Should Wilderness First Responder be the Standard of Care for Wilderness Leadership?

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Yes: Wilderness First Responder: A Valid Standard

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The fundamental duty of an outdoor leader is to ensure the safety of their expedition members. Hidden in this simple statement are a variety of competencies the leader needs in order to be able to meet this responsibility; outdoor living and travel skills, technical and risk and group management skills, and most importantly leadership and judgment. As well, an outdoor leader must be prepared to manage the medical situations and the health care needs that will inevitably arise in the outdoors. I've accepted the task of arguing that an outdoor leader should be trained as a Wilderness First Responder (WFR) and will do so from the point of view that the WFR scope of practice is practical and relevant to the needs of the wilderness trip leader. Before start, I will clarify the names of and the context for the primary training courses currently available for lay people, comment on the present state of national standards for medical training for outdoor leaders, define a wilderness context and focus this argument on the needs of a trip leader in remote wilderness. I will also speak to the history of this course and it's value to the profession, the concept of first aid, and discuss some areas of concern.

<a> Definitions

For those not completely versed in the training options associated with wilderness medicine, it is important to provide an overview to put my argument into context. While this paper focuses on WFR,

the catalogue of courses commonly used to train lay people in wilderness medicine also includes Wilderness First Aid (WFA) and Wilderness Advanced First Aid (WAFA). The relevant training depends on how deep into the wilderness you plan to venture and the reliability of rescue and medical support. Some outdoor leaders are never far from the umbrella of the local EMS response and may need only the basic 16 hour WFA certification. Some outdoor leaders work on trips with sound rescue response and communication options, and may only need a 40 hour WAFA certification. Some outdoor leaders lead in a remote wilderness context where the 70-80 hour WFR is the suitable credential.

- I am not aware of an agreed upon, industry wide national standard for outdoor leader wilderness medicine training. In the Wilderness Handbook Paul Petzoldt recommended that "One or two persons on every expedition should be knowledgeable about accepted first aid procedures concerning splints, treating shock, closing cuts, and detailed symptoms indicating appendicitis, pulmonary edema and hypothermia" (p. 220). He also advocated for leaders being certified in "second aid and evacuation" (Petzoldt 1974, p. 230). Currently, programs make individual choices, occasionally driven by accreditation, insurance or land management permit requirements, although these stipulations tend to be vague and allow almost any credential to meet first aid training requirements. Outdoor programs, land managers and national organizations vary on the credential they choose to require (Welch, 2009).
    - The Association for Experiential Education has program accreditation standards, which include a standard that wilderness programs at least 4-6 hours from definitive care have at least one leader with WFR certification.
    - The American Camp Association requires a minimum of a 16-hour wilderness medicine course when access to EMS is more than one hour.
    - The National Outdoor Leadership School (NOLS) requires WFR for its field staff.

- Outward Bound requires WFR of the field staff if a program is more than 1 hour from definitive medical care (M. Lindsey, personal communication, September 24, 2010).

For this paper I define a wilderness context as multi-day to multi-week domestic or international backcountry trips with unreliable communication and/or delayed medical or rescue support. Evacuations are primarily walkouts or carryout by the group, or with the assistance of local resources. In these settings the leader may be called upon to make independent decisions on the need for and urgency of evacuation, and calls for outside assistance. As well, medical equipment is limited, communication unreliable, transportation delayed and/or difficult and often by human power. As a result, patient care takes place in austere or harsh environments (Johnson et al 2010).

<a> A Practical and Relevant Curriculum

After decades of small scale "mountain medicine" educational programs, often hosted by large outdoor organizations such as the Seattle Mountaineers or the Adirondack Mountain Club, modern wilderness medicine programs began in earnest the 1970's. This development occurred in tandem with the growth of the outdoor education industry in order to meet the needs of trip leaders who shook their heads in frustration when attending an irrelevant urban oriented first aid course.

In the early years of modern wilderness medicine programs the instructors were often experienced outdoor education practitioners, passionate about wilderness, medicine and education, who took what they had learned in urban oriented Advanced First Aid or Emergency Medical Technician (EMT) courses and adapted this curriculum, based on experience and opinion, to fit their needs. Published research was sparse and courses evolved based on experience, opinion and the available literature. Many of the credible textbooks of the time contain techniques, such as incision and suction for snakebite, suturing wounds and administration of a plethora of medications that are now considered

ineffective or beyond the scope of practice of a lay medical provider. At the time it was the best advice available (Lentz, MacDonald, & Carline 1972; Forgey 1979; Wilkerson 1967)

In 1984, NOLS began carefully collecting data on the illnesses and injuries reported by course instructors. It was clear that small wounds, sprains and strains, diarrhea and flu-like illness were the day-to-day experience of the outdoor leader, and serious injury and illness was rare. This observation was confirmed in the first publication of the data (Gentile 1992) and has subsequently been seen in other publications (Islas 2008; Schimelpfenig 2006). NOLS began to develop an informed perspective of what is common. In the WFR courses taught internally by NOLS for staff training, dramatic, unrealistic scenarios were set aside and the focus moved toward developing the patient assessment skills needed to gather the information to make sound decisions and to address prevention of wound infections, sprains and strains, diarrhea and flu-like illness.

The NOLS field incident database remains the largest and longest continually running dataset on injury and illness on organized wilderness educational expeditions. It's currently in its 26th year with over 3 million person days of experience and 13000 incidents. The first paper - there are now three generated from the database - has been called a sentinel publication on wilderness injury and illness. In the last decade the pace of research and textbook publication has increased and there is now a substantial body of work than can inform our practice and help us focus our training and decision-making tools (McIntosh 2009). We can also study incident data collected by youth groups, outdoor programs, park visitors, search and rescue teams, climbing programs, trekking organizations or boating groups. We still lack credible incidence data from large segments of the outdoor recreation community including college-based programs, scouts and many camps.

There is also a growing literature on specific issues in wilderness medicine, and first aid in general

(Circulation, 2005). We're peeling the onion and asking critically if traditional techniques work, and if hallowed information is accurate. We study the arguments on the need for and efficacy of traction splints, on which dislocation techniques are relevant and realistic for an outdoor leader and whether pre-hospital providers can make accurate decisions on the need for spine immobilization. We're seeing rational discussion on wilderness water quality, hygiene and water disinfection (Derlet & Carlson 2004; Welch 2004).

In addition to the science, these courses continue to reflect the direct experience of outdoor leaders whose expertise is in the outdoors, not medicine. There is often little they can do for a patient besides providing comfort while evacuating, and the crux they face is the decision whether or not to evacuate, and if so, how quickly. This decision impacts the expedition, the rescuers and the patient. Guidance on evacuation is not found in urban first aid courses, which assume ready access to the physician. It is a crucial difference in wilderness medicine, and weaves judgment and decision making into first aid training. To ignore this in a leader's training is to ignore a reality of the field. Our data and our experience tell us that decisions on patients with abdominal pain and minor head injury, for example, remain vexing for outdoor leaders, unless they want to simply evacuate every patient. Decisions tools such as protocols have been tightened over the years, based on experience, and communication from the wilderness to the physician is more likely, but not guaranteed. In the future, accurate case reports may allow validation or abandonment of these decision tools.

The data also shows that mental health and behavioral concerns are part of the field experience, and the leaders tell us of the challenge of managing these problems, topics often given short shrift in first aid courses and outdoor instructor training. This topic is beginning to find its way into wilderness medicine curriculum and has been adopted into the WFR Scope of Practice Document (Johnson, et al

2010). WMI of NOLS began intentionally addressing this topic in 2008 in its WFR curriculum and devote a chapter of our WFR Textbook to mental health concerns (Tilton 2010).

Wilderness medicine courses remain evidence-informed, perhaps a more honest phrase than evidence-based, reflecting the limits and biases of the science, and the ever present influence of human experience and opinion. I review many field incidents through NOLS, the risk management community and as an active search and rescue (SAR) practitioner. Many of the directors of the prominent wilderness medicine schools do the same. We see what these outdoor leaders are capable of doing. We listen to them explain how they made their decisions on the need for and urgency of evacuation. These observations inform our decisions on what to include in our programs. The curriculum is dynamic and changes to stay current and relevant. The WFR Instructor of 2011 does not teach a 1976 curriculum, they teach a course that continues to thoughtfully evolve to meet the needs of the outdoor leader.

<a> WFA versus WFR

NOLS decided in the early 1980's to make its staff training standard WFR, not Emergency Medical Technician, which at that time was the gold standard in pre-hospital medicine. WFR was focused on information and skills, and on scenario-based training relevant to the typical setting in which a wilderness leader practices. Wilderness First Aid, the 16 hour introductory course, is used by some programs for leader training. This may be appropriate for people assisting a higher trained leader, or in a front country context, but it is insufficient for wilderness trip leaders. There is no science demonstrating one credential is better than another, however, the WFA course lacks ample time to practice skills, which is a cornerstone of the WFR experience, nor does it address the breath of medical situations a wilderness trip leader may experience. While flu-like illness, gastrointestinal complaints, sprains, strains and small wounds are common, the available evidence shows that illness with history

will present while on an expedition, and illness without history will reveal itself for the first time. It has been argued that the WFA concisely presents all that the trip leader really needs to know, but in my experience, as veteran of 35 years in the outdoor field, while I've seen more than my share of diarrhea, flu-like illness, blisters, minor cuts and burns I've also made evacuation decisions on people who suffered a blow to the head, had acute abdominal pain and a mechanism for a spine injury. I've reduced dislocations and splinted fractures, seen UTI's and testicular pain, frostbite and immersion foot, AMS and HAPE, spontaneous pneumthorax and broken ribs, asthma, hyperventilation and stomach aches from too many NSAID's. The list goes on and on. I've always appreciated my wilderness medical training. Last summer I participated in a SAR event where WFA trained leaders, in the middle of the Wind Rivers, over reacted to a participant's injury and insisted, in multiple satellite phone calls, for a helicopter evacuation. The weather precluded flying for several hours until we were finally able to land near the group, after a hair-raising flight, only to find a young woman without injury, who did not need to be evacuated. These young leaders were not prepared to manage this situation. An outdoor leader or program manager may see first aid training as a necessary evil and choose the shorter program, but they change their tune when they experience their first challenging medical event in a true wilderness context.

First aid, defined as "assessments or interventions that can be performed by the bystander (or by the victim) with minimal or no equipment" is at one end of a loosely defined continuum of care that ends with the physician (Circulation, 2005). One of the criticisms of WFR is that people are trained in skills beyond first aid. This is not the case. As I've argued before (Schimelpfenig, 2007) almost everything in the WFR scope of practice is accepted layperson first aid practices. The American Red Cross are recognized experts in the science and teaching of first aid, and often cited as the source of what is and is not "first aid." Their Wilderness First Aid Course (directly based on the WFA Curriculum of the major wilderness medicine programs), includes skills and knowledge widely taught in WFA and WFR,

as well as the more controversial topics of medication administration, dislocation reduction and selective spine immobilization, and they teach these concepts to people as young as 14. Obviously, the Red Cross considers this body of practice, first aid. (American Red Cross, 2010).

<a> Serves the Outdoor Community

Outdoor program risk managers don't argue the necessity of wilderness medicine training. Rather, their conversations center around which course is relevant for the program staff, which trainings are required or could be considered standards, and which topics should be covered.

I was an active field instructor in the early years of this profession (the 1970's) and remember poor decisions and poor patient care as part of my learning curve. Students became ill because we didn't appreciate the importance of hand washing or wound cleaning. Students, who should have been able to complete their programs left the field because we could not handle their medical problem. Our medical training was not taught well, wasn't focused on what we needed to know, and did not prepare us for the realities of the field. On my NOLS Instructor's Course in 1973 we had two days of poorly taught advanced first aid curriculum. Paul Petzoldt, then NOLS' Director, would have appreciated a more relevant and practical course. Indeed, I obtained an EMT certificate and began to volunteer in EMS, something I do to this day, solely to remedy this training deficit by gaining experience.

The theme of prevention in wilderness medicine courses separates these programs from urban-based courses. Drew Leemon, NOLS' Risk Management Director, says this is a clear benefit of these programs, a sentiment echoed recently by members of the Association for Outdoor Recreation and Education (AORE) (D. Leemon personal communication, Sept 21, 2010).

The literature lacks longitudinal studies evaluating the effect of training on the medical care on wilderness trips, but we can look at the impact on prevention. The NOLS database shows clear trends of a reduced evacuation rate and reduced incidence of the commonly reported incidents: athletic injury, wound infection and hygiene-related illness (Gentile 1992; Leemon 2003; McIntosh 2007). We learned these were common and we've educated staff on their prevention and management. The data demonstrates our students are in better hands now because of wilderness medicine training which is relevant and practical.

<a> Areas of Concern

What remains a challenge in wilderness medicine, and in all forms of medical education, is the consistency and skill of instruction. No matter what is written in curriculum documents, control of the instructor in front of the students is elusive. As Steve Donelan (2010)wrote in a recent edition of the Journal of Wilderness and Environmental Medicine "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" (p. 66).

There is a vast difference in instructor qualifications among organizations offering training. I recently obtained a credential to teach for a major national wilderness first aid provider through a 90-minute online course that did not assess my medical experience or skills competence, outdoor experience or skills competence or my efficacy as an educator. Contrast this to providers who require extensive outdoor and medical experience and train their instructors for seven days to teach a basic 16-hour WFA course.

In addition to inconsistent instruction, those involved in pre-hospital medicine know there are problems at all levels with uniform outcomes and that detailed curriculums and lesson plans are not a panacea. Among the major wilderness medicine schools there is remarkable consistency in content. This may be due in part to ongoing informal sharing of curriculum among providers, and the sharp focus of the material on wilderness medicine.

The major wilderness medicine programs, on their own initiative, recently embarked on a Scope of Practice project, intended to clarify what skills and knowledge a person with a WFA and WFR credential should have. This seemed a logical point of departure for the next phase in development of wilderness medicine courses. The programs engaged a wide number of providers and consumers in multiple drafts of a consensus document. The intent is for this document to standardize these credentials, and to serve as a base for future development of the content of these courses. This will evolve into a Consensus Position statement by the Wilderness Medical Society (WMS), making clear to outside audiences the content of these programs. There will also be regular meetings hosted by the WMS, continuing the conversations about what the relevant and practical skills are for a lay wilderness medical provider and continuing the evolution of the course content.

It is clear that medical decisions remain challenging to people whose expertise and experience is in the outdoors, not medicine. It is also clear that what we think our WFR students are capable of doing in a classroom and what they can realistically do in the field can be two very different things. There are only a few studies of learning retention in medical education to inform us of the limits of instruction There are several projects on retention of wilderness medicine skills in progress that when complete, may help us further refine our courses.

<a> Conclusion

Petzoldt notes that diarrhea is often due to hygiene, minor accidents to fatigue and haste, and hypothermia to "inappropriate Time, Energy and Climate Control Plans" (Petzoldt, 1974, p. 219). Wilderness medical events are often problems of leadership, judgment and fundamental outdoor skills competence long before they become an injury or illness. Wilderness medicine training is but a subset of these far more important competencies.

The Wilderness First Responder should be the standard of care for outdoor leaders in the remote wilderness context. WFR curricula have evolved to reflect program experience, expert opinion and data-driven evidence and the result is training that is practical and relevant to the needs of outdoor leaders. The widespread endorsement of WFR training for outdoor leaders has been a sound risk management tool.

The WFR, and its companion courses, WFA and WAFA, will continue to evolve as more evidence becomes available on the incidence of various problems, the efficacy of treatments and the efficacy of our instruction. As well, they will remain practical and relevant through the ongoing dialogue between those who teach wilderness medicine and those who practice wilderness medicine.

(Tod's note: word count approx 3,301)

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