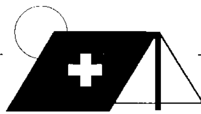

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Backcountry Health and Hygiene

Rethinking Hypothermia: So Much More Than Temperature

Sooner or later, anyone who writes about wilderness medicine needs to tackle the problem of hypothermia. Until now, I have assiduously avoided the topic, not because it was unimportant, but rather because I could not think of anything new to say about it. The basics of preventing, detecting and treating hypothermia are well described in scores of books aimed at both the casual user and the highly skilled backcountry traveler. Sure, there have been some recent advances in management. Patients, for example, may now be rewarmed by a modified heart-lung bypass technique: clearly a major, high-tech advance, but not likely to be applied at Lake Colden! For field use, adaptations of equipment originally designed for the military are beginning to be used for rewarming.

Our focus in teaching the public about hypothermia is misplaced. Sorry to say, the problem may be the fault of "us doctors."

Over the past few months, I have been reviewing a variety of recent hypothermia incidents, as well as studying some famous episodes in mountaineering history. I have even revisited (quite uncomfortably) a personal "near miss" as a teenager. All of this has convinced me that our focus in teaching the public about hypothermia is misplaced. Sorry to say, the problem may be the fault of "us doctors." Let me explain.

Physicians like to analyze situations according to what might be called the "medical model." Consider pneumonia, for example. According to the medical model, a bacterium gains entrance to a "host" (read "patient"). If the host's natural defenses are impaired or overwhelmed, the bacteria multiply, and give off chemicals which damage tissue. Treatment centers around the use of antibiotics to control the bacteria. Prevention involves protecting the body's defenses (e.g. not smoking), or enhancing them (e.g. immunization against some common bacteria). For most ailments afflicting mankind, this medical

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model works pretty well.

Just about every discussion of hypothermia in the backpacking, mountaineering and medical literature follows the medical model. Exposure to cold lowers the body's core temperature whenever heat loss to the environment exceeds heat generation. Since the chemical reactions that define life have a rather narrow range of temperature in which they can take place, reduction in core temperature slows and eventually stops these reactions. Treatment consists of reestablishing normal core temperature before death ensues. Simple enough.

An unreal model

The problem with this way of looking at hypothermia is that it ignores reality. *Exposure to cold, by itself, virtually never causes hypothermia.* If it did, anytime we ventured out in an environment whose temperature was below about 80° we would develop it. The well-fed, well-hydrated, well-rested, uninjured, properly equipped, properly-oriented-to-place member of an appropriate-sized group with competent leadership will hardly ever develop hypothermia, regardless of the ambient temperature. (Kayakers and rafters please note: My remarks do not apply to the special situation of "immersion hypothermia," an often-unpredictable event for which the medical model is entirely appropriate.)

Rather than being a primary "disease," suddenly striking the unwary hiker or climber, hypothermia is usually nothing more than the final nail in a coffin whose construction may have started well before the trip even began. While the county coroner may certify the death of a backpacker as "hypothermia," the real cause is more likely to be "failure to carry a compass," "improper gear for anticipated conditions," "unrealistic trip planning," or the like. In short, rather than looking upon hypothermia as a disease, explained by the medical model, we should see the condition as usually a manifestation of leadership dysfunction that should best be viewed through a model of group dynamics and expedition behavior. While only one member of a group may actually suffer a dangerous reduction in core body temperature, it is generally a breakdown in the entire party that allows this to happen. Stressing the technical details of wind chill, thermogenesis and the like is interesting for the aficionado, but inappropriately directs the focus on *temperature* rather than *leadership*.

Important knowledge

Similarly, training in recognition and field rewarming techniques may be vitally important for potential rescuers. Such knowledge is also important for any backcountry user who may fortuitously happen across a fellow hiker in difficulty, thus becoming a "first responder."

Keep in mind, however, that these techniques are unlikely to be effective *within a group*. Simply put, a party with the experience, equipment and wherewithal to treat successfully one of its own for hypothermia would not be likely to confront the problem in the first place.

Paul Petzoldt, the late father of modern mountaineering, frequently taught that true accidents in the wilderness were rare. More often, in his opinion, incidents were the predictable outcome of a series of bad decisions. The same can be said for hypothermia.

At risk of closing with some controversy, I can add that readers might do well to remember this: the vast majority of hypothermia deaths in the United States do not occur among backpackers anyway. The usual victims are the untreated mentally ill, alcoholic and drug-using unfortunates who make their homes on the streets of our cities. The "medical model" doesn't work very well there either. Political leadership can also be dysfunctional.

—*Thomas R. Welch, M.D.*

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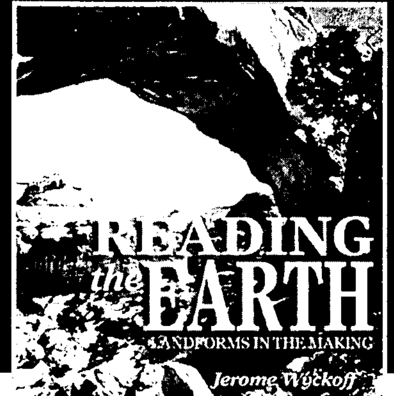

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