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ABSTRACT

This volume of newsletters addresses issues related to the treatment and prevention of medical emergencies in the wilderness. Each issue includes feature articles, book reviews, product reviews, letters to the editor, notices of upcoming wilderness conferences and training courses, additional resources, and general information relevant to medical services and outdoor activities. Feature articles cover legal issues for the wilderness care provider, first aid for children, animal diseases communicable to humans, preventing skin cancer, items to include in first aid kits, risk management incident reports, and principles of wilderness emergency medical services. (LP)

Wilderness Medicine Newsletter

FOR THE RECOGNITION, TREATMENT, AND PREVENTION OF WILDERNESS EMERGENCIES

JANUARY/FEBRUARY 1994 ISSN-1059-6518 VOLUME 5, NUMBER 1

LEGAL ISSUES FOR THE WILDERNESS CARE PROVIDER

by Charles "Reb" Gregg, Attorney at Law

Editor's Note:

Happy new year and warm greetings from the editors of the Wilderness Medicine Newsletter. In this issue you'll find current information on the legal and insurance-related aspects of backcountry medical care. We hope you can use it to decrease your exposure to liability and, as always, to make your outdoor ventures safer.

Introduction

Providing medical care in the wilderness is risky. You are miles and hours from modern equipment and the advice of a physician. Many people in the United States will be willing to haul you into court if you make a mistake. So, you could find yourself defending a lawsuit which claims that you should have done more, or less, for a patient in the wilderness. Failure to defend such a claim successfully can hurt you professionally and financially. You should, therefore, understand the legal issues involved in this new and important profession of which you are a part.

This article will deal with general legal concepts, not the laws of particular states. You should seek legal advice regarding the applicable laws of your state and consult with your medical advisor regarding the medical aspects of the discussion which follows. (A medical advisor is a licensed physician who advises an unlicensed medical practitioner.)

The areas of the law which are most important to the wilderness care provider, whether in the city or the wilderness, are contract and tort law. These are branches of civil law (as distinguished from criminal law).

Contract Law

Contracts are promises--expressed or implied, written or oral. A person can be sued to enforce these promises or to pay money if they are broken. All parts of a contract should be clearly expressed and understood--who is to do what for whom, when, and for what consideration or payment, and the remedy if a person does not perform as promised. At some time in your career, you will have a contract with someone--perhaps your employer or a person in your care. Some states might consider that you have entered into an implied oral contract as soon as you or someone on your behalf causes another to believe you will give medical help if needed. Other contracts with which you may be involved are "releases," whereby a person forgives you in advance for a wrong you might later commit. Contracts of insurance allow you to acquire protection from claims of persons who may be injured by you.

Tort Law

The area of the law with which you will be most concerned is tort law, which deals with wrongs to people and property not usually involving contracts. (The word "tort" comes from a French word meaning "wrong" or harm.") While the most familiar of these torts are intentional bodily injuries and fraud, the focus of our discussion will be the tort of "negligence"--that is, the careless, unintentional act which harms another person to whom you owe a duty of care.

Negligence

The good news is that, generally, you will be protected from legal liability for negligence if you do your job well and in accordance with the standards of your profession. Also, persons who participate in outdoor ventures often are more likely than others to accept responsibility for a risky activity and, therefore, are less likely to sue. Nevertheless this area of the law is of considerable interest to the wilderness care provider, whose scope of responsibility and authority may vary from state to state and whose role in a particular situation may not always be well defined.

The elements of a claim of negligence are 1) a duty of care, 2) a failure to perform that duty, and 3) a loss or injury caused by that failure.

Duty of Care

In all but a few states you do not have a duty to care for or protect another person in the absence of some prior relationship. Simply put, you usually will not have a duty to act. But once you begin to give care, or even respond to a call for help, a relationship and a duty are created.

If the person is in your direct care, or is a participant in an activity (a school or company outing, for example) for which you have been hired to provide services, you clearly have a duty to that person. If you know a person is relying on you for assistance, the duty element also is satisfied. You have a special relationship with that person, who is no longer a "stranger."

The "Good Samaritan"

To encourage care and rescue, most states have laws (often called "Good Samaritan" laws) which provide that a person who voluntarily gives emergency assistance will not be liable for "simple" carelessness. There is no such protection for "gross" negligence, which is carelessness that is so extreme that it appears you had complete disregard for the person injured. Note that the care must be *voluntary* and performed in an *emergency*. In a wilderness setting, such a statute might control your voluntary care of a stranger found injured on the trail.

Violation of the Duty

The second element of negligence is a violation, or breach, of the duty of care. A breach can be an act or the failure to act.

Generally speaking, the law will consider you at fault and liable for payment of damages to the injured person, if you have not performed as would a reasonable person with your background and training, acting in the same or similar circumstances. Examples might be the misreading of obvious vital signs or the failure to splint a fracture. *Gross* negligence might be attempting to provide care when you are under the influence of drugs or alcohol.

There are many different types of medical services being provided today, by First Responders, EMT's, Paramedics, Nurses, Physicians, and assistants. There is a variety of levels of EMT training. So, it is sometimes difficult to know what standard of performance to apply. In addition, different states allow EMT's to do different things.

Because wilderness medicine is a newer profession, the standards may be even less clear than for those operating in ambulances, emergency rooms, and other city situations. *What* you are allowed to do will depend on the laws of the state where you have your license. Be sure you are operating within those laws as you consider starting an IV, for example, or taking advice from a medical advisor. *How well* you perform will be measured by standards which are much broader. It is never enough for you to say simply, "it works for me." Some states modify the applicable standard by requiring compliance only with the way local professionals perform, but to be safe you should measure yourself against professionals all over the United States. Never do more--or less--than you are trained and licensed to do. Be sure to stay informed and well trained up to the standards of your profession. This, of course, should be the case with or without the possibility of a lawsuit.

Injury Caused by the Breach

The third element of a negligence claim is an injury or loss which is the natural result of the wrongful act or breach of duty. The "loss" can include fright and other emotional trauma and certainly includes loss of property and personal injury. The breach of duty must have directly caused the loss. You won't be liable if another person or event is shown to have caused the injury--for example, if a qualified person to whom you transfer the patient acts negligently. Also, the loss must have been a reasonably foreseeable result of the breach of duty. You should not be liable if a person, because of some pre-existing condition of which you could not have been aware, reacts badly to a regular procedure applied to you. In this event, a person with your training could not have foreseen the result and should not be liable.

Defenses

If you are sued for negligence, you have defenses. These defenses include the absence of one or more of the three necessary elements--duty, breach of duty, and injury caused by the breach. The negligence of others, including the person injured, also can reduce or eliminate your liability. In many

states, the judge or jury is allowed to compare, on a percentage basis, the fault of all who may have contributed to the injury. This is usually referred to as "comparative negligence" and assures that you are obligated only for that part of the loss that you caused. The example above--of negligent subsequent care--might produce a "comparative negligence" situation.

Damages

You will have to pay damages to the injured person if you are found to be negligent. These damages are the best estimate by the judge or jury of what you should pay to make up for the loss you caused--including pain and suffering, medical and other expenses, lost earnings, and even penalty or "exemplary" damages if your negligence was gross.

The fact that you are an employee is no protection from liability, except to the extent the employer's insurance may take care of your legal liability and expenses. Insurance is a matter you should carefully consider, whether you are acting independently or for an employer.

Abandonment

You can be liable to a patient (or, as in other cases, to a patient's family), for abandonment and for failure to obtain consent for treatment. Abandonment occurs when you or another care provider terminate that care too early, or transfer the care to an unqualified person for transport or care, thereby causing harm to patient.

Example: An EMT/Safety Officer, accompanied by a registered nurse, leaves unattended, at the top of a mountain, an aged, out-of-shape skier suffering from nausea, who had relied upon them for care and comfort. (Could also include leaving the previously-described skier in the care of a pleasant but medically under qualified party whose area of expertise is personnel management.) Note: Even though the personnel manager abandoned the skier five minutes later, she is not liable, because she has no duty of care.

Consent

The *informed* consent of an adult (including the parent or guardian of a minor), before care is given, is required by law and should be in writing or at least witnessed by a third party. Informed consent means the patient is advised of the problem and the proposed treatment and what to expect if no treatment is given. Fortunately, the law recognizes *implied* consent in emergency situations when it can be reasonably assumed that the patient, if conscious and sensible (or a parent, if the patient is a minor), would have agreed to the assistance offered.

Documentation

You have heard the saying "if it isn't written down, it didn't happen." This means that, in a lawsuit, if an important event is not recorded by you, the judge and jury probably will assume that it did not occur. It is important, therefore, in order to avoid guessing about what happened in the field, that you make a written record at the time of the event or shortly thereafter. The record should include at least dates and times, patient history, a description of the scene, your physical assessment and treatment, and changes in the patient while in you care. It is important also to have a witness to critical matters such as the consent to treatment (or, more important, the withholding of consent) and to the medical procedures used by you.

Conclusions

What is the practical legal effect of all this? A rescuer, as we know, assesses the emergency, removes the patient from harm, stabilizes the patient, provides other limited, essential care, and prepares proper reports and records. As a wilderness rescuer you probably will have more responsibilities (for expedition medicines, for example) and provide treatments that might be inappropriate if hospital care were more available.

Most of the issues facing you on wilderness expeditions will relate to athletic injuries (strains and sprains, and a rare fracture), environmental emergencies, and hygiene-related problems. But there is always the possibility of severe trauma or illness, or a difficult-to-diagnose stomach cramp (appendicitis?), diabetic reaction (too much insulin, or too little?), or severe laceration (evacuate?). Such occurrences, four hours or longer from the attention of a licensed physician, are much more serious than if encountered in Houston, Texas or Lander, Wyoming. If you accept the responsibility of care in the wilderness, you must be prepared with appropriate training, equipment, and authority.

A medical advisor or base-station physician will share responsibility with you for the adequacy (or inadequacy) of your training and performance, if he or she authorizes you to administer drugs or intravenous fluids, suture, or otherwise engage in procedures that might exceed the customary role of the city responder. Relocation of a dislocated joint in the wilderness, for instance, may or may not be an acceptable practice. If it is done well, there will be no complaint. If done improperly, questions of training, technique, authority, consent and alternative remedies will be carefully examined--by investigators, lawyers, experts and a judge and jury.

In a wilderness or outdoor program, additional issues important to you as a staff-person will be the screening and supervision of participants (determining that they can engage in the activity without danger to themselves or others), adequate equipment

and supplies on hand for foreseeable emergencies, and the training to improvise as necessary, and a carefully designed plan for evacuation and other emergencies.

In spite of the risks described in this article, the conscientious and responsible wilderness care provider will concentrate on the opportunities to be of service and not let a concern for liability affect his or her performance. This is as it should be, because the law requires only what reasonable patients should require and protects those who do their jobs well.

Guide Services *Do* Win: Anatomy of a Successful Defense

by Ken Thompson

No one who makes his or her living, or part of it, taking other people into the outdoors can claim immunity to the threat of being sued. We know that some folks view adventure travel injuries as a way to make money through frivolous lawsuits. We know that some attorneys actively solicit clients to sue when the carrot of personal injury dollars dangles before them. We know that some insurance companies have done more harm than good because they have settled claims to avoid the "hassle" of going to court. We know of solid operations that have ceased operation because the business just wasn't worth it anymore.

The good news is that since the crisis thinking that seemed to boil over around the mid 80's, we've learned a great deal. And, outdoors folks are beginning to successfully defend against frivolous lawsuits. The following account of a successful defense comes directly from the *Daily Appellate Report*, dated Monday, January 7, 1991, pgs, 170-172. The names in this California case have been changed to prevent any unwanted publicity for the people involved. but you should know that the defendants were members of the Worldwide Outfitter & Guides Association (WOGA)* and that WOGA mounted this successful defense. All italicized text represents direct quotes from the source document.

Maria Smith--Plaintiff-Appellant v. The Wave, Inc.--Defendant-Respondent

John Smith (decedent) drowned at Murderer's Bar Rapid after falling out of a raft guided down the Middle Fork of the American River by employees of the respondent commercial rafting company. The trial court entered summary judgment for the rafting company in the wrongful death action brought by decedent's heir (appellant). We affirm on the basis that the decedent expressly assumed the risks attendant to whitewater rafting so as to relieve the rafting company of its duty of care toward him.

(NOTE: "Summary judgment" is made by a judge who has reviewed all the evidence provided by attorneys for both sides. The trial court judge makes a "summary judgment" when she or he feels that the evidence is clearly in favor of one side or the other, and, therefore, a jury trial is not necessary.)

John Smith (28 years old, 5'10", 280 lbs.) and a group of friends contracted with The Wave rafting company to guide a three-day river trip, which included class II-IV water. All members of the party signed a "Release and Assumption of Risk Agreement". Prior to getting on the water, a trip leader *"gave a safety talk, covering such topics as what to do when thrown in the river, how to swim in that situation, how to get out from underneath the raft and the dangers of whitewater rafting. He warned: "Whitewater rafting is not a Disneyland ride and you can get hurt and even die."*

The guides ensured that all participants were fitted with an appropriately sized, type IV PFD and told participants that they must wear helmets in all class IV rapids. It was a standard practice of the company to have all participants scout rapids and to make a personal, individual choice about whether to run a particular rapid or to walk around it. The guide expressly warned them not to *"pay any attention to any peer pressure and to make this choice on their own".*

The trip went smoothly and routinely the first two days. Several rapids were scouted and avoided by participants. Smith fell out of the raft in one rapid and was pulled into the boat after a 30 second swim. Guides regularly briefed participants on safety precautions. One fact, interesting because it did not seem to play a role in the outcome of the case, was that one participant *reported that on the second night the "lead guide" drank beer, smoked marijuana and stepped on a hot coal and burned his foot.*

On the day Smith lost his life, trip leaders and all participants except Smith scouted the final rapid, Murderer's Bar. Smith declined to go with the scouts, apparently, because he was tired, his legs were sore, and he just wanted to get it over with. One of the guides pointedly asked Smith on two separate occasions if he wanted to run the last rapid or "take-out" with the vans. Both times he indicated he wanted to run the rapid. At Murderer's Bar, Smith fell out of the raft and drowned. One procedural element that was examined during the case was the fact that the crew did not station themselves on either side of the rapid with throw bags readied, as they had at other rapids.

While Wave seemed to act prudently in most cases, this case was won on the basis of the amount and quantity of informa-

tion provided to participants by the rafting company. Regular explanations of hazards, options for walking around risky rapids, and a pre-trip mandatory release were thought, by the court, to have placed most of the responsibility upon the decedent. However, the appelate court did note that the release was not perfect, specifically: *"Nonetheless, in plain language it expresses that the releasor is aware of the risks and dangers that can occur on any river trip with Wave, including the hazards of personal injury, accident and illness. The release then goes on to express the releasor's consent to assume those risks and "except in the case of gross negligence," to hold Wave and its agents harmless from any liability and claims arising out of the trip. finally, it ends with a statement indicating the releasor's understanding that he or she cannot participate in the trip unless he or she signs and submits the document to Wave."*

The decision was that Smith expressly assumed the risks that led to his death. The appellate court concluded Wave was entitled to judgment as matter of law.

What we have learned: If you are involved in a lawsuit, every action and document leading up to the trip will be thoroughly scrutinized, analyzed, and, possibly, scanned by something called an "Electrostatic Detection Apparatus", which helps verify the authenticity of documents. Every statement, whether meticulously planned or made "off the cuff" and under stress, uttered by anyone connected with the incident will be re-played hundreds of times. No matter how good you are and how much experience you have, your judgment and character will be questioned and cross-examined. So, the following guidelines should help programs and clients stay safe:

Make every critical decision with the outlook that you will have to defend it in court.

Choose insurers and attorneys wisely, as if your livelihood depends on it.

Write down your operating protocols and follow them to the letter.

Hire the best.

Train, read, and stay on top of your technical skills.

Keep an up-to-date log and equipment maintenance schedule.

Be certain, through formal, written releases and regular questioning, that participants willingly accept the risks inherent in the activity.

As time-consuming as these things sound, they are no more demanding requirements than you would expect from your home-builder or airline carrier. The great outdoors are wild, woolly, and wonderful. But, if we work there, we are still held accountable to the laws of a tightly wound, well-shaven, and buttoned-down society. In the end, both guides and clients will rest easier knowing that the t's are crossed and the i's dotted.

**Editor's Note:* *Worldwide Outfitter & Guides Association has been helpful in the preparation of this and other articles in this issue of the Wilderness Medicine Newsletter. They are a non-profit organization of professional outfitters, guides, and other outdoor recreation programmers, formed as a Risk Retention "Purchasing Group" under the 1986 Risk Retention Act. WOGA and its carrier, Homestead Insurance Company (an A.M. Best A-rated insurer), provide assistance in the development of risk management plans and aggressively fight frivolous lawsuits. For more information call 1-800-321-1493 or 801-942-3000, write WOGA P.O. Box 520400, Salt Lake City, Utah 84152-0400, or fax 801-942-8095.*

The Safety Talk: Good for Everyone

by Ken Thompson

The two most common allegations of any lawsuit against an outdoor recreation program concern the safety talk:

1) The injured was not adequately warned and informed about dangers inherent in the activity.

2) The injured did not receive proper instructions on what to do.

Every lawsuit in the files of the Worldwide Outfitter and Guides Association (WOGA) contains these allegations. Claims of this nature are almost always ridiculous, but almost impossible to disprove without some kind of a system. Because these are the most common allegations you can expect, it makes good sense to have a standard defense prepared.

All good outdoor recreation programs give safety talks and instructions, but not all have written down what is to be included. Write down the basics of a safety talk in outline form and give them to your guides and trip leaders. The most important reason to do this is to make sure that leaders, both new and experienced, do not forget anything.

Many programs put the information on small cards and laminate them with plastic. Alternately, the safety talk could be printed and handed out to participants so they can read along while the guide gives the talk. One customer or all of

them could sign a statement at the bottom which says that particular points were covered.

I encountered an effective use of the printed safety talk technique--it also served to convey rules and regulations--in the Boundary Waters Canoe Area this past summer. All permittees are required to listen to the permit grantor talk his or her way through a laminated booklet of information that includes drawings, as well as text, of safety and conservation highlights. Once I got through some initial resentment at being treated like a child, I actually appreciated the clarity and thoughtfulness of the presentation. When I signed on the dotted line indicating I had attended to the information, I felt a certain confidence and responsibility, knowing that everyone in the park was living by the same rules.

The WOGA Risk Management Manual provides the following general outline for developing safety talks:

I. Introduction:

1. Introduce yourself and your staff.

2. Tell them to listen and think--the responsibility for safety is shared by the participants.

II. Trip Specifics:

1. Introduce the area, suspected weather to be encountered, etc.

2. Describe inherent dangers (e.g. cold water, falling, hypothermia, other environmental conditions, etc.).

3. Explain proper equipment usage.

4. Demonstrate proper technique (e.g. Sit and paddle like this . . . ; Guide the horse like this . . . ; etc.).

5. Explain what to do in case of an emergency (e.g. If you are lost . . . ; If the canoe capsizes . . . ; etc.).

III. Participants' Responsibilities:

1. Explain the level of physical involvement.

2. Ask if anyone has medical or physical conditions.

3. Explain that NO drugs or alcohol shall be consumed prior to or during the activity.

4. Ask them to notify the guides if they observe any problems with the equipment or animals, and to report any incidents or accidents.

IV. Closing

1. Ask if everyone signed a release form.

2. Ask if there are any additional questions.

A related concept used by some programs is the "environmental briefing". The term itself helps leaders remember to provide regular briefings at appropriate points in the trip, specifically, whenever the environment changes. For example, the time to discuss wearing seat belts is before getting into the van; the time to discuss stove safety is before cooking a meal; the time to discuss lightning safety is when storm clouds appear on the horizon. The times of these mini-briefings, done immediately before an activity and from a prepared outline, should be recorded in a trip leaders log.

(Most of this article was adapted from literature developed by the Worldwide Outfitters and Guides Association and is printed here with their permission. WOGA provides many comprehensive outlines and checklists for its members. For more information: Will Leverette, Worldwide Outfitter and Guides Association, P.O. Box 520400, Salt Lake City, Utah 84152, (801) 942-3000.)

Health Care at Camp: A Special Kind of Caring

By Mary Marugg, RN, CEN

Consider using your skills in a different way this summer. Youth camps across the country employ RN's and EMT's to fill the role of camp health provider.

The job description may vary between camps, but a common theme is present for all "camp nurses". Health, safety, and wellness are key issues for all camp directors. The health provider is the ideal person to promote a safe and well camp. Injured and sick campers and staff must be attended to. First aid kits need to be organized and maintained. Routine medical care must be provided, such as daily medications and allergy shots, and routine health screening is a regular duty.

The American Camping Association (ACA) and Christian Camping International (CCI) are two agencies committed to promoting a safe camping experience. To order the ACA *Guide to Accredited Camps* contact the national ACA bookstore at 1-800-428-CAMP. The CCI Membership directory can be ordered by calling the CCI national office (719) 260-9400.

Through these directories, you'll discover many kinds of camps. Residential camps have kids stay overnight. Some are

short (2-3 days) and others may last 6 or 8 weeks. Program foci vary greatly. High adventure camps may include whitewater rafting, backpack treks, mountain biking, technical climbing. A broad range of activities may be offered at the camp site: horsemanship, riflery, crafts, archery. The theme for a camp program may be team building and group dynamics, or personal challenge and growth.

Camp directors need EMT's and nurses. Being part of a camp staff can be a great experience. Using your professional skills in an outdoor setting, where being proactive is valued, a part of your day may include rafting down a river, "standing by" at an event full of enthusiastic kids, and putting your feet up next to a campfire under the stars.

Dispatches

Risk Management Forum

Richmond, Virginia was the site of Risk Management Forum and Exposition, November 3 - 6, 1993. Co-sponsored by Markel Rhulen Underwriters and Brokers and the American Camping Association, this event was comprehensive and thoughtfully executed. The heart of the conference was a three morning long mock trial designed and staged by attorneys with vast courtroom experience in liability. The afternoons comprised presentations on specific aspects of outdoor program management led by nationally known experts. Chances are good that the ACA and Markel Rhulen will offer similar conferences in the future. Stay tuned for more information.

In the meantime, you can reach the American Camping Association, Inc. at 5000 State Road 67 North, Martinsville, Indiana 46151-7902, (317) 342-8456.

To discuss particular insurance needs for your operation, consult Markel Rhulen Underwriters & Brokers, Specialists in Camp, Youth Recreation, and Outdoor Education Insurance, 4600 Cox Road, Glen Allen, Virginia 23060, or call them toll free at (800) 431-1270.

Risk Management Help for Nonprofits

The Nonprofit Risk Management Center is a nonprofit resource center that conducts research, education, and advocacy to meet the risk management and insurance needs of nonprofit, community-serving, and volunteer organizations. The Center is an independent organization that neither sells insurance nor endorses specific insurance providers. Reach Gwynne Kostin, Education Director, Nonprofit Risk Management Center, 1001 Connecticut Avenue, N.W., Suite 900, Washington, D.C. 20036, telephone: (202) 785-3891 or fax (202) 833-5747.

Red Snow Algae: Fact or Fiction?

Fact it is, and way back to Aristotle you'll find references to "red snow" and "pink snow" and "bloody snow" and "watermelon snow". Occurring most commonly on slopes at an elevation of 10,000 to 12,000 feet above sea level, red snow shows up, usually later in the season, on most of the mountain ranges of the world. The red color, caused by plant (algal) material, has been seen as low as 4,000 feet and as high as 14,000 feet.

Multiple species of algae have been found in samples of red snow, but the one almost always there is *Chlamydomonas nivalis*. Although *C. nivalis* falls technically into the green algae class, the red color develops from carotenoids, apparently to give the plant an adaptive advantage under high intensities of light. The plants grow only in a narrow temperature range around the freezing point, temperatures that seldom occur except in Spring and Summer. Concentrations of the algae are greatest on the surface of the snow, but blooms may grow up to a foot under the surface.

No reliable info exists concerning whether or not human ingestion of red snow algae causes any problems. Anecdotally, several people have reported getting "sick" after eating the algae. Experts suggest the illnesses could have been caused by other impurities in the snow since no known toxins are associated with *C. nivalis*, or any green algae. Even if toxins did exist, an incredibly large amount of snow would have to eaten to cause illness. Until further investigation comes forth, however, it would be best to avoid eating snow of any color other than white . . . especially if it's yellow.

(Source: *Wilderness Medicine Letter*, The official newsletter of the Wilderness Medical Society, Summer 1993.)

A READER ASKS: "My doctor says I have bursitis in my knees. Any ideas about what I should do? Can I keep hiking?" T.S., Pennsylvania.

A bursa is a pad-like sac or cavity found in connecting tissue usually in the vicinity of joints. Bursae are lined with synovial membranes, and contain a fluid, synovia, which acts to reduce friction when you move.

Bursitis is the inflammation of a bursa, especially one located between a bony prominence and muscle or tendon, such as the shoulder or knee.

Treatment consists of rest and immobilization during the acute phase. Active mobilization as soon as acute symptoms subside will help prevent adhesions . . . in other words, use it or lose it. Analgesics, heat, and diathermy (electrical stimulation)

are often helpful. Injection of local anesthetics or cortisone into the bursa may be required. In chronic bursitis, surgical removal of calcification may be necessary.

Sex in the Outdoors

Looking for the ideal gift? How 'bout *Sex in the Outdoors* . . . not the deed but the book. Robert Rose, MD, and Buck Tilton, MS, take a wild and borderline wicked look at just about everyone's favorite backcountry recreational activity. Eighty-six pages in 6x9 inch format. Illustrated by artist-in-hiding Marc Bohne. $7 includes postage and handling and autographs of both authors. Order from: WMN, P.O. Box 9, Pitkin, CO 81241.

Job Opportunity

Registered Nurse positions available at beautiful boys/girls private summer camp in the Colorado Rockies near Estes Park. High health standards. Salary plus room/board. June 7 - August 9, 1994. Contact Bob Jamieson, Cheley Colorado Camps, P.O. Box 6525, Denver, CO 80206. Phone (303) 377-3616.

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May 16 - June 10 in Pitkin, Colorado $1,395
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Wilderness First Responder
February 26 - March 6 in McCall, Idaho $350
March 12 - 20 in Missoula, Montana $350
March 26 - April 4 in Monticello, Utah $400
April 22 - May 1 in Arcada, California $435
May 14 - 22 in Missoula, Montana $350
May 26 - June 4 in Taylor Park, Colorado $365
June 17 - 26 in Santa Cruz, California $425

Wilderness First Aid
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SOLO COURSES

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Wilderness EMT
March 14 - April 8 $1395
April 18 - May 13 $1395
May 23 - June 17 $1395
July 25 - August 19 $1395

Wilderness First Responder
March 7 - 18 in North Carolina (704) 488-2175
April 4 - 15 in New Hampshire
May 7 - 17 in Georgia (706) 745-5533

Wilderness/Rural EMT and First Responder Module (upgrade from current street certification)
March 7 - 11 in New Hampshire
May 16 - 20 in New Hampshire

The *Wilderness Medicine Newsletter* is intended as an informational resource only. Neither the *WMN* nor its staff can be held liable for the practical application of any of the ideas found herein. The staff encourages all readers to acquire as much certified training as possible and to consult their physicians for medical advice on personal health matters.

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Wilderness Medicine Newsletter

FOR THE RECOGNITION, TREATMENT, AND PREVENTION OF WILDERNESS EMERGENCIES

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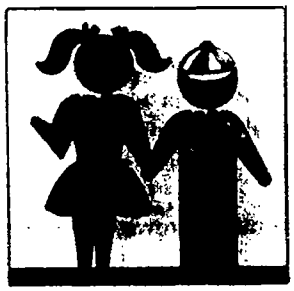
WILDERNESS PEDIATRICS

When a Child Runs Wild

BY BUCK TILTON



Six million little people, aged eleven and under (according to the Sporting Goods Manufacturers Association), went camping in 1992. Seems as if that number will keep rising. Six million little people . . . but **not little adults.** They run differently and they break down differently. That's why there's a branch of medicine called "pediatrics", a word derived from the Greek for "child-treatment."

When traveling into remote geographical locations with children, your medical knowledge and your first aid kit should be adapted to meet their special smaller bodies. Although specific needs may differ from trip to trip depending on such variables as the ages of the children, the length of the trip, the time of year of the trip, the environmental conditions you expect to encounter, and any pre-existing medical conditions, some medical advice is useful for all younger ages.

The Basics: A Few Reminders

This is not a treatise on pediatric care (excellent texts on pre-hospital child care are available), but a few reminders are perhaps worthwhile.

Older children are often accurate historians, but smaller children usually require parents or guardians to serve as the primary source of information. It remains important, however, to let all children express their opinions. In almost all cases, children and people they know and trust should not be separated. Sometimes, however, panicky parents become more a problem than a hurt child.

When a threat-to-life exists, all patients must be attended to on that basis. But, generally, you should expect to spend more time with children than adults. Most people, even little ones, respond positively to calm reassurance, quiet tones, and simple words. Be kind and firm. Be honest. And keep your eyes open--how children act and look is often more relevant than what they say.

Avoid touching children, especially painful spots, until you have gained at least some trust. Working toe-to-head, instead of head-to-toe, on children is usually more acceptable. If you've got instrumentation, anything from stethoscopes to tweezers, save it for the end.

Check the respiratory rate early in your examination, when the child is as calm as possible. If he or she starts to cry, there goes your opportunity for an accurate measurement. Remember pulse rates in children are higher than in adults. The means for pulses are:

Newborn to 3 months--140.
3 months to 2 years--130.
2 years to 10 years--80.
Over 10 years--75.

Blood pressures, if a cuff is available, are lower in children. Systolic measurements run approximately 90 plus the child's age. A cuff larger than two-thirds the child's upper arm will give you an inaccurate measurement.

Remember to assess the fontanelles in infants, the areas of the skull that have not yet fused. The posterior fontanelle is usually closed at four months, but the anterior fontanelle may not close entirely until 18 months. It should be level or slightly sunken, and you may note pulsations. Dehydration often produces a markedly sunken fontanelle. Head trauma or disease may produce a tight or bulging fontanelle.

Children and Fever

Temperatures are often important considerations in children. A temperature above 101 degrees F in a child over three months old should be enough to start you moving out of the backcountry and toward medical treatment. You should definitely seek assistance if the fever rises or lasts more than three days. The temperature should be taken rectally. If you expect to work with small children, carry a digital thermometer and an appropriate lubricant.

Acetaminophen has proven helpful in relieving pain and reducing fever. The American Academy of Family Physicians recommends the following dosage schedule:

Age	Weight	Dosage (every 4 hours)
4 - 7 months	13 - 17 lbs.	80 mg.
8 - 18 months	18 - 23 lbs.	120 mg.
1 1/2 - 3 years	24 - 32 lbs.	160 mg.
4 - 5 years	33 - 45 lbs.	240 mg.
6 - 7 years	46 - 61 lbs.	320 mg.
8 - 9 years	62 - 78 lbs.	400 mg.
10 - 11 years	79 - 98 lbs.	480 mg.
12 - 13 years	99 - 131 lbs.	650 mg.
14 years +	132 lbs. +	650 - 1,000 mg.

Children and Heat

Children gain core heat faster than adults. Little human cooling systems work fine, mostly, but they sometimes need encouragement. The younger the child the less developed her internal heat regulating system, and the larger her surface area for heat dissipation in relation to her body mass.

1. Allow children time to acclimatize. It will take them longer than it will take you. Early in the hot season, or early into a trip to an area hotter than the child is used to, go easy for the first few days, and increase the activity level progressively. The human body becomes increasingly able to adjust to heat.

2. Do not dress the child in occlusive clothing. Summer clothes should be woven loosely to allow air to circulate freely over the skin and to allow moisture to evaporate freely off the skin. Snug fitting clothing restricts healthy blood circulation and should be avoided. Wearing a hat, especially one with a wide brim, shades the heat-conscious brain and the sun-sensitive face.

3. Save the hardest walking for the coolest times of the day. Around 2 PM, when thoughtful desert dwellers are conserving their strength and moisture with a siesta, so should you and the child.

4. Do not give the child antihistamines. The stronger ones block the sympathetic nerves which stimulate sweating and predispose the child to heat problems. Antihistamines will have the same effect on you.

5. Monitor more closely the child who is overweight. Excess body fat reduces the ability of shed excess heat. The long and lean are heat-dissipaters while those who enjoy the cold are often fat-insulated, heat-retainers.

6. Encourage the child to drink lots of water. And don't be surprised at a claimed lack of thirst. Children feel the need to drink less readily than adults. Thirst is a sign that the body has already entered the early stages of dehydration. The old proverb advising "you can't drink too much water" is technically false but practically true. Water loss from children can be significant during one hour of activity in a warm climate. If you find it difficult to get kids to drink plain water, add enough powdered flavoring to make the water less boring, but not enough to make it a syrup.

7. Know how to treat overheated children. They need rest in the shade and lots of fluids to drink, especially water. Loosen any restrictive clothing. They can be sponged or splashed with water and fanned to increase the cooling rate.

Children and Dehydration

Children dehydrate faster than adults, and fluid loss, especially via diarrhea, can be devastating. One of the best and earliest signs of dehydration is urine color: clear indicates a well-hydrated child (or adult) and dark yellow indicates poor hydration. As dehydration grows worse, watch for headache, unusual fatigue, loss of appetite, nausea, and other complaints that make you think flu. One of the later signs of serious dehydration in a child is restlessness and unusual loss of interest in whatever's going on.

For treating diarrhea, carry a mild antidiarrheal medication in your first aid kit. Children should continue to eat during episodes of diarrhea. Avoid milk for a day. Infants do well on rice cereal, apple sauce, and bananas for a day or two. Older children may eat plain dry toast, plain crackers, plain chicken soup and other bland foods. After the first couple of days, yogurt (if available) helps to repopulate the bowels with healthy bacteria.

For treating dehydration, whether from diarrhea, vomiting, or heat, use oral rehydration salts (ORS) instead of plain water. ORS replaces essential salts and contains a little sugar for energy. You can buy ORS or make your own rehydration solution by adding 1 teaspoon of sugar and a pinch of salt to 1 quart of water. Do NOT use salt tablets.

Children and Sunshine

"The sun is even worse for children than it is for adults," says Karl Neumann, MD, associate clinical professor of Pediatrics, Cornell Medical College. Even though the damage may not show up for thirty years, 80% of skin damage from the sun (including skin cancers) happens in the first couple of decades of life.

Children sunburn more easily than adults. Children should wear clothing woven tight enough to protect their skin from ultraviolet (UV) light, and hats with a brim to protect their faces, and sunscreen on unprotected skin. Ultraviolet A and B damage skin, and the sunscreen should protect against both. Assume the SPF (Sun Protection Factor) is not as good as it claims and use a higher number. "Recent studies," says Dr. Neumann, "show that the new sunscreens with SPF numbers of 30 and higher are, in fact, more protective even over the first few hours of exposure." Sunscreens should be applied in a uniform coat over all exposed areas. If your trip involves swimming, use a waterproof sunscreen and reapply it often. A few inches of water will not protect your child's skin from sunburn. To encourage kid use, Sawyer Products makes Summer Stuff, waterproof sunscreen in colors (that fade fast) packaged with a crayon and educational coloring book: (800) 356-7811. Once a pleasant suntan is established, the screen should still be used. Tans prevent burning but offer little protection from the harmful effects of the sun.

Dr. Neumann suggests these further precautions: Keep children under one year out of the sun as much as possible, and apply sunscreens to their sensitive skin only when absolutely necessary. Test the screen on a small portion of skin, about the size of your hand, first to see if the child will react. If you see a reaction, try a different brand. For young children, use a screen prepared as a milky lotion or cream, and avoid the upper and lower eyelids where the screen might be rubbed involuntarily into the eye. Never use baby oil in the sun. Encourage children to wear sunglasses in order to reduce the chance of cataracts later in life, and to protect their sensitive eyelids. Several companies make highly-protective sunglasses designed with infants and children in mind: Baby Optics (800) 962-6874, Scott (800) 292-5874, Solar Sense (800) 285-0785, Vuarnet (800) 348-0388.

If your child gets a sunburn, start treatment as soon as possible. Cool compresses may reduce the pain and limit the depth of the burn. Johnson & Johnson, makers of No More Tears shampoo for babies, now offers No More Burn, a mild non-irritating spray for sunburn pain. Acetaminophen may be given for pain. Drinking lots of water is important in the treatment of sunburn.

Children and Insects

Children have more trouble than adults, usually, resisting the temptation to scratch itchy bites. Because they are also typically less hygienic than adults, scratches on children have a higher rate of infection. Sting wipes may be used immediately to reduce the temptation to scratch. Hydrocortisone cream will reduce the itch of more established bites. Johnson & Johnson makes No More Itchies. To improvise an anti-itch medication, you may use a slurry of baking soda or meat tenderizer. Bites that are scratched open should be washed with soap and water, and covered with a Bandaid.

For prevention, insect repellent should be used regularly. DEET, a common repelling ingredient, should not be used in a high concentration. For children, the lower the concentration the better. The safest alternative for kids and DEET is a repellent made with non-absorbents: DEET-Plus from Sawyer Products, Skedaddle from LittlePoint Corp (800) 243-2929, Sun & Bug Stuff from Reflect (800) 942-7900, Ultrathon from 3M (800) 852-3934. Keep the repellent off childrens' hands, and you'll reduce the chance they'll rub it into their eyes or, even worse, suck it off their fingers.

You can avoid DEET by choosing products made with natural repellents: Buzz Away from Quantum (503) 345-5556, Bygone Bugs from Kenyon (800) 537-0024, Natrapel from Tender Corp (800) 258-4696.

Children and Poisons

Campsites should be checked closely in order to identify the presence of poison oak, sumac or ivy. Children should be made aware of, and taught how to identify and avoid, all poisonous plants. Barrier creams (e.g. Stokogard) may be spread sparingly over all exposed skin. If contact is suspected, all skin that may have contacted the poisonous plant should be washed immediately with soft soap (e.g. Castile) and cold water. Clothing, including shoes, that may have contacted the poisonous plant should be cleaned thoroughly. If the itch, redness and fluid-filled bumps of a reaction to the plants develops on skin, hydrocortisone cream may be used to treat the symptoms. Only time will bring healing.

Small children make up the great majority of ingested poison victims. The American Association of Poison Control Centers estimated 2.2 million poisonings occurred in 1990. In a suspected poisoning, you may consider inducing vomiting as soon as possible. Many experts no longer recommend the use of syrup of ipecac. The child should first be given water to drink -- at least 8 ounces. Then gently stimulate the gag reflex with your finger. Do NOT induce vomiting in children who 1) are having seizures, 2) are lethargic or in danger of further loss of consciousness, 3) have already vomited, 4) have ingested a corrosive substance (which usually produces burns on the lips on in the mouth), or 5) have ingested a petroleum product.

Instead of vomiting, it is more common today for a poison control center to recommend the use of activated charcoal, which binds to poisons and retards absorption in the gastrointestinal tract. The recommended dose is approximately one gram per kilogram (2.2 pounds) of body weight. Charcoal is swallowed in a water slurry, a difficult task even for adults. For your first aid kit, you should consider Actidose with Sorbitol, a premixed slurry with a long lifetime. It is slightly more palatable, and available from Paddock Laboratories: (800) 328-5113.

If the child has ingested a poison, he or she should be evacuated to a medical facility as soon as possible, even if vomiting has occurred. Prevent poisoning by clearly identifying

to the child anything in the environment that should be avoided, and keeping all dangerous substances out of reach.

Children and Cold

Children lose core temperature faster than adults. Children also tend to show poorer judgment concerning maintenance of body heat. Parents need to make sure children are dressed properly for the cold: hats that hold in heat, winter boots (not summer boots with extra socks stuffed on the feet), mittens (not gloves). Make sure children stay well-hydrated, that they eat regularly on outdoor trips, and that they stay as dry as possible. Parents need to watch children closely for the tell-tale signs of hypothermia (loss of normal level of consciousness, loss of normal coordination, shivering) in order to treat a problem (change into dry clothing and snuggle) before it becomes serious.

Children and Medications

Children aged five and under usually can't swallow pills. Carry chewable tablets. For children too little to chew, the tablets can be crushed and added to food. Some children's medications are available in liquid form, less desirable for backpacking but it might be your best choice.

Children and Ouchies

Little people get scraped and cut and blistered just like big people, but they sometimes make less than perfect patients. To encourage kid cooperation, carry kid-oriented wound management products. Bandaids come with colorful characters on them. Johnson & Johnson makes No More Ouchies (for cuts and scrapes) and No More Germies antibacterial liquid soap and pre-moistened towelettes.

Children in Diapers

A diaper rash may last up to 10 days, spoiling an otherwise peaceful experience. Baby's bottom would do better if it got some air. Lay the baby chest down, head turned to the side, under a tarp, inside a tent, or in shade. Never leave the baby untended. Super-absorbent diapers seem to aid in prevention and treatment of diaper rash. Medications for diaper rash include Desitin and Derma Mend, both of which are multi-functional (e.g. can be used as sunblocks).

Additional Information:

Basic Life Support Heartsaver Guide, American Heart Association, 1993.

Nelson's Textbook of Pediatrics, 13th Edition, Behrman, Richard and V. C. Vaughn. W. B. Saunders, 1987.

Pediatric Emergencies, Eichelberger, Martin and Geraldine Pratsch and Jane Ball and Elaine Runion. Brady, 1992.

Contact With Clients: A Touchy Subject

By Ken Thompson

The knot in John's stomach cinched so tight it started to fray. He'd led students on wilderness outings for ten years, and his safety record was perfect: no one lost, no one badly hurt, not even a near miss. Now he was encountering the unthinkable: three girls on one of John's trips had returned and told Martha, a counselor, that he had harassed them and had touched them inappropriately.

John teaches at a co-ed, independent day school where the curriculum includes regular outdoor trips. Despite his previous background, having been at this institution less than a year, John is something of an unknown quantity at his school. Nevertheless, Martha was being kind, trusting, and supportive. Still, the message she conveyed had the potential to ruin his professional life. The specific allegations follow:

1. Susan stated that John had pulled her hair back into a ponytail, and, when he did so, his fingers brushed against her neck in a provocative way.

2. Becky said that John had taken advantage of a canoe instruction session to "hold" and "caress" her hands.

3. Nancy revealed that during a rockclimbing session John had made "suggestive" comments about her physique, commenting on her "long legs and great flexibility."

These incidents were reported to Martha two days after the completion of the trip. The three girls involved had talked when they returned to school and agreed that they detected a definite and distinct pattern in John's behavior.

John was stunned to here of these allegations of impropriety. He had indeed done those things. In fact, he recalled those exact instances and admitted he had touched other students in similar ways; what he disagreed with were the interpretations assigned to those events by the students involved. Here is John's side of the story:

1. Three kids were on the dinner crew that evening. Two boys had walked to the river to fill water bottles; Susan had stayed to tend a pot of soup on the stove, to which she was adding dumplings. Her long hair kept falling dangerously close to the stove and she was unable to tie it back because both hands were sticky with dough. John pulled her hair back into a ponytail and tied it in place with his clean bandanna.

2. Becky had been paddling for two days and just couldn't get the feel of executing a proper "J"-stroke. As a result, whenever she was in the stern of a canoe she had trouble controlling the boat and was getting frustrated. During lunch one day John offered to help Becky improve her stroke. While the rest of the group secured the boats, John stood on the bank

facing Becky and placed a canoe paddle in her hands. He watched her execute a few strokes and saw that she simply didn't rotate her wrists far enough at the bottom of the "J". So, still standing in front of her he put his hands on top of hers and modelled the stroke, showing her just how dramatically she needed to rotate her wrists and point the thumb of her top hand down. After a half dozen strokes, Becky seemed to understand so they joined the others for lunch.

3. The second half of the seven day course included a day and a half of top-roped rockclimbing: long enough for each student to try a couple of climbs and rappels. Several students had attempted and retreated from one particular climb before it was Nancy's turn. She practically danced to the top. Students were congratulating her and marveling at the ease with which she completed the climb. The students who had failed were looking a little downtrodden and John said everybody is good at something and Nancy's long legs and great flexibility just seem to make her a natural at climbing.

Back at school, during a thoughtful and sensitive investigation, John's co-leader, who was a woman, and several other female students on the trip heard through the grapevine about the allegations made by Becky, Susan, and Nancy. When the other leader and students spoke in John's defense, the girls who made the original allegations backed down from their positions. They admitted to feeling tenuous about the charges in the first place and they were ready to drop the whole thing. Aside from the emotional turmoil and confusion caused to those involved, this case ended at this point. But the message is clear: any of us can find ourselves at the wrong end of an accusing finger at any time.

English abounds with phrases affirming the significance of human touch: "laying on hands", "I was really touched", "a touching tribute", "he deserves a pat on the back", "reach out a hand". Many people who enter human services professions--clergy, teachers, providers of medical care--understand and respect the power of touch. Some consider embraces, pats on the back, and other physical gestures an integral part of conveying positive messages to their charges.

Nevertheless, however humanely some folks use touch, stories of abuse abound. Everyday, teachers, physicians, parents, and priests appear in hometown papers, and courtrooms, admitting their violations of the public trust. Little wonder then that the actions of all come under rather intense scrutiny. While this heightened level awareness among previously victimized groups may be leading us to somewhat safer, less abusive culture, along the way some well-intentioned "innocents" will find themselves, like John, falsely accused.

All recognized first aid and emergency medicine curricula include a segment on legal issues: how to initiate care, what constitutes abandonment, etc. Those legal guidelines help protect patients from physical harm and rescuers from legal entanglements.

Although most outdoor leaders have the requisite legal knowledge to behave appropriately when providing medical care, few such clearly defined guidelines exist for the other 99% of the time they spend with groups in the outdoors. Here are a few principles to consider:

Overnight trips with children need a minimum of two adult leaders. There needs to be at least one counselor present of the same gender as the participants.

Participants on outdoor trips are often dependent upon trip leaders to meet even basic needs. That kind of power differential can set leaders and students up for misunderstandings and abuse. Some programs working with emotionally disturbed adolescents discourage staff even from lending clothes to participants because of misunderstandings that arise.

Young adult staff working with adolescents need to be aware of the tendency for this group to develop secret romantic fantasies.

When touching someone, even for his or her safety or instruction, consider these guidelines: always ask first; touch on the hand, shoulder or upper back; never touch against a person's will (unless in the case of clear and present danger to the person); never touch against a child's verbally or non-verbally expressed discomfort; touch a child only in the company of other adults; never touch when it would have the effect of over-stimulating* a child; never touch a place on a child's body that is normally covered by a bathing suit, unless for a clear medical necessity, and then only in the presence of another adult.

(*Over-stimulation, in this context, refers not just to sexual excitement but to any form of stimulation that would lead to impulsive behavior. It might include tickling, teasing or kidding, aggressive play, etc. Children can be make to feel unsafe if they become overstimulated because in such a state they are threatened with the loss of self-control. Loss of self control is one of the things that children fear most.)

Finally, include in your trip log notes about any unusual circumstances or instances in which you feel your actions may have been mis-interpreted by a course participant.

Editor's note: Many of these guidelines were presented by Bob Ditter M.Ed., LCSW, at last fall's risk management conference in Richmond. Bob is an authority on child abuse and has been called in as an expert witness for many cases. Bob is, of course, interested in protecting the victims of abuse. However, he is also taking a leading role in protecting camps and counselors through education as to what constitutes abuse. For information on his video lecture series or his new book, write Mark One Distributors at 924 West 17th Street, Bloomington, IN, 47404 or call (800) 869-9058. You can reach Bob at 93 Union Street, Suite 307, Newton Centre, Massachusetts, 02159, (617) 964-2250.

Medical Coverage for Trip Participants: Humane Practice = Good Business

by Ken Thompson

An attorney recently told me that people are more likely to sue for the perception that they have been mistreated than they are for an actual physical injury. The fellow who sprains his ankle is more likely to seek recompense if you dismiss him after the injury with a "Gee-that's-too-bad-I-warned-you-about-those-wet-rocks" attitude than if you treat him with compassion and concern. One of the best ways not to add insult to injury in a tight economy is to offer to help with medical expenses.

Most people who have the money for adventure travel or to send their kids to camp also have some basic medical insurance coverage. However, you can't be certain of that, particularly when employers are tossing the heavy costs of top-line medical benefits overboard to keep the company ship afloat. It is great public relations to assure a client that he or she will not have to incur any expense for an injury that occurred on your trip.

For example, if Ms. Smith breaks her leg, her insurance may cover a large chunk of the medical costs. But several months later, after she has already paid $400 or $500 out-of-pocket for deductibles, prescriptions, and physical therapy, and still needs more, she is likely to look to your program to recover those expenses, and an attorney just might encourage her to tack on a chunk for pain and suffering. The first line of defense is to provide "excess medical" coverage to participants on your outdoor trips. The "excess medical" provision can work to an injured client's advantage by covering the medical costs not covered by the client's primary carrier. For example, this coverage would pick up the deductibles and co-payments that figure into most individuals' medical coverage.

Another, albeit slightly more expensive, option is to purchase a primary plan for participants in your camp or trips. Having such an option in place demonstrates your concern for the well-being of your clients and may keep their personal insurance out of the picture entirely. According to Ed Schirick, senior vice-president of Markel Rhulen Underwriters & Brokers, this type of coverage will help you maintain a positive image among the local health-care providers upon whom you depend.

Whatever insurance coverage your clients or your company may have, remember to carry appropriate identification cards and/or policy numbers with you in the field. Also have the phone number to call when those carriers require pre-authorization for certain treatments. Hospitals are much more amenable to providing prompt care without hassles when they have numbers to write down on admittance forms.

In addition, remember that hospitals will want to have parental authorization before they can provide care to a minor. So, be sure you have some document giving a hospital permission to treat, administer anesthesia, perform surgery, etc. that has been signed and dated by the parents or guardians of any minors in your charge.

Many insurance carriers can help you decide which type of coverage best suits your needs. Among those sources are Markel Rhulen Underwriters & Brokers, Specialists in Camp, Youth Recreation, and Outdoor Education Insurance, 4600 Cox Road, Glen Allen, Virginia, 23060, (800) 431- 1270; and the Worldwide Outfitter and Guides Association, P.O. Box 520400, Salt Lake City, Utah, 84152, (801) 942-3000.

Letter: Administering Medications to Children

Very often children come to camp bearing their own prescription medications. Some are maintenance drugs for chronic conditions such as asthma; some are short term courses of antibiotics to fight an infection; some are drugs to keep chemicals in balance in the brain and manage behavior or attention disorders. Whatever the reason, it is extremely important that those medications be delivered according to the prescribing physicians' orders. The questions concerning how to handle medication administration range from legal to practical to medical.

So, in a search for some definitive answers I went to Linda Erceg, president of the Association of Camp Nurses. Here is Linda's lightly edited response:

There are a whole range of practices out there regarding administration of medication to minors who participate in camp programs. Generally, the practices are driven by whomever grants the license for the camp to operate in a given state. Some directives are straightforward: only physicians can make decisions regarding medication (OTC as well as Rx) and RNs do so only within the scope of written directives/protocols/standing orders from the camp's supervising physician.

Other states have a more confusing directive. For example, one person reported that their camps were licensed through both the state Department of Health and the state Department of Social Services. Use of a healthcare provider was mandated (great) and several credentialed groups were listed as people who could fill the role: MD's, RN's, LPN's, EMT's, FA's. The regulations described the scope of that role, and one of the named functions was medication management/ administration. The problem is that those listed as potential healthcare providers for camp did not have the same skill or ability (by virtue of education or credential) regarding meds. Consequently, camp administration was frustrated. Their licensing group listed people as acceptable camp healthcare providers who could not, in fact, function as such because of their credentials. Medication concerns were a priority--and rightly so.

Consequently, what do we--people like you and I who represent groups with a vested interest in safe as well as practical healthcare delivery--recommend? My practice is not to recommend so much as it is to ask questions which ultimately get the person to respond to his or her own concern. The context of the discussion runs something like this . . .

a. Who licenses the camp and what regs does that body have regarding meds? This begins to address legal issues and may clarify the nature of the concern.

b. What kind of program does the camp run and what type of people attend? This provides an idea of the kind of meds

which may be needed as well as those which campers--and staff--may bring.

c. What level of healthcare provider does the camp employ and what state regulations govern that provider's license? Here one determines if the provider is appropriate for the camp's program and population needs--and can handle medication management.

d. What constitutes "safe" medication administration practice? This discussion usually indicates how much camp administration knows about medication practices. Some people have not considered the scope of issues (e.g. why individual history is needed; the need to assess for potentiation, compliment, interaction; tracking effectiveness of the med) and consequently, do not understand the nature of the concern.

e. Knowing all of the above, what level of liability is the camp administration willing to assume?

The last question generally cuts to the heart of the issue. My advice: develop a medication administration policy that safely and effectively blends the regulations under which the camp must function to be licensed, the needs of the camp population and program, the scope of the camp healthcare providers's credential, and the liabilities which the program is wiling to assume.

You mentioned, for example, that first responders may carry meds to which participants have access for self-administration. If the participants are kids, the program probably functions in loco parentis. Consequently, the program retains a responsibility to supervise the activity of the kids. Letting them self-administer meds with no monitoring opens a liability for the programs. If I were that first responder, I'd refuse to carry the meds! I'd much rather have the program director carry them. In reality, I'd probably not work under those conditions!

In essence, there are many ways to address this issue. No one response will guarantee a risk-free environment, but a well-defined response can minimize the risk. The task is to understand what impacts decision-making specific to medication management, determine with what liabilities the program is comfortable, and design a policy which supports this information.

I also asked Linda if there was any other advice she'd like to pass on to readers about kids in the woods. She responded with two points:

a. More kids are presenting with allergies that are environmentally-based. I believe that the conditioned air of urban dwellers has contributed to decreased resistance to naturally occurring allergens, and that the increased use of chemicals in everyday items is contributing to the problem, as well. Consequently, people who take kids to the woods should be comfortable with allergy management. Sometimes it is the people who have no history that are the most problematic!

b. Healthcare providers on trips for children should learn/know/review/practice injury-illness risk management that is appropriate for the pediatric population. For example, kids get dehydrated and fatigued quicker than adults. Consequently, a risk management program to complement growth and development quirks of the trip's age group are important.

Thanks, Linda.

Dispatches

Camp White Cloud Goes to Court

As part of a 1993 Risk Management Forum, the American Camping Association sponsored a mock trial involving a fictional camp-related lawsuit. A 75 minute videotape version of that trial, along with a 12 page leader's guide, is now available from the ACA. The training package provides 4 to 5 hours of material that would be useful in helping staff understand parents' expectations of staff performance; the importance of following written policies and procedures, the relationship of maintenance to camp health and safety; dealing effectively with peer pressure; and understanding their role in first aid and risk management. Contact Grechen Perry Throop, ACA, 5000 State Road 67 N., Martinsville IN 46151-7902, phone (317) 342-8456, fax (317) 342-2065.

(Editor's note: I haven't yet seen the tape or booklet, but the trial itself was well worth attending. I suspect this package would be useful not just to camps, but for any outdoor program whose clientele includes minors.)

Children Get Lost

To help prevent children from wandering off indiscreetly into the wild places, set strict boundaries around campsites. Supply children with whistles and a code: 3 blows means "help!" . . . 2 blows means "we hear you!" Encourage children to hug-a-tree (stay put) if they get lost. An excellent resource is Lost in the Woods: Child Survival for Parents and Teachers by Colleen Politano from ICS Books (800) 541-7323. To help teach children self-reliance and safety outdoors, MPI Outdoor Safety Products offers the Kids Kit, designed to educate the parent and child in the event they become separated: (800) 343-5827.

Let Kids Cough

Many children's cough suppressants contain dextromethorphan or codeine, both of which may produce unexpected and unhealthy side-effects for kids. Studies show that children treated with a cherry-flavored syrupy placebo coughed no more than children treated with medication. The point: you might save weight and reduce the chance of complications by removing cough suppressants from your pediatric first aid kit.

Within three days, coughs should be significantly better, with or without medication.
Source: Journal of Pediatrics, May 1993.

Immunization Update

Since the beginning of the 90's, the number of cases of pertussis (whooping cough) has increased by approximately 50%. Measles have reached epidemic proportions in some areas, a dramatic increase over recent past decades, leading to hundreds of deaths. The United States currently ranks 70th in children under the age of two who are adequately immunized. That means kids in 69 other countries are better prepared for the onslaught of childhood diseases. The reason: apparently parents have forgotten the importance of getting their children vaccinated.

Immunization against diphtheria, pertussis and tetanus were combined in the DPT vaccine in the 40's. A measles, mumps and rubella vaccine (MMR) were combined in the 60's. A new combination vaccination, *Tetramune*, combines DPT vaccine with a fourth immunization against Hemophilus b, the most common agent in childhood meningitis.

WILDERNESS MEDICINE INSTITUTE COURSES

P.O. Box 9, Pitkin, Colorado, 81241
Telephone: (303) 641-3572
Mon-Thurs 9 a.m.-1 p.m.

Wilderness EMT
May 16 - June 10, Pitkin, CO $1,395
August 1 - 26, Pitkin, CO $1,395

November 21 - December 15, Kelly, WY $1,400

Wilderness First Responder
April 11 - 22, Central Wyoming College, in Jackson, WY
April 29 - May 8, Breckenridge Outdoor Education Center, CO $375 (303) 453-6422
May 14 - 22, W. MT SAR, in Missoula, MT $350 (406) 243-5361
May 26 - June 4, Adventure Experiences Inc., Taylor Park, CO $365
June 8 - 17, Univ. of Puget Sound, Tacoma, WA (cost TBA) (206) 756-3372
June 17 - 26, Pelican School, Santa Cruz, California $425 (408) 427-2606

Wilderness First Aid/WFR Refresher
May 30 - June 1, Noah's Ark, Buena Vista, CO $110
June 6 - 7, Taylor Park, Colorado $125
June 16 - 18, Skinner Wilderness Camps, Pinedale, WY TBA

Wilderness/Rural EMT Module
April 14 - 23 Univ. of Utah, Park City, UT $485 (includes conference tuition)
April 21 - 30 Univ. of Utah, Park City, UT $485 (includes conference tuition) (801) 581-4512

SOLO COURSES

RFD 1, Box 163, Tasker Hill, Conway, New Hampshire 03818
Telephone: (603) 447-6711

Advanced Leadership and Emergency Care (ALEC) (EMT + Wilderness Leadership Skills)

June 20 - July 22, SOLO, NH $1650

Wilderness EMT
May 23 - June 17, SOLO, NH $1395
July 25 - August 19, SOLO, NH $1395

Wilderness First Responder
May 7 - 17, Wolfcreek, GA $695 (706) 745-5533

WFR Bridge to WEMT
May 2 - 13, SOLO, NH $695

Wilderness/Rural EMT and First Responder Module (upgrade from current street certification)
May 16 - 20, SOLO, NH $385

Contact SOLO for more information about the wide range of courses they offer, some of which include high angle rescue, winter medicine and survival, backcountry SAR, EMT-I, marine medicine, and Wilderness Trauma Life Support (for physicians).

The *Wilderness Medicine Newsletter* is intended as an informational resource only. Neither the *WMN* nor its staff can be held liable for the practical application of any of the ideas found herein. The staff encourages all readers to acquire as much certified training as possible and to consult their physicians for medical advice on personal health matters.

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Wilderness Medicine Newsletter

FOR THE RECOGNITION, TREATMENT, AND PREVENTION OF WILDERNESS EMERGENCIES

MAY/JUNE 1994 ISSN-1059-6518 VOLUME 6, NUMBER 3

ZOONOSES

by Buck Tilton

Zoonoses . . . not zoo-noses, but zo-o-no-sez . . . are those diseases, according to *Taber's Cyclopedic Medical Dictionary*, "communicable from animals to humans under natural conditions." Some of those diseases can be acquired in a wilderness setting (as opposed to, say, Old Mac Donald's farmyard), and it's at these most common wilderness-acquired zoonoses that we'll be taking a look.

You, as an outdoor leader and/or enthusiast, do not rank high as an opportunity for most zoonoses (unless you're a hunter or, for some other reason, you find yourself handling wild animal blood, guts, secretions, and excretions) but the incidence of several animal diseases in wild populations, including rabies and plague, is on the rise.

LEPTOSPIROSIS

Members of an order of slender spiral organisms, belonging to the class Schizomycetes, *Leptospira* are spirochetes with hooked or curved ends. Leptospirosis is the disease these organisms cause in humans.

Although infected wildlife shows no signs of the disease, animals disperse the organisms freely in urine. Human cases, usually less than 100 each year in the United States, are often acquired from contact with contaminated water and, sometimes, soil. You can also get sick from infected animal blood and tissues. Swallowing ranks as the primary way *Leptospira* get inside people, but the organisms can "worm" in through abraded skin and through the mucous membranes of eyes and mouths. Leptospirosis appears throughout tropical and temperate regions of the world, and is most commonly seen in Southeast Asia and some areas of Latin America. Recently, cases have been brought back from lower Central America.

Numerous types of *Leptospira* exist, but the signs and symptoms they produce in humans are much the same. One to two weeks (can be as long as three) after becoming host to the spirochetes, the first of two phases of the disease begins. Phase one lasts 4-7 days and shows up in many patients as fever, chills, headache, lymph nodes, malaise and a nonproductive cough. After a couple of days off, the disease reappears in a second phase with a lower fever and a severe headache that won't go away. A "spotty" rash sometimes appears. Muscle aches, stomach pain, nausea and vomiting can result in either or both phases. Death occurs about 5% of the time, most often in the very young and very old.

A blood test can tell if you've gotten leptospirosis during the first week of illness. Once leptospirosis is established for more than a week, a urine test suffices. If caught early, antibiotics are highly effective treatment. Antibiotic therapy is useful after the initial stage, but care is largely supportive.

Outdoorspeople who play in rivers (e.g. kayakers) in high risk areas are especially likely to become infected. Although doxycycline, 200 mg once a week, has been shown to be preventative, it's safer to stay out of the water.

PLAGUE

Between 1347 and 1350, the Black Death, caused by the bacteria *Yersinia pestis*, started in Asia and eventually rubbed out about 25 million Europeans (roughly one-third the population), including nine-tenths of the people of England. Before those devastating years, even in B.C. days, reports of the ravages of plague were known and feared.

Carried by rodents and passed primarily by the bite of rodent fleas, both rodent and flea are killed by the organisms, an unusual aspect of this disease. Black rats are especially susceptible, and *Rattus rattus* is blamed for the Black Death. In the United States, deer mice and various voles maintain the bacteria. It is amplified in prairie dogs and ground squirrels. Other suspects include chipmunks, marmots, wood rats, rabbits, and hares. States in which plague still exists include New Mexico, Arizona, California, Colorado, Utah, Oregon and Nevada.

Hikers and campers in infected areas are at risk. Meat-eating pets that eat infected rodents (or get bitten by infected fleas) can acquire plague. Dogs don't get very sick, but cats do. There is only one known case of plague being passed to human by a dog, but

cats can pass the disease to humans by biting them, coughing on them, or carrying their fleas to them. In the wild, coyotes and bobcats are known to have transmitted plague to humans after the critters were dead and the humans were skinning them. Skunks, raccoons, and badgers are suspect. Sick people transmit plague readily to other people.

Several forms of plague exist, but the three most common are bubonic, septicemic, and pneumonic. Buboes are inflamed, enlarged lymph nodes, and they give bubonic plague its name. After an incubation period of 2-6 days, patients usually suffer fever, chills, malaise, muscle aches, and headaches. Blackened, bleeding skin sores gave a name to the "Black Death." The septicemic form may appear similar but does not give rise to buboes. Gastrointestinal pain with nausea, vomiting and diarrhea is common. The pneumonic form results most often from inhaling droplets, but it can develop from bacteria that got into your blood. Coughing often produces blood in the sputum.

If plague is suspected, it should be treated. Fatalities are common. Any flu-like symptoms combined with a high, spiky fever in an area known to be plague infested should send you to the doctor. The treatment drug of choice is streptomycin. The recommended dose is 30 mg/kg of bodyweight/ day, divided into four equal injections, given every 6 hours for 5 days. Prevention includes avoiding rodents, avoiding touching sick or dead animals, dusting and restraining dogs, and keeping cats inside while traveling in infected areas.

RABIES

On May 30, 1990, a 22-year-old man visited his Texas doctor with complaints of pain and weakness in his right hand. Before slipping mercifully into a coma and dying, six days later, he suffered wild hallucinations including episodes of unexplainable terror, extremely painful difficulty swallowing to the point where he refused all liquids and drooled constantly, frequent muscle spasms especially in the face and neck, and, toward the end, complete disorientation and a raging fever. On unlucky April 13, he had been bitten on the right index finger by a bat.

A camping trip near Lake George, NY, ended with similar nightmarish signs and symptoms preceding the July 11, 1993 death of a young girl. The family lived on a small farm near Mamakating, New York. Three more days and she would have celebrated her 12th birthday. Although no one can say how she contracted the disease, the cause of death was the same as the Texan's--rabies.

Around 2000 BC in Mesopotamia, physicians first described the horror of dying from rabies: madness, fear, foaming at the mouth. Mesopotamia's Eshnunna Code leveled a stiff fine on the pet owner when the bite of his dog led to the death of another citizen. In 200 AD, the relentless doctor Galen recommended quick surgical removal of the bite wound to prevent rabies. The agonizing difficulty in swallowing, sometimes caused by the mere sight of water, produced the common name of hydrophobia, a fear of water. Expert guesses place the annual number of human rabies deaths worldwide somewhere between 50,000 and 100,000.
Shaped like an ultramicroscopic bullet, the virus, carried in the saliva of infected animals, attaches itself to peripheral nerves at the bite site and moves slowly (approximately 3 mm/hr) but with great determination along nerves toward the brain. Since rabies causes no reaction until it reaches the central nervous system, you don't know you're infected until it's too late. Once replication of the virus starts in the brain, agonizing death invariably results. Before death, after multiplying in neurons, the virus moves back out along nerves, congregating in different body parts including skin, corneas, and salivary glands. Rabies viral particles have been measured at one million per milliliter of saliva.

Of the multi-thousands of humans that die annually, only a few are in the United States. Eighteen documented cases since 1980. And 10 of those acquired the virus on trips to foreign lands. Over the past 20 years, the number of cases of rabies in domestic animals has steadily dropped, due primarily to animal vaccination programs. Often thought of as a disease of carnivores, any mammal can theoretically have rabies, and cows are the most common domestic animal to carry the disease. Despite the publicity mad dogs have received, rabid cats outnumber rabid dogs, with 290 infected cats being destroyed last year, and 182 infected dogs. But the last two decades have shown a steady increase in the number of wild animals having the virus. Since 1988 the number of cases has almost doubled, increasing from 4,700 to 8,645 in 1992. Dr. Charles Rupprecht, chief of the rabies section at the Centers for Disease Control in Atlanta, calls the outbreak "one of the most intensive in history." Known raccoon cases reached 4,311, making the "little bandits" the primary carrier in the US. Skunk cases numbered 2,334, placing skunks in the number two spot. Raccoons, skunks and bats account for 96% of the rabies cases in wild animals of the U.S. Foxes and coyotes make up most of the missing 4%. Foxes are the leading source of rabies in Europe, mongooses in Puerto Rico, dogs in Africa, South America and most of Asia, and wolves and jackals in India and Israel.

Just because you get bit, doesn't mean you'll get sick. Not every animal that has rabies transmits it. On the high end of estimates, 80% of the rabid animals that might bite you will give you the disease. The others don't have enough of the virus in their saliva. Skunks tend to be especially dangerous, secreting more of the virus over a longer period of time, and hanging on tenaciously when they do bite. Of course, smelly considerations keep most humans out of skunk bite range. Raccoons, conversely, tend to appear cute, cuddly and approachable, but they can be very deadly. Rodents, such as woodchucks, die of rabies, but rarely if ever secrete the virus in their saliva.

Just because you don't get bit, doesn't mean you *won't* get sick. Infection can occur when saliva contacts open wounds or mucosal membranes (such as your nose and mouth). The lick of a dying dog could kill you. Humans have gotten rabies from breathing the virus in bat-ridden caves where tons of bat saliva and excretions collect, and from corneal transplants from infected persons.

If you are bitten by a rabid animal, your life expectancy depends on where the teeth sank in. In rare cases, it has taken a year for the virus to reach an infected human's central nervous system. Usually it takes about 60 days for the virus to reach your brain after a bite on the lower leg, but only about 20 days from a bite on

the face. Hands fall in between. So a bite on the nose should send you looking for a doctor faster than a bite on the toe.

Early symptoms of rabies are too general to cause concern: fatigue, headache, irritability, depression, nausea, fever, stomach pain. Sounds like another day at the office. There is only one way to know for sure if you have the disease. Unfortunately the proof results in your death. There are ways to guess you have the virus ambling around inside you, in which case you will want to get the shots that kill the germs before they reach your brain.

Ways To Guess You Have Rabies

1. *The incidence of rabies in the species that bit you.* Domestic dogs and cats, ferrets, mice and rabbits, for instance, are low risk. Raccoons and skunks, as noted, are high risk.

2. *The behavior of the animal that bit you.* Most wild animals intelligently run away from humans. An unprovoked attack might mean rabies. A raccoon, skunk, fox, or bat wandering around in full daylight shows abnormal and suspect behavior. Foaming at the mouth shows up in about half the cases. To confuse things, some animals have dumb (paralytic) rabies, carrying the virus while appearing restless and sick, instead of the snarling, slobbering Cujo form of the disease called furious rabies.

3. *The vaccination status of the animal that bit you.* Vaccination of domestic animals does not guarantee protection, but it lowers the risk.

4. *Your vaccination status.* People who work with animals often get a pre-exposure immunization. It is highly effective, but requires a booster soon after the bite. Failure to be boosted can be fatal.

Ways To Keep From Dying Of Rabies

1. Appropriate and immediate care of the wound rates as extremely important. Rabies virus dies quickly when exposed to sunlight, UV radiation, dry air, heat and detergents. Bites from suspect animals should be washed as soon as possible. Dr. Rupprecht says: "Aggressive scrubbing with soap and water is the single best emergency treatment." After thorough scrubbing, rinse the wound with floods of water. Death by rabies increases dramatically, rising from 10% at 3 hours to 60% at 6 hours, if wound cleaning is delayed.

2. If the biting animal can be safely captured or killed and taken, head intact, to the nearest public health department, it can be either watched for signs of rabies or tested for rabies. Testing requires some of the animal's brain tissue . . . which requires the killing of live animals. Without conclusive lab tests, bites from wild raccoons, skunks, bats, coyotes, bobcats, and other carnivores should be considered rabid.

Until fairly recently, the decision to begin chemical treatment for rabies was one physicians labored over. Louis Pasteur developed the first rabies vaccine in 1885 from neural tissue. Large volumes had to be painfully injected 14 to 21 times into the patient's abdomen. Serious adverse reactions were common. In the 1950's, a vaccine from duck embryo was developed. Adverse reactions were significantly reduced, but a series of 23 injections was required, and it didn't always work. Within the past 15 years, the highly effective human diploid cell vaccine has been perfected. Five simple shots in the arm. On the down side, the shots currently cost about $1000 . . . but, except for rare cases, they work.

Are typical outdoor enthusiasts at an increased risk? "Not in the United States," says Dr. Rupprecht. He further advises: "Use common sense. Don't feed wildlife. Don't attract the attention of wild animals with improper handling of food or garbage. And don't be a Dr. Doolittle." Rabid animals will not lie in wait and leap on unsuspecting hikers. If approached by an animal, especially if the animal appears sick or abnormal, casually walk the other way. If they continue to approach, as a last resort, run away.

TRICHINOSIS

Encysted in skeletal muscle, the larvae of the parasitic worm *Trichinella spiralis* may be eaten unknowingly by a ravenous diner. In the small intestine, the worms mature and mate within a few days, usually within 48 hours. Female worms deposit larvae in nearby mucosal tissue. Larvae enter the circulatory system of the animal and invade skeletal muscle. Within three weeks, the larvae are encysted and ready to be infectiously passed should anything eat the muscle of the animal that ate the muscle of the animal that had encysted larvae.

Although all carnivorous or omnivorous mammals may have trichinosis, consumption of raw or undercooked pork accounts for the vast majority of the disease in humans. Rodents are often infected, but mice and rats seldom grace a human palate. Bears, raccoons, opossums, seals, walruses, peccaries and wild swine are common hosts, and sometimes are eaten by humans.

Trichinosis produces gastrointestinal symptoms during the first week after ingestion of infected meat: pain, nausea, vomiting, variable diarrhea. The severity of the symptoms depends on the number of larvae eaten. During the second week, as the larvae migrate around your body, capillary damage occurs, commonly producing facial edema, and maybe producing hemorrhages in nail beds and the conjunctiva. Migrating larvae can invade the pulmonary system, causing a cough and chest pain, or the heart muscle, causing carditis and the possibility of death. Gastrointestinal symptoms may remain for 4-6 weeks, until the worms are all excreted. As the larvae encyst in muscle tissue, significant muscle aches and stiffness often result. Between six and 18 months after ingestion, the larvae die and become calcified. This period is usually asymptomatic.

No drug exists for safe and effective treatment, although steroids are often used in severe cases. Supportive treatment is indicated until the disease has its way with you. Cooking meat until it reaches at least 150 degrees F kills the parasite. Most *Trichinella* larvae are also killed by freezing if meat is frozen long enough. Holding meat at minus 20 F for 6-12 days ends the life of the larvae. Warmer freezing temperatures require longer freezer time.

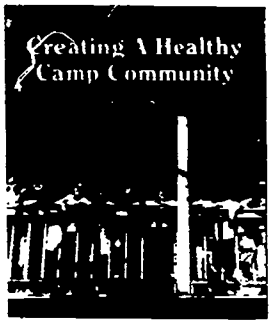
SOURCES:

Management of Wilderness and Environmental Emergencies, edited by Paul Auerbach, MD, and Edward Geehr, MD. The C. V. Mosby Company, St. Louis, MO. 1989.

Rupprecht, Charles, DVM. Centers for Disease Control, Rabies Section, Atlanta, GA. Interview, January 1994.

NEW BOOKS FOR YOUR SHELF

reviewed by Ken Thompson



Creating a Healthy Camp Community: A Nurse's Role, by Kris Miller Lishner, D.N.S., R.N. and Margaret Auld Bruya, D.N.Sc., R.N., C.F. Martinsville, IN: American Camping Association, 1994. $19.95 Contact Grechen Perry Throop at (317) 342-8456.

Traditionally, outdoor programs and camps have considered the provision of emergency medical care as their only obligation: intervention occurred at the time of injury or illness. Greater awareness of the importance of preventative health care has revised expectations from the public and will demand increasingly thoughtful planning from outdoor programmers. Much has been written on emergency medicine, less on general health precautions in outdoor programming, and practically nothing on developing a comprehensive health program for a camping program--until now, that is. Kris Lishner and Margaret Bruya, both of whom hold doctorates in nursing science, have filled a significant void with *Creating a Healthy Camp Community*. Although it was pointedly written for nurses working in traditional residential camps, it provides a valuable resource for anyone who is responsible for others, particularly minors, in rural or wilderness settings.

Fifteen chapters provide organized, systematic, and detailed discussions of a wide range of health care issues. Topics include developing health care plans, managing medication administration, providing health education, managing communicable diseases, maintaining records, and much more. The book contains a series of useful appendices with sample charts, forms, etc. and a healthy bibliography for further information. Now for some particulars:

First, I found only one significant flaw, one which limits its appropriateness for our typical reader. I might add that this omission points more to a lack of communication within the outdoor industry than it does to any failing on the part of the authors. In chapter 8, "Managing First Aid and Emergencies", when discussing trips that leave a basecamp, Ms. Lishner makes the statement, "There are no recognized formal standards for health emergency training for leaders of these trips beyond basic first aid certification. These trips put the camp, trip staff, and the nurse at considerable legal risk should a major health emergency occur when help is not available." Clearly, traditional outdoor schools (i.e. NOLS, Outward Bound, and others) do have reliable, recognized standards for their trip leaders, and many training opportunities are listed in the "Courses" section of this newsletter.

Second, chapter 13, "Injury Prevention and Control", introduces the use of the Haddon Phase/Factor Matrix for determining, and limiting, exposure to injuries and overly injurious activities. Chapter 13 provides a thoughtful clarification of the differences between injuries, which are predictable, and accidents, which are not. This chapter then provides a sound and detailed approach for readers to track injury and illness patterns and gather data which will lead to safer programming. This chapter is representative of the book in its entirety: the information, up-to-date; the writing, clear; and the approach, scientific, yet creative.

Creating a Healthy Camp Community provides more information on developing an overall health program for outdoor folks than is available anywhere else between two covers. It is fresh, comprehensive, and progressive and belongs on the shelf of all outdoor risk managers.

1994 International Travel Health Guide, by Stuart R. Rose, M.D., Northampton MA: Travel Medicine, Inc. $17.95 U.S.A., $22.95 Canada, 1-800-872-8633.

At just a shade over one-and-a-quarter pounds, Dr. Rose's volume may have the best weight/benefit ratio of anything in your luggage. It's 455 pages contain valuable information for those traveling anywhere in the world. It matters not if you'll roam no more than 50 miles from home--this book is as useful for North American travelers as it is for trekkers in Nepal.

Chapters one and two concern pre-trip preparation and dealing with jet lag. Three and four deal with those delightful issues of procuring safe food and drink and the aftermath, traveler's diarrhea, if you don't. The next eight chapters very thoroughly explain the most common, and some of the most nasty, maladies you can get traveling and how to avoid them: malaria, Lyme disease, and many other insect-borne diseases (and how to avoid insects in the first place), AIDS, hepatitis, altitude sickness, and much more.

Chapters 13 - 17 cover logistical matters: how to find reliable medical care abroad; the why's, wherefore's, and how-to's of procuring travel insurance; when flying home is warranted and how to get emergency transport; planning for personal security in the face of terrorism, kidnapping, and other forms of violence; and what special precautions the pregnant traveler should take.

The final one-half of the book is devoted to detailed information on countries across the globe. Disease risk summaries are included for 11 major travel regions (e.g. China & Southern Asia is one, Australia and Oceania is another), and over 200 countries receive their own entry including embassy phone numbers, entry requirements, electricity standards and plug requirements, American Express offices and references for hospitals and doctors, and very specific disease and injury risks. The book is indexed and contains an appendix listing over 500 yellow fever vaccination centers and travel medicine specialists around the world.

The information is specific enough for physicians (it includes detailed drug regimens and sophisticated diagnostic criteria for many far-flung maladies). Yet, there is plenty here for the non-physician. To top it all off, Dr. Rose is an engaging prose stylist. You'll enjoy his writing as well as his wisdom.

DISPATCHES

Naproxen Goes OTC

The "Big Three" (aspirin, acetaminophen, and ibuprofen) have officially become the "Big Four" with the Food and Drug Administrations's recent approval of naproxen (currently marketed as Aleve) for over-the-counter sales. Another of the non-steroidal anti-inflammatory drugs (NSAID's), naproxen can be used for a wide variety of relatively minor aches and pains. Aleve's 200-milligram per tablet dose is lower than that of Naprosyn, the most popular prescription-strength form of naproxen.

New CPR Mask

Although mouth-to-mouth rescue breathing inflates a patient's lungs with a larger volume of air than when a rescue mask is used, fear of disease has made mouth-to-mouth CPR rare. Reports of adequacy of CPR with rescue masks indicate all masks are not created equal. Among devices tested (Microshield, Laerdal Pocket, Ambu Bag, Brooks Airway, Kiss of Life), the Kiss of Life (KOL) gave the largest inflation volume, followed by the Microshield. Ambu and Laerdal gave intermediate and comparable volumes, and the Brooks gave the lowest values. The KOL, made of silicone, was judged by a report in the American Journal of Emergency Medicine as "pocket-portable, disposable, easy to insert, nontraumatic, experimentally impermeable to HIV-1, and protected the rescuer from vomit." The molded ear loops of the KOL hold the mask in place, freeing your hands. Inlet holes allow the use of a nasal cannula, and the mask can be attached to a bag resuscitator, should either be available. It takes up very little space in your first aid kit, and may be carried in small pouch (available with the KOL) on your belt. For more info, contact: Greenfield Medical Products, Inc., 910 Boston Turnpike, Shrewsbury, MA 01545; (800) 590-5905. Source: American Journal of Emergency Medicine, Volume 10, Number 1, January 1992.

ABC . . . and P?

We've heard about burning upon urination but not about urinating upon burning sensation . . . until now. Seems for centuries the Bedouin tribes of the Sahara have known and used the technique of peeing on a burn when the campfire leaped up a finger--wilderness medicine at its finest. Makes sense, I guess, since we've already established that the amines in fresh urine (which is sterile) alleviate the pain of nematocyst stings from jellyfish and their relatives. For the biochemically ignorant (including me), healthy cells have a positive outer charge balanced with a negative inner charge. Any boo-boo that disrupts the balanced charges (e.g. burns) may cause pain. Amines stabilize the electrical charge on cell walls. Amines are a primary active ingredient in many anesthetics. On the bummer side of life, urine has to be, er, applied rather soon after the incident to be maximally effective. If your bladder's empty, you might have to rely on the urinary preparedness of a bystander.
Source: *Health & Healing*, the newsletter of Dr. Julian Whitaker. For more info., call the Whitaker Wellness Institute at (714) 851-1550.

Kids Go BAT-ty

Basic Aid Training (BAT) for children teaches kids what to do in an emergency for themselves and others when adults aren't around (and sometimes when they are). Topics may include basic first aid, fire safety, CPR, poisons and electrical shock. As one fourth-grade graduate says: "It makes me feel good because I know I can save someone's life if they need help . . . " (*Emergency* magazine, September 1993). Several locations have been developing BAT programs in the last couple of years. We have had contact with two: Fred Hawkins, EMT (619) 940-0700 and Juli Adams, RN (303) 232-3535.

Children's First Aid Kits

Several companies now offer first aid kits especially made for infants and children. Our favorite comes from Atwater Carey, Ltd. (800) 359-1646, who also offer an Infant and Child Care Module to add to your personal first aid kit. Pediatric kits are also available from Sawyer Products (800) 356-7811, and Adventure Medical Kits (800) 324-3517.

Trouble at Moosehead Lake

There's a doggie that needs CPR, a pregnant woman stuck in an elevator, and a severe reaction to a bee sting . . . and it's Davey and Matt, two kids from Maine, to the rescue. In the first of a new series of books from Apple Paperbacks, Trouble at Moosehead Lake, children can read about children responding appropriately to emergencies. At the end of each chapter, the authors, James (Terry) and Lois Cowan (active WEMT's in Maine) review the skills and present a written report similar to a standard EMS form. In the back of the book there's a vocabulary and blank forms so kids can send in their own reports of emergencies.

The new book series, called "Emergency Rescue!", portrays kids as heros in believable and utterly delightful fashion. Young readers will be entertained, encouraged and educated. Highly recommended!

Second in the series, Nightmare at Norton's Mills, is also available from Scholastic, Inc., 730 Broadway, New York, NY 10003. (212) 505-3000. Ages 8-12. $2.95. Or contact the Cowans: Ferry Road, Islesboro, ME 04848.

Put a Helmet on that Little Soldier

Biking, skiing, in-line skating, sledding, horseback riding, even climbing high rising playground equipment wracks more and more heads each year, most of them little heads. In 1991 according to a recent study our of Johns Hopkins School of Public Health, Baltimore, 82,000 US people required hospital care for outdoor activity-related head injuries. Seventy-nine percent were 15 years old or younger.

Smaller children are especially susceptible to head injury, being sort of like shuttlecocks in a badminton game: no matter what body part starts first in a fall, the head seems to end up in the lead.

The Snell Memorial Foundation, a St. James, NY, non-profit organization that develops standards for head protection, recommends an approved bike helmet for all kids involved in activities that could involve a high speed impact on a hard surface. They are working on a multipurpose helmet that will cover more of a kid's (or adult's) head. Until it's available, a bike helmet rates a far better than a ponytail or a flat-top.

WILDERNESS RISK MANAGERS' CONFERENCE

by Ken Thompson

In the September/October 1992 *Wilderness Medicine Newsletter*, we reported on a meeting of risk managers from various large outdoor education programs across the country. The Wilderness Risk Managers Committee (WMRC) is a consortium of outdoor schools and federal land management agencies who are working towards better clarification, understanding, and management of risks in the wilderness. WRMC participants include: American Alpine Club, American Mountain Guides Association, Association for Experiential Education, Nantahala Outdoor Center, National Association for Search & Rescue, National Outdoor Leadership School, National Park Service, Outdoor Recreation Coalition of America, Outward Bound U.S.A., Wilderness Education Association, and Wilderness Medical Society..

Nearly one year ago, on June 3 - 4, 1993 the WMRC met again. According to Kenneth Kizer, M.D., M.P.H.:

Perhaps the greatest accomplishment of the meeting was coming to consensus on the need and rationale for standardizing untoward incident data in outdoor recreational activities. The reasons for standardizing data collection are:

1. To clearly establish the details and circumstances of individual incidents;

2. To be able to collate and use in aggregated form the data from individual incidents so as to assess rates and trends of illness and injury occurring in outdoor recreational programs;

3. To aid in the prevention of future illness and injury;

4. To accurately inform the public and providers about the occurrence and prevention of untoward events; and,

5. To facilitate risk management planning.

*It was agreed to develop a standardized data gathering/incident reporting instrument that would be both comprehensive and usable by field personnel. A work group was convened to pursue this, and the form is now in its second draft.**

(Source: *Wilderness Medicine Letter*, the newsletter of the Wilderness Medical Society, Winter 1994)

The WMRC has slated a Wilderness Risk Managers' Conference for September 9 - 10, 1994 with a three-fold purpose: to educate wilderness practitioners on risk management and practical safety skills; to share field and administrative techniques in risk management; and to raise risk management standards in the wilderness adventure industry. The conference is being hosted by NOLS Pacific Northwest Branch in Conway, Washington. The conference registration fee is $100 if you register before July 15th, goes to $150 until September 9th and bumps to $200 at the door. But even at that price its a bargain because the fee covers registration, meals, and the conference workbook. For registration materials contact NOLS at 288 Main Street, Lander, WY, 82520, (307) 332-1256.

(*Note: A copy of the draft is available from Tod Schimelpfenig at the address and telephone number listed above for NOLS. However, the WMRC is not the only group developing an illness and injury data tracking system. Linda Erceg, President, Association of Camp Nurses has established a functional system for use in ACA camps, but which has much broader potential for application. Look for more in future WMN's.)

TICK-BORNE ILLNESSES

By Ken Thompson

Ticks go through several maturational phases, each of which requires a blood meal, ordinarily from a larger host than it fed on the time before. That means the tick that feasted on a white-footed mouse as an infant, may now, as an adolescent, have its beak firmly attached to your ear. Consequently, ticks are reservoirs for many diseases which may be passed on to humans, and they are tenacious. Among the chemicals they secrete are an analgesic so that you won't feel them bite, a blood thinner to make their meal more accessible, and a cement-like substance to keep them bellied up to the bar, so to speak.

Fortunately, most of the diseases we can catch from ticks require a bit of time, several hours, for the infecting organism to travel from the tick to you. So prevention and early removal are critical. On the prevention side, most doctors recommend a DEET-based repellant on your skin combined with Permethrin on your clothing. The second phase of prevention is to check yourself and your partners regularly for ticks if you are in an infested area--look in scalp, in folds of skin, and around hair lines.

If you find a tick, remove it using tweezers or small forceps and avoid touching the tick or any of its secretions. Grasp the tick as close to the skin as possible and pull straight out, gently and with steady, even pressure. After it comes out, clean the area well with a disinfectant such as Betadine (if mouth parts remain behind in the flesh, they must be removed). Finally, wash your hands with soap and water.

LYME DISEASE

Yes, Lyme disease is still very much with us, and it is nasty enough to warrant continued vigilance. Ninety-percent of all known cases have occurred in nine states: California, Connecticut, Massachusetts, Minnesota, New Jersey, New York, Pennsylvania, Rhode Island, and Wisconsin. The disease, caused by the spirochete *Borrelia burgdorferi*, lives in the gut of some *Ixodes* ticks and migrates from the tick to you while the tick is feeding.

Stage I of the disease occurs days to weeks after the bite and includes flu-like symptoms (low-grade fever, headache, muscle and joint aches, swollen glands, fatigue, nausea, and loss of appetite), which ten to 20% of people may not develop. The classic sign, a

circular pink or red, bull's eye type rash (erythema migrans) does not appear in 15 to 40% of cases. So, diagnosis is not always easy.

The test, which is not definitive, is known as an enzyme-linked immunosorbent assay (ELISA). This can be backed up with another test known as a Western blot. Because early antibiotic therapy is highly effective, Dr. Stuart Rose, whose book is reviewed elsewhere in this newsletter, recommends that if "the diagnosis seems clear cut on the basis of your exposure and symptoms, you should receive immediate antibiotic treatment. Don't let your doctor withhold treatment just to see if your blood test will turn positive." If you suspect that you may have the disease, Dr. Charles Stewart, well-known environmental medicine expert, recommends you have your blood sent to Massachusetts or California for the most reliable test (because of the volume testing done in those states, their labs are better at reading results).

Stage II occurs weeks to months after the bite and can include skin rashes, severe headaches, arthritis (usually one-sided), and general musculoskeletal pain. A percentage of patients will develop acute cardiac or neurologic problems.

Stage III occurs months to years after the bite and can lead to severe arthritis, chronic fatigue, paralysis, memory lapses, and other neurologic manifestations. Dr. Stewart says that anyone who develops bi-lateral Bell's palsy, should highly suspect Lyme disease.

TULAREMIA

Since 1967, less than 200 cases/year have been diagnosed in the United States. In 1912, the disease was isolated in rodents in Tulare County, California, and thus the sickness, caused by coccobacillus *Francisella tularensis*, acquired its common name of tularemia.

Though once a disease associated with unhealthy contact with rabbits, ticks are now, by far, considered the prime transmission mode for the bacteria. Although many species of ticks have been incriminated, dog ticks and lone star ticks rank as the most common reservoirs. Since the infecting organisms have not been found in tick saliva, it is thought they are carried in tick feces. Rabbits still qualify as the second most common vector, but you must handle infected tissue, as you might do by skinning and eviscerating the little bunny. (Wearing rubber gloves will prevent transmission.) You could pick the disease up in water or soil, too, by direct contact, ingestion, or breathing in contaminated dust or water particles.

About 80% of tularemia cases appear in a ulceroglandular form: red bumps harden and ulcerate, usually on the lower extremities where ticks bite, or on the hands from handling infected tissues. Ulcers are typically painful and tender. Enlarged tender lymph nodes are common. The second most common form of tularemia, the typhoidal form, causes fever, chills and debility. Weight loss may be significant. Lymph node enlargement is less. Pneumonia is a relatively common complication of tularemia.

Tularemia can be diagnosed, among several ways, by identification of the organism in blood or the ulcers that form. Treatment of choice is streptomycin, 30-40 mg/kg of bodyweight/day, half of it injected intramuscularly, twice a day every 12 hours, for three days. Half that dose is recommended for an additional 4-7 days. Within 48 hours, patients start getting better.

ROCKY MOUNTAIN SPOTTED FEVER

Interestingly, Rocky Mountain Spotted Fever, caused by the parasite *Rickettsia rickettsi*, is not particularly common in the Rocky Mountain states. It is, however the most prevalent tick-borne disease, being most common in the southeast United States, Oklahoma, and Kansas.

Five to seven days after exposure, this systemic infection manifests itself through fever, edema, and rash, a triad called the "hallmark" of the disease by Dr. Stewart. The fever is usually high, from 103 to 104 degrees F, and lasts for several days. The rash starts on palms, wrists, ankles, and soles of the feet, but may go unnoticed at first.

Laboratory tests are not particularly useful in early stages of the disease. So, a detailed history with evidence of a tick bite is an essential part of the diagnosis. It is treatable with tetracycline or doxycycline. If untreated the mortality rate is as high as 12 to 15%.

COLORADO TICK FEVER

Finally, a tick-borne illness whose name actually describes where you might contract it, this virus is found in the Rockies and westward into the mountains of California. It is transmitted by the wood tick, *Dermacentor andersoni*, and presents as a non-specific flu-like disease. One distinguishing characteristic in half the cases is a fever in the 102 to 104 degrees F range that occurs, goes away, and then returns 3 to 4 days later with a vengeance. The disease may last 5 to 7 days, and may leave the patient feeling below par for another 3 to 4 weeks. There is no cure, so this is one you'll have to ride out.

TICK PARALYSIS

This is not a disease carried by ticks, but is rather a systematic reaction that may occur when ticks are left on the body for extended periods of time (9 to 16 days). It seems that pregnant ticks secrete a neurotoxin that, when it builds up in a host's system, leads to the condition. Livestock and dogs, as well as humans, are susceptible. Weakness, loss of reflexes, and sometimes ataxia tell you the problem is severe--within 24 hours of the onset of symptoms, the patient may be completely immobilized. Allowed to progress, the patient may die from paralysis of the respiratory muscles. The chance for death is 11% if the tick is not removed. Fortunately, once the tick is removed, symptoms should clear up in one to two days.

Ah, the United States, where staying ticked off keeps you healthy.

Source:

Stewart, Charles, *Environmental Emergencies*. Baltimore: Williams & Wilkins, 1990.

WILDERNESS FIRST AID AND MEDICAL TRAINING OPTIONS

WILDERNESS MEDICINE INSTITUTE COURSES

P.O. Box 9, Pitkin, Colorado, 81241
Telephone: (303) 641-3572
Mon-Thurs 9 a.m.-1 p.m.

Wilderness EMT

August 1 - 26, Pitkin, CO $1,395
November 21 - December 15, Kelly, WY $1,400
January 2 - 27, 1995, Pitkin, CO

Wilderness First Responder

June 17 - 26, Pelican School, Santa Cruz, California $425 (408) 427-2606
September 12 - 21, Summit Adventures, Bass Lake, CA $525 (meals and lodging inc.) (209) 642-3899
September 25 - Oct 4, Utah State University, Logan, UT $325 (801) 750-3264
September 26 - Oct 5, Selway Lodge, ID, $750 (meals and lodging inc.)

Wilderness First Aid/WFR Refresher

June 6 - 7, Taylor Park, Colorado $125
June 16 - 18, Skinner Wilderness Camps, Pinedale, WY TBA
July 16 - 17, Albuquerque, NM, $90

Wilderness/Rural EMT Module

October 29 - Nov 6, Boulder, CO (303) 444-4573

SOLO COURSES

RFD 1, Box 163, Tasker Hill,
Conway, New Hampshire 03818
Telephone: (603) 447-6711

Advanced Leadership and Emergency Care (ALEC) (EMT + Wilderness Leadership Skills)

June 20 - July 22, SOLO, NH $1650

Wilderness EMT

July 25 - August 19, SOLO, NH $1395

Contact SOLO for more information about the wide range of courses they offer, some of which include high angle rescue, winter medicine and survival, backcountry SAR, EMT-I, and Wilderness Trauma Life Support (for physicians).

WILDERNESS MEDICAL ASSOCIATES

Bryant Pond, Maine 04219
800-742-2931, 24 hr. messages

July 22 - 30 Wilderness First Responder, Leavenworth, WA
August 1 - 23 EMT + WEMT upgrade, Bryant Pond, ME
August 14 - 22 Wilderness First Responder, Ashville, NC
August 23 - 31 Wilderness First Responder, Milledgeville, GA
September 17 - 25 Wilderness First Responder, Carbondale, IL
October 1 - 9 Wilderness First Responder, Baltimore, MD
October 4 - 9 WFR/WEMT Review, San Diego, CA
October 8 - 9 WFR/WEMT Review, Newry, ME
October 8 - 13 Wilderness EMT Upgrade, Lookout Mtn., TN
October 15 - 22 Wilderness First Responder, Redmond, OR
October 22 - 23 WFR/WEMT Review, Joshua Tree, CA
October 23 - 29 Wilderness EMT Upgrade, Newry, ME
October 24 - Nov 1 Wilderness First Responder, Joshua Tree, CA
November 4 - 6 WFR/WEMT Review, Lake Placid, NY
December 1 - 8 Wilderness First Responder, Salmon, ID

SOLO MARINE MEDICINE INSTITUTE

c/o N.A.S., HC 60, Box 101, Medomak, Maine
(207) 529-5880, (207) 529-5233 - fax

Headquartered on the rockbound Maine coast, the SOLO Marine Medicine Institute offers the following courses at their coastal base and at off-site locations:

"Medicine for Mariners", a 16 hour program, based on data compiled by the U.S. Coast Guard, dealing with medical issues the mariner is most likely to encounter.

"Mariner First Responder", an 80 hour course exceeding the Coast Guard's requirements for mariners seeking licensing.

Back issues of Wilderness Medicine Newsletter are available. For a free index of articles and listing of newsletters, write to: P.O. Box 9, Pitkin, CO 81241.

Wilderness Medicine Newsletter

FOR THE RECOGNITION, TREATMENT, AND PREVENTION OF WILDERNESS EMERGENCIES

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OZONE, ULTRAVIOLET LIGHT, & YOUR HEALTH

by Buck Tilton

While recent dramatic rises in skin cancer rates may be primarily due to an increase in outdoor recreational lifestyles, scientists and doctors are now concerned about a new cause of increased ultraviolet (UV) radiation exposure--the thinning of the Earth's natural protective ozone shield. To help you better understand the health hazards from the UV and ozone connection, let's quickly review some science.

Compared to quantities of other gases (oxygen, nitrogen, and carbon dioxide), ozone molecules are quite rare in our atmosphere--but they provide a critical protective function for most lifeforms on our planet. Most of the Earth's ozone (about 90 percent) resides in the stratosphere, located 6 to 25 miles above the Earth's surface. Ozone's unique optical properties allow it to serve as a shield from dangerous UV radiation. An ozone molecule consists of three oxygen atoms. The so called "stratospheric ozone shield" is a thin layer of ozone molecules. The stratospheric ozone layer is actually very thin--if all the ozone molecules over your head were compressed together with sea-level pressure, they would form a layer less than 1/8 inch (3 millimeters) thick.

Solar radiation—a fancy word for sunlight—is made up of rays with many different wavelengths. Some you can see with your eyes, some are invisible. Wavelengths are measured in nanometers (nm). Here is how different wavelengths compare:

Above 700 nm	Infrared (invisible heat rays)	
650 to 700 nm	Red light	
590 to 650 nm	Orange light	
490 to 590 nm	Yellow and Green light	
420 to 490 nm	Blue light	
400 to 420 nm	Violet light	
Below 400 nm	Ultraviolet	(invisible UV rays)

The sun's rays are essential for both plant and animal life, but the very short UV wavelengths can actually damage living cells. The ozone layer allows life to flourish on Earth by passing the longer, beneficial wavelengths and effectively blocking the shorter UV waves. The shortest UV wavelengths the most damaging--they contain enough energy to actually troy DNA molecules in your skin and eyes. Since DNA controls your cells' ability to heal and reproduce, it's no wonder that overexposure to UV rays is dangerous.

Ultraviolet rays are divided into three groups by scientists according to their wavelength and relative hazard to your health. None are visible to the human eye:

320 to 400 nm	UVA:	beneficial in low doses, may cause cancer
280 to 320 nm	UVB:	causes sunburns and cancer
below 280 nm	UVC:	quickly causes burns and cancers

Almost all UVA radiation passes through the ozone shield and, as far as science is concerned, it always has. Ozone effectively blocks nearly all UVC. It also does a good job of protecting us from excessive UVB radiation--if the shield is undamaged and can do its job. Unfortunately, in the last 10 years the ozone layer has started to thin as manmade CFC chemicals attack the ozone.

UV INDEX by Buck Tilton

As of late June this year the National Weather Service began predicting the UV levels expected for the following 24 hours. After several months of delay, this UV Index now appears in the newspapers of about 50 cities nationwide. If it hasn't reached your locale yet, the UV Index should be there soon.

The UV Index is a scale that usually runs from 1 to 10, but Index values as high as 11 or 12 are possible in tropical regions. The UV Index number is given as a daily forecast, or as a reading of the previous day. The number represents the highest UVB level reached for the day, which will occur at solar noon under clear skies.

In the U.S., the UV Index data is generated by the National Weather Service and the National Oceanic Atmospheric Administration (NOAA) using real-time ozone data collected from NOAA satellites.

The chart below will help you estimate, in human terms, what UV Index values really mean. The "sunburn time" noted below is the number of minutes it will take for noticeable

reddening to occur in an un-tanned Caucasian (this is the dark haired variety, not freckled redheads or blue-eyed blondes).

UV Index	Sunburn Time
10	13 minutes
8	17 minutes
6	22 minutes
4	34 minutes
2	67 minutes

You may also hear UV readings being broadcast on your local TV station that use the Sunsor scale. Sunsor is a registered trademark of the Sunsor Corporation, a private company that produces UV measuring equipment and works with many local TV stations to provide UVB intensity information. The Sunsor system uses a proprietary scale of 0 to 120, but the purpose is the same as the UV Index—to give you an idea of how strong the sun's UVB rays are. Since both systems are measuring the burning-type UVB radiation, Sunsor readings are roughly (but probably not exactly) ten times an equivalent UV Index reading.

FACTORS THAT AFFECT UV INTENSITY

by Ken Thompson

The sun is a relatively constant engine, radiating its energy with variations totalling mere fractions of a percent. Yet, many conditions on Earth affect the amount of radiation we receive.

The amount of UV reaching us is greatest at solar noon, the time when the sun is at its highest, which is not necessarily 12:00 o'clock. Solar noon can be calculated by finding the mid-point between sunrise and sunset. Of course, it's not necessary to figure that out exactly. The sun is most intense between 10:00 a.m. and 3 p.m., during which hours we receive as much as two-thirds of the entire daily dose.

Latitudes closest to the equator receive considerably more radiation than those near the poles. June is the most intense month in the Northern Hemisphere and December in the Southern.

Each 1,000 feet of elevation above sea level receives an additional 4% to 5% of radiation. The combination of altitude and highly reflective snow often leads to severe, blistering sunburns on the nose, cheeks, lips and even the roof of the mouth of unsuspecting mountaineers. Snow and ice can reflect as much as 90% of the UV radiation that strikes it, nearly doubling the power of burning rays.

Not just mountaineers suffer intensified rays, however. Because sand reflects 20% to 30% and water, at certain times of the day, reflects a full 100% of UV light, beach goers and fisherman get more than their share. A cloudy day at the beach, or anyplace else for that matter, offers little protection. In fact, clouds may make matters worse because they block the heat rays of the sun, which naturally make us want to seek shelter, and allow the UV rays to cause damage while the victim relaxes unaware and fully exposed in what amounts to a reflector oven.

We know that an automobile is a relatively safe place to be in a lightning storm; it also offers protection on a sunny day as well. Standard window glass absorbs almost all UVB. Now if we could just stop using those fossil fuel hogs for transportation and use them instead for shelter.

PHOTOSENSITIVITY

If you're taking a drug for a medical condition, using certain chemicals on your skin, or eating certain foods, you may be more than normally sensitive to the sun's ultraviolet radiation, or photosensitive. Problems of photosensitivity do not fall neatly into scientific classifications due to a wide variety of individual responses and lack of medical knowledge on the subject. But, generally, photosensitivity reactions fall into three broad categories: 1) Phototoxic reactions, an exaggerated normal response to sunlight, a common result of using some shampoos, perfumes and other everyday products. 2) Photoallergic reactions, an abnormal response to sunlight, usually a rash, from many medications, soaps and cosmetics. And 3) Phytophotodermatitis, a reaction from getting some plant juices on your skin prior to exposure to UV light, commonly caused by lemons, limes, celery, parsley, parsnips, carrots, figs, and mustard.

A Partial List of Substances That May Cause Photosensitivity

Food additives, including cyclamates and saccharine.
Benzocaine, used in most anesthetic sprays.
Biothionol, used in some soaps and first aid creams.
Green soap.
Sunscreens, especially the ones with PABA.

A Partial List of Drugs That May Cause Photosensitivity

Anti-depressants, including Adapin, Asendin, Elavil, Norpramin, Vivactil.
Anti-histamines, including Benadryl.
Anti-microbials, including Bactrim, Fansidar, Septra, the tetracyclines, and the doxycyclines.
Anti-parasitics, including Chloroquine and Quinine.
Anti-psychotics, including Haldol, Phenergan, and Thorazine.
Diuretics, including Diamox and Lasix.
Hypoglycemics, including Diabinase, Glucotrol, Orinase, and Tolinase.
NSAIDS (non-steroidal anti-inflammatory drugs), including Clinoril, Feldene, Naprosyn, and Orudis.

What To Do

Direct ultraviolet light should be avoided when you're taking a drug or using a chemical that makes you photosensitive. If you're having an allergic reaction, try a different brand. If you're unsure, consult your physician.

(Editor's note: UVA rays, which do pass through window glass may be the main culprit in photosensitivity responses. So sitting in cars and near windows may not provide protection.)

Reprinted with permission from Ozone, UV and Your Health: 50 ways to save your skin, by Buck Tilton and Roger G. Cox, Merrillville, Indiana: ICS Books, 1994.

THE GOOD, THE BURNT, AND THE UGLY
by Ken Thompson

When UV rays reach the unprotected skin about 10% are reflected. Seventy percent of the light is absorbed by the stratum corneum, which is the outermost "horny layer" of skin made up primarily of dead and dying cells ready to slough off. Another 20% reaches the dermis, which contains blood vessels, lymph vessels, hair follicles, glands, and nerves. A very small amount may pass through into underlying tissues.

These UV rays damage cells, affect circulation in the skin, cause edema, and may inhibit RNA and DNA synthesis. The skin, which now has a first degree burn, begins to redden and get tender. Sweat glands stop functioning during times of greatest inflammation, making the victim more susceptible to heat illness. Blisters may form in severe cases, indicating a deeper burn. If enough surface area is involved, systemic problems, often referred to as "sun poisoning", may arise, including chills, fever, and weakness.

The body will provide some limited protection against UV damage. We secrete urocanic acid which absorbs some UV rays, but this natural protective layer is often evaporated off our bodies along with perspiration, especially in a drying wind. This process may contribute to the effect we call "windburn". Wind may also dry other protective oils from our skin making it more sensitive. Another contribution wind may make to the overall damage by sun, is its cooling effect, which clouds our perception of how hot we really are and encourages longer stays in the sun.

Over time, UV exposure stimulates increased melanin production, which manifests itself as a suntan. Melanin is the body's primary defense against sun damage because it helps the body to harmlessly absorb ultraviolet light. Even tanning, however, is now being considered harmful, and the cumulative effect of years of exposure cause, at the very least, premature aging of the skin and, in the worst case, cellular changes that lead to cancer.

Melanin is found in greatest quantities in people who have evolved this defense over time in equatorial regions. Those whose families have spent the past couple of hundred generations closer to polar regions, do not have the same protection. For example, Aboriginal Australians have virtually no skin cancers; recently arriving Europeans toast quickly. There is a rating scale of skin types which indicates various levels of protection: Type I includes blue-eyed blondes and redheads who burn easily and never tan, Type II includes those blondes with fair skin who usually burn and will tan only after long gradual exposure, Type III includes most Caucasians who often burn first but will also tan moderately, Type IV includes Hispanics and Asians who burn a little and tan well, Type V includes Middle Easterners and Native Americans who burn rarely and tan darkly, and Type VI includes those darkest skinned Blacks who burn only after extreme exposure.

Dr. Karl Neumann in his newsletter, Traveling Healthy & Comfortably (July/August 1994), provides the following advice for those who find themselves sunburnt:

Aspirin and ibuprofen when taken immediately after excessive sun exposure may reduce or even prevent subsequent redness, tenderness, and itching. However, these substances do not prevent long term skin damage. Take 650 mg. of aspirin or 400 mg of ibuprofen every four hours. Continue for twenty-four hours. Aspirin and ibuprofen also help reduce itching and tenderness once erythema (redness) is present. If itching is severe, also take an antihistamine, diphenhydramine (Benadryl), for example.

For severe exposure—falling asleep in the sun at the beach, for example—indomethacin (Indocin), and anti-prostaglandin may be more efficacious. Start as soon after exposure as possible.

Cool, clean compresses—milk or water—and cool and lukewarm baths help numb inflamed skin. No additives are needed in the bath water.

The most effective creams and ointments are those that contain menthol and phenol, or cortisone. Most effective are sprays of the stronger cortisone preparations. The sprays are very soothing, cover a large area, and are easy to apply.

Stay away from substances that contain calamine lotion and topical anesthetics. These may cause rashes and worsen itching, especially on damaged skin. (It is worth noting that Dr. Neumann also advises against aloe; however, there are some of us who have found it beneficial. Let your own body be the guide.)

Sunburned skin is damaged skin. Applying other substances—sunscreens, insect repellents, perfumes, for example—can be hazardous. Damaged skin increases the chances of sensitivity reactions and increases the absorption of substances into the body.

Sever sunburns—blistering, oozing, redness, swelling, and possibly, fever—require prompt medical attention. Treatment may require antibiotics and other medications.

PREVENTING UV DAMAGE by Buck Tilton

If you plan to be spending time in the sun, plan to use protection. Many chemical sunscreens are on the market, but it is important to understand what you are buying and how to use it properly.

Sun Protection Factor

A product's Sun Protection Factor, or SPF, tells you how long you can stay exposed to sunlight before you burn, compared to exposure time without a sunscreen. For example, if you would burn in 10 minutes, an SPF of 10 allows you, theoretically, to stay in sunlight for 100 minutes before burning occurs. The number varies directly with the concentration of ingredients in the sunscreen, but is really only an average. To be safe, consider that the protection factor is only half as good as it says it is.

Although it seems that an SPF of 15 would do for almost anyone, research shows that higher concentrations provide greater protection, even during the first few hours of exposure.

SPF refers to protection from UVB; a UVA rating system is still under consideration by the FDA. If and when that does arrive it will measure protection against phototoxic effects and will be designated with a PPF number. Choose the highest PPF number available.

Sunscreens contain compounds that absorb UV rays before they harm you. The best products have two or more active ingredients that work against UVA and UVB radiation. Para-aminobenzoic acid (PABA) and its derivatives (padimate A and padimate O) are the most common sunscreen ingredients, but they cause skin irritations in many people and have little benefit against UVA. Non-PABA products which contain benzophinones (oxybenzone), cinnamates (octyl methoxycinnamate), salicylates, or anthaniline are very effective sunscreens. The benzophenones are especially effective against UVA. (Read the label on your sunscreen).

Sunscreens are formulated with bases of lotion, cream, gel, oil, or wax—choose whichever feels best to you. Some sunscreens are labeled "water resistant" or "water-proof". Water resistance implies 45 minutes of protection while swimming or sweating heavily. Water-proof versions should still be working 80 minutes into the same conditions.

In 1989, the sunscreen Photoflex (from Allergan Herbert) became the first "broad spectrum" product (protective against UVA and UVB) available in the U.S. The sunscreens Shade UVAGuard (from Schering-Plough) and Ultra One (from Sawyer) now also offer maximum broad spectrum protection. Ultra One offers the additional benefit of maximum drying on your skin instead of absorption, which provides longer lasting protection.

Use Your Sunscreen Properly

The experts recommend choosing an SPF of at least 15 for tanning purposes, and of at least 25 to prevent tanning. Children under 6 months should be kept out of direct sunlight; children 6 months and older should use an SPF of at least 25.

If you are active choose a water-resistant or water-proof sunscreen.

Before coating your body with a sunscreen, apply it to a small area, about the size of your hand, and wait an hour to see if you develop a rash or other skin irritation.

If you're taking a medication, check with your physician or pharmacist concerning possible side-effects with sunscreens.

The SPF is based on a uniform covering of your skin of approximately 2mg/square centimeter. That's about one ounce per application for a skimpily clad adult. Dr. Karl Neumann provides this formula for smaller areas: apply approximately one-half teaspoon to head and neck, to each arm, to half of the torso, or to half the leg.

Apply sunscreen to dry skin approximately 30 to 60 minutes prior to exposure and rub it in, don't just smear it on.

Reapply sunscreens often, at least two hours during periods of exposure, especially between 10 a.m. and 3 p.m.

Don't forget parts and bald spots. And, protect lips with a lip balm having an SPF of at least 25.

To high exposure areas (nose, ears, neck) consider using a complete sunblock. (Common ingredients in complete sunblocks, which prevent all light from reaching the skin, are zinc oxide, titanium dioxide, and red veterinary petrolatum.)

DON'T LET HIGH SPF'S MAKE YOU OVER CONFIDENT by Ken Thompson

Recent studies suggest that even though sunscreens successfully retard the burning process they may not necessarily provide the kind of protection we need to avoid skin cancer. In fact cancer rates are increasing in areas where folks routinely use sunscreens. The reasons for this are not clear but researchers speculate that the causes may be related to one or several of the following possibilities:

Sunscreens encourage people to spend much more time in the sun than their systems can safely tolerate. Sunscreens may not block sunlight-induced changes in immune cells. Sunscreens may prevent skin from producing vitamin D, which is necessary to suppress the growth of melanomas.

Research is in progress, and the jury is out. So in the meantime, consider spending less time in the sun and using physical barriers like clothing and wide-brimmed hats when you are in the sun. OK, now, are you ready for the warning about clothing? Read on.

Hold some of your clothing up to the sun and look through it, any rays that pass through can burn you. Now look at something of a different weave, you'll see more or less light passing through. Studies on white cotton t-shirts have placed their SPF's at anywhere from 7 to 20. Get them wet, and the

SPF will drop about a third. Densely woven, dark blue jeans have an SPF of nearly 1,000. So select your outdoor clothing with sun protection in mind. Look for dense weaves and dark colors, if you can tolerate the heat. If you have particularly sensitive skin or have phototoxic reactions, consider purchasing some of the clothing made by two manufacturers who assure high SPF's are woven into their garments: Frogwear at 1-800-328-4440, or Sun Precautions 1-800-882-7860.

SKIN CANCER by Buck Tilton

An estimated 32,000 U.S. citizens will be told they have melanoma this year, and between 7000 and 9000 will die when the cancer metastasizes (spreads) to vital organs. "By the year 2000," writes Franklin Glickman, MD, "projections suggest that malignant melanoma will affect one out of every 90 Americans." (*Family Practice Recertification*, Vol. 15, No. 9, Sept 1993).

Melanoma occurs in the melanocytes, the cells of the skin that control pigmentation, and it occurs most often in people who are fair-skinned and freckled, people who sunburn easily. Cases are almost equally divided between men and women, but the average age at which melanoma strikes has been dropping dramatically. Ten years ago it was considered unusual to find skin cancer in someone under 40. Younger people are increasingly at risk, says Dr. Glickman, "particularly whites of either sex between the ages of 25 and 29 and white men aged 35 to 39 years."

In last few years skin cancer's association with exposure to ultraviolet light has been firmly established, with nine cases out of ten "caused by too much exposure to sun," concludes the *American Institute for Cancer Research Newsletter* (Spring 1994).

If caught early, malignant melanoma is virtually 100% curable. The Skin Cancer Foundation recommends a monthly skin check for the symptomatic ABCDs of skin cancer. (For a free brochure, send a self-addressed, stamped business envelope to The Skin Cancer Foundation, Box 561, New York, NY 10156.)

A for Asymmetry. One half of a mole or skin spot doesn't match the other half.

B for Border Irregularity: Ragged, notched, or blurred edges.

C for Color: Changes in color from black to brown to red, often with a combination of colors. Blue and white may appear.

D for Diameter: Any mole or spot that grows to more than one-fourth inch, about the size of the end of a pencil eraser.

About one-half of all melanomas arise from a previously existing mole, but they can also appear as a completely new spot on the skin. Consult your physician if any mole or spot appears suddenly, looks scaly, becomes itchy, painful, or tender, or starts to ooze blood.

Malignant melanoma is one of three common forms of skin cancer, but not the most common. That distinction belongs to basal cell carcinoma, with about one half million cases reported annually. Basal cells make up the base of the epidermis, the outermost covering of the body. UV radiation can cause these cells to reproduce too fast, producing a tumorous growth. Basal cell carcinoma usually start as a slow-growing, small, shiny (or pearly) bump that becomes an open sore taking longer than three weeks to heal. Sores often bleed, crust over, and open to bleed again. The cancer may be an itchy or tender reddish patch that comes and goes. Sometimes it's a pale splotch, like a scar, and sometimes a circular growth with a raised border and depressed center.

Squamous cell carcinoma, the second most common skin cancer, accounts for about 100,000 cases each year. Like the other forms, it appears most often on the face, ears, hands and forearms. In the past 50 years, according to the American Cancer Society, shoulders, back and chests on men, and the lower legs of women, have become increasingly popular sites for skin cancer because more and more people "deliberately expose themselves to the sun's ultraviolet radiation."

Squamous cells make up most of the epidermis. When they become cancerous, they may look like basal cell cancer, but the problem can also appear as a wart that bleeds and crusts over, bleeds and crusts over. Cancerous squamous cells grow faster and metastasize more frequently than basal cell carcinoma.

Children, who spend more time in the sun than adults, are particularly at risk for problems later in life. Researchers estimate that eighty percent of solar skin damage occurs during the first 18 years of life. Population migrations toward the sunbelt, combined with less natural protection from ozone have raised the stakes for playing in the sun. A child born in the United States in the 1930's had a one in 1500 chance of developing malignant melanoma. That risk for a child born in the 1990's is one in 123.

HOW FIT ARE YOU?

A recent edition of the Rescue Forum, the Journal of the Mountain Rescue Association (Number 17) included an article on physical preparedness for rescue missions. The article, written by Portland Mountain Rescue team member Don Adamski, provided an overview of various types of fitness testing and recommendations for standards that PMR members should strive to attain. For the edification of WMN readers, we'll describe some of the tests here and share the standards that Mr. Adamski articulated in his fine article.

Body Mass Index

Being over or under weight puts unneeded stress on every system of the body. You can evaluate your physical stature using the following empirically derived index. It's simple and revealing.

$$\text{Body Mass Index (BMI)} = \frac{704 \times (\text{your weight in lbs.})}{(\text{height in inches}) \times (\text{height in inches})}$$

Your weight should be naked weight and height should be barefoot. This index applies regardless of gender, body type, and age. Evaluate yourself considering the following scale:

BMI	Points to ponder
less than 20	Below ideal range. Seek to gain muscle mass and perhaps some fat by weight training and good quality nutrition.
20 to 26	Ideal range. Good show. You're on the right track, but read on.
26 to 30	Moderately overweight. Increase aerobic (fat burning) exercise and maintain good quality nutrition.
30 or more	Truly overweight. Adopt a structured exercise and diet program. You could be at medical risk.

Recovery Index

This is the Harvard Step Test and involves cardiorespiratory condition, leg (quadriceps) endurance, and balance.

Locate or build a sturdy bench with a height that places one upper leg (top of thigh) slightly below (about 5 degrees) the horizontal with its foot flat on the bench and the other leg straight with its foot flat on the floor. The outside angle at your raised knee (between thigh top and shin) should be about 85 degrees to avoid knee injury. The height is important to standardize the exertion.

Without support or pushing with your hands on your knees, step from the floor onto the bench top bringing both feet up (one at a time—of course) and then step down bringing both feet to the floor (again, one at a time). This is one cycle. Do this at a steady rate of 30 cycles per minute for 4 minutes. Change lead leg every 10 cycles.

As soon as you finish, sit quietly for 1 minute, then count your heart beats (not the heart rate in beats/minute) for 30 seconds. Continue to sit quietly. At the 2 minute mark, after you finish stepping, count your heart beats again for 30 seconds. Repeat the same 30 second heart beat count at the 3 minute mark. Compute:

$$\text{Recovery Index (RI)} = \frac{50 \times (\text{duration of stepping in seconds})}{(\text{Sum of heart beats at 1, 2, and 3 minute marks})}$$

Evaluate yourself using the following table:

RI	Ranking
60 or less	Poor
60 to 70	Fair
70 to 80	Good
80 to 90	Very Good (Suggested PMR "hasty team" level)
90 +	Excellent

Oxygen Uptake

To estimate your current oxygen uptake, run as fast as possible for 15 minutes on a good outdoor track (makes estimating distance easy) and on a windless day. This must be an all out effort and you should be exhausted at the end. Record the distance you run and convert it to minutes/mile. Your approximate Max VO2 is:

Speed in min/mi	Approximate Max VO2
9	41 (minimally fit)
8	45
7	50 (sug. "hasty team" level)
6	56.5
5	65.8

Minimally aerobically fit people score around 40. World-class endurance athletes score in the 70's and 80's. Being overweight will lower your score. Being underweight may make you a fast runner by physically weak as a mountaineer.

Overall Body Strength and Endurance.

This is important for carrying equipment, raising/lowering tasks, avoiding injury, and toughening ligaments, tendons, and bones.

Test	Desirable Levels
Bench Press	1 rep at body weight (strength measure) 20 reps at 70% body weight (endurance measure)
Chin-up	10 reps with palms in (your pace—no resting) 10 reps with palms out(your pace—no resting)
Push-up	50 reps (your pace—no resting)
Squat	1 rep at body weight (strength measure) 20 reps at 70% body weight (endurance measure)
Dead Lift	1 rep at body weight (strength measure) 20 reps at 70% body weight (endurance measure)
Stomach crunch	50 reps./min. Knees bent, feet not held down, lower back on floor.

TUBERCULOSIS by Buck Tilton

Back in 1882, German pathologist Robert Koch discovered the rod-shaped bacteria *Mycobacterium tuberculosis* as the cause of the disease. It killed such notables as Edgar Allan Poe, Henry David Thoreau, Emily Bronte, and Robert Louis Stevenson. Each opera season, *La Boheme*'s Mimi dies a thousand hacking deaths of consumption. Once considered a "thing of the past" and after a 30-year decline, TB has re-emerged. In September 1993, the Centers for Disease Control (CDC) estimated 10-15 million people in the United States were infected with tuberculosis.

M. tuberculosis spreads via airborne droplets—coughed, sneezed, talked, shouted or sung into the air by someone with active TB. After being inhaled by someone healthy, the

bacteria multiply in the lungs for a short time before being controlled by the immune system and going dormant. The disease remains dormant until some factor—age, malnutrition, drug abuse, an immunodeficient condition such as HIV—coaxes it into the active phase with lung, kidney, larynx or brain lesions . . . and the ability to spread the disease. Symptoms of active TB may include lethargy, fever, anorexia, weakness, night sweats and if it's active in the lungs, painful cough with bloody sputum.

The Mantoux skin test shows if the bacteria are in your body, but it doesn't tell if the disease is active or dormant. "Culturing the microorganisms from sputum or other body tissue, or a chest x-ray," says Jack Bahouth, MD, Wyoming radiologist, "will tell if the disease is active. And with antibiotic therapy, TB is 95% curable."

Standard "operating room" masks do not protect you from the airborne bacteria. A highly efficient particulate air (HEPA) respirator will. Avoid close contact with the exhaled air of suspected TB patients. If you must transport one in a vehicle, keep the windows open. If you think you have been exposed, make an appointment to be tested.

URINE TROUBLE NOW

Dear WMN:
I was reading through the May/June 94 issue of the WMN and I noticed the statement in "ABC and P" that urine is sterile. I think this concept persists as a wilderness medicine myth. Even if we accept that urine is sterile post-nephron, it has to pick up microorganisms as it passes the urethra. Microorganisms in the urethra are manifested as UTI's, not an uncommon infection. This being the case, how can we say urine is sterile?

I've also asked this of physician's, and never had anyone want to say urine is "sterile". Some remark about residual colonies of microorganisms within the bladder, as well as questions of the kidney's ability to filter out every bug that tries to pass from the blood to the urine. My physiology book lists the normal contents of urine, and has bacteria, albeit in extremely small quantities, as a standard component of urine. Anyway - it's a pet "pee"ve of mine.
Tod Schimelpfenig, Lander, Wyoming

The WMN responds:
Tod, urine corrigible. Thanks for helping to set us straight. I went to the source to get some more information. Well, actually, I didn't go to the source, but went to an Albuquerque urologist, Dr. Dick Conn, who provided the following information:
Generally speaking, urine is only sterile in the sense that it usually doesn't carry bacteria (if we cultured some, nothing would grow in it). However, viral infections, including hepatitis, may, indeed, be transmitted by way of urine. For this reason, treat other people's urine as you would any other bodily fluid, using universal precautions (Since you already have whatever is in your urine, feel free to treat it any way you please).

Perhaps our lack of concern about urine has been fueled by practices in the not too distant past, when endocrinologists, lacking adequate blood tests, would taste patients' urine to check for excessive sugar. It is the presence of overabundant sugar in the urine and blood that gives diabetes "mellitus" its name.

Since urine may actually provide relief when applied topically to jellyfish stings, it is important to have the victim use his or her urine only. Dr. Conn happened to be traveling with a group of urologists when a woman was stung by a jellyfish and subsequently treated the sting with her own urine. Although she experienced relief, Dr. Conn was not sure whether it was the result of the urine or the rum, which was also flowing freely.
Ken Thompson, Editor

UPCOMING CONFERENCES

Wilderness Risk Managers Conference

September 9 - 10, 1994 Conway, Washington
$150 in advance, $200 walk-in. Fee covers registration, meals and the Conference Workbook. For registration form and more information contact: NOLS, WRM Conference, 288 Main Street, Lander, WY, 82520, telephone (307) 332-1256.

5th Annual Winter Wilderness Medicine Conference

March 6 - 11, 1995 Keystone Colorado
For more information contact: The Wilderness Medical Society, P.O. Box 2463, Indianapolis, IN 46206-2463, telephone (317) 631-1745.

Deluxe Wilderness First Aid in Taos, New Mexico, January 14 and 15, 1995

Here is a chance to combine training in backcountry medicine with a stay at a national historic landmark. This standard 16 hour Wilderness First Aid Course will be held at the Mabel Dodge Luhan House, an easy walk from Taos plaza. This creative space, established in the 1920's by Mabel Dodge, is what attracted and hosted the likes of D.H. Lawrence, Willa Cather, Carl Jung, Georgia O'Keefe and nearly 200 other artists and philosophers in the early part of this century. The current owners continue that rich legacy through hosting educational seminars and conferences. In addition to receiving a two year certification in wilderness first aid, you can participate in evening sessions designed to engage you in the rich cultural heritage of Northern New Mexico.

The $250 package includes tuition, 2 nights lodging and 6 meals beginning Friday night, January 13th at the Mabel Dodge Luhan House. Register early through the Wilderness Medicine Institute, P.O. Box 9, Pitkin Colorado, 81241. Those wishing to spend extra time in Taos to take advantage of

skiing and sight-seeing should get in touch directly with folks at the Mabel Dodge Luhan House, 1-800-84-MABEL, who will graciously extend discounted rates to attendees. Taos residents who wish to attend the course without lodging, may contact the Wilderness Medicine Institute, (303) 841-3572 to discuss registration fees.

WILDERNESS FIRST AID AND MEDICAL TRAINING OPTIONS

WILDERNESS MEDICINE INSTITUTE

P.O. Box 9, Pitkin, Colorado, 81241
Telephone: (303) 641-3572, Mon-Thurs 9 a.m.-1 p.m.

Wilderness EMT

November 21 - December 15, Kelly, WY $1,400
January 2 - 27, 1995, Pitkin, CO

Wilderness First Responder

September 12 - 21, Summit Adventures, Bass Lake, CA $525 (meals and lodging inc.) (209) 642-3899
September 25 - Oct 4, Utah State University, Logan, UT $325 (801) 750-3264
September 26 - Oct 5, Selway Lodge, ID, $750 (meals and lodging inc.)
October 17 - 28 San Juan Island, WA, $425
November 1 - 11 Jackson, WY, $400

Wilderness/Rural EMT Module

October 29 - Nov 6, Boulder, CO (303) 444-4573

SOLO

RFD 1, Box 163, Tasker Hill, Conway, New Hampshire 03818
Telephone: (603) 447-6711

Advanced Leadership and Emergency Care (ALEC) (EMT + Wilderness Leadership Skills)
A combination of NREMT and WEMT certifications combined with training in leadership skills, survival and rescue for the professional outdoor leader.

Ocotber 10 - November 11 Conway, NH, $1,650
January 30 - March 3 Conway, NH, $1,650

Wilderness EMT

September 12 - October 7 Conway, NH, $1,395
November 13 - 23 Pt. I—November 28 - December 9 Pt. II, Conway, NH
January 2 - 27 SOLO
January 2 - 27 Nantahalla, NC, (704-488-6737)

Wilderness First Responder

September 8 - 18 Conway, NH, $695
October 24 - November 4 AMC, NH, (603-466-2727)
November 11 - 20 College of DuPage, IL (708-858-2800)
December 3 - 13 Hulbert, VT, (802-333-9840)
January 2 - 12 Unity College, ME, (207-948-3131)
January 14 - 24 Hulbert, VT, (802-333-9840)
Jan TBA Cornell, NY, (607-255-6415)

Wilderness/Rural EMT & First Responder Module—Upgrade
September 4 - 8 in WV, (800-634-3785)
October 17 - 21 Conway, NH, $385
December 12 - 16 Conway, NH

Wilderness First Aid/WFR Recertification
September 9 - 11 with CPR Hulbert, VT, (802-333-9840)
September 17 - 18 AMC, NH, (603-466-2727)
October 14 - 16 with CPR Dartmouth, NH, (603-646-2428)
November 4 - 6 with CPR DuPage, IL, (708-858-2800)
December 10 - 11 Conway, NH
January 21 - 22 Conway, NH

WILDERNESS MEDICAL ASSOCIATES

Bryant Pond, Maine 04219
800-742-2931, 24 hr. messages

September 12 - 17 Wilderness EMT Upgrade, Nelsonville, OH
September 12 - 20 Wilderness First Responder, Caratunk, ME
September 17 - 25 Wilderness First Responder, Carbondale, IL
September 24 - October 2 Wilderness Adv. First Aid, Idyllwild, CA
October 1 - 9 Wilderness First Responder, Baltimore, MD
October 8 - 9 WFR/WEMT Review, Newry, ME
October 13 - 21 Wilderness First Responder, Newry, ME
October 15 - 20 Wilderness EMT Upgrade, Lookout Mtn., TN
October 15 - 22 Wilderness First Responder, Redmond, OR
October 22 - 23 WFR/WEMT Review, Joshua Tree, CA
October 23 - 29 Wilderness EMT Upgrade, Newry, ME
October 24 - Nov 1 Wilderness First Responder, Joshua Tree, CA
November 4 - 6 WFR/WEMT Review, Lake Placid, NY
November 6 - 14 Wilderness First Responder, Pinedale, WY
December 1 - 8 Wilderness First Responder, Salmon, ID

SOLO MARINE MEDICINE INSTITUTE

c/o N.A.S., HC 66, Box 101, Medomak, Maine
(207) 529-5880, (207) 529-5233 - fax

Headquartered on the rockbound Maine coast, the SOLO Marine Medicine Institute offers the following courses at their coastal base and at off-site locations: "Medicine for Mariners", a 16 hour program, based on data compiled by the U.S. Coast Guard, dealing with medical issues the mariner is most likely to encounter. "Mariner First Responder", an 80 hour course exceeding the Coast Guard's requirements for mariners seeking licensing.

Wilderness Medicine Newsletter

FOR THE RECOGNITION, TREATMENT, AND PREVENTION OF WILDERNESS EMERGENCIES

SEPTEMBER/OCTOBER 1994 ISSN-1059-6518 VOLUME 5, NUMBER 5

THE 5 COMMANDMENTS OF FIRST AID KITS

by Buck Tilton

#1: Thou shalt find it impossible to put together the perfect first aid kit.

Go ahead, try it. Eventually, if you spend enough time wandering around, you will one day wish for something that just isn't there, and you might find yourself willing to trade your stove for a glob of sunscreen. And kits are personal. A small roll of tape hides in your kit for years, but your partner uses yards of the stuff every day. You end up doing the best you can.

#2: Thou shalt re-pack thy first aid kit for each trip.

For one thing, there are expiration dates on many of those medicinal supplies. And for another thing, moisture, heat, or cold can creep in and destroy the efficacy of many of those items on one trip, and you'll never know until you reach for that item on your next journey. Finally, you carefully think through your food and gear needs but fail to do the same for your first aid kit . . . and you end up with a kit devoid of abrasion management materials because you used everything on the last slide.

#3: Thou shalt not pack anything in thy first aid kit that thou art not familiar with.

Why lug something along that you don't know how to use? Why carry, say, prescription drugs and a suture kit unless you fully understand their uses? Besides, it could be dangerous for your patients if you inappropriately attempt to sew up their open wounds or give them medications they can't tolerate.

#4: Thou shalt remember that, ultimately, human life and limb are not saved by items stuffed in a kit, but by knowledge carried in thy brain.

Almost everything in your first aid kit is designed to ease the pain and speed the healing of relatively simple problems. In a critical situation, it is your knowledge and your skill in using that knowledge that stands between life and death.

#5: Thou shalt discover the value of commercial first aid kits.

Time was when off-the-shelf kits were a plastic box with a few adhesive bandages and a tube of cream. Now manufacturers are consulting wilderness-oriented doctors and medics, who think of important things that never crossed your mind, and they are offering kits that save you money because they buy items in bulk and pass the lower prices on to you.

FIRST AID MATERIALS FOR BIKERS

by Buck Tilton

The original first aid kit designed to be carried attached to a mountain bike is Atwater Carey's ATB (All Terrain Bike) Kit. Its triangular shape fits securely between the top and down tube with four velcro fasteners large enough for all frames including the oversized Klein and Cannondale. One kit contains items adequate for managing the needs of a group of five bikers. Weight: 17 0z. Size: 9" x 9" x 2.5" Suggested Retail Price: $49.95.

Mountain bikers reach for their first aid kits most often to treat abrasions and other open wounds. Proper management of open wounds involves three steps: 1) stop serious blood loss, 2) clean adequately to prevent infection, and 3) maintain an environment around wound that will promote healing. The ATB Kit contains:

1 pr. disposable gloves. To wear if you are treating someone else who is bleeding in order to keep your germs out of them and their germs out of you. When appropriate, save the gloves and have each patient treat themselves.

1 ea. 5" x 9" combine dressing. A very absorbent sterile pad to help in managing a wound that is bleeding heavily. Could also be used to manage normal menstrual bleeding.

1 ea. re-sealable plastic bag. You can fill it with water and punch a pinhole in it to serve as an irrigation tool for flushing a wound. Of course, you can also use your water bottle. Any water safe to drink is safe to clean a wound with. The plastic

bag can be used to hold ice, snow, or cold water for cooling strains and sprains.

2 ea. iodine ointment foil packets. A topical disinfectant, iodine ointment can be used to wipe wounds clean after the wound has been flushed with water. The iodine can also be dissolved in unsafe water to create a disinfected flush. Wait 20 minutes after putting the iodine into water to allow full disinfecting action.

1 ea. green soap scrub sponge. To clean those dirty abrasions, where the grime is ground into the wound, use the sponge and aggressively scrub the wound clean. Follow the scrubbing with a clean water flush.

3 ea. antiseptic towelettes. Can be used to wipe very minor wounds clean. Can be used to wipe your hands clean after dealing with an open wound.

2 ea. triple antibiotic foil packets. Topical antibiotics have very little effect on the lives of germs, but they do help some and, more importantly, keeping a dab on open wounds helps maintain a moist environment around the wound. Maintaining body moisture around an open wound speeds healing significantly.

6 ea. 1" x 3" fabric bandaids. To cover small wounds after they have been cleaned.

2 ea. knuckle bandaids. To cover those small and difficult to bandage scraped knuckles. This bandage allows an almost full range of motion after application.

4 ea. 3" x 3" gauze pads and 1 ea. 1" x 10 yds cohesive gauze tape and 1 ea. 1" x 1.5 yds adhesive tape. This combination allows you to create a very effective cover for larger open wounds. Remember, when you handle sterile material, to touch only the edges. A squirt of triple antibiotic ointment on the wound first helps prevent the gauze from sticking to the wound. The adhesive tape can be used on hot spots to prevent blister formation.

2 ea. 3" x 4" non-adherent dressing. These dressings are designed especially for wounds that tend to weep. They help prevent sticking.

2 ea. Micro-Thin bandage. This marvelous new product is sort of like a piece of sterile Gore-tex -- it "breathes" while it keeps bad moisture out and lets exudate from the wound escape. Once the wound is clean and prepared with the antibiotic ointment, this see-through "window" bandage allows you to monitor the wound for signs of infection.

4 ea. butterfly closures. To pull the edges of gaping wound approximately together before bandaging and until a physician can suture the wound.

1 ea. tincture of benzoin swab. Benzoin is very sticky, and can be used anywhere tape (including a butterfly closure) is used to ensure the tape stays in place. Benzoin is an irritant and should be kept out of open wounds.

1 ea. 2nd Skin® dressing. 2nd Skin is 97% water held together in a gel. It can be used to cover small burns, after cleaning, and for the treatment and prevention of blisters. Blisters, once they form, are best managed by washing the area, deflating the bubble, and then applying the 2nd Skin. The 2nd Skin will need to be held in place with tape.

After wounds, first aid kits are most useful in the management of musculoskeletal injuries . . . primarily sprains.

1 ea. triangular bandage w/2 safety pins. This large bandage can be used to sling and swathe upper extremity injuries. It can also be used to tie splints in place and to hold large wound dressings in place. It will serve as an excellent pressure bandage, and it will work as a tourniquet, if you feel qualified to appropriately use one. If you ever need two slings, the safety pins can be used to improvise one by folding a shirt and pinning it in place.

1 ea. 3" x 5 yds elastic bandage. Useful in wrapping sprained wrists and ankles, although the support is not very great unless you use athletic tape as well. Can be used to hold splints and large bandages and ice packs in place.

The ATB Kit also contains:

2 ea. packets of 2 ibuprofen (Advil®). The best over-the-counter medication for the treatment of pain, inflammation and fever.

1 ea. Mineral Ice. Topically-applied cold-inducing gel for reducing the pain and swelling of a musculoskeletal injury.

1 ea. 4.5" bandage scissors and 1 ea. 3.5" forceps (tweezers) and 1 ea. single-edge razor blade. These tools are useful in many ways -- altering bandage size, removing splinters, cutting delicately to get at a deeply imbedded splinter, etc.

1 ea. oral rehydration salts. This package contains an ideal combination of electrolytes and sugar for maximum replenishment of lost body fluids. Must be mixed with water.

1 ea. sun screen foil packets. To be applied before exposure to direct sunlight, especially on over-exposed areas such as tops of shoulders, tops of legs, and the nose. There's not enough in the kit for sustained use, but just in case you run out or lose or forget your regular source.

1 ea. pill vial. For packing personal medications.

1 ea. report form. Reminds you, in serious emergencies, of the things that need to be done while providing a convenient way to record vital information.

1 ea. first aid manual. In slim, easy to read format, this little

book helps remind you of the things that need to be done for the most common and serious mountain biking emergencies.

Atwater Carey, Ltd., 218 Gold Run Road, Boulder, Colorado 80302, carries a full line of sports specific outdoor first aid kits including other kits designed for mountain bikers and refill modules to replace the stuff you use. Free catalog available. 800-359-1646.

NON-PRESCRIPTION DRUGS YOU MAY WANT TO CARRY

NOTE: When using these, or any medications, follow the directions on the label and/or your physician's advice. Children and pregnant women should not take medications without first consulting a physician.

Acetaminophen (e.g., Tylenol): For relief of pain of headache, cold and flu discomfort, minor muscle and joint discomfort, and menstrual cramps. For reduction of fever. Especially useful for those who are allergic to aspirin or aspirin-containing products. Does *not* work as an anti-inflammatory.

Antacid tablets (e.g., Mylanta, Magnacal): For symptomatic relief of heartburn, acid indigestion, sour stomach, and other conditions related to an upset stomach. Mylanta helps relieve intestinal gas problems.

Antihistamine (e.g., Benadryl): For the temporary relief of respiratory allergy symptoms and cold symptoms. Helps relieve the itching of allergic skin reactions. May be used as a mild sedative. Useful as an additional measure in the treatment of anaphylaxis. May help alleviate seasickness.

Aspirin: Same uses as acetaminophen but *does* work as an anti-inflammatory. Can be used to "cauterize" exposed tooth pulp. Not to be given to children. Many people are allergic to aspirin.

Decongestant spray (e.g., Afrin): for relief of nasal decongestion that accompanies cold and allergies. May be useful to help stop nosebleed. May be useful to relieve sinus "squeeze" from diving.

Diarrhea medication (e.g., Imodium, Diarrest): For use in the control of diarrhea.

Electrolytes (tablets or solution): For use in replacing electrolytes lost due to prolonged diarrhea, sweating, etc. Can be used as an adjunct in preventing heat exhaustion and muscle cramps due to excessive sweating.

Fungus treatment cream (e.g., Tinactin): For treatment of superficial skin fungi such as ringworm, jock itch, and athlete's foot.

Hydrocortisone cream: For relief of pain and itching of nematocyst stings, poison ivy, poison oak, insect bites, and other allergic skin reactions. May help dry up oozing rash of allergic skin reactions.

Ibuprofen (e.g. Advil): For symptomatic relief of pain associated with headache, colds, flu, frostbite, toothache, arthritis, burns, and menstrual cramps. For pain of inflammation associated with muscle and joint injury and overuse.

Meclizine (e.g., Antivert): For seasickness.

Pepto-bismol: For use in the control of diarrhea, nausea and upset stomach. May help prevent "traveler's diarrhea." Not to be taken by the aspirin-allergic.

Triple antibiotic ointment: Contains ingredients for the prevention of infection in minor wounds, works as a lubricant, some relief for itching.

PRESCRIPTION DRUGS THAT MAY BE HELPFUL ADDITIONS TO YOUR BACKCOUNTRY KIT

NOTE: The following list contains drugs that people often carry into remote environs. This list is descriptive rather than prescriptive. Consult a physician before choosing to carry or using any prescription medication (ask about druginteractions). Carry written instructions concerning indications for use, doses, and contraindications. Know if you are allergic to any drugs before taking them. Pregnant women and children should use no drugs without a physician's advice.

Analgesics (Painkillers)

Percoset For severe pain. Narcotic. One tablet/4-8 hours.

Tylenol #3 For moderate to severe pain. Also good for diarrhea and coughs. Contains codeine, a narcotic. One or 2 tablets every 4-6 hours.

Vicodin For moderate to severe pain. One or 2 tablets/4-6 hours.

Antibiotics

Cephalexin (Keflex) For skin, bone, pneumonia and urinary tract infections. BEWARE if penicillin allergy exists. 250-500mg/6 hours.

Ciprofloxacin (Cipro) Best for infectious diarrheas. 500mg/12 hours. OK for bone and urinary tract infections. NOT FOR CHILDREN.

Erythromycin For sinus, pulmonary, ear, eye, respiratory and soft tissue infections. OK if penicillin allergy exists. 250-500mg/6 hours. Take with food.

Trimethoprim/sulfa-methaoxazole (Septra or Bactrim) For marine wounds, urinary tract, kidney, ear, sinus and some respiratory infections. OK substitute for ciprofloxacin for diarrheas. AVOID if sulfa allergy present.

Anti-diarrheal

Lomotil For severe diarrhea. Two tablets with each loose stool up to 8 tablets/day.

Anti-emetic (for vomiting and seasickness)
Phenergan For severe nausea and vomiting. One 25mg suppository every 4 hours as needed.

Anaphylaxis
Epinephrine (Ana-Kit or Ana-Guard or Epi-Pen) For severe allergic reactions, inject the pre-measured dose of 0.3cc. (Will provide emergency relief of systemic reaction; patient may also need an antihistamine, such as Benadryl.)

Anti-vertigo (for seasickness)
Scopolamine (Transderm-Scop) For motion sickness. Keep out of eyes. Put one patch behind ear 4-5 hours before needed. Strong side-effects possible.

SAFE AND EFFECTIVE ADMINISTRATION OF MEDICATIONS AWAY FROM HOME

Kris Lishner, DNS, RN and Karen Busch, PhD, RN
Intercollegiate Center for Nursing Education

Approximately 40 million children are reported by the National Council of Patient Information and Education (1989) as using prescribed and over-the-counter medications in any two week period. Very little information is available about how these medications are administered and the problems encountered in that process. This study examined the administration of medications and drug misuse in children's camps.

A survey instrument mailed to a sample of 100 "health care managers" of day and resident camps nationwide yielded a 53% response rate. Camp enrollment ranged from 210 to 5000 with a mean of 995 campers per summer. Registered nurses were reported to be responsible for medication administration in 47% of the camps. Only 27% of the group who were not RN's reported having taken any courses or in-service training focused on providing health care at camp. Over-the-counter medications were given without a physician's order in 68.6% of all the camps. Mislabeled or inadequately labeled medications brought from home also were cited as problematic.

Findings disclosed both registered nurses and other staff frequently give a wide range of potent prescribed and over-the-counter medications, including allergy, cold, and gastrointestinal preparations, mild analgesics, and topical ointments. Asthma medications including inhalers, and other inhalation treatments were fourth in a rank ordering of frequently given medications. Ritalin was ranked fifth. Also mentioned were AZT, prednisone, seizure medications, and several antidepressant medications.

Perceptions of the registered nurses and the group composed of other camp staff were compared using the Mann Whitney U statistic. Significant differences were identified between the groups with registered nurses reporting more availability of resources to learn about medications given in camp and less knowledge on the part of campers about their medications. Registered nurse and non-registered nurse groups differed in perceptions about misuse of medications and other drugs. Registered nurses believed campers take more medications than they need, use medications to solve their problems, and that both campers and staff misuse prescription medications.

The findings of this study suggest practice implications for all nurses involved in child health care. Nurses must take an active role in preparing parents and children for managing medications in camp and other settings outside the home, Nurses are in a position to teach parents to evaluate medication administration policies and procedures, including assessment of staff qualifications. Camp staff need clearly written instructions about medicating individual children, including specific information about untoward effects, missed doses, and time schedules. Nurses should consider developing appropriate training for non-health care staff who are likely to continue dispensing medications in the majority of camp settings. Findings of this study also suggest that practices and problems associated with medication administration in other settings, including schools and day care centers, warrant much closer scrutiny. *(Editor's note: This research abstract was prepared by the authors of the study. If you would like more information, contact Kris Lishner at the Intercollegiate Center for Nursing Education, 2917 W. Fort George Wright Drive, Spokane, Washington 99204-5291.)*

WILDERNESS RISK MANAGERS INCIDENT REPORTING PROJECT

The Wilderness Risk Managers Committee is actively promoting the collection and sharing of data among outdoor programs. These data, over time, will be important to assess the rates and trends of occurrence of illness, injury and near misses in outdoor programs; to use the data as predictors and aids in prevention; to inform both the users and providers; and to facilitate planning for risk management. The information gathered will be analyzed and the results communicated to the industry. Program and participant confidentiality will be maintained.

The Wilderness Medicine Newsletter is pleased to take part in this effort by publishing both the data collection guidelines and a copy of the data collection instrument, which readers may freely copy and use.

Wilderness Risk Managers Committee Incident Reporting Project Instruction Sheet
This report was designed with the intent that it be useful for program records and incident documentation as well as the incident data gathering needs of this project. The form itself can be used to record both pertinent incident data and essential patient information. As a reminder, statements of witnesses are recommended information for a program to obtain in the event of an incident, but are not necessary to submit to this database.

Reports for each incident should be submitted to:
Association for Experiential Education
Wilderness Risk Managers Incident Report
2885 Aurora Ave. #28
Boulder CO 80303
(303) 440-8844 - (303) 440-9571 (fax)

Incident Report Instructions
Accurate and complete reports are essential to the strength of this database. The following instructions are provided for completing the Incident Report Form. Questions about completing the incident report should be directed to Tod Schimelpfenig at NOLS (307) 332-1256 or Jed Williamson (603) 862-4557.

A reportable injury or illness meets one or more of the following criteria:
- requires more than simple first aid such as a bandaid
- requires more than cursory staff attention
- requires follow-up care by staff in the field
- requires use of prescription medications
- interferes with participants participation
- is evacuated
- is a lost day case

Program/Course name and address
The name of the program. It will be used to confirm unclear data and will be kept confidential.

Program/Course type
This should be a brief description of the type of program, (e.g. outdoor adventure, therapeutic, adjudicated youth, etc.).

Name
The name of the person involved in the incident. This is included for completeness of the program's records. The name can be omitted or covered on forms submitted to the WRMC.

Age, Gender, and Staff or Participant, Incident date, Time
Self-explanatory.

Day of course incident occurred
The number of days the participant was in the field prior to this incident.

Program/Course area
This should be a geographical description of the program area (e.g. Wyoming, Bighorn Mountains, Mt. Baldy, or Vermont, Green Mountains, Long Trail).

The weather at incident time
Air temperature, wind speed, precipitation amount and type, visibility.

Type of Incident
An incident may result in injury, illness, motivation/behavioral outcome or a near miss. Check each applicable category. Injury includes damage to property (e.g. van, kayak).

Lost day cases
A lost day case occurs if a participant missed one or more days of activity beginning with the day following the incident, or if it causes loss of more than half of the day of the incident for morning mishaps.

Near miss incidents
A "close call."
A potentially dangerous situation where safety was compromised but that did not result in reportable injury.
An unplanned and unforeseen event. This rules out situations such as routine top-rope falls, failure to roll a kayak for a beginning student, or a fall on the trail with no injury.
A situation where those involved express relief when the incident ends without harm.

Motivation or behavioral incident
Examples would be unwillingness to participate, running away, alcohol or drug use, assaultive behavior, suicidal ideation, or an emotional or psychological situation that compromises the student's ability to participate in the program.

Evacuations
Evacuations are incidents in which the person leaves the field as a result of the incident. There are several levels of definition which aid in defining the seriousness of the incident:
participants who leave the field
participants who seek medical care
the type of evacuation (assisted by litter, helicopter, etc. or the patient was able to walk out unassisted)
if hospitalization was required
if the participant returns to field

Property damage
This is included to make the program's records complete for insurance purposes. Circle if property, equipment or vehicle damage occurred.

Type of injury
All the applicable categories should be checked. Please specify the injury if the "other" category is checked.

Anatomical location of injury
All the applicable categories should be checked.

Type of illness
All the applicable categories should be checked.

Type of illness
All the applicable categories should be checked. Please specify the illness if the "other" category is checked.

Activity at incident
The applicable categories should be checked describing the program activity the person was engaged in at time of incident.

Immediate cause of incident
This is a list of common incident causes in outdoor programming. Prioritize the applicable categories 1, 2, 3, etc.

Narrative
Describe the incident. What, how, and when it happened, any medical treatment, the final medical outcome or diagnosis.

Analysis
Include any observations, recommendations or suggestions regarding prevention.

Patient Report
This section is included to make the program's records on the incident complete and is designed to serve as both a field report form or "run sheet", a record of medical assessment and treatment, and corresponds to the Field Report Form carried in many first aid kits.

LESSONS FROM COLD-WEATHER RELATED ACCIDENTS

(Editor's note: Bill Aughton, long-time SOLO Wilderness Medicine Instructor, climbing guide, mountain rescue specialist, entrepreneur, and all-around decent fellow gave a talk at the Wilderness Risk Managers Conference about three preventable deaths in early 1994. As the Search and Rescue Coordinator for the Appalachian Mountain Club at Pinkham Notch, Bill sees a lot of cold-related accidents. The three deaths this past winter have encouraged Bill to be especially mindful of educating winter enthusiasts about the risks inherent in the season. Here is his summary of the key points.)

1. Extreme weather (cold below zero F., wind above 50 mph, heavy snowfall greater than 1" per hour, and/or heavy rainfall greater than 1/2" per hour) exists frequently below 8,000 feet. Such weather can be deadly because it is perceived to be less of a problem at lower elevations.

2. Weather forecasts in this day and age are reasonably accurate, but occasionally can be expected to be more (or less) severe than predicted. All weather predictions need to be tempered by what a team observes to be happening and what they feel on their bodies. Don't keep traveling in the face of worsening conditions just because the forecast was good.

3. To turn back or not to turn back was the fatal question in these accidental deaths. To leave the valley with the idea of turning back as a prominent part of the hike/climb plan is the key. Such decisions might be based on weather, physical condition of team members or equipment suitability or failure. *"I got to be my age by turning back a lot of times."* - Brad Washburn

4. The three fatalities of January - February of 1994 on Mount Washington were all well-dressed for a winter hike/climb including double boots, Goretex shells, pile layers and synthetic underwear. It was not enough for the conditions that:
   a. were to be expected in this area, or
   b. they found themselves in.

The conclusion is that excellent modern clothing does not work magic. The clothing scale still needs to be geared up to accommodate the possible conditions that may be encountered.

5. Surviving means shelter for victims and helpers. On big mountains, above treeline, there often exists the option of digging into glaciers and bergschrunds. This is regularly not an option above treeline on low mountains, where snow is mostly ice and screaming winds denude the snow pack to its rocky base.

The solution in most cases it to get below treeline, by splinting, packing, protecting, and dragging the victim. Clearly these actions can contradict one another. However, below treeline there is at least a chance; we have seen with the recent fatalities, that above treeline, on rocky summits, in extreme conditions, that the chances of survival are virtually nil.

6. We have learned that hypothermia is very much a malady of wet cold - above zero degree F conditions. This still holds true. However, in dry, biting cold, compounded by severe wind chill, and inadequately dressed, but totally dry outdoors person, will exhibit the classic signs of hypothermic deterioration. This deterioration has perhaps a more insidious onset due to the numbing effect of the dry cold, with its accompanying mental retardation.

"Wet = you feel cold before you are cold."
"Dry = you are cold before you feel cold."

INJURY AND ILLNESS IN THE WILDERNESS
by Ken Thompson

The increase in personal injury litigation that raised the ire, and the consciousness, of professional outdoor folks in the mid-eighties is bringing substantive progress in the area of risk management for the nineties. Specifically, reputable schools, camps, and operators are focusing more attention on the nature, causes, and prevention of outdoor injuries and illnesses. We are acknowledging that safety cannot be guaranteed and that accidents can happen; but that, through the thoughtful management of people and equipment we can reduce injuries in outdoor programs.

At both last year's ACA conference on risk management in Richmond and last month's Wilderness Risk Managers Conference held at the new NOLS Pacific Northwest branch north of Seattle, speakers placed great emphasis on data collection as the place for programs to begin. We're providing some help along those lines elsewhere in this issue of the WMN. Below, you can learn from some of the data of others (This, by the way, is just a smattering of what is out there, but it has relevance.):

Some Insurance Company Statistics

1993 Claims Ranked by Frequency of Occurrence (Markel Rhulen Underwriter, the largest insurer of ACA camps)
1. Bruises, contusions, abrasions
2. Fractured forearm
3. Ear infection
4. Sprained ankle
5. Head laceration
6. Sore throat
7. Lower body lacerations
8. Upper body lacerations
9. Sprained wrist
10. Conjunctivitis

1993 Claims Ranked by Frequency of Occurrence (American Income Life Insurance, Total Claims = 4832)

1. Sprains, strains (685)
2. Contusions (585)
3. Lacerations (420)
4. Ligament and bone injury(411)
5. Strep throat (300)
6. Upper respiratory infection (240)
7. Otitis (218)
8. Head injury (189)
9. Flu symptoms (187)
10. Insect bites (181)

Rank Listing of Paid Claims by Context in Which They Occurred (Markel Rhulen Underwriters, 1993)

1. Sickness
2. Trip and Fall
3. Soccer
4. General sports
5. Basketball
6. Playground
7. Canoeing/rafting/sailing
8. Horseback riding
9. Swimming
10. Dining hall

Ranked Listing of Claimed Injuries by Ways in Which They Were Sustained (American Income Life Ins., 1993)

1. General trip, fall (343)
2. Basketball (340)
3. Recreation, games (252)
4. Volleyball (212)
5. Swimming, diving (200)
6. Hiking (190)
7. Insects (181)
8. Falling down stairs (180)
9. Falling out of bed (165)
10. Getting hit by object (156)

Mountaineering Accidents

Jed Williamson, who for over 20 years has compiled accident statistics related to mountaineering, names two errors in judgment as the greatest contributing factors to problems in the outdoors: the desire to please others and sticking to a schedule. Two of the most striking examples of those contributing factors working together occurred in 1986 when students and leaders from the Oregon Episcopal school died in an accident on Mount Hood, and also in 1986, when the Challenger space shuttle exploded during liftoff killing all of the crew including Christa McAuliffe, a New Hampshire public school teacher.

Jed's research has been instrumental (he'd like it to be more instrumental, so tell all your friends) in demonstrating that mountaineering, when it's done by people who know what they're doing, does not deserve the daredevil reputation it has been assigned by the media. Changing public perception through education about the real, as opposed to the perceived, risk of outdoor adventure will make for better informed participants and more reasonable expectations among all parties involved.

Here are some mountaineering related statistics Jed has assembled:

Average fatalities per year for the last ten years in North American mountaineering = 28

Estimated active climbers = 250,000 (this is probably high)

About two-thirds of all accidents are the result of falls

Twenty-five percent of all accidents are caused by inadequate protection

About two-thirds of all accidents happen to inexperienced climbers

The 1994 edition of Jed's Accidents in North American Mountaineering has just been published. See if you can get your hands on a copy.

BARK SCORPION ANTIVENIN

Relatively few bugs that are really toxic to humans exist in the United States. And, most of those are usually fatal only to the very young and the very old and infirm. Among them is Centruroides sculpturatus, or the bark scorpion. Although no FDA approved drug is available for treating the bark scorpion sting, an antivenin has been available, and in use, for the past nine years.

Marilyn Bloom, of Arizona State University's Antivenin Production Laboratory, makes and distributes the western hemisphere's supply of sculpturatus antivenin in her cluttered office. The serum, derived from venom and goat's blood, is used in hospitals throughout Arizona and was given to 106 people in 1993.

"It works wonderfully," said Dr. Andrea Stone, an emergency-room physician at Desert Samaritan Medical Center, where the antivenin is used about a half-dozen times a year. It quiets symptoms in 10 to 15 minutes and has been used on children only several months old with great results.

Yet, Bloom's antivenin is available only in Arizona because it has not been approved by the U.S. FDA. The ASU lab gives the antivenin away and has decided that seeking FDA approval just isn't worth the effort and expense. Technically the drug is not supposed to leave the state of Arizona, but, with a doctor's orders, has been airlifted to emergency rooms in other parts of the country.

source: Albuquerque Journal, Sunday August 21, 1994.

UPCOMING CONFERENCES

5th Annual Winter Wilderness Medicine Conference
March 6 - 11, 1995
Keystone Resort, Keystone, Colorado

2nd World Congress on Wilderness Medicine
August 6 - 12, 1995
The Ritz-Carlton, Aspen, Colorado

6th Annual Winter Wilderness Medicine Conference
February 10 - 16, 1996
Big Sky Resort, Big Sky Montana

11th Annual WMS Scientific Conference
August 3 - 9, 1996
The Lodge at Kananaskis, Kananaskis, Alberta, Canada

For more information contact: The Wilderness Medical Society, P.O. Box 2463, Indianapolis, IN 46206-2463; telephone: (317) 631-1745; fax (317) 269-8150.

WILDERNESS FIRST AID AND MEDICAL TRAINING OPTIONS

WILDERNESS MEDICINE INSTITUTE

P.O. Box 9, Pitkin, Colorado, 81241
Telephone: (303) 641-3572, Mon-Thurs 9 a.m.-1 p.m.

Wilderness EMT
January 2 - 27 Pitkin, CO, $1395
May 22 - June 16 Pitkin, CO, $1395

Wilderness First Responder
October 17 - 28 San Juan Island, Friday Harbor, WA
November 1 - 11 CWC Jackson, WY, $400
January 3 - 13 Calwood Outdoor Rec Ctr., Jamestown, CO
March 4 - 12 Oklahoma State, Stillwater, OK 405-744-5581
March 17 - 26 Sierra Wilderness Seminars, Arcada, CA 707-822-8066

Wilderness First Aid
December 2 - 4 Keystone, CO
January 14 - 15 Taos, NM, deluxe version at the historic Mabel Dodge Luhan house, lodging and meals included, options for additional nights at reduced prices, $250
Jan 28 - 29 Albuquerque, NM

SOLO

RFD 1, Box 163, Tasker Hill, Conway, New Hampshire 03818
Telephone: (603) 447-6711

Advanced Leadership and Emergency Care (ALEC) (EMT + Wilderness Leadership Skills)
A combination of NREMT and WEMT certifications combined with training in leadership skills, survival and rescue for the professional outdoor leader.

October 10 - November 11 Conway, NH, $1,650
January 30 - March 3 Conway, NH, $1,650

Wilderness EMT
November 13 - 23 Part I, and
November 28 - December 9 Part II, SOLO
January 2 - 27 SOLO
January 2 - 27 Nantahalla, NC, (704-488-6737)

Wilderness First Responder
October 24 - November 4 AMC, NH, (603-466-2727)
November 11 - 20 College of DuPage, IL (708-858-2800)
December 3 - 13 Hulbert, VT, (802-333-9840)
January 2 - 12 Unity College, ME, (207-948-3131)
January 14 - 24 Hulbert, VT, (802-333-9840)
January TBA Cornell, NY, (607-255-6415)
January TBA AMC, NH
February 20 - March 3 Nantahalla, NC

Wilderness/Rural EMT & First Responder Module--Upgrade
October 17 - 21 Conway, NH, $385
December 12 - 16 Conway, NH

Wilderness First Aid/WFR Recertification
October 14 - 16 with CPR Dartmouth, NH, (603-646-2428)
November 4 - 6 with CPR DuPage, IL, (708-858-2800)
November 12 - 13 AMC, NH
November 18 - 20 with CPR, Hulbert, VT
December 10 - 11 SOLO
January 21 - 22 SOLO

WILDERNESS MEDICAL ASSOCIATES

Bryant Pond, Maine 04219
800-742-2931, 24 hr. messages

October 1 - 9 Wilderness First Responder, Baltimore, MD
October 4 - 9 WFR/WEMT Review, San Diego, CA
October 8 - 9 WFR/WEMT Review, Newry, ME
October 13 - 21 Wilderness First Responder, Newry, ME
October 15 - 20 Wilderness EMT Upgrade, Lookout Mtn., TN
October 15 - 22 Wilderness First Responder, Redmond, OR
October 22 - 23 WFR/WEMT Review, Joshua Tree, CA
October 23 - 29 Wilderness EMT Upgrade, Newry, ME
October 24 - Nov 1 Wilderness First Responder, Joshua Tree, CA
November 4 - 6 WFR/WEMT Review, Lake Placid, NY
November 6 - 14 Wilderness First Responder, Pinedale, WY
November 10 - 13 Wilderness Advanced First Aid, Denver, CO
November 15 - 23 Wilderness First Responder, Knoxville, TN
December 1 - 8 Wilderness First Responder, Salmon, ID

SOLO MARINE MEDICINE INSTITUTE

c/o N.A.S., HC 60, Box 101, Medomak, Maine
(207) 529-5880, (207) 529-5233 - fax

Headquartered on the rock-bound Maine coast, the SOLO Marine Medicine Institute offers the following courses at their coastal base and at off-site locations: "Medicine for Mariners", a 16 hour program, based on data compiled by the U.S. Coast Guard, dealing with medical issues the mariner is most likely to encounter.

"Mariner First Responder", an 80 hour course exceeding the Coast Guard's requirements for mariners seeking licensing.

 Published 6 times a year. Subscriptions $20 per year, $37 for 2 years. Wilderness Medicine Newsletter, P.O. Box 9, Pitkin, CO 81241.

MEDIATE CAUSE (prioritize major applicable categories 1, 2, 3, etc.)

___Altitude
___Avalanche
___Cold Exposure
___Carelessness

___Dark/poor visibility
___Dehydration
___Inadequate Equipment
___Exceeded ability
___Exhaustion
___Fall/Slip on trail;
___Fall on snow
___Fall on rock
___Falling rock
___Failure to follow instructions
___Falling tree/branch

___Immersion/submersion
___Inexperience/poor judgment
___Intoxication (alcohol/drugs)
___Inadequate Instruction

___Improper Screening
___Inadequate Supervision
___Lightning
___Hazardous animal/insect (specify)_____
___Misbehavior
___Overuse injury
___Poor camp/personal hygiene
___Preexist. medical condition
___Plant poisoning/toxicity
___Other(explain)_____

___Poor Technique
___Psychological
___Sunburn
___Technical System Failed
___Unfit
___Unknown
___Weather

___Missing/Lost

NARRATIVE: Describe the incident. What, how and when it happened, any medical treatment, and the final medical outcome or diagnosis.

ANALYSIS: Include any observations, recommendations or suggestions regarding prevention.

Report prepared by _____ Position: _____ Date: _____

Signature _____ Date: _____

Patient Report:

Name _____

Age_____ Sex_____

Chief Complaint(PQRST)_____

Date & Time of Incident_____

History of Present Illness/MOI_____

Vital Signs (quantity and quality)

Time	LOC Pupils	Pulse	RR	BP	T^0	CRT	SCTM	

Physical Findings/Appearance_____

Past History_____

Allergies_____

Medications_____

Medications Administered	Amount	Date/Time

Emergency Care Rendered/Changes in Patient's Condition_____

Details of Evac Plan(timetable, backup, pickup point)_____

WILDERNESS RISK MANAGERS INCIDENT REPORT

Program/Course Name _____

Program Type _____

Staff_____ # Participants_____ # Program Days_____

Name _____(circle) Male/Female Staff/Student Age ____

Incident Date _____ Time ___:___ AM/PM Day of course incident occurred_____

Geographical Location of Incident _____

WEATHER at Time of Incident:
Temp (°F) _____ Precipitation (circle) Rain or Snow or None
Wind (mph) _____ Visibility_____(ft or miles)
Surface Condition (circle) wet dry snow ice trail rock uneven flat sloped

TYPE OF INCIDENT: Check each applicable category:

Injury_____ Illness_____ Motivation/Behavor_____ Near Miss _____

Is this a Lost-Day case? ___NO ___YES If Yes, # of Days Lost _____

Did the victim leave the field? ___NO ___YES If Yes, on what date _____

Evacuation method (circle) walk unassisted, litter, vehicle, helicopter, other_____

Did the victim visit a medical facility? ___NO ___YES If Yes, length of stay in days___

Did the victim return to the course? ___NO ___YES If Yes, on what date _____

Was there damage to (circle) vehicle, equipment or property?
_____

TYPE OF INJURY (check all that apply)

____bruise, contusion or similiar soft-tissue trauma
____ligament sprain
____muscle strain
____frostbite
____fracture
____dislocation
____head injury without loss of consciousness
____head injury with loss of consciousness
____near drowning or other submersion problem
____other _____
____immersion foot
____tendinitis
____eye injury
____dental or tooth-related
____burn
____blister(s)
____laceration
____skin abrasions
____sunburn

ANATOMICAL LOCATION OF INJURY

____Head
____Face
____Eye
____Neck
____Shoulder
____Upper Arm
____Elbow
____Forearm
____Wrist
____Hand/Fingers
____Chest
____Abdomen
____Upper Back
____Lower back
____Pelvis
____Hip
____Thigh
____Knee
____Lower Leg
____Foot
____Ankle
____Toe

TYPE OF ILLNESS (check all that apply)

____allergic reaction
  ____mild or localized
  ____severe, generalized or anaphylaxis
____altitude illness
  ____acute mountain sickness
  ____pulmonary edema
  ____cerebral edema
____hypothermia (specify core temperature if known __°F/__°C
____heat illness (specify core temperature if known __°F/__°C
  ____heat exhaustion
  ____heat cramps
  ____heat stroke
____chest pain or cardiac condition
____upper respiratory illness (runny nose, congestion, "cold")
____upper respiratory illness (other)_____
____abdominal or other gastrointestinal problem without diarrhea
____diarrhea
____apparent food-related illness
____nonspecific fever illness
____urinary tract infection
____skin infection
____eye infection
____other _____

PROGRAM ACTIVITY (activity at the time of the incident)

____Backpacking
____Camp
____Canoe
____Caving
____Cooking
____Cycle
____Dog sledding
____Glacier travel
____Hike no pack
____Horse
____InitiativeGame
____Kayak
____Mountaineering
____Portage
____Rafting
____River crossing
____Rappel
____Other(explain)_____
____Ropes course
____Rock climbing
____Run
____Sail
____Service
____Ski w pack
____Ski w light pack
____Sea Kayak
____Snow Climb
____Snowshoeing
____Solo
____Sportyak
____Swim/Dip
____Unaccmp. Travel
____Urban activity
____Vehicle/Van

Wilderness Medicine Newsletter

FOR THE RECOGNITION, TREATMENT, AND PREVENTION OF WILDERNESS EMERGENCIES

NOVEMBER/DECEMBER 1994 ISSN-1059-6518 VOLUME 5, NUMBER 6

PRINCIPLES OF WILDERNESS EMS

Dear Subscribers:

The Wilderness Medicine Newsletter is now under the management of SOLO in Conway, New Hampshire. Buck Tilton will continue to contribute articles; and I, Ken Thompson, will continue to be involved as editor for a time. The change in management marks one more stage in the evolution of the newsletter. Expect to see a few changes over the coming months, the first of which is this:

All correspondence, including your resubscription checks should now be sent to the following address: SOLO, P. O. Box 3150, Conway, NH 03818. Direct any phone inquiries to Holly Weber at (603) 447-6711.

We at the Wilderness Medicine Newsletter, SOLO, and the Wilderness Medicine Institute wish all of you a joyous and peaceful holiday.

Caver in a Crevice

Keith Conover, M.D.

In June 1993, some 50 students and 30 instructors were engaged in a nine-day cave rescue class near Elkins, WV. The course was sponsored by the Eastern Region of the National Cave Rescue Commission (NCRC). This particular class attracted 15 members of an Army Corps of Engineers' rescue team, which is stationed near Washington, DC, and works with the Secret Service.

The long days (8 a.m. to 10:30 p.m.) were filled with lectures, discussions, and various practical sessions. As students neared the end of the week, they looked forward to an all-day mock search-and-rescue, to be followed by a critique and wrap-up on Sunday morning.

Following the mock rescue, I brushed the cave mud off my electric lamp and then plugged it back into its charger in the back of my station wagon. When a few students made fun of my meticulousness, I said, in a somewhat holier-than-thou tone, "You're not done with the rescue until your gear is back in order, you never know when there might be another rescue."

To make matters even more inviting for whatever power governs cave rescues, I decided to take a shower on the way back to our base. Of course, as soon as I got out of the shower, my radio said: "Keith, get over to base right away, we've got a real rescue."

An experienced caver was about a mile into a popular cave in Bath County, VA, known as Crossroads Cave. Initial word was that he fell and had a shoulder fracture or dislocation. We packed up the entire class and moved *en masse* to Crossroads, muddy coveralls and all.

Dinner was eaten en route: we descended like a cloud of locusts upon an unsuspecting country gas station/store and stripped it bare of food. After an hour's drive, we arrived to find that local EMTs had entered the cave and were with Earle Copp, the patient. The local EMS agency had set up a command post near the entrance.

We set up an Incident Command System command structure, modified for cave rescue. We established a rest area for personnel in a nearby church. (Remember, most of us had just finished a 12-hour mock cave rescue.) We started stringing field phone wire into the cave.

As an experienced search-and-rescue manager and as Region Medical Coordinator, I was assigned to above-ground medical command and to serve as Plans Section Chief. Under other circumstances, I'd have probably been sent underground, but Sam Chewning, an orthopedic surgeon from Charlotte, NC, was one of the students. He had been an EMT prior to medical school, and was an experienced caver. He and Jack

Grandey, a Wilderness and EMT-trained paramedic, along with three other cave rescue personnel, became the first-in NCRC team.

Mr. Copp was preparing to ascend a rope, in order to go on deeper into the cave, and he rigged ascenders to both seat and foot. He started up the rope, but his seat ascender came loose when he first put weight on it. He fell backward, pivoting on his foot ascender, and the back of his left shoulder struck a rock directly. He was aware of no other injury, and didn't hit his head significantly or lose consciousness. He said that as long as he didn't move his shoulder, it didn't hurt too much, and that he thought he could move through the cave with assistance.

The first NCRC team found him far back in a long, narrow crevice, about 100 feet high and only a foot or so wide. Traveling through this crevice passage requires cavers to chimney up and down to find a place wide enough to get through. The paramedic and doctor sent a note out to the surface with details of his injuries, also with comment: "This is not going to be easy!"

Paramedic Grandey used his Wilderness EMT training, with Dr. Chewning's help, to evaluate Mr. Copp and "clear the cervical spine," thus permitting Mr. Copp to be rescued without a backboard.

Wilderness EMS Principle #1: Clear the Cervical Spine When Appropriate

Using standard "street" EMS protocols for the area, Mr. Copp would have to be carried out on a backboard. The NCRC team instead used standard cave rescue medical protocols, and cleared the cervical spine despite the significant mechanism of injury. Clearing the cervical spine in this particular case turned what could have been a multi-day rescue operation (with likelihood of significant morbidity to Mr. Copp) into an operation that lasted merely 13 hours.

Clinically clearing the C-spine is not taken lightly, but when the cost of *not* clearing it is high, as in wilderness rescues, it may be appropriate.[1,2] The team's paramedic learned when and how to clear the cervical spine in a class based on the Wilderness EMT Curriculum of the Appalachian Search and Rescue Conference-Center for Emergency Medicine of Western Pennsylvania; most other wilderness EMT and similar courses teach a similar protocol.

The local EMTs had splinted the arm well. Because of the narrowness of the crevice and thus difficult access to Mr. Copp, and because he was relatively comfortable in the splint, the NCRC team elected to proceed with the evacuation without a complete exam.

They gave Mr. Copp 60 mg of IM ketorolac tromethamine (Toradol), which provided protection against the unavoidable pain caused by moving through the crevice. Ketorolac has the advantage over narcotics in that is does not cause significant sedation, and the patient could thus assist in the rescue without difficulty. There is some concern about an increased bleeding tendency with it, but this is mostly theoretical. A more reasonable concern is possible renal failure, especially if the patient is dehydrated or in shock. However, one or two doses of ketorolac are not likely to induce renal failure. This patient was kept hydrated and fed throughout the evacuation.

Wilderness EMS Principle #2: "Street" Drugs Are Not Enough

Wilderness patients often need medications that are rarely if ever used in the routine prehospital environment. Ketorolac is one example; antibiotics for open fractures or infections, and sedation for difficult extrications, are other examples.

Wilderness EMS Principle #3: Oral Fluids and Nutrition are Almost Always Indicated

The principle for "street" prehospital care is: Never give anything by mouth. There are several good reasons for this. In particular, the patient is unlikely to benefit from oral intake during a short transport time, a full stomach should be avoided in case the patient will require immediate surgery, and prehospital personnel are not trained to recognize an ileus.

However, in the wilderness, I.V. fluids may be scarce (mostly because they are heavy to carry), and with long evacuation times a potential surgery many hours in the future is not a good reason to withhold oral intake. Also, I.V. fluids can only provide a fraction of the caloric and other food needs of the body.

In general, wilderness patients are given oral fluids and food as long as: 1) they are alert enough to drink and eat without aspirating; 2) there is no expectation of urgent general anesthesia in the next 3 to 4 hours; and 3) the patient is able to tolerate oral intake (no ileus or other cause of nausea).

Confined-Space Rescue

The rescue personnel rigged hauling systems, rappel lines, and one Tyrolean traverse (high-line) through the crevice. Then they began to use this rigging, in combination with Mr. Copp's own seat harness, to start moving him through the crevice. It was difficult, but much easier than if they had to use a litter.

The mass of NCRC personnel had arrived and started operations about 9 p.m. I prepared the medical, evacuation, and shift plans, arranged for additional resources, and kept in touch with the personnel with Mr. Copp via the field phone once it reached them. At about 4 a.m., Chuck Hemple, the NCRC Incident Commander, told me he wanted to rotate me into the cave in a few hours to replace Dr. Chewning and Paramedic Grandey.

Cave rescue is very tiring, and rescue personnel have to be rotated to prevent injuries from fatigue and hypothermia. I went to sleep at about 4:30 a.m., and was awakened at 6 a.m.

when someone shoved a radio in my hand. (The above-ground radio was tied into the field phone system by a special phone patch.)

Mr. Copp was about halfway to the entrance. Dr. Chewning had already been rotated out of the cave, but Paramedic Grandey was still with Mr. Copp. They had finally gotten Mr. Copp out of the narrow part of the crevice, but he was tiring and having increasing pain in the shoulder. They were trying to load him into a Stokes litter, but it was causing him significant pain. I could hear his screams and moans in the background. I told paramedics Grandey, Joy Hackman, and Julia Smith, who were now with Mr. Copp, to give additional pain medication (more Toradol and a little morphine), and to try to continue in the litter.

Along with several other rescuers, I suited up in my wet, muddy cave gear. We threw appropriate medical kit modules into our cave packs and headed in. On the way in, we were estimating the time a litter evacuation would take. As we climbed and wormed our way toward Mr. Copp, the estimate went up and up: two hours, three hours, four...

When we reached Mr. Copp after about 45 minutes of strenuous caving, the team had just finished packaging him in the litter. We added our muscles to the exhausted team's, and succeeded in moving him about 100 meters to a small, relatively dry room, about 4 feet high but fairly wide. This was the first point at which we could reasonably perform a complete exam.

We carefully removed him from the litter and cut off his coveralls. He was heavily muscled, but after careful examination I convinced myself that his primary problem was an anterior shoulder dislocation, and that there were no other significant injuries.

Shoulder Dislocation and Hypnosis/Suggestion

With the help of A. Richard Fogle, a Wilderness EMT, and the other Wilderness paramedics present, who had been specifically trained to reduce anterior shoulder dislocations, I attempted reduction. In addition to the pain medication, we used guided imagery and a light hypnotic trance to help Mr. Copp relax.

First, we got the 20 or 30 rescuers in the general area to be completely quiet. (This was probably the most difficult part of the rescue.)

Then, I told Mr. Copp: "Think of something you like, such as being at the beach, or hiking in the mountains. ... Something different, better than caving." He replied, in a boisterous tone, "There's only one thing better than caving!"

"No, no, no! I want you to relax! Think about the beach."

"Okay, okay, if you insist."

Speaking in a slow, even cadence, and matching my breathing to Mr. Copp's, then slowing it down, I started: "Close your eyes. You're on the beach. You feel the beach; the sun is beating down on you. You feel the warm gritty sand below you; you hear the surf. There is the salty, fishy smell of the ocean. You are very comfortable and relaxed. The heat is penetrating deep into all your muscles. ..." As I was saying this, I was applying lateral and upward traction on the shoulder with countertraction provided by the Wilderness EMT. Mr. Copp closed his eyes, and did an excellent job of relaxing. With a small "chunk," the humeral head relocated and Mr. Copp reported his pain entirely gone. We used duct tape to patch up his coveralls, put a sling on his arm, and put a sweatshirt over the top of his coveralls and slinged arm. We then put a seat harness on him, attached belay lines to the front and back, and with the help of some fresh rescuers, helped him clamber out with assistance. Instead of the estimated four-plus hours in a litter, it only took an hour and a half with him able to walk and climb.

Wilderness EMS Principle #4: Reduce Dislocations in the Wilderness

The street EMS rule is "splint it as it lies"; the only exception is that EMTs are told to reduce dislocations if the distal pulse or distal sensation are absent, but they are not taught how to accomplish dislocation reduction. To prevent the morbidity and pain associated with prolonged dislocations, wilderness providers are generally taught how to reduce most common dislocations.

Wilderness EMS Principle #5: Psychology is (at Least) as Important as Pharmacology

Good general psychological management, guided imagination, and hypnosis are important tools for dealing with wilderness patients. This is especially true if you have no medications. In this case, a very light trance allowed the patient to relax enough to permit reduction of his shoulder dislocation without excess pain, medication or sedation. In this case, sedation would have prevented us from walking the patient out, the main reason for attempting a reduction.

We decided Mr. Copp needed X-rays to determine if there were any associated fractures, but we didn't think his injuries would require admission or surgery. This could be done at a small local hospital, rather than sending him to a trauma center further away. He'd already been examined in detail by an emergency physician and an orthopedic surgeon, and had his own orthopedic surgeon at home to follow up with. At the hospital, his X-rays showed a good reduction, and a small associated fracture that was also well-reduced.

Mr. Copp was released in time to get back to the operations base to thank us for the rescue before we left - a happy ending for a difficult rescue.

Wilderness EMS Modifications

Wilderness EMS takes from both wilderness medicine and "street" prehospital EMS. Basic EMS principles (e.g., "extending the hospital to the patient") are modified for the wilderness context. Wilderness EMS modifications are and should be based on position statements of organizations such as WMS, thoughtful adaptation of general medical practice, and critical review of the medical literature. Modifications should be selected based on the actual needs of wilderness patients and rescuers.

References

1. Conover K. EMTs should be able to clear the cervical spine in the wilderness [editorial]. *J. Wild Med 1992;3(4):339-343.*

2. Rural Affairs Committee NAEMSP. Clinical Guidelines for Delayed or Prolonged Transport. III. Spine Injury. *J. Prehosp Disast Med 1993;8(2):176-182.*

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UPDATES FROM THE EXPERTS

Beyond the ABC's, we do not find much about medicine that can be relied upon 100% of the time. We have protocols and principles to guide us in most situations, but the experts continue to debate some of the finer points. We want to keep you up-to-date on a couple of such debatable issues relevant for backcountry applications, so that you can make informed decisions for your personal and program kits.

Snake bite

The Journal of Wilderness Medicine recently posed the following scenario to four doctors:

"A rock climber receives a deep rattlesnake bite on the dorsum of the hand. What is your opinion regarding the following methods of management:

1. Make incisions across each fang bite.
2. Apply mouth suction.
3. Use a commercially available suction venom extractor.
4. Apply a venous-constricting tourniquet above the wrist.
5. Pack the arm in snow.
6. Immobilize the arm in a splint.
7. Hold the hand above the head during transport to a hospital.
8. Inject the antivenom intravenously.
9. Kill the snake for identification."

The doctors consulted included William Forgey of Merrillville, Indiana; Robert Norris of Stanford, California; James Blackman of Boise, Idaho; and Frank G. Walter of Tucson, Arizona. They agreed almost unanimously. You take the quiz first, answering "yes" or "no" to each of the questions, then, and only then, read on for the experts' responses and a summary of their thoughts on each.

1. No. You might damage underlying tissues, and there is no evidence that this will have any therapeutic benefit whatsoever. Above all else, "do no harm".

2. No. A) You cannot create a strong enough vacuum. B) Ever hear of universal precautions?

3. Yes. Applying the Sawyer Extractor was mentioned by everyone as being a reasonable approach, especially if applied within three minutes and left on for 30 to 60. Dr. Norris recommends carrying two Extractors in areas where Eastern and Western Diamondbacks are found--the fang spread of those snakes may be wider than the large (one inch) suction cup. The older kits that come with tiny yellow or green rubber suction cups, and which are still sold in outdoor shops everywhere, were dismissed as being entirely useless. (Editor's note: Try attaching one to each side of your neck--that and a little green eye shadow should get you into a Halloween party. Reduce, re-use, re-cycle.)

4. No. Constricting bands are advocated for Australian elapid bites, which tend not to swell, but not for North American crotalid bites, which may swell a great deal. Although there is some sparse evidence that a venous restricting band may slow the systemic spread of venom, the danger is that an unmonitored band applied in the field will restrict blood flow enough to cause greater tissue damage.

5. No. Cooling the site of the bite may actually drive venom deeper into tissues. (Editor's note: By the way, don't apply heat either, especially electric shocks!)

6. Yes. Immobilization probably helps and certainly does no harm, unless the splint is applied too tightly (see 4, above). And, try to keep the victim as calm as possible.

7. No. Elevating the affected extremity may hasten the spread of venom; lowering the venom may increase swelling. The recommended compromise is to keep the bite at or just below heart level.

8. No. Antivenom is heavy, expensive, and may cause anaphylaxis. Let them deal with that in the emergency room. Dr. Walter points out that in a 1988 report of bites in Southern California only 1 of 277 victims of rattlesnake bite died (an 80-year-old man who died of a heart attack in the hospital). (Editor's note: What you can do is use a marker to track the spread of edema around the bite. A line drawn at the furthest extent of the swelling every half-hour on the way to the hospital will help the attending physician to determine the virulence of the bite and, consequently, how much antivenom to administer.)

9. No. Live and let live. In the words of Dr. Norris, "treat the snakebite, not the snake."

(Source: Hultgren, Herbert N., M.D. ed. Journal of Wilderness Medicine, Volume 5, Number 2, 1994, pp. 216 - 221.)

Hypothermia Thermometers

Once again the Journal of Wilderness Medicine has asked a question of the experts, whose answers will help lay providers make choices in the field:

"On trips where there is a danger of hypothermia, should the trip physician carry a hypothermia thermometer which reads below the standard 94 degrees F of most thermometers?"

Because "hypothermia is an important differential diagnosis in wilderness ventures," Dr. Eric Weiss of Stanford, California recommends that physicians and trip leaders carry a low-reading thermometer. He points out that hypothermia can be confused with AMS, hypoglycemia, and carbon monoxide toxicity, among other ailments.

Dr. Bruce Paton of Denver, Colorado believes that a standard clinical thermometer reading only to 94 degrees F, combined with careful assessment of behavioral and other clinical signs may be all that is necessary for an accurate diagnosis. He also warns that finding an accurate measurement site may be difficult since the mouth is fairly unreliable and the added exposure required for a rectal reading is not usually practical.

Dr. Cameron Bangs recommends a low reading thermometer but also stresses the accurate reading of signs and symptoms. Dr. Bangs reminds us, "The earliest changes are decreased enthusiasm of the individual, who tends to be more withdrawn, apathetic, slower and falls away from the group. As the temperature drops, these symptoms progress to confusion, bewilderment and even to the point of making wrong decisions as to direction of travel and other important behavior."

(Source: Hultgren, Herbert N., M.D. Journal of Wilderness Medicine, Volume 5, Number 1, 1994, pages 115 - 116.)

COLD REALITY: WINTER HEALTH BY THE NUMBERS *by Buck Tilton*

Once, in the youthful spirit of adventure and immortality, I camped several days in winter when the temperature, I read later, stiffened mercury in thermometers at 100 degrees below zero F. Little comfort awaits the winter camper when it's *that* cold, but being outdoors in the frozen months remains a favorite pastime of mine for the solitude, silence, beauty, freedom, and refreshment of spirit they afford. And, it is possible to stay safe and warm, most of the time, whether skiing, snowshoeing, hiking or camping, by keeping a few guidelines in mind:

1) Let someone who cares about you, or has a deep sense of responsibility, know where you're going and when you'll be back. He or she can summon help if you don't return.

2) Travel with someone experienced with the outdoors in winter, or take your first trip with a training program . . . or, better yet, do both. Experience can be a cold and heartless teacher, a teacher best avoided when your health is at stake.

3) Talk with someone who knows the area you intend to visit about the conditions you might meet, and prepare adequately for the worst possible conditions. If the temperature dropped to 100 below only once in the last 100 years, expect it to drop that low while you're there.

4) Carry a first aid kit, and, if it contains specific medications, remember they might be deactivated by freezing. Consult your physician or pharmacist.

5) Choose a sleeping bag rated to preserve body heat at a temperature lower than you expect to encounter.

6) Remember that while sleeping, most of your body heat will be lost into the ground. Carry a thick, insulating sleeping pad, or, even better, carry two pads.

7) Wear boots designed for winter use. Stuffing extra socks into summer-weight boots reduces healthy circulation making your feet colder and offering frostbite a chance to sink its teeth in. When you're just standing around melting snow or cooking keep your feet warmer by standing on insulation. It makes a difference.

8) "Dress like an onion," advises Dr. Murray Hamlet of the U. S. Army Research Institute for Environmental Medicine. Your inner layer should be a material that wicks moisture away from your body (polypropylene, for example). Middle layers are for warmth, and they should be adequately large. No tight-fitting clothing when insulation is your goal. A final outer layer should repel wind and water while allowing body moisture to pass through (Goretex, for example). Peel off layers as you warm up to prevent wetness from sweat, and add them back on as you cool down. "Staying warm," says Dr. Hamlet, "means staying dry."

9) To help maintain dryness, pace yourself. Overexertion means over-sweating, and it burns up energy required for warmth.

10) Keep your head and neck well-insulated. Heat rises via the "chimney effect," making the top of your body the part where heat escapes most rapidly. Wearing a scarf ranks high as a healthy idea. Scarves can be pulled up over your mouth to pre-warm the cold air you're breathing.

11) Wear mittens, not gloves, to keep your hands warm.

12) Drink lots of water. Your internal thermoregulatory system is water-based. The water need not be warm and, in fact, cold water keeps you as warm as warm water once it gets inside. Do not wait until you feel thirst, but drink as an act of discipline at regular intervals. As an indicator, your urine should flow clear.

13) Eat lots of food. Food burns inside you to produce heat and energy . . . and both are needed for outdoor winter health. The foods burned most easily for maximum heat production

are simple carbohydrates (sugars) and complex carbohydrates (starches). Fats work for the long haul and are best eaten early in the day and late in the day.

14) Use extreme caution when cooking in tents or snow shelters. Carbon monoxide poisoning has taken the life of more than one winter traveler.

15) Practice survival skills appropriate to the area before you need them. Can you construct a snow cave or trench? Can you start a fire in the snow? Have you read Jack London's "To Start a Fire"?

16) Understand hypothermia, the loss of body core temperature. Dr. James Wilkerson, editor of *Medicine for Mountaineering* (The Mountaineers Books, Seattle, WA; $16.95 paperback), has nicknamed the first signs of hypothermia the "umbles": the patient mumbles, stumbles, fumbles and bumbles. The "umbles" indicate your mind's grip on reality is slipping through cold mental fingers. At the first suspicion of hypothermia, stop and rewarm by whatever means are available: eat, drink, add clothing, change into dry clothing, huddle with warm people, build a fire. Untreated, hypothermia often progresses from the mild "umbles," with a slight decrease in core temperature, to a severe problem, with a substantial decrease in core temperature, that may include unconsciousness, irregular and inadequate heartbeat, and death. (See box below)

The Administration of Medications

In the previous issue we printed an abstract of a study into the routine administration of medications in camp. The authors, Kris Lishner and Karen Busch, looked at who was administering medications, the types given, and the problems associated with administering medications recognized by those who do it. Their full article, "Safe Delivery of Medications to Children in Summer Camps", appeared in Pediatric Nursing, May-June 1994/Vol. 20/No.3. and is the source of this review. Their study comprised a number of non-profit camps including those run by the Boy Scouts, the YMCA, and other independent and church camps. Although the study focused on a somewhat younger age group than those people who ordinarily take extended wilderness trips, the findings are, nevertheless, pertinent for anyone responsible for the care of young folks in the outdoors. For example, a review of the literature revealed that, "the rate of adherence to prescribed medicine regimens among children averages only 54%", and that, "side effects can be expected in 10% to 15% of medicated children."

Estimates have about 40 million children in this country taking medication in any two week period (one of the studies the authors cite estimates that approximately one-half the children who come to camp bring medications). Lishner and Busch rank ordered by frequency the categories of medications that their study revealed were being taken most often: 1) Antihistamines, 2) Analgesics, 3) Antibiotics, 4) Bronchodilators, 5) GI medications, 6) Ritalin, 7.5) Decongestants, 7.5) Topical medications, 9) Cough medications, 10.5) Anti-depressants, 10.5) Throat lozenges/sprays, 12) Ear drops, 13) Anticonvulsants.

The three most prevalent problems associated with minors bringing medications from home follow:

1. Campers bring medications with incomplete information: medications are incorrectly or incompletely labeled; medications are expired or have no dosage instructions; and there is often no indication what the medication is intended for.

2. Anecdotal evidence exists that parents may independently decide to discontinue some medications, Ritalin, for example, while the child is at camp, without informing either the physician or the camp health staff.

STAGES OF HYPOTHERMIA

	Temperature (Approx.)	Signs
Mild	98.6-95F	Occasional shivering, goose bumps, subtle loss of judgment, loss of fine motor skills, e.g., it becomes difficult to zip up your parka and light your stove, etc.
Mod	95-90F	Violent shivering, difficulty walking and talking.
Severe	below 90F	Shivering stops, unable to walk, diminished responsiveness, may grow rigid and appear dead.

TREATMENT FOR HYPOTHERMIA

Mild	Shelter the patient from cold (wind, water, air) and remove wet clothing. Bundle in dry insulation, e.g., clothing, sleeping bags. Insulate from cold ground. Give warm, sweet liquids, if possible, or plain water. Give simple carbohydrates. Place near fire, or add warmth with body contact.
Mod	Same as mild with addition of heat packs or hot water bottles to palms of hands, soles of feet, groin, neck and armpits, if possible. Give liquids and food only if patient is fully alert. Add a radiation barrier, e.g., sheet of plastic, tent fly, tarp, to the bundled patient to prevent any further heat loss.
Severe	Same as moderate. Treat patient very gently. Aggressive movement may stimulate fatal heart irregularities. Seek help. Field rewarming of severely cold patients is unlikely. Remember: no one is dead unless he or she is warm and dead.

3. Some campers and staff bring drugs from other countries which are not FDA approved and about which information is sparse.

RN's, who are trained in the administration of medications, are the most frustrated by these factors. Not surprisingly, EMT's and first-aiders, who do not necessarily have any specific training in this area, seem to be less concerned about the problems noted above. This seems to indicate that the potential for errors is great. The authors make the point that, "Variety of medications given, lack of preparation specific to camp health care, and limited resources available for health staff to learn about medications that can arise unexpectedly with campers necessitate a strong, broadly based background for safe administration."

The authors suggest that there exists a need for better communication on these issues and recommend the following guidelines:

Information Parents Need from Camp

- Name and health care background of person(s) who administer medications.
- Procedures and routines for administering the types of regular and PRN medications the child may need at camp.
- Policies regarding over-the-counter medications given to campers.
- Policies regarding standing orders for medications from the camp physician.
- Policies regarding campers keeping emergency medications with them (inhalers, bee sting kits).

Information Camps Need from Parents and Health Care Providers

- Name, address, and phone number of health care provider to call with questions about medications.
- Complete, accurate, and current information on camp health history and physical exam form, including names of current medications.
- All medications enclosed in original pharmacy containers, clearly labeled with child's name and drug expiration date.
- Complete written instructions that include: dose, time, expected effects, potential side effects, directions for missed or delayed doses, foods or other substances that might cause interactions.
- Appropriate measuring devices for medications in liquid form or divided dosage.

Information Campers Need before Camp Starts

- Medications that will be at camp for them and where they will be kept.
- The name of the person who will give them their medications and how to find that person.
- Review of basic facts about medications taken regularly.
- What to do/whom to see if they have questions or problems with their medications.
- The names of foods or other substances that should be avoided while at camp.

Wilderness Risk Management

In the last issue we published information and a reporting form developed by the Wilderness Risk Management Committee. The deadline for having your data included in the 1994 database is January 15, 1995. Send those forms to the Association for Experiential Education, Wilderness Risk Managers Incident Report, 2885 Aurora Ave. #28, Boulder CO 80303. Questions about completing the incident report should be directed to Tod Schimelpfenig at NOLS (307) 332-1256 or Jed Williamson (603) 862-4557. After the committee has had a chance to review data, they may follow up with individual reporting agencies to gather additional information about the extent of the organization's programs, data that will be helpful in calculating nationwide illness/incident ratios.

Conferences

Fifth Annual Winter Wilderness Medicine: Social & Environmental Perspectives on Health and Wilderness, March 6 - 11, 1995, Keystone, Colorado. Registration fees range from $150 to $635 depending upon your level of training and the time you register. Many winter recreation activities abound for the entire family. And, the conference should be good, too. Call the Wilderness Medical Society at (317) 631-1745 for more information.

Second World congress on Wilderness Medicine, August 9 -12, 1995, Ritz-Carlton, Aspen, Colorado. Register early and save, fees from $125 - $375 before January 15, at (317) 631-1745. Planned to coincide with the world famous Aspen Music Festival, it promises to be a good conference.

New First Aid Book for Children

ICS Books has just released the latest of Buck Tilton's books, First Aid for Youths. Co-authored by award-winning writer Steve Griffin, this 95-page volume makes quality first aid instructions accessible to young adolescents. Simply illustrated and spiced with true stories about young people saving life and limb under pressure, each chapter is followed by a very simple outline of the important principles, called "What You Can Do". The book should inspire the young'uns among us to watch out for themselves and others.

WILDERNESS FIRST AID AND MEDICAL TRAINING OPTIONS

WILDERNESS MEDICINE INSTITUTE

P.O. Box 9, Pitkin, Colorado, 81241
Telephone: (303) 641-3572, Mon-Thurs 9 a.m.-1 p.m.

Wilderness EMT
($1,395 includes tuition, lodging and meals)
January 2 - 27, 1995, Pitkin, CO
May 22 - June 16, Pitkin, CO
July 31 to August 25, Pitkin, CO

Wilderness First Responder

March 4 - 12, Stillwater, OK (405) 744-5581
March 17 - 26, Missoula, MT (406) 543-9577
March 17 - 26, Arcata, CA (707) 822-8066
March 31 - April 9, Bend, OR
April 8 - 15, Bass Lake, CA, (209) 642-3899
April 28 - May 7, Breckenridge, CO (303) 453-6422
May 9 - 18, Taylor Park, CO (303) 641-3572

Wilderness First Aid
(may be used as WFR refresher, recognized by ACA)

January 28 - 29, Albuquerque, NM
April 1 - 2, Walla, Walla, WA
April 8 - 9 Marin Headlands, CA
April 15 - 16 San Juan Island, WA
May 13 - 14 Marin Headlands, CA
May 25 - 27 Creede, CO
May 29 - 31 Buena Vista, CO

SOLO COURSES

P. O. Box 3150
Conway, New Hampshire 03818
Telephone: (603) 447-6711

Wilderness First Responder
February

20-3/3	NOC, NC	(704) 488-6737

EMT/WEMT Refresher

20-25	SOLO, Conway, NH	(603) 447-6711

Wilderness First Aid/WFR Recertification

4-5	Chicago Mountaineers, IL	(312) 561-7241
10-11	Houghton College, NY	(716) 567-9498

Wilderness/Rural EMT & First Responder Module

6-10	SOLO, Conway, NH	(603) 447-671

Horizontal Ice Rescue

11-12	SOLO, Conway, NH	(603) 447-6711

Nordic Ski Patrol & Winter Rescue School

13-17	SOLO, Conway, NH	(603) 447-6711

March
Wilderness/Rural EMT (full course)

19-4/14 (Part I & II) SOLO, Conway, NH (603) 447-6711

Wilderness First Responder

4-12	UNC, NC	(919) 962-4179
6-17	SOLO, Conway, NH	(603) 447-6711
19-30	SOLO, Conway, NH	(603) 447-6711

Wilderness First Aid/WFR Recertification

4-5	SUNY, Binghampton, NY	(607) 777-2233

Wilderness Trauma Life Support

31-4/2	SOLO, Conway, NH	(603) 447-6711

APRIL
Advanced Leadership and Emergency Care (ALEC)

17-5/12	SOLO, Conway, NH	(603)447-6711
17-5/19	(w/WEMT) SOLO, Conway, NH	(603) 447-6711

Wilderness First Responder

3-13	Passages to Adventure, WV	(800) 634-3785
10-21	AMC, NH	(603) 466-2727

Wilderness First Aid/WFR Recertification

7-9	(w/CPR) Horizons for Youth, MA	(617) 828-7550
8-9	AMC, NH	(603) 466-2727
15-16	SOLO, Conway, NH	(603) 447-6711
TBA	Milton, PA	(717) 742-7611
29-30	Wm & Mary, VA	(804) 221-2787

Wilderness/Rural EMT & First Responder Module

17-21	SOLO, Conway, NH	(603) 447-6711

EMT Intermediate

3-14	SOLO, Conway, NH	(803) 447-6711

WILDERNESS MEDICAL ASSOCIATES

Bryant Pond, Maine 04219
800-742-2931, 24 hr. messages

WEMT Upgrade
June 6 - 10 Camp Bullis, TX

Wilderness First Responder

Feb 6 - 15 Port Isobel, MD	Apr 15 - 23 Devil's Lake, WI
Feb 24 - Mar 5 Cornwall, NY	Apr 22 - 30 Keene, NY
Mar 11 - 18 Hamilton, NY	May 7 - 10 Green River, UT
Mar 11 - 18 Carbondale, IL	May 13 - 21 Poteau, OK
Mar 16 - 24 Redmond, OR	May 15 - 23 Missoula, MT
Mar 30 - Apr 7 Newry, ME	May 15 - 23 Columbia, MO
Apr 13 - 21 Leavenworth, WA	June 19 - 27 Charlemont, MA