Wilderness Medicine Letter

The official newsletter of the Wilderness Medical Society

An international nonprofit professional association serving the medical interests of the outdoor and wilderness community.

Special 10-Year Anniversary Issue!

Volume 10, No. 4 Fall 1993

In This Issue

A Decade of Growth

Eric A. Weiss, M.D.

This issue of the Wilderness Medicine Letter is a 10-year anniversary tribute to the Wilderness Medical Society, its members and its staff. One decade after its inception, WMS has exceeded the dreams of its founders. The membership has grown to more than 3,000 and represents nearly every nation in the world. The Society publishes a sophisticated and well-respected, peer-reviewed journal, offers stimulating top-quality continuing medical education conferences, and produces written and photographic education material.

As the Society prepares for its second decade, a sense of history is vital. How did it all begin? The idea of a Wilderness Medical Society was the brainchild of three Californian physicians: Paul Auerbach, Ed Geehr and Ken Kizer. Although the three pioneers argue over whose living room served as the spawning ground, they all agree it was conceived after the consumption of a large amount of beer. Subsequent to recruiting other notable colleagues such as Joe Serra, Cam Bangs, Warren Bowman, Jeff Davis, Bob Mutch and Kent Olsen, they founded the Wilderness Medical Society in the summer of 1983 as an organization to promote research and educational programs that would increase medical knowledge about human activities in wilderness environments.

WMS was originally based in Mill Valley, CA, home of its first president, Edward Geehr. His wife, Janet (J.T.), provided the administrative support. Dian Simpkins was hired as a part-time administrative secretary in February 1985, and for the next seven years, the Society was operated from her home in the coastal community of Point Reyes Station, CA. Dian began working full time as the Executive Secretary for the Society in January 1990. She moved her home, along with the WMS Administrative Offices, to Indianapolis, as part of WMS' management agreement with the American College of Sports Medicine.

The first scientific meeting was held during the fall of 1984 in Yosemite National Park in California. The Society held its first multi-day meeting in September 1988 at Grand Teton National Park in Wyoming. Despite the raging forest fire in Yellowstone Park directly to the north, more than 250 registrants attended the meeting. Two years later, the First World Congress of Wilderness Medicine attracted more than 500 participants to British Columbia from countries as far away as Russia and Japan.

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Society Business

Howard Backer, M.D., Section Editor

Bylaws Changes

The WMS membership voted unanimously to approve two changes to the bylaws. The first institutes a two-consecutive term limit on the Board of Directors. This is intended to assure regular turn-over on the Board and to increase opportunities for members to serve on the Board.

The second change was for the immediate past-president to remain on the Board as a voting member for two years following their term. This addition does not decrease the number of regular Board members. The change will assure continuity of program and will harness the momentum and experience of the immediate past-president.

Wilderness Medicine Letter

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Janice Parr Leaving WMS

Janice Parr, WMS Meeting Coordinator, will be leaving the Society this fall to pursue other interests. Over the past two years, Janice has done an outstanding job of organizing and running our conferences.

Janice has brought a high level of organization and professionalism to our meetings, and also helped maintain creativity and collegiality. Her efforts were successfully directed at increasing attendance at WMS meetings and WMS membership.

It will be difficult to replace Janice and her influence will be felt in future WMS conferences. We wish her well in her endeavors.

WMS Accepting Board Nominations

The Board of Directors of the Wilderness Medical Society is composed of nine members. A Board member may also serve as an officer, if appointed. A term on the Board is for three years with staggered positions to avoid too much turnover in a given year.

Three positions will open at the WMS Annual Meeting in 1994. Anyone interested in serving on the Board should submit their name to the Chairperson of the Nominating Committee, Howard Backer, M.D., at the WMS Administrative Offices, P.O. Box 2463, Indianapolis IN 46206-2463. Applications will be accepted until January 31, 1994. The nominating committee will choose the slate of candidates. Biographical sketches and a ballot will be sent to regular WMS members in April 1994. New Board members (and officers) will be installed at the Annual Meeting.

WMS Board members participate in decisions concerning Society planning, policies, finances and programs. Meetings are held every two months via telephone conferences and at Annual Meetings. Serving on the WMS Board of Directors is an excellent way to assist the Society, and should be undertaken with a realistic and ambitious attitude toward the work necessary to foster the growth of a young medical organization. If you have any questions about WMS Board of Directors operations, please feel free to contact WMS at the address above; telephone: 317/631-1745; fax: 317/634-7817.

Promotional Slide Sets Free to WMS Members

The Wilderness Medical Society has developed a promotional slide set consisting of 14 slides with suggested comments to help our members introduce and promote the Society when speaking to interested groups on matters related to wilderness medicine. These sets are available free of charge from the WMS Administrative Office, P.O. Box 2463, Indianapolis IN 46206-2463; telephone: 317/631-1745; fax: 317/634-7817. The slides provide information on the interests and activities of the Society.

Meeting Co-Sponsorship Planned

The Wilderness Medical Society has maintained a policy of *not* co-sponsoring Continuing Medical Education meetings. This policy was a response to criticism by the Accreditation Council for Continuing Medical Education concerning lack of proper supervision and documentation of jointly accredited seminars nearly five years ago.

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From the Editor

Eric A. Weiss, M.D.
Chair, Editorial Board

This issue of the *Wilderness Medicine Letter* celebrates the 10-year anniversary of WMS and the 10-year publication anniversary of the newsletter, and commemorates its dramatic evolution.

The first issues of the newsletter were written and edited by Edward Geehr, M.D., first WMS president. They were six pages long and contained some medical news, book reviews and Society announcements. Finished pages were driven to the printer by Ed's wife, J.T., and Dian Simpkins, now WMS Executive Manager. It was printed on tan paper in green ink and was sorted and labeled by hand on a small table.

Today, 10 years and thousands of members later, the *Wilderness Medicine Letter* is edited and coordinated by an editor, a managing editor, and an assistant editor, as well as nine section editors. It ranges from 16 to 20 pages, and in addition to medical news and book reviews, it contains columns by WMS leaders, important Society business and vital membership information. Instead of being driven down the street, it is faxed back and forth across the country before finalization and shipment to the printer. Once printed, it is then delivered to a mailing house, where it is sorted and labeled by machine, and then mailed to you!

One aspect, however, remains unchanged: Like the first editor, most of the editorial staff today volunteer their time and energy out of love and enthusiasm for the Society.

Three past presidents have contributed reflective articles for this issue and one more will be published in the January 1994 issue. Charles Houston, M.D., was also invited to share his thoughts because of his profound influence and inspiration to the development of wilderness medicine. We are indebted to Dian Simpkins who scoured through the WMS files for pictures and wrote historical information for this commemorative issue.

As you read this, we hope you reflect and enjoy the rich history of this still-young Society, and that you look forward with enthusiasm to its future. Our 10th anniversary celebration will culminate Aug. 7-14, 1994, in Squaw Valley, CA, at the 10th Annual WMS Scientific Meeting. We invite you to be a part of that celebration and to share in the next decade of growth of the Wilderness Medical Society. ❑

Then and Now

Far right: A copy of the first issue of the *Wilderness Medicine Letter* states: "This issue of *Wilderness Medicine* marks the beginning of a new effort to address some timeless concerns: people and the environment. **Right:** A copy of today's newsletter. Desktop publishing technology allows for the newsletter to be produced professionally, yet very inexpensively.

WMS Members Summit Mt. Everest

Mark Rabold, M.D., FACEP

The 1993 American Sagarmatha anniversary expedition and Mountain Medicine Seminar was blessedwith a wonderful group of support trekkers. During the trek into the Khumbu, members monitored their own responses to altitude by daily measurements of pulse, blood pressure, pulse oximetry, and pulmonary function.

Lectures, given mostly by WMS members, included a range of topics, such as tropical medicine, high-altitude sickness, and the Nepali medical system. Several of the lectures were accompanied by "practical demonstrations."

During a dental emergency lecture at the Pheriche Aid Post, two patients with dental problems arrived. One of our own members demonstrated the use of the Gamow Bag after developing high-altitude pulmonary edema. Luckily, there were no similar demonstrations with the lecture on medicolegal aspects of expedition medicine.

The climb itself was successful with five out of the six climbing members reaching the summit. WMS members, Mark Selland, M.D., and Dolly LaFever reached the summit on May 12, while Mike Sinclair, M.D., and Mark Rabold, M.D., summited on May 16. All returned home healthy, except for some moderate frostbite. The South Col route was busy this year, with at least 17 expeditions vying for the summit. Fortunately, there existed a spirit of cooperation.

The primary reason that a new record was set on May 11 for numbers of summiteers in one day was that most expeditions sent a team on the same day to cooperatively break trail through deep snow. Smaller groups had failed to break through to the summit, due to the lack of manpower to break trail. International discord was at a minimum and cooperation at a maximum.

Deputy Editor Sought

Paul Auerbach, M.D., editor of the *Journal of Wilderness Medicine*, is seeking letters of interest and *Curricula Vitae* from those interested in serving as deputy editor(s) for the journal. Depending upon expertise, the deputy editor will be expected to become familiar with all editorial operations of the journal, serve as the editor for one or more sections, and help in the development of new features. Candidate should expect to work four to six hours per week.

There is no compensation for this position currently, but this may change in the future. Please address all letters of interest to: Paul Auerbach, M.D., *Journal of Wilderness Medicine*, Stanford University Hospital, 300 Pasteur Drive - H1249, Stanford CA 94305-5239.

H.R.A. Physcian Needed

The Himalayan Rescue Association is seeking a primary care physician to volunteer from Feb. 15 to May 15, 1994. If interested, write to: Ken Zafren, M.D., 18120 Grass Ct., Bakersfield CA 93306. Dr. Zafren will contact applicants when he returns in January 1994 from Antarctica.

President's Column

Warren Bowman, M.D.

WMS as a Primordial Society

Being the incoming president of the Wilderness Medical Society is an honor — a stimulating but also a humbling experience. I'll need the help and tolerance of all our members. Support your Society. Let me know your concerns. I need your suggestions and constructive criticism to keep improving our meetings, members' services and other activities. Promote WMS whenever you can, volunteer to serve on committees, and help recruit new members.

As I write this, a little over a week has passed since the ninth WMS Annual Meeting, which was held in Big Sky, MT. It is accurate to say it was one of our best Annual Meetings. Montana is my home state — a beautiful land of high mountains, vast forests, placid lakes and surging rivers. Here, in the greater Yellowstone ecosystem, if anywhere, you can reach out and touch wilderness — real, ever-present, multifaceted and accessible in all its splendor.

For many of us, WMS is our "first-love" medical society, even if it is not a primary society in the sense that it reflects directly on the concerns of our daily work. At the meeting's annual banquet, as I looked out on the participants, I could tell that we are not the AMA. We are not ACEP, or AAFP, or ACP, or ACS. Too many people were smiling. No one was talking about RBRVs or DRGs. Nevertheless, I don't have to tell you that profound changes are ahead for the practice of medicine. All of us will have less discretionary income, for which we will be expected to work as hard as ever. It may not be as much fun to practice medicine. You may be tempted to withdraw from "secondary" activities, such as the Wilderness Medical Society.

> *"It could be said the mission of WMS is 'preparing us medically to do our best when nature is doing its worst.'"*

I remind you that WMS is not a primary or a secondary society. You might call it a *primordial* society, a very basic society. Our mission statement says that "the purpose of WMS is to encourage, foster, support, or conduct activities or programs concerned with the life sciences, that can improve the scientific knowledge of the membership and the general public in matters related to wilderness environments and human activities in these environments."

More simply put, it could be said the mission of WMS is "preparing us medically to do our best when nature is doing its worst." This mission, therefore, is closely related to the basic survival of humankind itself. We do not conquer nature, we accommodate ourselves to it — and sometimes not very well, as demonstrated by the hurricanes, droughts and floods over the past year. What are the requirements for human survival? Briefly, they are oxygen, a stable body temperature, water, food, physical integrity (the absence of disease and injury), and finally — and most important — a faith and the will to live.

WMS performs in all these areas, across the spectrum of other medical societies. It concerns itself with the problems of high altitude, hot and cold environments, nutrition, water purification, wilderness injuries and illnesses, and countless other areas. But all these activities mean nothing without faith and the will to live — enthusiasm, spirit and health of the soul, if you will. You know what I mean or you wouldn't be reading this newsletter. You know the feeling that comes when, after weeks and months of dealing with the wretched results of human sloth, gluttony, excess and carelessness, and the ever-expanding piles of paper associated with these, you have a few days or more to "get away" — to climb, hike, kayak, ski, feed your addiction to wilderness, or commune with like-minded colleagues at the WMS Annual Meetings. To clean the cobwebs and mildew from the surface of your spirit, buff it up, and feed it some trail mix. (I almost said, "nectar and ambrosia.")

So I guess what I'm trying to get across, at the risk of being uncool — or what we used to call "corny" — is that the concerns of WMS may be good for your body, but they are even better for your soul. Far from being a secondary society, WMS may be the most primary organization with which you could be associated. Medicine may change, but wilderness is always wilderness. ❑

WMS Winter Wilderness Medicine Conference

snowbird

February 12-18, 1994

Snowbird, Utah's premier ski resort, is the site of the Fourth Annual WMS Winter Wilderness Medicine Conference, to be held Feb. 12-18, 1994.

Program chair, Eric Johnson, M.D., and his committee have designed a curriculum to bring you the latest research on high altitude, health hazards, and the aquatic environment.

Registrants will be able to choose from 31 hands-on workshops. Topics include: *"Minimal-Impact Camping"*; *"Menu Planning and Caloric Requirements for Backpackers"*; and many more. Special evening programs have been included for registrants and their guests.

Reserve these dates now! Combine an outstanding educational program with double black diamond skiing. For a conference brochure or for more information, contact: WMS Administrative Offices, P.O. Box 2463, Indianapolis IN 46206-2463; telephone: 317/631-1745; fax: 317/634-7817.

Executive Director's Column

James R. Whitehead

The Evolution of WMS

Elsewhere in this issue of the *Wilderness Medicine Letter*, new president Warren Bowman describes the Wilderness Medical Society as a primordial organization. Clearly, at our most recent meeting in Big Sky, MT, there were a few events that probably qualified as Neanderthal — notably those (very) early morning committee meetings prior to the first round of coffee.

Obviously WMS is an evolving organization. Our history began 10 years ago with the proverbial handful of people sitting around a table, sharing a common interest, a bold vision, and little else. As this dream became a reality, WMS progressed from those few to thousands more, and from an all-volunteer association to one that has a varied professional staff. With these advances, WMS has confronted barriers and opportunities along the way — some of major import, others of passing fancy.

This is the expected history of associations, and outcomes are frequently determined by how well the leadership and members of the organization react. I remain extremely impressed with the elected leadership of WMS, and assure you the leaders you have chosen are unfailingly committed to meeting your needs, and to making WMS even more meaningful to you, professionally as well as personally.

"WMS is establishing itself as an even more membership-sensitive organization..."

On reflection after the Big Sky meeting — which, by the way, was a marvelous conference — I was struck by the fact that WMS is at a very important juncture. A critical mass has been achieved, an admirable track record established, opportunities for new programs and activities abound, and the only limitations are, as usual, time and resources. The WMS Board of Directors is appreciative of the many opportunities, but is also aware that WMS cannot do all things at once. The Board recognizes the intense need to establish even more specific priorities and future directions based on member needs and desires.

Nowhere was this more apparent than at one of the many Big Sky sessions of the hard-working Board. During an agenda devoted to strategic long-term planning, they prioritized both existing and potential major activities of WMS. Interestingly, the top priority determined by the Board was a revisiting of the overall mission and purpose of WMS, a healthy activity for any organization. A second tier of issues that received attention dealt with membership matters, including services, retention, recruitment, involvement and composition. Finances, of necessity, received considerable attention. Then, organizational issues such as management, leadership, structure and current and future location of headquarters were covered. Lastly, a broad range of programmatic matters were dealt with, including publications, meetings, research, the environmental council and WMS' relationship with the public and officials.

Expectedly, the Board deliberations were not conclusive in several important areas. Thus, this is interim feedback, a comment more on the deliberations than on conclusions. Suffice it to say that WMS is busy establishing itself as an even *more* membership-sensitive organization, totally dedicated to excellence in all its activities, with the only proviso being the business realities that all of us must acknowledge.

Your WMS Board of Directors meets frequently by teleconference, and a major agenda item in the near future will be further consideration of the Society's strategic long-term plan. We are ready to take WMS successfully into the next decade. Once the Board has finalized matters, we will insert a summary of the plan here in the *Wilderness Medicine Letter* for your reference and feedback. In the meantime, we would appreciate observations, concerns or suggestions that you wish to share. Please feel free to contact Warren Bowman or me in this regard. We assure you that the response will not only be timely but downright modern.

If you have suggestions to share with WMS President Warren Bowman, M.D., or Executive Director Jim Whitehead, please send them to: WMS Administrative Offices, P.O. Box 2463, Indianapolis IN 46206-2463; telephone: 317/631-1745; fax: 317/634-7817. ❑

Brief Reviews

Linda G. Allison, M.D.,
Section Editor

Electric Shock and Lightning Strike

Fontanarosa P. Annals of Emergency Medicine, 1993; 22(2): 378-387.

This review article distinguishes electric shock from lightning strike injuries. The first section deals with electrical shock, which is associated with 1,000 deaths and 5,000 injuries per year in the United States.

Lightning strikes cause approximately 150 to 300 fatalities per year, and 1,500 injuries. The majority of deaths are due to immediate cardiac arrest, while 74 percent of survivors sustain significant sequelae. Compared to electrical shock, lightning has a much higher voltage, but much shorter duration of exposure (100 million to 2 billion volts for 0.01 to 0.001 seconds). This results in less energy delivered internally and, therefore, much less internal injury compared to electrical shock. Lightning may flash over the victim while only a small amount of current may actually enter. Mechanisms of injury include direct strike to the victim (the most serious), side flash, or splash when lightning jumps from its primary strike site to a nearby person or object, ground current when lightning strikes the ground and spreads to the victim, and blunt injury from expansion and implosion forces of the surrounding air.

Immediate cardiac arrest may result from a lightning strike — the lightning acts as a direct current countershock that causes cardiac asystole. Lightning also acts to paralyze the medullary respiratory center, which may be quite prolonged. Spontaneous restoration of cardiac automaticity and cardiac activity may occur only to be disrupted again by hypoxemia from prolonged respiratory arrest. The critical factor in mortality appears to be the duration of apnea rather than the duration of asystole. Ventilatory support may prevent secondary hypoxic cardiac arrest and may be needed for several hours. Post-arrest rhythms that may be associated with poor outcomes in the "traditional" cardiac arrest victim do not necessarily carry a poor prognosis in the victim of a lightning strike.

Other common acute complications of lightning strikes include neurologic deficits, coma, seizures, paralysis, increased intracranial pressure, intracranial hemorrhage, blunt trauma, fractures, dislocations, tympanic membrane rupture, contusions, mottled extremities with loss of peripheral pulses.

Lightning strikes may involve more than one victim up to 30 percent of the time. Triaging these victims should be done in reverse order of normal multiple-casualty triage priorities. If a person sustaining a lightning strike does not go into cardiopulmonary arrest, they are unlikely to die. Therefore, the victim who appears clinically dead should be treated before other victims who show obvious signs of life. Aggressive and persistent resuscitation measures are indicated for a victim of a lightning strike. Fluid resuscitation is not indicated unless there is concomitant trauma with hemorrhage because it can exacerbate cerebral edema and intracranial injuries.

Hypothermia

Weinberg AD. Annals of Emergency Medicine, 1993; 22(2): 370-377.

Most clinically significant episodes of hypothermia occur after a person sustains an injury in a cold environment, during submersion in cold water, or with exposure to low temperatures for a prolonged period without adequate clothing. Alcohol ingestion increases susceptibility to cold injury and hypothermia by causing vasodilation, impaired vasoconstriction, impaired shivering, hypothalamic dysfunction, and decreased awareness of environmental conditions.

Other conditions that may contribute to the development of hypothermia include advancing age, sepsis, hypothyroidism, hypopituitarism, head injury, drug ingestions, diabetes and hypoglycemia. Hypothermia affects the function of all organ systems. Complications include volume depletion, glycogen depletion and hypoglycemia from prolonged shivering, serious arrhythmias from an irritable cold heart, bradycardia, hypotension, altered level of consciousness, mixed metabolic/respiratory acidosis, and increased plasma viscosity.

One should avoid rough movement of the victim since this can produce cardiac arrhythmias. Treatment includes prevention of further heat loss, monitoring vital signs, and beginning rewarming. Prevention of further heat loss is accomplished by removing wet clothing, covering with warm dry garments, and placing a healthy volunteer into a sleeping bag with the victim. Field rewarming techniques include heat packs to arms and groin areas, warmed blankets, heated humidified air or oxygen and warmed I.V. fluids. Emergency Department rewarming techniques include peritoneal or thoracic dialysis or extracorporeal rewarming with partial bypass.

Cardiac resuscitation is very difficult if the victim is severely hypothermic with a temperature less than 30°C: cardioactive drugs, defibrillation, and pacing do not work well. Drugs administered may accumulate to toxic levels. Use the smallest effective dose, and increase the time intervals between doses. I.V. tubing, the cuff-port of ET tubes, suction tubes, and other plastic tubing become brittle and may break easily in the cold and should be prewarmed prior to use. EKG electrodes do not stick well and electrical signals may not be conducted effectively across cold skin.

Terminating resuscitation efforts may be recommended if there is no response to therapy after the core temperature has reached at least 32°C, but such a decision should be based on the individual case. Post resuscitative management includes close monitoring for a wide variety of potential renal, pulmonary, and hematologic complications.

Section Editor's Note: These two articles ("Hypothermia," and "Electric Shock and Lightning Strike") are included in a "State of the Art Reports" in the February 1993 issue of the Annals of Emergency Medicine. *They review the basics of our understanding of these injuries and discuss in some detail the use of CPR and resuscitation.*

Current Issues in Rabies: Epidemiology, Clinical Management, and Postexposure Prophylaxis

Harrigan RA, Kauffman F. Emergency Medicine Reports, 1993; 14(5): 37-44.

There were 17 cases of rabies in the United States reported to the CDC between 1980 and 1992. Of these, 10 were acquired outside the United States. Worldwide, there are an estimated 25,000 to 50,000 deaths from rabies each year. The dog is the most common animal reservoir of rabies in Asia, Africa, the Indian subcontinent and Latin America. In the United States, nearly 97 percent of identified rabid animals were raccoons, skunks, bats and foxes. In Europe, the red fox is the principal host, with rabies also found in deer, cattle, dogs and cats. England and Hawaii are free of rabies.

The rabies virus, a neurotropic rhabdovirus, is usually transmitted by infectious material, e.g. saliva, being introduced in a break in the skin or intact mucous membrane. The incubation period depends on the age of the victim, immune status, distance between the bite site to the central nervous system, and size of the innoculum. Incubation period ranges from less than 10 days to as long as six years.

Wound care should be instituted immediately following any bite or scratch. Some soaps are potent virocidal agents and may significantly reduce the risk of contracting rabies after exposure. Wounds at risk for rabies exposure should not be sutured. Tetanus immunization and antibiotic prohylaxis should be used as necessary. Rabies prophylaxis should be considered for bites at high risk for rabies transmission.

If the biting animal is a healthy dog or cat and is available for quarantine and observation, prophylaxis may be delayed. If the biting animal is a wild carnivore such as a raccoon, skunk, fox, coyote, or bat, and is not captured, rabies prophylaxis should be instituted. Current recommendations include the use of human rabies immune globulin (HRIG) for passive immunization on day 0 and human diploid cell vaccine (HDCV) on days 0, 3, 7, 14, and 28. If previously immunized, the recommendations are modified to include only HDCV on days 0 and 3.

Pregnancy is not a contraindication to post-exposure rabies prophylaxis. Pre-exposure prophylaxis should be considered for high-risk groups such as laboratory workers, veterinarians, animal handlers, spelunkers, and persons spending more than 30 days in rabies-endemic countries. Chloroquine may hinder the antibody response to HDCV. ❑

Linda G. Allison, M.D., is Assistant Professor, Emergency Medicine, at West Virginia University, Morgantown, VA.

Society Business

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During that time, we have sponsored only our own meetings, and our CME committee, under the leadership of Doug Gentile, M.D., has meticulously maintained ACCME standards. Next year, we will have our four-year review by the ACCME. We are confident our accreditation will be renewed.

WMS regularly receives requests for co-sponsorship of CME activities from highly credible organizations; however, our current policy is quite restrictive. These requests include major conferences as well as adventure travel seminars.

The CME committee has been charged by the WMS Board of Directors to prepare a policy and procedure for co-sponsorship of CME programs. WMS will present this to the ACCME for comment prior to our next review. The ability to co-sponsor will provide new educational opportunities for the Wilderness Medical Society.

Public Education Meetings Proposed

The WMS Board of Directors approved the design of two public educational seminars on wilderness medical problems. These one-day seminars will focus on prevention of problems, field management and evacuation issues. They will help fulfill WMS' mission to enhance public safety. Two sites under consideration are Denver and Salt Lake City, which both have active outdoor populations and

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Society Business

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close proximity to wilderness. Issues of local sponsorship and support are the crucial problems.

Strategic Planning Session

At a recent strategic planning session of the WMS Board of Directors, three critical issues considered were membership, meetings and finance. The WMS Mission Statement was reviewed and determined to still faithfully represent our purpose and goals. WMS will concentrate its efforts on four or five areas in which we can be most successful.

Specific steps toward public education, and public educational seminars were planned. Another means of public outreach is through liaisons with other organizations that sponsor wilderness outings or are responsible for public health and safety in wilderness settings. The Board feels it is appropriate to take a more active approach to joint projects with these organizations.

There was some concern that the actions of the Environmental Council remain within our stated goals, mainly prevention and education related to health issues. There is much work that can be done within these goals. The Board will investigate a new organization of medical societies that will focus on health problems related to environmental degradation.

The goal for WMS to have its own headquarters, along with a larger staff, was discussed. The current management contract through the American College of Sports Medicine is serving us well, but our intent is to eventually have our own headquarters and executive director. The time frame will depend on financial and membership growth.

Many of these issues will be discussed in more detail in upcoming issues of the *Wilderness Medicine Letter*.

Board Reports and Actions

The following business items were reported and decided at recent meetings of the WMS Board of Directors:

- The position of Secretary, which has been idle due to lack of assignments, has been reactivated. The secretary will be responsible for reporting the *Society Business* column in the *Wilderness Medicine Letter*. Howard Backer, M.D., was appointed to the position for the next two years.
- At the recommendation of the Conference Planning Committee, Big Sky, MT, was chosen for the site of our Winter Wilderness Medicine Conference in 1996. Big Sky was the site of our 1992 winter meeting, and our 1993 summer meeting, and has proven to be a very attractive location for both seasons.
- Tamar Earnest, M.D., was named Chair of the Fundraising Committee. At her recommendation, it will be renamed the Development Committee. The first priorities of this committee will be to develop corporate sponsorship and funding. The committee will also identify potential services for members that could provide financial benefit to the Society.
- The Members' Services Committee, chaired by Susan Snider, M.D., has completed a new membership brochure. It was noted that many of our members join when registering for one of our educational conferences, but do not continue their membership beyond the first year. The most important future task for this committee is to identify member-retention issues. They are also working on a new member's packet.
- The Communications Committee, led by Barbara Kennedy, M.D., is designing a questionnaire to identify members' areas of expertise to be used for referral to media, as a speakers bureau, and for internal expert referrals. This will enhance the ability of WMS to provide expert opinions to other professionals, organizations and the public.
- The following policies for elections to the Board of Directors were approved:

  Tie votes will be decided by the Nominating Committee; ballots will be voided if more than the indicated number of candidates are marked; ballots must be postmarked by the indicated deadline to be counted.
- Warren Bowman, M.D., the new WMS president, will visit the Society offices in Indianapolis to become familiar with WMS central operations.
- A Policies and Procedures Manual for day-to-day operations of the Wilderness Medical Society is being prepared by Dian Simpkins, WMS Executive Manager.
- A manual for Program Chairs has been developed and is being reviewed. This will facilitate the orientation of new Program Chairs. Meeting production is a complex process that involves joint responsibilities of the CME, Finance, Program, and Conference Planning Committees, as well as the Meeting Planner and the Executive Manager.
- The educational slide sets, edited by Ken Zafren, M.D., and Bill Robinson, M.D., have been very successful. New sets are being developed. The Board decided to keep the price of these sets at the current level of $100 U.S. per set to encourage their distribution. To receive a brochure describing the sets, contact the WMS Administrative Offices, P.O. Box 2463, Indianapolis IN 46206-2463; telephone: 317/631-1745; fax: 317/634-7817.
- The Financial Statement for 1992 was reviewed and accepted. A report from Treasurer Doug Gentile, M.D., and Finance Chairman Edward Geehr, M.D., will be published in an upcoming issue of the *Wilderness Medicine Letter*. ❑

Howard Backer, M.D., is the WMS immediate Past-President, and is WMS Secretary. Dr. Backer is an emergency medicine physician at Kaiser Permanente in Hayward, CA.

Call for Research

I am a faculty member at the University of Alaska, Anchorage, where I teach and coordinate the Alaska Wilderness Studies program. One of the core courses of our curriculum is wilderness survival. In teaching survival, we are faced with the problem of a subject for which there are many anecdotes, but little hard data.

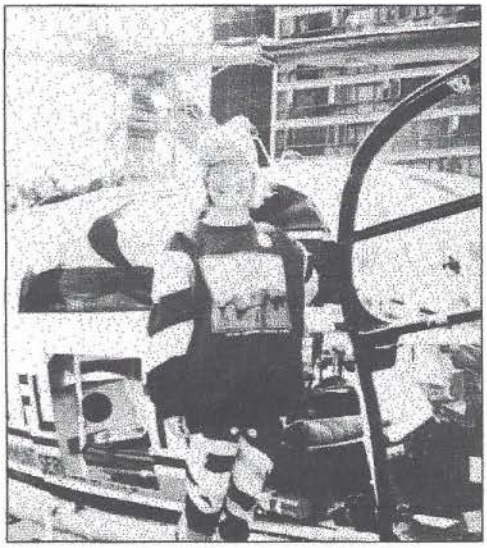
We are looking for help in developing a data base to empirically examine survival situations in Alaska. We would appreciate hearing from anyone who has examples of data collections from other places or on related subjects.

In addition, we seek to define the term "survival" so that our potential data base can be compatible with other data bases. Finally, we seek non-anecdotal references from the literature of emergency medicine, military survival, occupational safety, outdoor safety and survival, search and rescue, wilderness medicine, or other fields that might assist us in developing the data base.

Please send examples or suggestions to: Todd Miner, Ed.D., Alaska Wilderness Studies, University of Alaska Anchorage, 3211 Providence Dr., Anchorage AK 99508; telephone: 907/786-1468; fax: 907/786-1564. ❑

A Look at Past WMS Meetings

Clockwise, From Above: Ken Iserson, M.D., and his wife, Mary Lou, prepare to hike the trails at the 1988 meeting at Grand Teton National Park, WY. Dian Simpkins,WMS Executive Manager, chats with Blair Erb, M.D., Peter Goth, M.D., and Warren Bowman, M.D., at the 1988 meeting. Anne Dickison, M.D., is ready to fly high at the 1990 meeting in Snowbird, UT. Attendees scour the WMS Bookstore at the 1989 meeting in Stratton Mountain, VT. Joe Serra, M.D., has a full plate at a barbeque during the 1988 meeting.



Decade of Growth

(Continued From Page 1)

Every year, the Wilderness Medical Society has set new goals, planned more programs, and expanded its reach in the growing field of Wilderness Medicine. This tremendous growth should instill pride and enthusiasm in every member whether he or she joined last week, or a decade ago.

To help us celebrate our 10-year milestone, we invited WMS past presidents and founding member Charles Houston, M.D., to contribute their "reflections" on the Society's first decade. Past president Ken Kizer's reflection will be published in the January 1994 issue of the *Wilderness Medicine Letter*.

Reflections on the First 10 Years of WMS

Edward Geehr, M.D., WMS President, 1983-85

At a recent WMS Board of Directors meeting in conjunction with our Annual Meeting in Big Sky, MT, a group of us were attempting to describe the attraction of the WMS to its membership. After much highfalutin discussion, a friend and colleague said, "It's just cool stuff!" He was right. It *is* just cool stuff. In fact, it has been the most rewarding and fun experience of my medical career.

As I reflect on the first 10 years of the Society, I think back to our first meeting in Yosemite National Park. Seventy brave souls signed on for two days of wilderness medical instruction. My wife, J.T., pregnant with our first child, who was due in just two weeks, coordinated the meeting and staffed the registration desk. Participant comradery evolved quickly due to our common interests in medicine and the outdoors. It was a beautiful October in Yosemite and many of the registrants became long-time members of the Society. We were off to a good start.

From a handful of members in 1983, to 3,000 from 40 countries in 1992, and from 70 participants at the inaugural meeting, to more than 500 at our World Congress in British Columbia, the organization has experienced unimagined growth and success. The Society now publishes a newsletter and a peer-reviewed journal; it sponsors three CME meetings a year; it funds original research and develops educational materials including slide sets and position papers. Our members include some of the world's foremost wilderness medical researchers and practitioners.

With the Society's growth, better organization and management was necessary. Articles of incorporation, bylaws, committees, budgets, and paid staff became necessary. The real challenge to all of us, 10 years later, is to preserve that sense of excitement and comradery with which we all started, yet provide an expanding set of needed services to healthcare professionals and the public. The leadership of the Society will no doubt struggle with finding the right balance over the *next* 10 years. I firmly believe we will find the proper balance because of our abiding interest in combining medicine with our love of the outdoors.

After all, it's really just cool stuff.

Paul S. Auerbach, M.D., WMS President, 1987-89

When Eric Weiss asked me to write a "few paragraphs" about the Wilderness Medical Society, recounting its origin, reflecting on past experiences and projecting the future, I have to admit I thought, "Wow! How do I condense 10 years of a labor of love into the few words that might convey what it has all meant to me and, hopefully, to others?" Impossible. But then I thought, "Eric knows me too well. He's read my editorials in the *Journal*." So there needs to be a limit. I'll save the reminiscing for the celebration at the 10th Annual Scientific Meeting at Squaw Valley next August.

The Wilderness Medical Society is in an excellent position to become an extremely relevant and influential medical society. Incontrovertible themes resound with correctness laced throughout the environmental issues of today. There are few arguments against preservation of the wilderness in support of habitat and the constructive science that can emanate from that environment. WMS stands as a unique group of medical professionals who understand the appropriate role of spirit in the pursuit of medical excellence. We may not be the pivotal keepers of the wilderness, but we should be no less than its most articulate spokespersons.

In the next 10 years, I would like to see, among other things: The membership of WMS grow to more than 5,000 *active* members; a permanent home for WMS, in a logical location, laid upon a stable and self-sustaining financial foundation; WMS connected in medical education and research activities with every major outdoor organization in North America, and, as resources permit, internationally; the *Journal of Wilderness Medicine* become the first choice for all significant wilderness medical research and clinical observations; development of a WMS awards program that motivates young people to pursue outstanding achievements in wilderness medicine that will benefit their fellow man and provide the investigators with a lifetime of satisfaction in medicine; and, the WMS Environmental Council developed so that it can serve its mission to pro-

Fun at the Annual Meeting: WMS meetings are always, in addition to being educational, great fun for members. Here at the 1990 meeting in Snowbird, UT, from left (foreground), Blair Erb, M.D., Havner Parish, M.D., Isabel Parish and Sally Erb ride the Heber Creeper Train through Provo Canyon.

mote rational activities directed at preserving the Earth and its inhabitants.

These goals should keep a few people busy. We all enjoy the warmth, but the campfire didn't just come out of nowhere. There are those of us who were here to pick the campsite, others have chosen to gather the firewood, and some who always know when to fan the flames. Speaking as a founder of WMS, there's much for which to be grateful, but there's so much left to be done. I invite each and every one of you to help us.

Blair Erb, M.D., WMS President, 1989-91

That the Wilderness Medical Society was an instant success is not surprising. Interest in the medical care of individuals in remote and hostile environments has always existed quietly among many physicians and allied health professions from virtually all medical disciplines. The real genius of the founders was in gathering the topics — physiologic function, environmental stresses such as heat, cold and altitude; field treatment of illness and injury; search and rescue; global issues and administrative concerns, and others — into a single stable of teachable materials labeled, "Wilderness Medicine."

As the first non-founding president of WMS, it fell my lot to attempt to interpret the intentions and early work of the founders, much of which was carried in their heads, and from this to develop a functional structure that could accomplish the Society's mission.

Recognizing that education is the principle role of WMS, our focus has been on identifying the audience, its various needs, and the degree of success in meeting those educational needs for continuing education, curriculum design and development of materials.

Because the economic and administrative demands for large-scale research activities are beyond the means of WMS, the Society limits its research funding to "stimulator grants" for pre-doctoral and house staff awards. This important nidus, however, assists WMS in its role as facilitator and as a forum for enlightened research in the field.

The essential tool used in our efforts is communication. The WMS meetings have a track record of high-quality, hands-on participatory activities. Meanwhile, the Society attempts to encourage informal communication among members as a valuable mechanism for identifying issues of concern. The *Journal of Wilderness Medicine* is the premier journal in the field and members are kept abreast of activities by the *Wilderness Medicine Letter*.

I was especially pleased to have participated in the conceptualization of the World Congress on Wilderness Medicine. Designed as a quadrennial gathering of professional societies and organizations involved in Wilderness Medicine, it can evolve as a sort of United Nations of wilderness medicine with WMS serving as the host group.

The topics of wilderness medicine will always be a part of medicine. Ultimately, the success of our organization in delivering an economical program of education, research, meetings and written words in the spirit of comradery will determine the future — even the life span — of the Wilderness Medical Society.

Working with WMS has been an exciting journey. We are honored to be traveling it with such an elite group.

Because he has been an inspiration to so many physicians and researchers in the field of wilderness medicine, Dr. Charles Houston was invited to share his reflections on WMS' first 10 years and to identify the challenges for the next decade.

Charles S. Houston, M.D., WMS Founding Member

Considering Paul Auerbach's scurrilous comments on my defective wisdom, judgment and prescience (*Journal of Wilderness Medicine*, Vol. 3, No. 3,), I was surprised but honored by this invitation to consult again my crystal ball.

Now, as much 10 years ago, thousands of outdoor addicts congregate in hundreds of societies, clubs and associations, as often in competition as in brotherly love. All these herds have meetings in attractive places during lovely seasons. Could WMS compete in this arena? Was there room for another society? Evidently there was, and still is. Could another medical journal find a place among the 5,000 published each year? Would lust to publish attract scientists to give the *Journal of Wilderness Medicine* quality articles? Again, the answer is yes.

There is always room at the top. High-quality conferences and journals survive if not killed by excessive costs, soaring ambition, and repetitious articles and programs.

WMS has found a significant niche. Membership and journal can flourish, provided that: Programs are imaginative and fresh; articles are thoroughly reviewed and ruthlessly culled; and dues, meetings and periodicals are not priced beyond the market.

WMS must be more than a gang of friends, gathering now and then to play and occasionally hear talks by the same speakers saying mostly the same things in different settings. So — where *is* the future? Since I no longer fear Dr. Auerbach's libels, I can confidently comment and advise, even if I'm wrong. It seems to me that:

1. The non-scientific public (don't call them laymen) are increasingly interested in health and illness. WMS should speak to them through special programs, one-day meetings in metropolitan areas as well as longer ones in affordable resorts. There is nothing wrong with a nice spot, but the IRS does not allow Joe Six-Pack a tax deduction for such meetings, so the price must be right.
2. There is a major role in environmental education for WMS, but it's a crowded field and the approach must be unique. WMS should lobby for selected environmental causes but *should not* contribute to political campaigns.
3. WMS should produce high-quality educational materials such as videotapes, booklets and position papers on health and environmental topics, targeting the outdoor public, but *only* when these don't overlap with others.
4. Wilderness treks, sponsored by WMS (and sometimes enriching the sponsor) should include a service element: WMS should give as well as take from the third world — and at home as well as abroad.
5. WMS should use 10 percent of its revenue for scholarships or grants-in-aid to carefully chosen young people with fresh ideas for research or teaching.

Quality is the prime consideration. But sooner rather than later, our nation will face a major recession. Bare bones organizations with excellent programs and tightly controlled expenses will survive. Those that sacrifice quality or raise prices to meet inflation may not. ❑

HIGHLIGHTS OF THE 1993 WMS SCIENTIFIC MEETING

Photos by Ken Zafren, M.D., and Eric A. Weiss, M.D.

Above: Ken Zafren, M.D., WMS photographer, was somewhat "sidelined" with a knee injury at this year's meeting.

Above: Col. Joseph J. Darlak, M.D., a new member from New Orleans, won a free pair of Timberland Boots from Timberland representative Bonnie Murman.

Above: Membership Chair Susan Snider, M.D., presents Havner Parish, M.D., Pittsboro, NC,a copy of *"River Gods."* Havner was one of the t-shirt photo contest winners. J. Berthold Spencer, M.D., Jasper, TX, was also a winner.

Above: Arlene Burns, who lists her residence as "Planet Earth" gave a thought-provoking, entertaining and inspirational keynote address. **Right:** Edward "Mel" Otten, M.D., a workhorse at all WMS conferences, takes a moment to relax.

Environmental Medicine

Deniz Tek, M.D., Section Editor

Backcountry Patient Evacuation in the Cold

Adapted from *"Medical Operations in the Cold"*
by Tek D, Boehm R, Craven A.
4th MEB, USMC, 2nd ed., 1990

The evacuation of ill and injured persons from remote areas to appropriate medical facilities often requires manual transportation to a roadhead or landing zone. The timing and method of evacuation is ideally decided by balancing patient care with rescuer safety. In practice, resource availability and weather are often the deciding factors. Unless a helicopter can appropriately and safely be dispatched, long-range backcountry evacuation must await arrival of a team of rescuers with sufficient manpower and equipment. The following are standard methods for improvised evacuation to trailhead or landing zone.

Decision to Evacuate

The team leaders' decision to evacuate an injured or ill member of an expedition party depends on a combination of factors. These include the effect of the evacuation on the safety of the remaining party and rescuers, severity and time, critical nature of the patient's condition, team medical capability, rescuer skills and resources, weather, and time and distance to medical care.

Helicopters can be extremely useful in backcountry evacuation. But they are often unavailable, or unable to complete the mission because of altitude, weather or lack of a safe landing zone. Patients who are able to walk should be accompanied in their evacuation. If evacuation resources are inadequate, it is usually best to bivouac and wait for skilled rescuers. Litter teams of several people may be required. Rescuers must be prepared to survive in bad weather and to protect and manage the patient enroute.

General Rules for Backcountry Evacuation

- Treat life-threatening conditions (ABCs) first.
- Complete essential first aid (splints, pressure dressings).
- Protect patient from environment and keep warm from both above and below.
- Provide eye protection.
- Secure the hands of the unconscious patients. If the airway is unstable, transport the patient prone while protecting and monitoring airway.
- Select the easiest and safest route. Scouts may be required, especially in avalanche country.
- In mass patient or disaster situations, and if route is long and arduous, establish relay points and rewarming sites. Staff the rewarming sites with medical personnel to monitor/treat for shock, hemorrhage or other emergency conditions.
- Check patients' conditions frequently for deterioration such as shock and respiratory failure.
- Augment litter teams in snow or arduous terrain. It could require up to 13 bearers to evacuate one litter patient in rough terrain over a long distance.
- Do not separate patient and litter team from their clothes, sleeping bag and survival gear.
- Monitor litter patient for overheating, dehydration and cold injury.
- Consider I.V. therapy when appropriate, but it is often not practical. Unless externally warmed, I.V. tubing will freeze within minutes in cold temperatures.

Manual Carries

One-Person Carry (Firefighter's Carry)

This carry requires no special equipment and can be used to move a conscious or unconscious patient a short distance. The rescuer may become overheated and subject to cold injury. Individual survival equipment may have to be temporarily abandoned.

Firefighter's Carry

1. Turn the patient face-down.
2. Bearer kneels on one knee facing the patient's head.
3. The bearer pulls the patient upright by placing his hands under the patient's axillae and locking them across the back. The bearer must keep his back straight and head up, and use his leg strength to lift the patient.
4. The bearer pulls the patient's right arm around the back of his neck and down, gently bringing the patient's body across his back.
5. The bearer then encircles the patient's right leg at the knee and grasps the patient's right wrist with his right hand.

Modified Firefighter's Carry Using Ropes

Illustrations by Cynthia Williams.
Photos courtesy Wilderness Medical Associates, RFD 2 Box 890, Bryant Pond ME 04219.

Two-Handed Carry

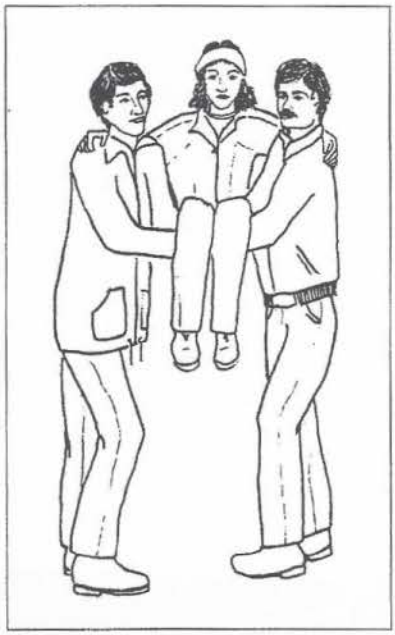
Two-Person Carries

Two-Handed Carry: The two-handed carry is used to move a conscious/unconscious patient a short distance. This carry should not be used with a suspected fracture of the neck or hips. It requires at least two rescuers but no special equipment. In arduous terrain/heavy snow, additional carries are required or carriers will overheat and tire quickly. Survival gear may have to be abandoned.

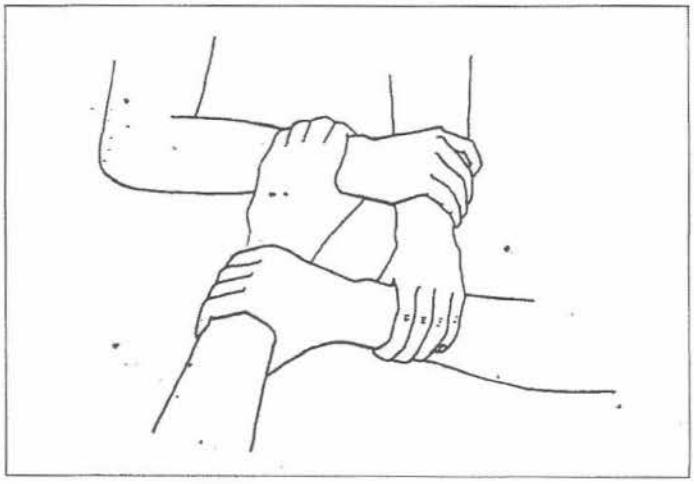
1. With the patient lying supine, the rescuers kneel on opposite sides of the patient's hips.
2. Each bearer passes an arm under the patient's thighs, grasping respective wrists, with one arm under the patient's arms and behind the back.
3. Bring the patient to a sitting position. Each bearer then grasps the other's jacket at the shoulder.
4. The bearers rise together using their leg strength to lift the patient.

Four-Handed Carry: This is used to move a conscious patient who is unable to walk. It requires two bearers and no special equipment. It should be used for short distances, and bearers should be monitored for overheating and fatigue:

1. Each bearer grasps his own left wrist with his right hand, then grasps the other bearer's right wrist with his left hand, keeping palms down.
2. The patient sits on the interlocking hands while supporting himself with an arm around the neck of one of the bearers.



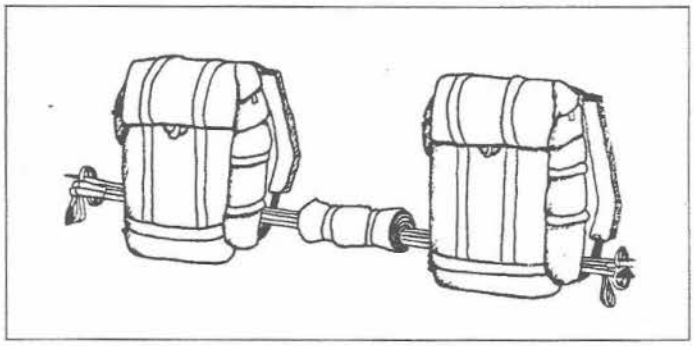
Four-Handed Carry



Seat for Four-Handed Carry

Ski-Pole Carry: This carry can be used to carry a conscious patient a short distance. Four ski poles are required. The bearers should wear snowshoes and may have to abandon survival gear and skis.

1. Two bearers with backpacks stand side-by-side.
2. Run four ski poles between the pack straps and pad the poles with clothing or other soft gear.
3. The victim sits on the padded ski poles with arms over the bearer's shoulders.



Pack Arrangement for Ski-Pole Carry

Litter Carries

Standard Litter: The standard Army pole litter can be used to carry a patient short distances. The patient must be placed in a sleeping bag or patient-evacuation bag and secured to the litter. Depending on the distance, depth of snow, terrain and weight of patient, four-member litter teams will need reinforcement. The general considerations listed above apply. The litter may be fitted with a litter kit, ski sled or ski adapters that will convert a litter and a pair of skis to a patient-evacuation sled.

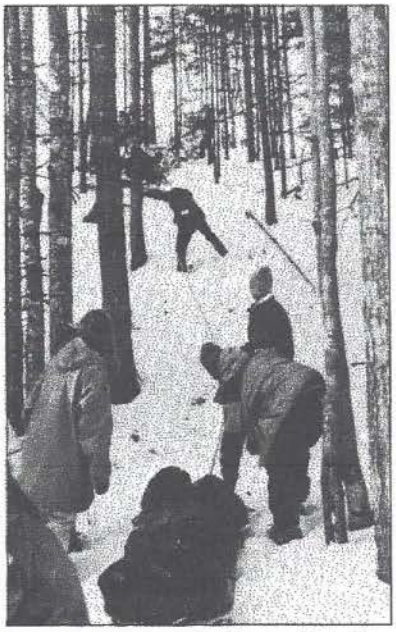
Pole-less Litter: This litter is only used to carry a patient short distances. Advantages over the standard pole litter include its compactness and light weight. It can be converted to a pole litter by utilizing saplings or branches at least 2 to 3 inches in diameter. It requires a four- to six-member litter team.

Improvised Litters

Akhio Litter: The unit Akhio can be converted to a litter:

1. Pad the bottom with the patient's sleeping pad or extra clothing.

2. Place patient in sleeping bag and lash securely into the Akhio.
3. Position the patient's head at the rear of Akhio and slightly elevated. If evacuation route is down slope, maintain head uphill.
4. The Akhio can be pulled by four to eight rescuers, or towed behind a snow cat or snowmobile. It can also be loaded into a helicopter or ambulance to reduce patient handling. The Akhio will accommodate some of the patient or team's survival gear.



Pulling an Akhio Litter

Hjelper Sledge: A hjelper sledge can be made with the patient's skis and ski poles:
1. Lay skis parallel.
2. Lash the skis together with ski poles, sticks or tent poles. Pad the toboggan with sleeping pad and clothing.
3. Attach rope or ski poles to the bindings for tow lines.

Snowplow Sled: A variation of the hjelper sledge:
1. Tie the skis together at the tips to make an angle of 40 to 60 degrees.
2. Separate the skis at the bindings by a rigid branch or pole about 50 centimeters (20 inches) long.
3. To hold the snowplow position intact, hook the ski pole baskets over both tips with the poles running along the skis to the binding and branch intersection.
4. Fill the space between the skis with a soft pack, boughs or other soft materials.
5. These types of improvised litters will work but are inefficient and demand a large team of strong bearers.

Blanket litter: This improvised litter uses blankets, space blankets, parkas, poncho, shelter half, tarps, pack frame, tree limbs, skis, tent poles or lengths of pipe. The poles must be about 2.5 meters long to extend beyond the blanket folds.
1. Open the blanket or tarp. Lay one pole lengthwise across the center and fold the blanket across the pole.
2. Place the second pole across the center of the folded blanket.
3. Fold the free edges of the blanket over the second pole to the first pole. The patient's weight will hold the litter together.
4. If using a parka or jacket, slip the branches or skis through the sleeves of the parka. Zip the parka shut with the sleeves inside.
5. A pack-frame litter can be constructed by lashing two pack frames to a pair of skis. The frames should be padded using the sleeping mat.

Litter Travois: A litter travois can be constructed for relatively smooth slopes that have snow, dirt or grass cover:
1. Secure two poles (3.5 to 4m X 8cm) to a standard litter by tying the small ends to the stirrups at the foot of the litter with wire or cord. If a standard litter is unavailable, use a poncho, tent sheet or blanket litter.
2. Extend the butt ends past the head of the litter approximately 1.5 to 2 meters.
3. Secure the poles to the stirrups at the head of the litter with wire or strong cord.
4. Drag the travois by one or more bearers. To free their hands and aid balance, the bearers may use webbing slings worn diagonally across the shoulders and secured to the litter.

Trail Breaking

Carrying a litter or pulling an Akhio is hard work and requires teamwork and practice. Trail-breaking is required for route selection and packing the snow to ease the load on the bearers. If possible, litters or Akhios should be carried or pulled by rescuers wearing snowshoes. Wearing skis increases the effort and control required by bearers and is less comfortable for the patient. In addition to the four- to six-member litter/Akhio team, trail-breakers are required.
1. The table below lists travel times over broken and unbroken trails. The rate of movement must be judged on time against the distance to be covered. Snow depth, terrain, weather and load all increase the time required to cover a given distance.

	Unbroken Trail	Broken Trail
On foot (<1 foot of snow)	1 to 2mph	1.25 to 2mph
On foot (>1 foot of snow)	.25 to .75mph	1.25 to 2mph
Snow shoeing	1 to 2mph	2 to 2.5mph
Skiing	1 to 3.5mph	3 to 3.5mph
Snow Cat	N/A	5 to 15mph

2. Trail-breaking organization
Trail-breaking is strenuous work, and unless carefully monitored, quickly leads to fatigue, overheating and dehydration. Breakers must be rotated often and allowed time for rest, for clothing to dry, and to eat hot or warm liquids or soft foods, such as instant oatmeal. The breakers may also navigate and select the safest evacuation route.

Conclusion

The key to successful patient evacuation is preplanning. Leaders should anticipate the worst-case scenario and think through all contingencies. Members of backcountry expeditions should know the risks and limitations of the group, and have a plan for calling outside help. Authorities should be given the planned route and destination. With anticipated decision points preplanned, the potential for mistakes in patient handling and evacuation can be minimized.

References

Worsing, Vines, eds. *Basic Rescue and Emergency Care.* American Academy of Orthopaedic Surgery, 1990.

Tek D. Medical Planning for Expeditions, *Emer Med Clin North Amer,* May 1992: 449-466.

Small Unit Leaders' Guide to Cold Weather Operations, FMFM 7-10e, CG MCCDC, Quantico, VA, 1988. ❑

Deniz Tek, M.D., is a staff emergency physician at St. Vincent Hospital, Billings, MT. He is also director of the HELP-Flight Aeromedical Transport Program.

Travel Medicine and International Health

Karl Neumann, M.D., Section Editor, and Caroline MacLeod, M.D.

News from the International Society of Travel Medicine

Third Meeting • April 1993 • Paris

Future Vaccines Against Enteric Infections

Accumulating knowledge regarding pathogenesis and mucosal and cellular immunology, coupled with the application of modern biotechnology, is resulting in numerous vaccines against important enteric infections that affect travelers, says Myron M. Levine, University of Maryland School of Medicine.

Several inactivated hepatitis A virus vaccines are already in use in Europe, but are not yet available in the United States. Presently, three doses are necessary. However, the use of special adjuvants and antigen delivery vehicles may enhance immunogenicity to allow immunization with one dose.

Two vaccines against typhoid fever (oral Ty21a and parental Vi polysaccharide) have been licensed in many countries. Newer typhoid vaccines are undergoing clinical testing including attenuated *S. typhi* and a Vi polysaccharide-carrier protein conjugate vaccine.

Two inactivated oral cholera vaccines, consisting of inactivated *V. cholera* 01 bacteria, alone or in combination with Beta subunit of cholera toxin each conferred 50-53 percent protection over three years in a field trial in Bangladesh. In extensive clinical trials in both developing and industrialized countries, an engineered live oral cholera vaccine has proven well-tolerated by adults and children. This vaccine is highly immunogenic following administration of just a single oral dose. Licensure of this vaccine in several countries is imminent.

Several live and inactivated candidate vaccines against shigella and enterotoxigenic *E. coli* are entering or are already in clinical trials.

A quadravalent rotavirus vaccine is undergoing placebo-controlled field trials in the United States and in two developing countries. This vaccine would be especially advantageous for infant travelers.

Travelers' Diarrhea

According to Herbert L. DuPont, University of Texas Medical Center, Houston, the incidence of diarrhea experienced by travelers from industrialized countries varies greatly with the destination: 40 percent in high-risk areas, (tropical/semitropical developing regions), 10 percent in intermediate risk areas (the northern Mediterranean countries, the former Soviet Union, and China), and 2 percent in other industrialized countries.

Travelers' diarrhea in high- and medium-risk areas is usually due to bacterial enteric infections from contaminated food and water. The safest foods to eat are: Items served steaming hot (more than 59 degrees Celsius); items with low pH (citrus fruits); dry foods (bread); and items with high-sugar content (syrups and jellies).

Travelers should receive pre-travel guidance for treating illness should it occur — fluids such as flavored mineral water and saltine crackers to replace fluid and salt losses, for example.

Symptomatic medication such as bismuth subsalicylate and loperamide reduce symptoms, but antimicrobials are more effective in curing the disease. Trimethoprim/sulfamethoxazole (TPM/SMX) is appropriate for diarrhea that develops in areas where TMP/SMX resistance is not reported. For most areas TMP/SMX resistance is common and quinolones are preferred. For patients with fever and dysentery (passage of bloody stools), the antimicrobial alone is recommended. For travelers without fever and dysentery, loperamide may be given with the antibiotic for optimal therapy.

Chemoprophylaxis (antimicrobials or bismuth subsalicylate) is recommended only in extraordinary circumstances, such as situations where travelers will not be able to watch their diets closely and where even minor alterations in itinerary can be catastrophic to the mission. Chemoprophylaxis may have side effects and increases the difficulty of making proper recommendations for therapy in the rare case where illness does occur.

Low Stomach Acidity and Diarrheal Diseases

Anecdotal reports suggest a relationship between the absence or reduction of gastric acidity and travelers' diarrhea and between gastrectomy and cholera. According to Leo Van Der Reis, Seton Medical Center, Daly City, CA, a survey of U.S. gastroenterologists and infectious disease specialists did not substantiate this. Furthermore, in several of the cases where an association did exist, the patients had underlying impairments in their immune systems.

Stool Testing for Some Returning Travelers

Travelers returning from developing countries who work in the food industry or day care centers should have mandatory screening for intestinal pathogens according to P.A. Mardh, University of Uppsala, Sweden. In Sweden, large numbers of secondary cases were traced to individuals with enteric pathogens who acquired the pathogen during travel in developing countries.

Leptospirosis in the United States

In a recent 20-year period, 381 cases of leptospirosis were reported in Hawaii, said V. Ansdell, Kaiser Permanente, Honolulu. The disease occurs worldwide, but tends to be more prevalent and more severe in the tropics due to high temperatures and rainfall. The majority of cases result from contact with rat-contaminated soil and water - though other domestic and wild animals also spread the disease. Early symptoms resemble influenza.

Misperception of Travel Risks by Older Travelers

Many international travelers worry about exotic threats to health and life while underestimating more common ones, says Larry W. Rumans, Naval Hospital, San Diego, CA. In a study of travelers 60 years and older, respondents believed that the greatest threats were (in decreasing order of frequency): airplane crash, road/car accidents, malaria,

AIDS, and diarrhea/dysentery. Airplane travel is, in fact, ten times safer than car travel.

Such misconceptions may place travelers at increased risk of injury. Travelers should be counseled on safe auto rental, seatbelt use, driving unfamiliar roads during daylight hours only, and the use of public transportation.

Chronic Fatigue Syndrome and the Tropics

The finding that travelers to the tropics have an increased incidence of developing chronic fatigue syndrome may be a clue to unraveling the cause(s) of this disease, says J. Gascon, Hospital Clinic, Barcelona. Fourteen typical cases were seen between 1989-1991. Symptoms lasted a minimum of six months and were present at least 50 percent of the time.

Malaria in Malaria-Free Zones

Most large, urban areas in the developing world are believed to be malaria-free and travelers to these areas are advised not to take malaria prophylaxis. However, this may be changing, says S. Shanmuganandan, Madurai Medical College, India. In India, (and likely in other developing countries), large-scale migrations of malaria-infected individuals from rural areas to urban areas is spreading this disease because the mosquito vectors that spread malaria are also present in the urban areas.

Travelers' Diarrhea and Malaria

According to R.H. Behrens, Hospital for Tropical Diseases, London, travelers' diarrhea may interfere with the absorption of proguanil and chloroquine, two drugs used for malaria prophylaxis.

Non-Exotic Infections Acquired in the Tropics

Not all fevers of unknown origin in travelers returning from the tropics are malaria, typhoid fever, or other exotic diseases, even though clinicians must keep such diseases in mind. In a 17-month period, 11 patients referred with suspected malaria were found by A.G.C. Bauer, Harbour Hospital, Rotterdam, to have sinusitis. All patients had fever, and many had headaches and symptoms of upper respiratory infections. All cases were confirmed by radiographs. The author speculates that changes in temperature caused by air-conditioning in hot climates and pressure changes in the inner ears and sinuses associated with high altitude may be predisposing factors.

Environmental Health Hazards in Former Soviet Bloc Countries

Travelers to Eastern Europe and the former Soviet Union are exposed to numerous environmental toxins, says Thomas R. Chen, Centers of Disease Control, Atlanta. Contamination of air, water, soil, and food occur due to high-polluting energy sources, industrial pollution, motor vehicle emissions, and unsound agricultural practices.

In many cities, the levels of sulfur dioxide, carbon monoxide, and dust in the air are well above World Health Organization standards. In most countries, drinking water fails bacteriological standards and surface water used for drinking is contaminated with nitrates, heavy metals and other pollutants. Contamination of agricultural areas with pesticides, nitrates and heavy metals necessitates careful consideration of the types and origins of food consumed. The region has high cancer rates and life expectancies are among the lowest in Europe. The effects, however, on short-term travelers is largely unknown.

Good Samaritans or Reticent Bystanders?

Two hundred five members of the International Society of Travel Medicine responded to a questionnaire about their attitudes toward providing professional assistance during travel.

Forty-eight percent of the respondents said they would provide medical assistance anytime and anywhere; 45 percent would respond only if no other medical help was available; and 6 percent said they would help only under special circumstances. Respondents who had never been in such a situation (29 percent) were as willing to help as those who had rendered care in the past (70 percent). Most who had previously rendered care had done so aboard aircraft. Despite a thankful crew, most physicians found the airline and the patient to be less than appreciative.

The most commonly quoted reasons for not becoming involved were discomfort with an unfamiliar problem (32 percent) and concern over malpractice issues (27 percent). European physicians expressed trepidation about rendering services in the United States or to U.S citizens because of liability issues.

The majority of respondents were willing to examine and treat fellow travelers; however, they were cautious about treating indigenous people to avoid undermining regional or traditional medical practices. When asked directly, however, 83 percent said they would treat specific injuries and illnesses in such people.

Campylobacter Enteritis

C. enteritis is a common cause of diarrhea. It is especially prevalent in developing countries and a frequent cause of travelers' diarrhea.

Generally, C. enteritis has a very good prognosis, and isolation of the organism from stool does not necessarily warrant antibiotic therapy. The patient usually recovers before the bacteriological diagnosis is made.

In the absence of chemotherapy, feces remain positive for about two to seven weeks after the illness. In mild cases, the organism is excreted only for a few days. Erythromycin or one of the newer macrolides (clarithromycin), if started within four days of onset of symptoms, has clinical benefits and shortens the fecal excretion of the organism.

Chemotherapy is indicated in the presence of severe abdominal pain, dehydration, or a high probability of complications. Quinolones such as ciproflexacin are effective as are aminoglycosides, erythromycin, doxycycline, minocycline, and chloramphenicol. The quinolones have the advantage of being effective against other causes of dysentery. Sensitivity tests should be conducted because *C. jejuni* resistance has been reported against all of these medications.

Health Risks in Developing Countries: Fact and Fiction?

Some 50 percent of travelers who visit developing countries for two weeks will feel ill and use medication(s), says R. Steffan, University of Zurich. Most of the health problems are mild. Travelers' diarrhea affects about 30 percent of travelers. Other common complaints are colds and constipation.

(Continued on Page 18)

Malaria is the most frequent cause of more serious threats to health. Two percent of travelers to tropical Africa who are unprotected by chemoprophylaxis acquire malaria. Hepatitis A is the most frequent occurring preventable infection. The incidence rate is approximately 0.3 percent / month of travel. Typhoid fever incidence is 10 to 100 times lower depending on destination, and cholera is 1,000 times less frequent.

Long-term travelers are at risk from hepatitis B and rabies with an incidence rate of 0.2 and 0.02 percent, respectively. Sexually transmitted diseases, including HIV infections, schistosomiasis, and other tropical diseases can be reduced by adherence to simple behavioral guidelines. Road accidents claim the heaviest toll of lives in travelers. ❑

Karl Neumann, M.D., has a private practice in pediatrics in Forest Hills, NY. He is also Associate Clinical Professor of Pediatrics at Cornell Medical College, and he has a syndicated column on travel medicine. Caroline MacLeod, M.D., is with the Tropical Medicine and Travelers' Clinic, Miami.

WMS Award Recipients

Abstract Presentation Award

William A. Robinson, M.D., Truman Medical Center, Kansas City, was selected by the Research Committee as the recipient of the 1993 Annual Meeting Abstract Presentation Award. Dr. Robinson's topic was, *"The Use of a Thromboxane Inhibitor to Treat Frostbite: The Effect of Delayed Presentation After Injury."* He received a $200 WMS Bookstore gift certificate. Abstracts from the 1993 Annual Meeting will be published in the *Journal of Wilderness Medicine*.

1993 Research Awards

Research Committee Chair Peter Hackett, M.D., announced the following recipients of the 1993 WMS Research Awards:

- **James Higgins**, a student at the University of Rochester School of Medicine and Dentistry, Rochester, NY, received the Charles S. Houston Award for his project, *"The Affects of Tropical Deforestation on the Medicinal Practices of Traditional Health of the Carib Indians."*
- **Allen Rosen**, a student at Albany Medical College, Albany, NY, was also granted the Charles S. Houston Award for his project, *"Methods to Maintain Hand Comfort and Function in a Cold Environment."*
- **Paul R. Bender, M.D., Ph.D.**, Emergency Medicine Resident at the Medical College of Wisconsin, was a recipient of the Research Training Award for his project, *"Serum Potassium Concentration as a Predictor of Resuscitation Outcome in Hypothermic Cardiac Arrest."*
- **Carl Spengler, D.O.**, Emergency Medicine Resident from the University of Oklahoma received the Research Training Award for his project, *"Comparison of the Sawyer Device vs. No Treatment for Brown Recluse Spider Envenomation."*
- **David Fiore, M.D.**, Department of Family and Community Medicine, University of Nevada-Reno, received the WMS Member Award for his project, *"The Effect of Mountain Biking on Prostate-Specific Antigen Levels."* ❑

Upcoming Meetings

Future WMS Conference Dates

Please mark your calendars now and plan your schedules around the following important upcoming Wilderness Medicine Society conferences:

- **February 12-18, 1994**, Winter Wilderness Medicine, Snowbird, UT
- **April 23-27, 1994,** Travel Medicine, Santa Fe, NM
- **August 7-14, 1994,** WMS 10th Annual Meeting Squaw Valley, CA

WMS Member News

Susan Trip Snider, M.D., Section Editor

Keith Conover, M.D., has been spending as much spare time in the outdoors as possible ever since he was a small child and routinely wandered away from his parents on mountain vacations. He went through medical school primarily to practice wilderness emergency medicine, and is active in the field with local mountain and cave rescue teams, as well as serving on the faculty of the University of Pittsburgh Emergency Medicine residency. His most recent exploit was to drag one of his E.M. residents onto a helicopter, then proceed half a mile into a cave to care for a patient. What's worse, he made the resident finish emergency department mangement of the patient before letting him shower and change clothes. Keith is helping explore plans for a WMS eastern regional meeting. Watch for details.

Nicola Schiebel, M.D., Edmonton, Alberta, Canada, describes herself as an eccentric emergency physician with long-time interests in the following outdoor pursuits: mountain biking with specialty in trailside improvised repairs; hiking (i.e. walking with expensive equipment); cross-country and downhill skiing; sailing (can be compared to the exhilaration of standing in a cold shower shoving $100 bills down the drain). Her long-term goal is to write a book titled, *"Psychology of Camping with Children: How to avoid the temptation of feeding them to the bears."*

Scott Camazine, M.D., is an emergency physician working part-time in Ithaca, NY. The rest of his time is spent doing research on honey bees and as a professional nature photographer. He has worked with the Africanized "killer bees" in Brazil and Mexico and recently completed a doctorate in neurobiology and behavior at Cornell University. He has written two books on natural history and nature photography (*"The Naturalist's Year,"* and *"Velvet Mites and Silken Webs"*). His nature photographs have appeared in *Natural History, Audubon, Ranger Rick, Smithsonian,* and other magazines. ❑

Members! We would like to know about you and your activities. Please write a paragraph about yourself and send it to the WMS Member News editor, Susan Snider, M.D., 112 Hospital Dr., Spruce Pine NC 28777. Please include your telephone number and a recent photo, if available.

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