



Appalachian Search and Rescue Conference
Center for Emergency Medicine of Western Pennsylvania

Wilderness EMT Lesson Plan

Part I: Introduction to WEMS, the WEMT, and the WEMSI Curriculum

Draft Version 1.61 October 17, 1991 (reprinted August 1994)

Comments to:

Mark Pennington, Task Group I Leader
2732 Grantwood Rd. Richmond, VA 23225
804-320-8052 (H) 804-674-2499 (W)

Task Group: Albert Baker, M.D.; Bruce Bannerman; Ken Boyles; John Chew; Keith Conover, M.D.; Arthur Dodds, Jr.; Jack Gabow; Gene Harrison; John C. Hemple; Robert Koester; Tim Kovacs; Richard Kunkle, M.D.; Patrick LaValla; David A. Lindell; Gary Mechtel; Richard Packer; Mark Pennington; Greg Shea; John Wallace; and Ralph Wilfong.

© 1989, 1994 by ASRC-CEM WEMCDP/WEMSI

This Draft contains material proprietary to the ASRC-CEM Wilderness EMS Institute; it is preliminary and may contain significant errors, so it should **not** serve as a reference. It may not be reproduced whole or in part without written permission. It is not to be circulated except to Staff and Consultants to the WEMSI, and students at our classes. However, a future draft version of this material **will** be made public.

Project Coordinator:

Keith Conover, M.D. 36 Robinhood Road
Pittsburgh, PA 15220-3014 412-561-3413

Verbose Outlines

We develop our WEMT Lesson Plans in a **verbose outline format** (what you see here). Why? Because the material is new to enough reviewers that the usual terse (“telegraphic”) lesson plan format might be incomprehensible or misleading.

Our Task Groups use these “verbose” outlines. Each part of the WEMT curriculum (about twenty in all) has a Task Group of five to twenty selected consultants. A Coordinator guides the Task Group in revising the section.

Each Task Group provides references to support its statements and for further reading. They also provide glossary entries for any new terms they introduce. (New, that is, to a reader with basic EMT and SAR training.)

Background material that should appear in the Textbook (see below), but instructors need not present in class, will appear *in a small, italic font*.

Splitting the Outlines

When the outline satisfies the Task Group, it goes to our **Editorial Board**. This Board includes officers of the Appalachian Search and Rescue Conference and Center for Emergency Medicine of Western Pennsylvania, our two sponsors. It also includes experts in emergency medicine, search and rescue, and education. The Editorial Board reviews the verbose outline, and requests any necessary revisions. Once it is acceptable to the Board, we reformat the outline, into two distinct new versions.

We rewrite the material in the standard lesson plan format, which becomes a terse “telegraphic” outline. This version will be briefly reviewed by the Project Coordinator and then released to the public. It is the result of extensive review and testing, and will be used in all our classes. But, we still publish it as a draft, because we expect many good suggestions from the public. We distribute these drafts as widely as possible. After each year of public review, the Task Groups reviews comments, and submits revisions to the Editorial Board. Once all outlines have withstood a year of public scrutiny, we will prepare a single comprehensive curriculum with a Course Guide. We will continue to review and revise the curriculum regularly.

On to a Textbook

As explained above, once the Editorial Board approves the verbose outline, we split it into two versions. Besides the terse teaching outline, it will also become the basis for a textbook chapter. The

Project Coordinator is the textbook Editor-in-Chief, and works closely with the Task Groups to consolidate and revise the verbose outlines into a comprehensive textbook. All who have contributed to the curriculum will be acknowledged as contributors. The textbook will be commercially published when completed. Until the textbook is available, we will distribute the verbose outlines or drafts of the textbook at classes.

Notes: Introduction to WEMS

This part of the curriculum serves several purposes. It introduces students to this particular class. It also sets the tone by combining search and rescue and EMS, in a new way, in the students’ minds.

This is, to a degree, a review of material from EMT and GSAR training. However, we must make students look at these old concepts in the new light of a coordinated Wilderness EMS system. Even if, in many areas, a Wilderness EMS system exists only in the WEMTs’ minds, this Wilderness EMS mind-set is integral to the concept of the WEMT.

I. Introduction to WEMS, the WEMT, and the WEMSI Curriculum

A. Educational Objectives

1. Meet the faculty and staff.*
2. Understand the class schedule, and the facilities available for the class.
3. Become familiar with reimbursement or tuition procedures.
4. Describe student expectations:
 - a. practical teaching and testing,
 - b. written tests and testing procedures,
 - c. personal equipment,
 - d. student feedback, and
 - e. clinical rotations.
5. Outline the purposes and target population of the ASRC—CEM WEMT Curriculum.
6. Become familiar with the structure of Wilderness EMT training using the ASRC—CEM Wilderness EMT Curriculum, including:
 - a. prerequisites;
 - b. clinical training; and
 - c. the applicability of the curriculum to EMT-Basics, to EMT-Paramedics, and to other advanced EMTs.
7. Define certification and licensure, compare and contrast them, and apply them to the Wilderness Emergency Medical Technician.
8. List the components of an EMS system, and describe how these should be implemented in a Wilderness EMS system.
9. Describe the role of the WEMT:
 - a. when not involved in an operation;
 - b. when on a wilderness search and rescue, operation, either at base, on a search team, or on a rescue; and
 - c. during a catastrophic disaster.
10. Describe important EMS medico-legal issues that are relevant to WEMTs:
 - a. law suits: negligence and tort claims;
 - b. standard of care;
 - c. duty to act;
 - d. abandonment;
 - e. medical practice acts;
 - f. delegated practice;
 - g. on-line command;
 - h. off-line command;
 - i. protocols and standing orders;
 - j. doctor-patient relationships versus EMS medical command; and
 - k. dealing with a dead patient, including
 - (1) determining death,
 - (2) declaring death, and
 - (3) certifying death ("signing the death certificate")
11. Identify important guiding principles for the WEMT, including:
 - a. keeping up certification and competence via continuing education in three areas:
 - (1) search and rescue,
 - (2) "street" EMT skills and knowledge, and
 - (3) Wilderness EMT specific skills and knowledge;

* Objectives 1-4 are for the Lesson Plan but not for the Textbook.

- b. recognizing the psychological stress of wilderness and taking appropriate countermeasures as needed; and
- c. meticulously documenting all care given.

B. Class Introduction

1. Introduce any faculty members who are present.*
2. Describe special procedures for this particular class (tuition, reimbursement, continuing education credit, etc.)
3. Describe the schedule, including meal breaks and rest breaks; describe the facility, including restrooms, etc.
4. Lay out the first day's objectives (which depend on the specific schedule followed).
5. Describe student expectations:
 - a. practical teaching and testing,
 - b. written tests and testing procedures,
 - c. personal equipment,
 - d. student feedback, and
 - e. clinical rotations.

C. Purposes and Target Population

1. The purpose of the ASRC—CEM Wilderness EMT Curriculum is to “fill in the gaps” between search and rescue and EMT/EMT-P training. And, we want to extend both the SAR (search and rescue) and the EMS system so they can meet “in the middle” in the person of you, the Wilderness EMT. Our ultimate goal is to provide better care of those in the wilderness who are injured or ill.

2. The target population for the curriculum includes members of mountain, cave, and other wilderness search and rescue teams, and members of rural rescue squads with wilderness search and rescue responsibilities. The curriculum is **not** designed for outdoor recreation trip leaders or guides, unless they are part of a wilderness EMS system with a physician medical director.

a. *The true “Wilderness EMT” is the object of our curriculum.*

(1) *The wilderness search and rescue team carrying out a victim needs wilderness first aid/medical training similar to that of a park ranger's wilderness first responder training (see below), but even more extensive. (Not all SAR team members need such training, but each team should have enough medically trained members to provide prompt and continuous care for its patients.) Wilderness EMTs will be responsible for caring for the critically ill wilderness patient during long evacuations, or perhaps during overnight (or longer) bivouacs due to weather. However, the critical medical and surgical problems the Wilderness EMT will confront are different from those on urban streets. The urban EMT's most critical patients are those who will die within minutes unless the EMT uses cardiac drugs or defibrillation. In the wilderness, such patients are merely dead bodies and need concern the Wilderness EMT very little. The urban EMT, however, delivers some urban patients to the Emergency Department without difficulty, only to have the patient nearly succumb to some complication in the ED, on the ward, or in the ICU. These are the patients for which you must prepare. When these problems occur in a wilderness patient, the patient may not be in the ED, the ward, or the ICU; the patient may still be in the middle of a wilderness evacuation, still tended by you.*

(2) *Hypothermia. Delayed effects of shock. Acute renal failure. Sepsis. Deep venous thrombosis*

* Section B is for the Lesson Plan but not for the Textbook.

I: Wilderness EMS

and pulmonary embolism. Compartment syndrome. Adult respiratory distress syndrome. These are the critical problems that will confront the Wilderness EMT. To train the Wilderness EMT, we realized that we must develop an entirely new curriculum based on these problems, treated in the wilderness environment.

b. Would-be "Non-EMS Wilderness EMTs" posed a problem for us. Those who travel the wilderness regularly, not as part of a wilderness search and rescue team, but as part of their jobs or for recreation, are often confronted with wilderness emergencies. For many years, highly motivated outdoors enthusiasts attended EMT classes, supposing this was the best preparation they could make for the wilderness emergency. Many of these "non-EMS EMTs" wanted to take our course, as a logical continuation of their basic EMT courses. However, our curriculum depends very much on WEMTs being part of a wilderness-specific, physician-supervised EMS system. Physician control is essential, we believe, for the kind of training we provide. Therefore, we will admit outdoors enthusiasts (ones who are not members of a physician-supervised wilderness search and rescue team) only if their outdoor recreation group has a physician who is willing to integrate the outdoor recreation group into the local EMS system. (In many cases, this could be done without requiring the group's WEMTs to serve as "street" EMTs.)

- (1) Weekend wilderness trip leaders seldom have a strong EMT background even if they've taken an EMT class. They rarely have any sort of physician medical control or supervision. Professional guides, however, may have a physician who works with them on a regular basis. And, they probably have the requisite search and rescue background. We decided our curriculum might be appropriate for guides if (and only if) they are willing to become a part of their local EMS system.
- (2) Urban medics who enjoy outdoor recreation have strong EMT backgrounds and strong outdoor skills, but seldom know much about wilderness search and rescue. They will have no medical control or supervision for their outdoor recreation activities. Therefore, with

Purposes and Target Population

regret, we decided that our curriculum was unsuited for these potential students, too.

- (3) With the need for an EMT-equivalent course for wilderness trip leaders, we will probably have the ASRC—CEM Project develop such a curriculum over the next few years.
3. The Appalachian Search and Rescue Conference (ASRC) is a volunteer search and rescue organization. ASRC missions include wilderness search for lost persons and the rescue of injured persons from hiking, hunting, or other accidents. The ASRC also conducts special technical operations including mountain and cliff rescue. There are currently ASRC Groups in Pittsburgh, Pennsylvania; Columbia and College Park, Maryland; in Washington, D.C.; and in Virginia, at Charlottesville, Chesapeake, Richmond, and Blacksburg. The ASRC is also the Eastern Region of the Mountain Rescue Association. The ASRC is affiliated with the Eastern Region of the National Cave Rescue Commission (NCRC) and the National Association for Search and Rescue (NASAR).
4. The Center for Emergency Medicine of Western Pennsylvania (CEM), founded in 1978 and incorporated in 1983, is a consortium of 11 Pittsburgh-area hospitals and the University Health Center of Pittsburgh, the largest single medical campus in the U.S. Through its large residency program (the University of Pittsburgh Affiliated Residency in Emergency Medicine) the Center trains emergency physicians. It also conducts a highly-respected paramedic training program. The Center provides medical command for the city of Pittsburgh, and provides emergency ground and aeromedical transportation services (STAT: Special Treatment And Transport). The Center for Emergency Medicine is well-known for its research in emergency medicine and prehospital care (the use of lighted stylets for intubation is a recent CEM innovation). The Center publishes many papers in the *Annals of Emergency Medicine* and other medical journals. It is the center for Pennsylvania's Basic Trauma Life Support training, and it is the headquarters of the National Association of Emergency Medical Services (EMS) Physicians.

D. Wilderness Prehospital Care

1. The Wilderness Medical Society has outlined wilderness first aid and delineated its own role:
 - a. Backcountry First Aid can be defined as first aid rendered under conditions where immediate, definitive medical care is unavailable because of distance, adverse travel conditions, or difficulties in communications. The term "backcountry first aid," therefore, can be applied to first aid rendered at high and low altitudes, from arctic ice and subarctic tundra to forests, deserts, seashores, the tropics, and even under the seas. Small boat sailors, inhabitants of isolated villages, and victims of disasters where medical facilities and communications have been destroyed may all require "backcountry first aid." Backcountry first aid differs from the usual type of first aid and EMT training in three major ways:
 - (1) The need to learn new procedures in order to handle injuries and illnesses in which a delay of more than a few hours or days will likely cause adverse effects which outweigh the dangers of teaching such new procedures to lay persons. Standard urban protocols for these illnesses and injuries are not adequate for the backcountry setting.
 - (2) The need to deal with entirely new illnesses and injuries not seen in the urban setting.
 - (3) The need to learn basic care of an injured or ill person so that ordinary day-to-day requirements of the body will be met until definitive care is secured. These requirements include temperature control (warmth or coolness), shelter, water, food, cleanliness, psychological support, and the management of excretory functions. . .
 - b. . . . The WMS, with its membership which already includes a large number of the country's experts on various aspects of backcountry first aid, can and should become the national authority in this area. . .
 - c. . . . The WMS . . . does not have the manpower or funds to set up a national program for backcountry first aid training, including certification and recertification of instructors and students. It can, however, be in a position to assist, advise, and perhaps certify other organizations which teach and certify students and instructors.¹
2. Wilderness first aid needs differ. Consider the widely different situations that might call for "wilderness first aid": from afternoon day-hikes, to expeditions to the Hindu Kush; from blisters on the heel, to open femur fractures; and from Sunday afternoon day-hikers, to medics with Mountain Rescue Association teams.
 - a. Wilderness first aid training is provided by a variety of organizations, but there is no national standard. Examples include wilderness-oriented Red Cross standard and advanced first aid programs offered by The Mountaineers and Seattle Red Cross,² and a wilderness-oriented advanced first aid course offered by the Los Angeles Red Cross. The ASRC—CEM Project is not involved in curriculum at this level, though the ASRC Medical Committee has developed a search and rescue-specific basic wilderness first aid course for internal use. In addition to the standard Red Cross texts,³ several wilderness medicine and wilderness first aid textbooks are now available to those conducting such a course. Fred Darvill's *Mountaineering Medicine- A Wilderness Medical Guide*,⁴ a first-aid-kit sized booklet, has sold about 150,000 copies over the past 20 years. Many backpackers and wilderness canoeists use Forgy's *Wilderness Medicine*⁵ is a popular text which combines outdoor safety and survival with wilderness medicine for backpackers. Auerbach's *Medicine for the Outdoors*⁶ provides a larger and more in-depth text for the recreational wilderness traveler. Another book from The Mountaineers, *The Pocket Doctor*,⁷ is aimed at foreign travel in general. It has become quite popular among backpackers due to its small size. In Canada, a 382-page text published in British Columbia in 1986 is very popular.⁸
 - b. Expedition medicine refers to the care during long expeditions to faraway places, and thus is different in time scope than recreational wilderness first aid. A series of overview articles in *Postgraduate Medicine* in 1985 describes medical considerations in planning for such

expedition.^{9,10,11} For twenty years, Wilkerson's *Medicine for Mountaineering*,¹² now in its third edition, has been the "medical Bible" for climbers on expeditions to remote parts of the world. These classes concentrate on providing a good general "family practice" background for the climbers, with a smattering of wilderness-oriented first aid and EMT-type trauma management. There are generally few problems with climbers giving prescription medications to each other in places like the Himalayas. Therefore, classes usually cover the use of some oral and injectable medications, though the pharmacology instruction is much more basic than in paramedic classes.

C. Wilderness First Responder courses are designed for people such as mountain and river guides and park rangers. Some wilderness-oriented first aid courses do indeed call themselves "Wilderness First Responder" courses. Some are based on (or similar to) the Department of Transportation's First Responder course;¹³ others are of completely different design, unlike the American Red Cross first aid courses, DOT (and most wilderness) First Responder courses focus solely on care of the severely injured or seriously ill wilderness patient, neglecting far more common but simpler medical problems.

(1) For the past 10 years, the National Cave Rescue Commission's Orientation to Cave Rescue training sessions have offered emergency medical and rescue training to cavers, and cave rescue training to EMTs in cave-bearing areas.* The medical portion of the course (for the non-medical cavers) is similar to the DOT First Responder Course, but abbreviated and oriented specifically to the cave environment. The new edition of the *Manual of U.S. Cave Rescue Techniques* is the basis for this course; the section on medical aspects of cave rescue has been expanded in the new edition.¹⁴ Orientation to Cave Rescue student manuals, that expand on the cave rescue textbook, are available to participants in Na-

tional Cave Rescue Commission training courses. The Eastern Region of the National Cave Rescue Commission has also offered advanced medical training seminars to its paramedics on an irregular basis, and is now formalizing this training to complement the ASRC-CEM WEMT curriculum as a special cave rescue module.

(2) The National Ski Patrol's ski slope patients are more rural and winter problems than wilderness problems. But, with the recent explosive interest in backcountry Nordic (cross-country) skiing, and the corresponding growth of the Nordic Ski Patrol, ski patrollers' first aid training has become more wilderness-oriented. Their new wilderness-oriented Winter Emergency Care Course (WECC)¹⁵ is designed for an outdoor setting far from hospitals but usually close to a vehicle. It is specifically aimed at the problems of the Ski Patrol, and it is suited more to rescuers than to recreational users of the outdoors.

(3) The National Association for Search and Rescue offers a 64-hour Wilderness First Responder Course based on the DOT course. It includes all the material in the DOT First Responder course, adding information specific to prolonged transport.**

3. The Wilderness EMT concept developed at several independent centers in the 1970s, and early work was guided by Stan Bush of the National Association for Search and Rescue. Later, independent groups such as SOLO (Stonehearth Open Learning Opportunities), WMA (Wilderness Medical Associates), and the ASRC-CEM Project took over developing the WEMT idea. Of the three, the ASRC-CEM project is the only direct descendant of the early NASAR work. NASAR contracted with WMA to offer WMA's WEMT as the NASAR WEMT course. SOLO and the ASRC-CEM project continued independent development of WEMT classes.

* contact: John C. Hemple, NCRC Eastern Region Coordinator, Rt. 1 Box 371, Dilliner, PA 15327.

** contact: NASAR, P.O. Box 3709, Fairfax, VA 22038, 1-703-352-1349.

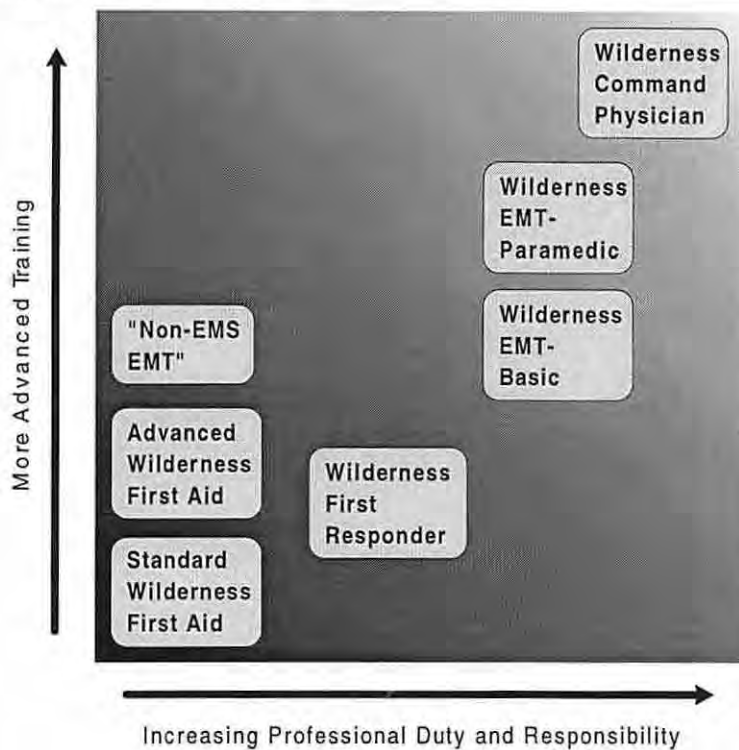


Figure 1.
The
spectrum
of
wilderness
prehospital
care

- a. Wilderness-oriented basic EMT classes have been offered by several organizations in years past. These included ambulance-specific material, thus meeting the requirements for EMT-Basic certification, yet oriented all classes and practical exercises toward the wilderness environment. The SOLO wilderness EMT-Basic course in the 1970s and the WMA wilderness EMT-Basic course in the mid-1980s were such courses. The ASRC—CEM Project Coordinator (Dr. Conover) offered such wilderness EMT-Basic courses through the Blue Ridge Mountain Rescue Group of the Appalachian Search and Rescue Conference in the mid-1970s. Doubtless similar courses have also been offered elsewhere.
- b. In the mid-1970s, the National Association for Search and Rescue had a very active Emergency Medicine Committee under the direction of Mr. Stan Bush of the Colorado Search and Rescue Board. The Committee began work on a national Wilderness Medical Technician curriculum at that early date, and established a rough outline in 1980.¹⁶ At one point, the Committee had over a hundred active members across the country, and held several national meetings to discuss the topic.
- c. Unfortunately, with the loss of Mr. Bush's energetic leadership in the early 1980s, this project foundered, though individual WEMT programs continued to develop in various parts of the country. The NASAR Emergency Medicine Committee dissolved, and was eventually replaced by a small committee that did not pursue the development of a NASAR WEMT program. Eventually, NASAR adopted the WMA program but with no review by its own medical committee.
- d. The most complete draft curriculum produced by the NASAR Emergency Medicine Committee, proposed by Dr. Conover in 1980,¹⁷ lay dormant while he attended medical school. After medical school, he began recruiting other physicians and mountain and cave rescue team members to develop the program further. The program obtained the formal sponsorship of the Appalachian Search and Rescue Conference (Eastern Region, Mountain Rescue Association) and the Center for Emergency Medicine of

I: Wilderness EMS

Western Pennsylvania (an emergency medicine and prehospital care research and education organization with an affiliated Emergency Medicine residency). Other medical and search and rescue organizations, including the Eastern Region National Cave Rescue Commission, participated in the project informally.

4. Thus was born the Wilderness Emergency Medicine Curriculum Development Project. Its goals were developed during several years of discussion between Emergency Medicine and search and rescue professionals. The Project established three main goals.

- a. Our first goal was to develop a Wilderness EMT curriculum. This was to be a high quality add-on module in wilderness prehospital care for EMTs and paramedics. It was to be developed with a formal mechanism for regular review and input from both wilderness search and rescue experts and emergency medicine experts. The curriculum, once published, was to be available to the public: copyrighted, but with unlimited copying permitted. The first published version, though approved by the Project Editorial Board, was still to be formally published as a draft, to emphasize the need for wider public comment. A subsidiary goal was to develop a textbook for the course. Concurrent with developing the curriculum, we developed standards for Wilderness EMTs. Many of the "students" in our Pilot classes were doctors, nurses, EMTs, and paramedics with years of experience in mountain and cave rescue. Their feedback during and in between Pilot Classes allowed us to assure that the Curriculum always stayed true to the actual needs of the wilderness rescuer.
- b. The project's second goal was to use the curriculum to provide high-quality Wilderness EMT training to the mountain and cave rescue teams in the Central Appalachians, and to work towards recognition of Wilderness EMS as an integral part of regional EMS systems.
- c. The project's final goal was to develop a Wilderness Command Physician curriculum. This one-weekend course would train physicians to give command to WEMTs involved in evacuations lasting hours to days.

Wilderness Prehospital Care

- d. More about the details of the Wilderness Emergency Medicine Curriculum Development Project and the Wilderness EMT Curriculum may be found in the ASRC-CEM Wilderness EMT Course Guide. The Course Guide should be available in mid 1991.

5. The ASRC—CEM WEMT Curriculum evolved over the years to its present form. Major influences in its upbringing included
 - a. Dr. Conover and Mr. Bush's early WEMT work for NASAR;
 - b. Special WEMT conferences, seminars, and meetings, including several held specifically for this Project;
 - c. A 100-page Prospectus and questionnaire sent to every mountain and cave rescue team in the country, and to other wilderness medicine educators;
 - d. Recommendations from Mountain Rescue Association and National Cave Rescue Commission teams;
 - e. Advice from state EMS agencies, especially Susan McHenry and Bill Meadows of Virginia EMS;
 - f. Work by the staff of Search and Rescue Training Associates and the search and rescue staff of the Virginia Department of Emergency Services;
 - g. Students and instructors giving excellent critical commentary at several Pilot Courses;
 - h. Several people who volunteered their time, critical commentary, and encouragement (David Tauber, Paul Auerbach, M.D., Michael Callahan, Murray Hamlet, D.V.M.);
 - i. Suggestions from the staff of SOLO and WMA, especially Peter Goth, M.D., Lee Frissell, and Buck Tilton; and,
 - j. The work of our Faculty, Staff, Task Group members, and Editorial Board, as well as the many ASRC members, and CEM faculty and residents, who participated in the Project.

E. WEMT Structure, Prerequisites, and Clinical Training

1. The overall concept of the curriculum is quite simple: this WEMT curriculum cements together the student's EMT and SAR training to form him or her into a complete Wilderness EMT. (See Figure 2.)
2. The prerequisites for the curriculum (and a "post-requisite") and the reasons for them, are as follows.
 - a. Virginia Ground Search and Rescue Field Team Member certification or similar training is required, so that we don't have to repeat basic search and rescue training in the WEMT course. Adequate SAR training is readily available in our area (i.e., the Virginia GSAR training program, and training and certification offered by organizations such as the ASRC). Programs such as the National Association for Search and Rescue's *Fundamentals of SAR* and the National Cave Rescue Commission's *Orientation to Cave Rescue* are also available across the continent.
 - (1) *However, we encountered several important questions in deciding on the SAR prerequisite. First, why not include SAR in the WEMT curriculum? Here are the reasons why we decided against including SAR.*
 - (a) *First, most members of our target audience were members of search and rescue teams and thus already trained in SAR.*
 - (b) *Second, we felt, and all of the mountain and cave rescue teams that we surveyed felt, that SAR training should be left in the hands of SAR experts and not taught as part of a curriculum that was primarily medical.*
 - (2) *Do we need to require complete wilderness search and rescue certification, or does the WEMT student only need to know a selected subset of search and rescue skills?*
 - (a) *Consider the parallel case of EMT training. The ambulance driving portion of the basic EMT class is essentially irrelevant to Wilderness EMTs. Similarly, one can make a strong argument that the search portion of most search and rescue certification courses is irrelevant to the WEMT: a WEMT who does rescues but no searches need have no more than passing familiarity with search techniques.*
 - (b) *Reviewing the topics in a standard basic search and rescue certification class, we decided that search is not so important. But, incident management, survival, wilderness travel, basic land navigation, improvisational techniques, and nontechnical, semitechnical, and limited technical rescue familiarity were all legitimate needs for the WEMT. The WEMT must understand enough SAR to interface with other members of the SAR system, to estimate evacuation time and difficulty, and for safety in operations in rough terrain or bad weather.*
 - (c) *In parallel to our decision to require EMT training for the WEMT class because it is widely available and standardized, we decided to require "complete" SAR certification. That is, we wanted students to have had all the training required for SAR, rather than a specific subset chosen specifically for WEMTs. It makes sense to require a standard SAR certification class, since search comprises only a small section of the SAR course. (Also, there are good arguments for requiring WEMTs to know the basics of search, including the situation when a WEMT reaches a rescue scene to find that the victim has wandered away.)*
- (3) *Another question was: Is the SAR prerequisite a prerequisite for taking the course, or just for state licensure as a WEMT? (If the state decides to license WEMTs.)*
 - (a) *We only offer a course completion certificate, relying on state EMS agencies to coordinate with state search and rescue agencies to establish state WEMT licensure or certification (see below for more on this). Given the inherent risks of field exercises in the curriculum, we decided that SAR certification should be a prerequisite for the course.*

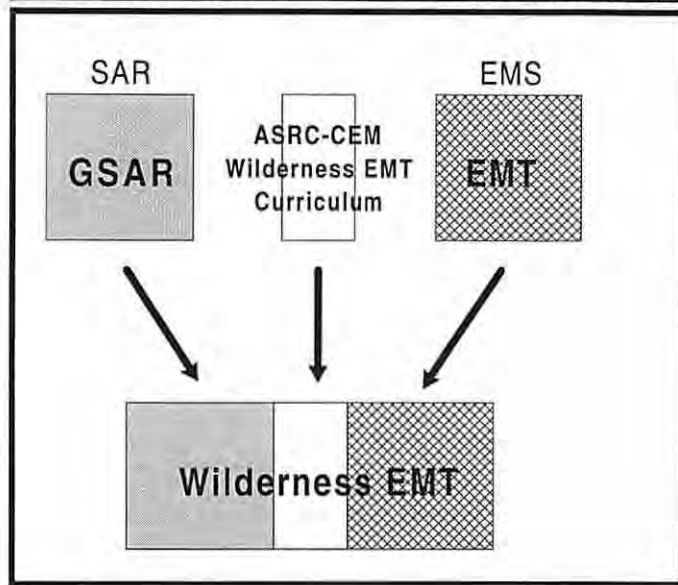


Figure 2.
Assembling the
Wilderness EMT

- (b) However, this left us with a problem when running Pilot Courses in Pennsylvania. To explain, we should first look at the types of Wilderness EMS agencies here in the mid-Appalachian area: local EMS agencies with SAR capability, and regional SAR organizations that are also EMS agencies. An example of the former would be a rescue squad that provides rescue services for a National or State Park, or possibly the Park Rangers themselves. Examples of the latter include search dog teams, the Civil Air Patrol, the Appalachian Search and Rescue Conference, or the various Regions of the National Cave Rescue Commission. These regional SAR agencies also, in many cases, are EMS agencies operating across many jurisdictional lines; they operate not only in several different counties but in several different states. Members of these regional SAR organizations will all receive SAR certification from their respective organization, but local EMS agency members may not be able to obtain SAR certification so easily.
- (4) We also considered the various SAR certificates that we might accept in lieu of a state SAR certificate. We saw multiple possibilities, including Naval Independent Duty Corpsman or Rescue Corpsman, Army Expert Field Medic Badge, Air Force PI, NASAR Fundamentals of SAR, and NCRC Orientation to Cave Rescue.
- For our classes in Pennsylvania, we decided to accept all MRA or NCRC certification, but to allow our local Mountain Rescue Association Group Training Officers to decide on other certificates on a case-by-case basis. We recommend that states wishing to use our curriculum for licensure establish state SAR certification, and establish procedures for SAR equivalence certification; or, that they use the Virginia standards as a model and accept any training or certification that is equivalent.
- b. EMT or EMT-P training is required. It is readily available, and is the basis for all recognized prehospital continuing education courses (e.g., Prehospital Trauma Life Support and Basic Trauma Life Support courses). We are developing EMT equivalency guidelines for Canada.
- c. Clinical training in the Emergency Department is considered a “post-requirement” of the class. Although we believe that specific clinical training is essential to the education of the WEMT, we cannot integrate this into the curriculum itself. Therefore, we will provide clinical training recommendations to each student, and to each student’s Wilderness EMS medical director. We will urge that this clinical training be

- arranged by the medical director, and that this clinical training should continue on a regular basis. (See Appendix A: *Clinical Rotations: Outline and Checklist* for specifics of clinical training.)
3. After much discussion, we decided in 1987 to develop a single WEMT curriculum. The same course curriculum would be used for EMTs, EMT-Ps, and anything in between. Why?
 - a. First, we felt we must teach something about advanced techniques even to Basic EMTs. Compared to street EMS, wilderness EMS is very much a team effort (often with a large team!). Basic WEMTs will often need to assist their WEMT-Paramedic team members with advanced skills (e.g., helping prepare IV bags and lines under the WEMT-Ps supervision).
 - b. Basic WEMTs must know much of the same pharmacology, anatomy, and physiology that the wilderness paramedics must know. Basic WEMTs must know about the proper use of medications commonly carried in outdoors enthusiasts' medical kits, must understand the principles of oral fluid replacement, and must be able to deal with common primary care problems, just as must the wilderness EMT-Ps.
 - c. No advanced skills beyond EMT-P skills are needed for routine wilderness ALS. Central lines, Foley catheters, chest decompression, and NG tubes are all legitimate parts of the standard EMT-P training curriculum. Therefore, the WEMT module need not teach any new invasive skills. Escharotomy and fasciotomy are surgical skills that are occasionally needed, but require surgical training far beyond that given to EMT-Ps, and should be reserved for physicians or others already specifically trained in these procedures.

F. Certification vs. Licensure.

1. Let's compare and contrast the concepts of **certification** and **licensure**; they are related, but different.
 - a. Those who complete a specified course of instruction, or who are tested and found to meet certain performance standards are **certified**. Any organization can issue a certificate, but the value of that certificate depends on acceptance of the standard that it represents and the prestige of the certificate-issuing body. Examples of certificates include an M.D. diploma from the George Washington University Medical School, an EMT wall certificate from the National Registry of EMTs, or an American Heart Association CPR card. A certificate by itself does not entitle one to practice a particular skill; the privilege to practice the skill is regulated by the government, usually the state.
 - b. A Medical Doctor (M.D.) degree is not enough to practice medicine; the graduate must meet additional requirements and apply for a state **license** as a licensed physician. In many fields, practicing without a license is a criminal offense, no matter how many certificates you hold.
2. Laws are generally similar for EMTs (though the law on EMTs is new and not well-established): although one might receive an EMT certificate from the state or National Registry, one also must obtain a separate EMT license from the state.
 - a. This may seem a bit confusing, if your state does not separate EMT certification and licensing. Unlike accountants, lawyers, nurses, or doctors, the EMT certificates and EMT licenses bear the same name (**EMT** and **EMT** instead of **Medical Doctor** and **licensed physician**).

- b. A second cause for confusion is that states may simply legislate (or assume, without legislation or administrative rule making) that anyone with a valid state or National Registry EMT certificate is automatically licensed as an EMT. This is not true in all states; Virginia, for example, requires EMTs to obtain a separate "blue card" EMT license before serving as a licensed EMT with an EMS agency.
 - c. For CPR training, states simply accept that anyone with a valid Red Cross or Heart Association CPR card is licensed to perform CPR, or simply do not see CPR as something states must license. At any rate, the American Heart Association and the National Red Cross are **very** careful to stipulate that a CPR card is a certificate and **not** a license.
 - d. These examples bring up an interesting point. In most states, you can fulfill the requirements for licensure with a variety of certificates: a licensed physician in Washington DC need not have a medical degree from George Washington University, Georgetown University, or Howard University (the three medical schools in DC), but can apply for a license with an M.D. from any accredited school in the country. Not only that, but doctors with degrees from non-U.S. schools may obtain a license, although sometimes they must show evidence of additional training in the U.S. Doctors with an "osteopathic" D.O. degree (Doctor of Osteopathy) may also become licensed to practice, after meeting similar requirements. Accountants applying for a C.P.A. (Certified Public Accountant) may present a variety of certificates, and many states will license an EMT based on certificates from the National Registry of EMTs, or from certain nearby states.
 - e. To summarize: **certification** implies someone has completed a prescribed course of instruction or met a set of objective performance standards. **Licensure** means that a governmental agency has reviewed a person's qualifications, possibly including certain essential certifications, and has granted that person permission to practice a profession within its jurisdiction. The major point here is that EMT **certification** does not automatically confer **licensure** to practice as an EMT.
3. If you are licensed to practice as an EMT, do you need an additional license to practice as a **Wilderness** EMT? The knowledge and skills required of Wilderness EMTs are slightly different from those of "street" EMTs, but is the difference enough to require a different license? Since Wilderness and non-wilderness EMTs are doing the same job but in different environments, can we just **certify** Wilderness EMTs without them needing separate **licenses**?
- a. We can argue that there is no need for Wilderness licenses beyond the EMTs "standard" EMT-basic/-Intermediate/-Paramedic licenses. Wilderness EMTs will be performing the same **level** of skills as their non-wilderness counterparts, as adapted for the wilderness: basic Wilderness EMTs will be restricted to non-invasive therapy, leaving IVs and drugs for the Wilderness EMT-Intermediate and Wilderness EMT-Paramedic. Thus, there should be little concern for licensing Wilderness EMTs, provided they hold proper EMT licenses.
 - b. Let us closely examine an example: dealing with shoulder dislocations in the wilderness.
 - c. The current teaching for street EMTs is "never attempt to reduce a dislocated shoulder."¹⁸ However, the standard street treatment of a knee dislocation without a pulse is to attempt reduction: "If distal pulses are absent, one attempt should be made immediately

to realign the limb and thus reduce the compression of the popliteal artery. The EMT should gently straighten the deformity by applying gentle longitudinal traction in the axis of the limb."¹⁹

- d. Even with a good distal pulse, reducing an anterior shoulder dislocation in the wilderness makes good sense; at the minimum, it will reduce pain and suffering, and it may well avoid the need for reduction under general anaesthesia at the hospital (when spasm has been intensifying for many hours, reduction may be impossible without general anaesthesia).^{*} Indeed, the Wilderness Medical Society has a position statement that says: "The common anterior shoulder dislocation can usually be reduced without too much difficulty and the sooner this is attempted, the easier it will be."²⁰
- e. EMT-Basics have always been trained to use axial traction to straighten angulated limbs; the very first EMT textbook said: "... a severely angulated fracture should be straightened prior to splinting, for this may lessen the chance of permanent damage to blood vessels and nerves around the fracture site. ... Straightening an angulated fracture may cause the patient momentary pain, but this should lessen when the fracture is straightened and splinted. If the straightening can be performed immediately after the fracture occurs, the patient may experience little or no pain; frequently there is numbness around the site for several minutes following a severe fracture. ... Gently but firmly grasp the extremity with both hands. Place one hand just below the site of fracture and the other hand farther down the ex-

tremity. If possible, have someone provide countertraction . . ."²¹

- f. The logical argument can be summarized: EMTs are told to use axial traction to straighten fractures, AND EMTs are told to reduce certain dislocations when medically appropriate, AND the standard for care of the anterior shoulder dislocation in the wilderness is reduction; THEREFORE, EMTs who have been trained by a physician to reduce anterior shoulder dislocations should be able to do so within the scope of their EMT licenses.
- 4. An interesting and very close analogy to WEMT certification is with the EMT continuing education courses BTLS (Basic Trauma Life Support) and PHTLS (Pre-Hospital Trauma Life Support). These courses teach EMTs new ways to perform EMT-level skills in an acute urban trauma setting, and offer certification. However, the states do not see this training as needing a new level of licensure. BTLS and PHTLS, however, concentrate on a specific type of patient already covered in EMT and Paramedic training, but Wilderness Emergency Medical Technician training focuses on patients and problems not covered in regular EMT training, and thus may appropriately be licensed as a new level of EMT.
- 5. To return to the original question: Does WEMT training require a new license? The answer will depend on the state. If state laws or EMS regulations specifically prohibit EMTs from reducing shoulder dislocations or performing other skills of a WEMT, then separate WEMT licensure would be needed.

^{*} Although the risk of death under anaesthesia is small, it is significant, especially when a simple backcountry maneuver could eliminate the need for anaesthesia altogether.

G. Wilderness EMS Systems

1. The term "Wilderness EMS system" doesn't mean that there is a separate system for wilderness emergency medical problems. It does, however, emphasize the need for a specialized subset of the EMS system for dealing with the needs of wilderness patients.
2. Where does SAR end, and EMS begin?
 - a. Some rescues clearly fall within the province of EMS and do not involve any SAR; for instance, a cardiac arrest in the wilderness area parking lot. Some clearly fall within the province of SAR: the hiker who is overdue in an unexpected early fall blizzard. But what of all those incidents that fall in between these extremes? Any dividing line is arbitrary. But, it would determine what went into our curriculum. Delving into the (considerable) combined wilderness rescue and EMS experience of our Staff, we established a limit of 1/4 mile from the nearest road as our dividing line. Depending on the terrain, of course, one-quarter mile from the nearest navigable road represents the limit of most urban and many rural EMS systems' ability to effectively function. Beyond this point, carrying bulky rescue gear, litters, and patient is more effort than a paramedic "crew" can muster. You can make an argument for time, as well. Assume that a person is trapped a bit less than 1/4 mile into a difficult cave, even though the cave entrance is right next to the road. It might take the better part of the day to rescue the victim. For such cases, we can establish an alternate criterion based on time: any rescue that takes you more than 6 hours to get to the road is a wilderness rescue. Setting these as the limits of the "wilderness" meant that we could limit our training to backpackable gear, and that we must assure that all WEMTs are capable of surviving in the backcountry with the gear they have.
 3. We next perform a wilderness-oriented review of EMS system components.
 - a. The first parts of the EMS system are **recognition** that an emergency exists and **first aid**. For the wilderness, this means that those in the outdoors must have access to wilderness first aid training as described above.
 - b. The next step is **initiation of EMS system** response. For this to occur in the WEMS system, the outdoor public needs to know how to call (or send) for help. Public outdoor safety education efforts include accident report forms (such as that in the back of *Mountaineering First Aid*) that can be

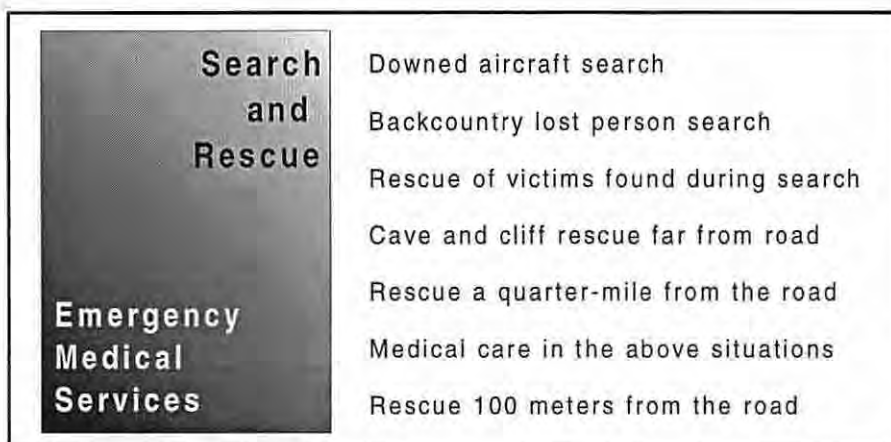


Figure 3. The dividing line between SAR and EMS.

sent out with those hiking out for help, and signs with emergency information at trailheads. For this emergency alerting to serve as initiation of the Wilderness EMS system, however, the emergency response agency (e.g., State or Federal Park or Forest Service, local county sheriff, local rescue squad) must either be a part of the Wilderness EMS system, or know how to alert it **and** be aware that a Wilderness EMS system exists **and** that it should be alerted for a wilderness medical emergency. Specifically, wildland managers must know how to access special wilderness EMS resources.

- c. The next step in the EMS chain is **treatment at the scene**. For the wilderness, this means treatment by wilderness **first responders**. These may be park or forest rangers, or local fire service or rescue squad members. Rangers generally have good rescue training, but may have limited medical skills. Rescue squad EMTs generally

have good medical training, but often lack search and rescue training. Training such as the Virginia Ground SAR Field Team Member training program (described above) along with a Wilderness First Responder course or EMT-Basic course and Wilderness EMT course provides an excellent background for such wilderness first responders.

- d. The next link in the wilderness EMS chain is Advanced Life Support (ALS) treatment and transport by Wilderness EMS providers.
- (1) We can see an important point in favor of Wilderness EMT training from applying the most fundamental EMS principle to the wilderness. The basic tenet of prehospital care is to take the hospital to the patient, rather than waiting for the patient to come to the hospital. Applying this to the wilderness, we can make a parallel observation that the ALS "ambulance" should go to the patient; one should not have to bring the patient

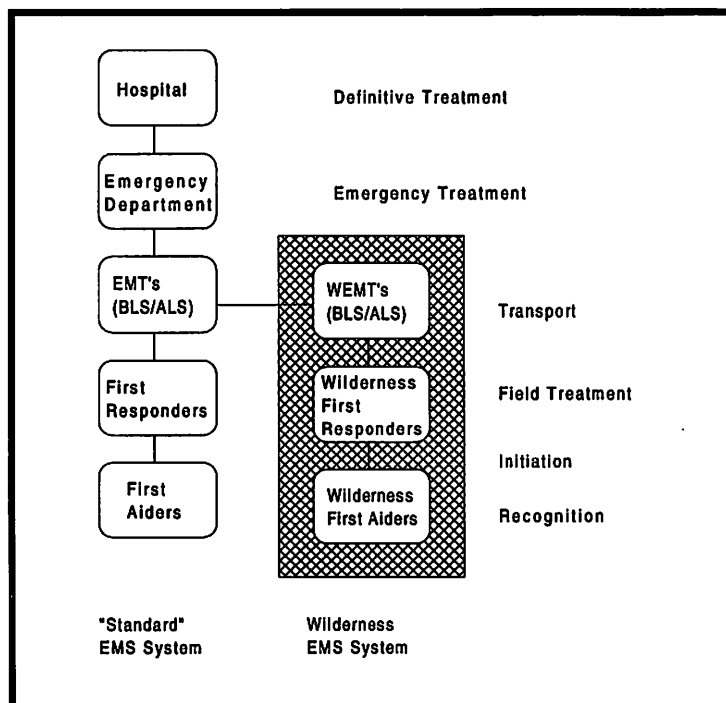


Figure 4. The Wilderness EMS System: Patient Care Chain

to the ALS “ambulance.” To do so requires that and rescue teams to have EMTs with ALS training; or local rescue squad EMTs must have search and rescue training. And, of course, Wilderness EMT training is the glue that binds SAR and EMS training into a solid whole.

- (2) To deliver ALS care, the EMT must always act under the orders of a physician. And, for wilderness patients, the environment, the problems, and the duration of the transport are very different from most medical command situations. Whether the EMT is receiving on-line command via radio, or off-line command via standing orders (see below), it would best come from a physician specifically trained in wilderness prehospital medical command. Since there is no physician-level training program for command physicians, the ASRC-CEM *Wilderness Emergency Medicine Curriculum Development Project* is developing the one-weekend Wilderness Command Physician course described above.

e. Once a wilderness patient reaches the road or the helicopter, the patient enters the “regular” (non-Wilderness) part of the EMS system. From then on, the EMS care chain is the same as in urban patients: treatment in ED, OR, and ICU; and then discharge from the hospital and follow-up care.

f. An EMS system includes more than just the links in the “EMS chain” for patient care. It also includes organization, integrated communications, planning, education, evaluation, and research. To be considered a Wilderness EMS system, the system must address wilderness patients and providers in all these areas. Here are some examples.

- (1) **Organization:** A system for insuring that equipment used in the wilder-

ness is compatible with that used in normal EMS to facilitate patient transfer; for example, if the search and rescue team uses a cardiac monitor, and all the local helicopter medevac services use a different type of monitor lead, then every patient must be unpackaged and repackaged when picked up by the helicopter. This wastes valuable time. If, however, the search and rescue team uses compatible leads, the patient can be hooked up to the helicopter monitors without the need for repackaging. As a further example, most helicopter medevac services will always repack their patients prior to transport. With preplanning, however, most helicopter services will accept the search and rescue team’s packaging for helicopter transport.

- (2) **Organization:** Wilderness EMTs are often working with wilderness SAR teams, and will often turn their patients over to members of the “regular” EMS system (or ride in with the patient; see the discussion of abandonment, below). By insuring that EMS providers understand the wilderness protocols, and how they differ from “street” protocols, the WEMT may accomplish this transfer without difficulty.

- (3) **Communications:** By making arrangements for the local system of repeaters to work in nearby wilderness areas, Wilderness EMT-Ps can obtain radio command and consultation from Wilderness Command Physicians. An example would be making pre-plans to set up a temporary EMS frequency repeater on a particular mountain, or even arranging for an aircraft to be available to carry a low-power repeater over the area.

- (4) **Communications:** Pre-planning a network for inter-agency communications may speed up the evacu-

- ation. For example, making plans for a network that allows (possibly via crosspatching at a central facility) the WEMT, the hospital, and the “street” prehospital EMS provider at the roadhead, and/or the medevac helicopter, to all conference by radio.
- (5) **Planning:** Pre-planning for a WEMS system may help WEMTs, search and rescue teams, and rural EMS agencies. Specifically, analyzing recent wilderness rescues may allow you to document the need for WEMTs, and to plan and fund a training program to provide the number of WEMTs your plan specifies. You also may be able to identify where those WEMTs should be “stationed,” or what the emphasis of local WEMT training should be.
- (6) **Planning:** You can do a hazard analysis for high probability areas for wilderness rescues, and identify bases, identify helicopter LZs and have them listed with local medical evacuation helicopters, plan best routes in and out, note possible vehicle support, list local EMS radio frequencies, plot repeater locations and coverage, compile a history of type of injuries most likely in the area, gather a history of weather in the area, and in general provide better information for wilderness rescues.
- (7) **Education:** You must educate the local pre-hospital medical community as to why and when they should request WEMTs, and why local EMTs should endure the extra training to become a WEMT. Without an educated awareness of the differences in the wilderness working environment, many people may mistakenly assume that “street” EMT skills will suffice.
- (8) **Education:** To allow WEMTs to use the training of WEMT classes, you must assure acceptance, both locally and statewide, of the need for different wilderness protocols by Emergency Department staff physicians and EMS administrators.
- (9) **Research:** New procedures are coming along all the time, primarily through organized research. (Recent examples include the use of hypertonic saline and dextran for shock, and the use of dexamethasone for spinal injuries.) A system must be in place to make sure a new procedure gets noticed, evaluated and implemented if appropriate. Many times the organized research is done by the providers themselves, but must be done under the supervision of the medical staff. A system must be in place that allows for careful controlled experimentation. Teamed with evaluation, this will help insure that the WEMT program is providing the best, most current assistance it can.
- (10) **Evaluation:** Is the system really doing what it was intended to do? Are WEMTs actually doing anything useful for the patient? Are the WEMTs performing adequately, or do they need more clinical training? Are the protocols realistic or off the wall? Are the procedures helping or actually harming the patients? Without an evaluation system, these valid questions can never be answered.
-

H. Why Wilderness EMTs?

1. Because the problems are different in the wilderness, and standards of pre-hospital care are different for wilderness rescues.
 - a. Some problems are more common in the wilderness than on the street, and WEMTs must be trained to deal with them routinely (particularly environmental problems such as hypothermia).

- b. Some problems, common to the wilderness, are not taught to most EMTs (e.g., plant contact dermatitis, friction blisters on the heel). Although they may seem minor on the street, these problems may cause severe illness or be temporarily disabling in the wilderness.
 - c. Wilderness patients need longer-term care (e.g., on long evacuations, monitoring the patient's urine output by a Foley catheter or Texas drain). Infections, atelectasis, and deep venous thrombosis may become problems during an extended wilderness evacuation.
 - d. Wilderness emergency medical equipment is limited by what the team members can carry on their backs or improvise.
 - e. Some special procedures (e.g., reducing dislocations) may require special licensing by state (though this depends on the state).
 - f. When a search and rescue team is out for a day or more, and especially when the team is out of contact with a command physician, **you** are the team's medical expert, for whatever problems arise; team members will ask your advice, even if the problem is outside the scope of "street" EMT training.
 - g. Some problems that require heroic resuscitation on the street are non-survivable in the wilderness. Examples include primary cardiac arrest or traumatic arrest miles from advanced life support care.
 - h. The safety of the WEMT depends on his or her ability to coexist safely with the wilderness in a search and rescue situation.
2. Wilderness EMTs need special training for the wilderness environment and for search and rescue.
- a. The WEMT must carry out emergency medical tasks despite severe environmental stresses (e.g., freezing rain, blizzards, 105° heat).
 - b. And, to keep the operation moving smoothly, the WEMT must interface smoothly into a large SAR operation (even if not actually assisting with SAR tasks).
-
- I. WEMT and WCP Roles**
- 1. The WEMT's roles include educating other SAR team members in wilderness prehospital care, standing by at base during a search, serving in the Medic position on a search team, and of course, caring for wilderness patients during a rescue.
 - a. When not on an operation, the WEMT:
 - (1) helps educate team members in wilderness medical problems and their management;
 - (2) maintains SAR, EMT, and WEMT skills and knowledge by continuing education; and
 - (3) helps maintain medical supplies and equipment for searches and rescues.
 - b. When standing by at Base, the WEMT:
 - (1) helps the Plans Section plan for the rescue;
 - (2) may serve as safety officer;
 - (3) may standby for rescue with the rescue team; and
 - (4) may provide incidental medical care for those at Base.
 - c. In the field:
 - (1) The WEMT is the medical expert on a search and rescue team while in the wilderness, and provides "primary care," = care for team members' minor medical problems. This may be definitive treatment if the WEMT can do so, or a recommendation for the team member to see a doctor when

- the team gets back in, or aborting the task and walking the team member out, or even starting an emergency evacuation of the team member.
- (2) If on a search team that makes a find, the WEMT provides care for the patient with, initially, only a small medical kit.
 - (3) The WEMT provides medical care to the victim during the evacuation. Because of the length of the evacuation, the WEMT must serve as "nurse" and "Physician's Assistant." Although WEMTs don't have extensive nursing or PA training, they will still need to provide, as best they can, **long-term** emergency care like the ICU nurse, and must be able to operate independently if the Wilderness Command Physician can't be contacted, like some PAs.
 - (4) If appropriate, the WEMT accompanies the patient to the hospital, along with local prehospital personnel. (See below under medico-legal considerations about abandonment.)
2. The WEMT's role after a catastrophic disaster is very similar to that on a wilderness search and rescue team.
- a. First, we must define the types of disaster.
 - (1) A multi-casualty incident may be considered a disaster, and most local "disaster plans" deal with such a disaster.
 - (2) A single-casualty incident involving multiple resources (as are all search or rescue operations) rates with a multi-casualty incident in terms of confusion and difficulty.
 - (3) A "major disaster" occurs when the incident strains available resources, for example, a school bus or urban plane crash.
 - (4) A "catastrophic disaster" completely overwhelms local resources (or has already destroyed all local resources, as in the recent earthquake in Armenia).
 - b. A catastrophic disaster is very similar to a wilderness search and rescue operation.
 - (1) There is no shelter, and exposure to environmental extremes (e.g., heat, cold, snow, or rain) is important to victims and rescuers alike.
 - (2) There is no potable water or food.
 - (3) EMTs need overland evacuation skills (i.e., the roads and streets may be impassable).
 - (4) EMTs must be ready to care for patients for a long time:
 - (a) The local hospitals may be destroyed or overwhelmed, and many local doctors and nurses may be dead or injured themselves.
 - (b) Transportation of the sick or injured out of the area may be delayed for days, and it may take a day or more for a field disaster hospital to set up in the area.
 - (c) Although victims may be entrapped in ways that require special urban rescue skills, many may simply need evacuation by simple mountain/cave rescue techniques.
 - (5) As in the wilderness, WEMTs must be self-sufficient in terms of food, water, and shelter.
 - (6) Since, during the first hours to days, all medical resources will be aimed at the critically ill, WEMTs will be called upon to care for minor injuries.
3. *"Wilderness Command Physician" is our Project's name for a physician who not only can provide medical command for EMTs and EMT-Ps, but who has our special training in providing command for **Wilderness** EMTs. To understand the difference between a Wilderness Command Physician and a "regular" command physician, you must first understand what is required of any command physician.*

- a. In the U.S., medical doctors may have either a M.D. or a D.O. degree (European degrees, such as a B.Surg., are not granted by U.S. medical schools). MDs ("allopaths") and DOs ("osteopaths") both must complete college and four years of medical school. After additional postgraduate training, they may obtain full license to practice medicine.
- b. DPM.s (Doctor of Podiatric Medicine; podiatrists), DDSs and DMDs (Doctor of Dental Surgery or Doctor of Medical Dentistry; dentists) also earn the title "doctor" and can prescribe medications and do surgery within their limited fields, but are not considered medical doctors, and are not allowed to command EMTs.
- c. Clinical psychologists treat patients with psychological problems, and receive a doctorate in clinical psychology. As they are not medical doctors, they cannot prescribe medications or command EMTs. Psychiatrists are medical doctors (M.D. or D.O.) with special training in psychology as well as the use of medications for psychological problems. Although psychiatrists are licensed to practice medicine, it is unlikely that a psychiatrist will become a command physician.
- d. Chiropractors, homeopaths, naturopaths, and a variety of "fringe" medical practitioners are sometimes called "doctor," but are not licensed to prescribe prescription medications or perform surgery. Most chiropractors restrict themselves to manipulating spine problems (and are quite effective at this). But, some chiropractors falsely insist that they can cure problems such as diabetes, hypertension, and infected gall bladders by manipulating the spine.
- e. MDs and DOs must go through postgraduate on-the-job training after medical school. The first year is called an internship (though in many places interns are officially called "first-year residents," they still think of themselves as interns). Although a doctor can, in most states, go into general practice after a year of internship, almost all U.S. doctors go on to complete two or more years of additional training (a residency). In many areas, residents may "moonlight" by working part-time as an Emergency Department doctor. Some moonlighting residents may become command physicians. One residency is specifically in emergency medicine, but some doctors with training in internal medicine, surgery, or family practice also practice emergency medicine. Some of these doctors trained in other specialties have taken the Emergency Medicine qualifying exams and are "Board Certified" in emergency medicine.
- f. Command Physicians are doctors who practice emergency medicine and have met local requirements to command medics. Although local requirements vary widely, most command physicians must have Advanced Cardiac Life Support and Advanced Trauma Life Support certification, and have attended a Base Station Course dealing with medical command.²²
- g. Our concept of the Wilderness Command Physician is of a command physician with additional training specific for commanding Wilderness EMTs. Specifically:
 - (1) The Wilderness Command Physician must understand environmental and traumatic problems common to the wilderness, and how to deal with them through WEMTs.
 - (2) The WCP must understand what it's really like in the field. We believe that the WCP must take part in a realistic field SAR exercise, or at least observe one at close range.
 - (3) The WCP must understand the problems of extended evacuations, and know how to deal with medical command over hours to days.
 - (4) The WCP must understand the WEMT's background, training, equipment, capabilities, and limitations.

J. WEMS Medicolegal Issues

1. In the U.S., there are three sources of law: constitutional, legislative, and common law.
- a. The ultimate laws of the land are found in the Constitution, which prescribes our form of government, and how additional laws are made. The first ten amendments to the Constitution itself, accepted at the same time as the Constitution itself, are known as the Bill of Rights, and limits the government's power over citizens.

- b. A second source of law is the Congress, state legislatures, and local legislatures such as city councils. The Constitution has precedence over all legislative laws, and the Bill of Rights specifically limits the ability of legislatures to regulate certain rights.
 - c. A third source of law is common law. This comprises the decisions of state and federal courts, and certain principles inherited from the common law of Great Britain. Judge-made law is an important protection, in the U.S. system, against the power of the legislatures.
 - d. A fourth type of law has developed in recent years: administrative law. When the legislature passes laws allowing government agencies to establish administrative regulations, these regulations then have the same enforceable characteristics and penalties for violation as any law passed by the legislature.
 - e. These four types of law exist at three levels: federal, state, and local.
 - f. Most EMS law is administrative law, with some legislative "enabling laws" that permit the state EMS agency to write further regulations. The federal EMS Act of 1973 requires, in vague terms, that EMS agencies have some degree of medical control.
2. Many EMTs, and especially WEMTs, worry about the legal implications of the care they deliver. These fall into two classes: first, worries about liability for civil suits ("being sued"), and second, worries about criminal charges from "practicing medicine without a license" or similar illegalities.
- a. Law suits (civil suits) may arise from claims of **negligence**, or from claims of intentional damage (known as **tort claims**). A law suit can be brought by anyone against anyone else, irrespective of how poorly grounded is the claim, Good Samaritan and other laws notwithstanding. An example of a tort claim would be a claim of **battery**, when you treated (touched) a patient who was alert, oriented, and legally competent, and who refused treatment. A good Samaritan law may be cited in the defense of such a claim, but is only one of many items that are taken in consideration. Negligence claims hinge on the plaintiff (the individual suing) proving that a chain of five elements occurred. To prove negligence, the plaintiff must prove (1) that you had a duty to act on behalf of the plaintiff, (2) that you committed an unreasonable act or omission in the context of this duty, (3) an injury occurred to the plaintiff, (4) proximate cause (your act or omission must have caused the injury), and (5) foreseeability: you must have been able to foresee the possibility of injury.
 - b. Actual criminal charges against you, if you were acting in good faith are unlikely, but administrative penalties (e.g., loss of your EMT certificate or license) may well follow from infraction of administrative law (state EMS regulations). This is discussed further in the following sections.
3. **Standard of Care** is an important legal concept. The principle is that questions of negligence hinge on your training and experience. For instance, if you had truly never even heard of cardio-pulmonary resuscitation, no court would convict you of negligence for not starting CPR when you found someone pulseless on the sidewalk. Suppose you were trained in CPR, though, and you had incurred a duty to act (see *Duty to Act*, below) by going over to see if you could help. You would be negligent if you didn't start CPR when you found the individual pulseless. Another example would be a patient with myxedema (severe hypothyroidism). An emergency physician would be expected to recognize and treat this problem, but you as an EMT would not.
4. Does the EMT have a duty to help anyone in distress? Frew²³ cites an example: *You are walking down the street while vacationing in a neighboring state.*

*Across the street, you observe a man in his late fifties suddenly clutch his chest and fall to his knees and then to the pavement. His wife is frantically calling for help. You are an EMT . . . Is there a duty to help this person? In these circumstances, the legal concept of duty [in the U.S., as derived from British common law -Ed] says that you are under no duty to aid a person to whom you had no special relationship and to whom you had not caused injury. There is no legal duty requiring you to be a "Good Samaritan." Exceptions are Vermont and Minnesota, which have enacted "duty to act" statutes.**

5. **Abandonment** is an important legal principle.

- a. If, in the above case, you start toward the victim with the intent to help, you are legally obligated to continue your efforts to help. To cease your efforts would be abandonment. (Even if you start toward the victim, then a second later decide to go on your way, another bystander might have seen you responding and decided not to help, since you were responding.)
- b. Any prehospital responder caring for a patient has a duty not to turn the patient over to a lesser-trained person. This, too, would be abandonment. An EMT-Basic may turn a patient over to another EMT-Basic or to an EMT-Paramedic or doctor, but an EMT-Paramedic could not turn the patient over to an EMT-Basic.
- c. Can a Wilderness EMT-Basic turn over a patient to a non-Wilderness EMT-Basic, or a Wilderness EMT-P to a non-Wilderness EMT-P? While this is a situation about which there is no clear legal precedent, our answer is both yes and no. We believe a WEMT may

turn a patient over to a similar or higher-level EMT without wilderness training when the patient has reached a helicopter or ambulance, but not while still in the wilderness.

6. All states have **medical practice acts** that regulate the licensing of physicians, defines the practice of medicine, and prohibits those who are unlicensed from practicing medicine.. These laws allow only licensed physicians or their agents to prescribe or administer prescription-only drugs or to perform surgical and other advanced medical procedures (e.g., defibrillation, intubation).

- a. The legal doctrine of **delegated practice** allows a doctor to delegate functions to others. The specifics of this doctrine vary from state to state, as to whom the licensed physician may delegate to perform some of the physician's duties. In the hospital, or on street, this is restricted by special laws: EMTs, RNs, PAs, NPs, or others may perform specific delegated medical duties, depending on the law.
- b. Most state medical practice acts "require physicians to take responsibility for tasks that they delegate to less-trained individuals; therefore, in those states, medical control for EMS systems [is] a legal necessity."²⁴ The common-law legal concept of *respondeat superior* states that the physician who provides "on-line" medical control for the EMT is ultimately liable for the acts and omissions of the EMT.
- c. Most (but not all) states have laws or administrative law regulations which require each EMS agency to have a physician medical director who provides "off-line" medical control. (Some states, including New York, have no

* Minn. Stat. Ann. 604.05(1) (West Supp. 1985) and Vt. Stat. Ann. tit. 12,519(a) (1973).

- such legislation.) McSwain²⁵ divides EMT medical control into prospective, immediate, and retrospective. The physician medical director provides the first and last of these, allowing the command physicians to provide immediate (“on-line”) medical control for individual calls. The precise relationship of local medical directors to regional or state medical directors is vague in almost all states, and will only become clear as states pass more definitive EMS legislation.
- d. Physician EMS medical directors are responsible for establishing protocols, which are “standardized written procedures for diagnosis, triage, treatment, and transport or transfer or specified commonly encountered emergency medical cases. . . . Standing orders, a part of the protocols, are written instructions directing field personnel to perform certain emergency care medical measures before or in the absence of communications with a physician.”²⁶ In other words, standing orders are specific physician orders, whereas protocols lay out general principles for the care of various types of patients, including, perhaps, specific ways to carry out and document physician orders, whether direct or standing. In some areas, the EMTs are assumed to be operating under the EMS medical director’s license, in which case the command physician has the right to remove any agency EMT’s certification, if the EMT does not perform in accordance with accepted standards.
7. The Wilderness EMT is the doctor’s eyes and hands. Although in some states EMT-Basics are allowed to work with no supervision by a command physician,²⁷ we believe that all Wilderness EMTs, basic or paramedic, should operate under the supervision and on the orders of a physician, preferably a Wilderness Command Physician, even if this is entirely through “off-line” medical command including protocols and standing orders. Our entire curriculum is based on this premise.
8. Sometimes, the EMS system and the doctor-patient relationship come into conflict.
- a. The EMS system is under a doctor’s supervision as well as direct on-line command. However, the courts recognize that a specific doctor-patient relationship exists when a doctor is physically present at a patient’s side, and this generally supersedes the EMT and command physician’s indirect relationship. Many EMS systems have enacted regulations requiring a physician who wants to care for a patient also attended by EMTs to sign a waiver. This waiver states that the attending physician accepts full responsibility for the patient. In some areas, the physician must also ride into the Emergency Department with the patient. In the wilderness, most any physician who travels to the patient’s side is likely to be a Wilderness Command Physician, and thus will have no hesitation accepting full responsibility for the patient.
- b. In many areas of the Eastern U.S., search and rescue teams provide services over a wide area, and may operate in many EMS jurisdictions. When Wilderness EMTs and local EMTs are present at a patient’s side, and each has separate medical command, conflict might arise (though this is hypothetical thus far). The potential conflict has been prevented in Virginia; there, ASRC EMTs and Shock-Trauma EMTs have permission from the state EMS Bureau to use their wilderness-specific protocols and standing orders throughout the state. In other states, this potential conflict still needs to be addressed.

9. Dealing with a dead patient is difficult for any EMT.
 - a. Coroner's cases include all airplane crashes, and virtually all deaths in the outdoors. After ascertaining that they do indeed have a body rather than a hypothermia patient (covered in the Wilderness Medical Problems section), WEMTs must assume that they are at a crime scene, and must act to preserve evidence at the scene.
 - b. Crime scene protection is covered in ground search and rescue training; the principles include following a single path into the site with a minimum of team members, and making careful notes of the surroundings. The team will need to make radio contact with the local coroner to get instructions; sometimes, the coroner will wish to travel to the scene with a field team. At other times, the coroner will want you to obtain certain samples at the scene for evidence, prior to evacuating the body. If so, you must take care to preserve the **chain of evidence**. To comply with chain of evidence rules, the evidence must always be in the custody of an identifiable person who can testify that he or she received it in a given condition from someone else or from the scene, that the item was safely kept away from any possible tampering or contamination, and that the item was then delivered in the same condition to another named person. You must either keep the item with you at all times, not setting it down or out of sight for even a second, or immediately lock it in a safe place that is not accessible to anyone else. When the evidence is turned over to a Sheriff's deputy or other person, that person's name must be logged in your log.
 - c. Although laws vary from state to state, declaring and certifying death are generally limited to licensed physicians. A

WEMT may, however, state that a person is dead, and a physician may accept this over the radio. Declaration of death and certification of death are formal legal procedures. Both require the physician to sign a state form. Declaring death requires the examination of a physician, even if this is hours or days after you find a body. Similarly, certification of the cause of death must come from the patient's family doctor or from the coroner. Even though WEMTs may neither "declare" nor "certify" death, they should indicate in their log the time that they determined the patient was dead. There is no legal liability from a WEMT saying and documenting that a patient is dead, providing you do not sign the official form. Indeed, it would be inappropriate, and would incur possible liability, if you did not document death properly in the patient log.

- d. Details of determining death, and when to not start CPR, or to cease CPR, are discussed in the Wilderness Medical Problems section.
- e. You may find more information on medicolegal principles in several textbooks.^{23,28,29}

K. WEMT Guiding Principles

1. Even full-time professional medics have problems with skill decay. Search and rescue operations are not as frequent as "street" emergencies. So, you must train very hard to do things right **the first time**; and, to prevent skill decay, you must participate in regular continuing education:
 - a. You must **not** be a liability in the wilderness and specifically, on a search and rescue mission. Therefore, GSAR training or the equivalent is a prerequisite for Wilderness EMTs, and you must keep up this certification.

- b. You must be able to perform all EMT skills in the wilderness. This requires solid EMT training prior to the WEMT course, and regular continuing EMT education, including clinical time in the Emergency Department.
 - c. You must be able to recognize medical and surgical conditions that “street” EMTs don’t need to, in order to predict and manage problems that may evolve during a long evacuation. You must take appropriate action, e.g., asking for a physician into the field to perform a fasciotomy if needed. To keep up these skills, you must participate in WEMT-specific continuing education and recertification.
2. You must recognize that, unfortunately, some problems simply **cannot** be managed in the wilderness, and no matter what you do, the patient will deteriorate and die. The psychological impact of this can be overwhelming. (See the Section on *Stress Management and Critical Incident Stress Debriefing* for more about this.)
 3. You must scrupulously document all care, despite the rain/cold/whatever. From a legal standpoint, “If you didn’t write it, you didn’t do it.”

Glossary

ALS: Advanced Life Support. A level of prehospital care involving drugs, IVs, and other invasive techniques.

ASRC: Appalachian Search and Rescue Conference. A regional wilderness search and rescue organization, with local Groups in Virginia, Maryland, and Pennsylvania. The Eastern or Appalachian Region of the Mountain Rescue Association.

CEM: The Center for Emergency Medicine of Western Pennsylvania. An organization based in Pittsburgh, which encompasses an Emergency Medicine residency, Emergency Medical Services for the City of Pittsburgh, and a variety of other activities, including many research projects.

Civil Suit: A legal action where a person attempts to reclaim money from someone who allegedly wronged the person; distinguished from a criminal action, which is brought by the government against a person for violating the law.

Delegated Practice: A legal doctrine that allows the doctor to delegate functions to others.

DO: Doctor of Osteopathy. A degree offered by Osteopathic medical schools. DOs are now licensed to practice medicine in all states. A minority of physicians in the U.S. are DOs.

EMT: Emergency Medical Technician. A person who has completed training according to U.S. Department of Transportation/ASTM or state standards (roughly 100 hours of training), who has met the educational objectives of the EMT curriculum, and is functioning as a part of an EMS system. Also refers generically to EMTs who have gone on to higher levels of training up to EMT-P.

EMT-P: Emergency Medical Technician-Paramedic. A person who has completed training according to U.S. Department of Transportation or state standards who has met the educational objectives of the EMT-P curriculum, and is functioning as a part of an EMS system. Whereas “plain” EMTs (EMT-As or EMT-Ambulances, also more properly known as EMT-Basics) can only perform Basic Life Support techniques, EMT-Ps can perform Advanced Life Support techniques under a doctor’s orders.

Fasciotomy: Making surgical incisions to release pressure caused by swelling under the skin. Used when a limb develops compartment syndrome (discussed in the Wilderness Trauma section).

Good Samaritan Law: A state law that exempts certain people from liability for civil action (prevents people from suing them) if they are offering emergency aid, generally without compensation, and in good faith. Good Samaritan Laws vary from state to state.

Law Suits: See Civil Suits.

MD: Medical Doctor. A medical degree offered by “allopathic” medical schools; the majority of licensed physicians in the U.S. are MDs.

Medical Practice Act: A state act that provides for the licensing of physicians, defines the practice, of medicine, and prohibits those who are unlicensed from practicing medicine.

N.P.: Nurse Practitioner. An R.N. who has gone on to more advanced (generally, M.S. level) training. NPs and PAs are similar in their training and capabilities.

PA: Physician’s Assistant.

Physician’s Assistant: Someone who has completed a specified course of training, usually 2 years of intense training at a medical school, and who can carry out some but not all functions of a physician. Must work under supervision of a physician.

SAR: Search And Rescue.

Tort Claim: A type of civil suit that alleges intentional harm.

WEMT: Wilderness Emergency Medical Technician.

Wilderness Command Physician: A physician (M.D. or D.O.) who is permitted to provide medical command to advanced-level EMTs, and who has specialized training in the direction of Wilderness EMTs.

Wilderness EMS System: Those components of an EMS system that are specifically adapted to the needs of the wilderness patient; also, any EMS system that has made such arrangements.

References

1. Wilderness Medical Society. Backcountry first aid workshop, Yosemite Park, November 1984. Position Paper. Point Reyes Station, CA: Wilderness Medical Society, 1984.
2. Lentz JM, Macdonald SC, Carline JD. *Mountaineering first aid: A guide to accident response and first aid care*. Edition No. 3. Seattle: The Mountaineers, 1985.
3. American Red Cross. *Advanced first aid and emergency care*. 2nd ed. Garden City, NY: Doubleday, 1979.
4. Darvill FT. *Mountaineering medicine: A wilderness medical guide*. 12th ed. Berkeley, CA: Wilderness, 1989.
5. Forgey WW. *Wilderness medicine*. 3rd ed. Merrillville, IN: Indiana Camp Supply Books, 1987.
6. Auerbach PS. *Medicine for the outdoors: A guide to emergency medical procedures and first aid*. Boston: Little, Brown, 1986.
7. Bezruchka S. *The pocket doctor*. Seattle: The Mountaineers, 1988.
8. Christensen A, ed. *Wilderness first aid: A resource manual for outdoor leaders in British Columbia*. N. Vancouver, B.C.: Wilderness First Aid and Safety Association of British Columbia, 1986:382.
9. Goodman PH, Kurtz KJ, Carmichael J. Medical recommendations for wilderness travel: 3. Medical supplies and drug regimens. *Postgrad Med* 1985;78(Aug):107-15.
10. Goodman PH, Kurtz KJ, Carmichael J. Medical recommendations for wilderness travel: 1. Health maintenance in the great outdoors. *Postgrad Med* 1985;77(June):173-84.
11. Goodman PH, Kurtz KJ, Carmichael J. Medical recommendations for wilderness travel: 2. Field management of illness and injury. *Postgrad Med* 1985;78(July):253-63.
12. Wilkerson JA. *Medicine for mountaineering*. 3rd ed. Seattle: The Mountaineers, 1985.
13. U.S. Department of Transportation NHTSA. *Emergency medical services: First responder training course (course guide, instructor's lesson plans, student study guide)*. Washington: U.S. Government Printing Office, (no date).
14. Hudson S, ed. *Manual of U.S. cave rescue techniques*. 2nd ed. Huntsville, AL: National Speleological Society, 1988:11-6.
15. Bowman WD. *The National Ski Patrol's outdoor emergency care: Comprehensive first aid for nonurban settings*. National Ski Patrol, 1988.
16. Bush S. *Proposed outline: Wilderness Medical Technician Course*. Littleton, CO: National Association for Search and Rescue, Emergency Medicine Committee, 1981.
17. Conover K. Partial draft proposal for a national wilderness medical technician program. Emergency Medicine Committee, National Association for Search and Rescue, 1980.
18. American Academy of Orthopaedic Surgeons. *Emergency care and transportation of the sick and injured*. 3rd ed. Chicago: AAOS, 1981:150.
19. American Academy of Orthopaedic Surgeons. *Emergency care and transportation of the sick and injured*. 3rd ed. Chicago: AAOS, 1981:160.
20. Iserson KV, ed. *Orthopedic injuries in the wilderness III: Guidelines for individuals with advanced skills*. *Position Papers 1989*. Point Reyes Station, CA: Wilderness Medical Society, 1989.
21. American Academy of Orthopaedic Surgeons. *Emergency care and transportation of the sick and injured*. 3rd ed. Chicago: AAOS, 1981:95.
22. American College of Emergency Physicians. Medical control of pre-hospital emergency medical services. Position Paper. *Ann Emerg Med* 1982;11:387.
23. Frew SA. *Street law: Rights and responsibilities of the EMT*. Reston, VA: Reston Publishing Co., 1983.
24. Reines D. The emergence of medical control. *EMS medical directors' handbook*. A Publication of the National Association of EMS Physicians. Ed. Kuehl AE. St. Louis: CV Mosby, 1989:156.
25. McSwain NE. Indirect medical control. *EMS medical directors' handbook*. A Publication of the National Association of EMS Physicians. Ed. Kuehl AE. St. Louis: CV Mosby, 1989:163-73.
26. Reines D. The emergence of medical control. *EMS medical directors' handbook*. A Publication of the National Association of EMS Physicians. St. Louis: CV Mosby, 1989:158.
27. McSwain NE. Indirect medical control. *EMS medical directors' handbook*. A Publication of the National Association of EMS Physicians. Ed. Kuehl AE. St. Louis: CV Mosby, 1989:164.
28. Kuehl AE, ed. *EMS medical directors' handbook*. A Publication of the National Association of EMS Physicians. St. Louis: CV Mosby, 1989.
29. Fish RM, Ehrhardt ME. *Preventing emergency malpractice*. Oradell, NJ: Medical Economics Books, 1989.