

**Wilderness EMT:**  
the Appalachian Search and Rescue Conference --  
Center for Emergency Medicine of Western Pennsylvania  
*Wilderness Emergency Medicine*  
*Curriculum Development Project*

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**ABSTRACT:** This article reviews the history of Wilderness Emergency Medical Services (EMS). It discusses the meaning of EMS in the wilderness context, and surveys the boundary between wilderness emergency medical services and wilderness search and rescue (SAR). It provides an overview of the ASRC--CEM Wilderness Emergency Medicine Curriculum Development Project. We describe how we used a survey to help establish goals and objectives. We have conducted pilot classes to obtain student and instructor input, and are now working on a written curriculum, parts of which will be placed in the public domain. Consistent with our EMS approach to Wilderness Emergency Medical Technician (WEMT) training, we are working toward a regional Wilderness Emergency Medical Services System, merging the EMS and wilderness SAR systems and thus extending prehospital EMS into the backcountry. The roles of the WEMT in wilderness search and rescue and catastrophic disasters are explained, as is the selection of medical and search and rescue topics for the ASRC-CEM Wilderness EMT courses.

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**Why a Wilderness EMT Course?**

Wilderness emergencies have always fascinated the public and the EMS community. An episode of the TV series *Emergency* featured paramedics in a wilderness rescue with the Sierra Madre Search and Rescue Team.\* A wilderness search and rescue series called *High Sierra* appeared briefly a few years back, and the new series *High Mountain Rangers* continues in the same vein. (One should not take TV lightly. Some argue that the TV series *Emergency* is the major reason why we have EMS systems.) Television programs aside, wilderness medical emergencies have interested the outdoor recreation public through the years. The medical community is also becoming interested, as chronicled by a recent article in the *Journal of the American Medical Association*.<sup>2</sup>

A review of some pertinent history will put our discussion of Wilderness Emergency Medical Technician (WEMT) training in perspective.

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\*The Sierra Madre Search and Rescue Team is a certified member team of the Mountain Rescue Association, the national certifying organization for mountain search and rescue teams.

### The History of Wilderness EMS

Many years ago, recreational groups took the lead in wilderness medicine education. The Mountaineers, a Seattle-based climbing group, offered some of the earliest formal mountaineering training in the U.S. As part of its mountain safety commitment, the group decided to develop and offer mountain first aid training. Almost twenty years ago, they joined the Seattle Red Cross to develop a Mountaineering Oriented Standard First Aid Course. This course is still taught, and still uses the classic booklet *Mountaineering First Aid*.<sup>2</sup>

The outdoors community also developed training for trips longer than a weekend hiking or climbing trip. Climbers heading to the Hindu Kush or Himalayas, and trekkers heading to the Andes or the Amazon Highlands, sought climber-physicians to teach them how to cope with medical problems. Trekkers and Himalayan climbers were usually medically untrained, and had to cope with their own medical problems for periods up to months. They were also expected to provide whatever medical care they could to the locals inhabitants, who may have had no prior medical care at all. Climbers and trekkers in such places had to prepare themselves to deal with the special problems of the high mountain environment: water disinfection, trauma, infectious diarrhea, infections, and high altitude pulmonary and cerebral edema. The physicians who taught these courses gradually developed text materials. James Wilkerson's classic *Medicine for Mountaineering*, now in its third edition, evolved into the standard textbook for "mountaineering medicine" or expedition medicine classes.<sup>3</sup>

These expedition medicine courses are very different from the emergency medical techniques taught to EMT's and Paramedics. Mountaineering medicine students need to know about general medicine and what we call "primary care": care of common medical, surgical, and nursing problems. Topics that form the bulk of EMT and Paramedic training (such as the acute care of heart attacks and automobile accidents and similar problems) have little relevance for mountaineering medicine students. EMT's and Paramedics are taught how to stabilize patients for the first minutes to hours, which is only a fraction of the time high mountain trekkers may have a patient.

Since expedition medicine courses have been available even longer than EMT and paramedic training, some wilderness search and rescue teams combined the two types of training to serve as their "Wilderness Emergency Medical Technician" training. Most found this to be far from an ideal education. The combination of EMT and expedition medicine courses was better than either by itself, but the gaps between the training and the contradictions were frustrating (e.g. "never give a patient anything to drink" vs. "oral rehydration is the mainstay of treatment for diarrhea"). One wilderness search and rescue team member described using these two courses to train a Wilderness Emergency Medical Technician as "trying to fit two square pegs into one round hole."

To our knowledge, the first gainful work toward specialized and specific training for wilderness Emergency Medical Technicians began in the early 1970's with the Emergency Medicine Committee of the National Association of Search and Rescue Coordinators under chairman

Stan Bush.\* One of us provided the Emergency Medicine Committee with a "Partial Draft Proposal for a National Wilderness Medical Technician Program" in 1980.<sup>4</sup> In the late 1970's and early 1980's, some Appalachian Search and Rescue Conference and Mountain Rescue Association teams began offering basic EMT classes that met all standards for EMT training, but concentrated throughout the course on wilderness search and rescue applications. (This smoothed the conflict between mountaineering medicine and EMT training, but differences remain.) In the 1980's, as an outgrowth of Outward Bound first aid training for trip leaders, an independent organization, *Wilderness Medical Associates*, began offering such wilderness-oriented basic EMT classes for the general public, and is now offering such courses around the country. Dr. Warren Bowman, current Chairman of NASAR's Emergency Medicine Committee and national medical advisor for the National Ski Patrol System, coordinated development of the joint National Ski Patrol -- American Red Cross *Winter Emergency Care Course* (WECC). This course is supplanting the Ski Patrol's previous reliance on Red Cross Advanced First Aid course taught with a winter and wilderness slant. The American Red Cross has reputedly withdrawn from the project, but the National Ski Patrol System plans to continue with the WECC course on its own.<sup>5</sup>

In the mid-Appalachian region, the first wilderness Advanced Life Support (ALS) system was the National Park Service's ParkMedic program in Shenandoah National Park, and it dealt as much with "rural"

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\*NASARC is now NASAR, the National Association for Search and Rescue.

as with "wilderness" EMS.\*<sup>6</sup> As an outgrowth of its wilderness EMT-A courses of the late 70's, the Appalachian Search and Rescue Conference continued to build up its medical training, both in terms of traditional EMT and paramedic training, but also in general wilderness medicine. The ASRC also recently started a statewide wilderness ALS EMS system in Virginia, about which we'll say more later.

#### **Wilderness EMT: The EMS Mandate**

Here, we'd like to quote from a proposal from the Appalachian Search and Rescue Conference to the Virginia Division of Emergency Medical Services. This proposal suggests additions to the EMS regulations to cover wilderness EMS agencies:

"The ASRC believes that high-quality emergency medical care should be available to citizens of the Commonwealth, whether in a city, along a rural road, or far back in the hills. Therefore, we would like more rigorous requirements for Wilderness EMS agencies, and we have drafted this proposal to provide these. This proposal extends the Regulations' mandate for quality prehospital care into backcountry settings; we want to make prehospital care

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\*Advanced Life Support refers to the use of intravenous fluids, drugs, and other invasive procedures by EMT's within the context of an EMS system. Many mountaineers were taught how to administer intravenous and intramuscular medications, and gave them, but not in the context of an EMS system.

available to the hunter who falls into a ravine, the child who is lost in the forest for five days, and the people on an aircraft that crash-lands in the Blue Ridge Mountains. We want to do our part to provide a system of quality prehospital care encompassing not only the cities and highways of Virginia, but its caves, forests, and mountains, as well."<sup>7</sup>

Unfortunately, given our current technology, "quality care" in the wilderness can never be as good as if on a city street. Why?

Let us take as example a cardiac arrest, one of the main reasons that urban EMS systems stress a quick response to the scene. For victims of primary cardiac arrest (i.e. not secondary to trauma, cancer, or some other non-cardiac cause), the major criterion for their survival is the time until defibrillation, as evidenced by the new emphasis on the EMT-Defibrillator. On the other hand, the idea that anyone can survive a primary cardiac arrest in a wilderness area is ludicrous. One hears stories of patients surviving long periods of external cardiac compression, but these are cast in doubt by recent studies showing an almost total lack of coronary artery circulation during optimum CPR.<sup>8,9,10,11</sup> So, if one is in a wilderness area, whereby definition advanced life support is distant, the chance of restoring a viable rhythm before irreversible cardiac damage sets in is vanishingly small. One might make an argument for a precordial thump, and admittedly, there may be a few circumstances, such as lightning injury, where a bit of artificial respiration might make a difference in survival. But, external cardiac compression has no

theoretical or even anecdotal evidence to suggest it would be effective in a wilderness cardiac arrest. So, if one has a primary cardiac arrest in a wilderness area, one is dead. Period. The same principle applies to patients with the kind of multiple-system trauma that sparked the development of trauma centers-- a patient with that sort of trauma in a wilderness setting is also dead. (Someone might argue that a prompt helicopter evacuation might save a cardiac arrest or multiple-trauma patient. We would counter this by arguing that any place from which one can evacuate a patient in a matter of minutes is, by definition, not a wilderness, and therefore outside the scope of wilderness EMS.)

Thus, no matter how hard we try, we cannot provide the same level of care in the wilderness as we do on the street. We still have a moral obligation to provide the best wilderness care we can. This most definitely includes providing the search and rescue resources to find and evacuate the patient promptly. . . defibrillators and monitors, or even blankets, IV's, and warm humidified oxygen, are of little use while an EMT spends half a day trying to find the patient. It is also probably bad form to cause additional injuries by performing a sloppy rescue and evacuation. (We cannot expect those untrained in wilderness rescue, no matter how good at urban rescue, to manage a wilderness rescue expertly.) We should emphasize a wilderness rescue that is almost overwhelming to a rural EMS agency might be quite routine for a good wilderness search and rescue team. Failing to call for expert help, and underestimating the duration and difficulty of a wilderness or even rural rescue, are com-



mon errors. We feel that failing to call for expert help in a wilderness rescue is EMS malpractice, just as much as would be transporting a patient with a C-spine injury in a wheelchair with a soft cervical collar.

It is also true that training EMT's and Paramedics the priorities and realities of wilderness EMS is an important route to providing quality EMS in the wilderness. For instance, in most wilderness rescues, monitoring rectal temperature is more important than monitoring heart rhythm, a very foreign concept to most non-wilderness EMT-Paramedics.

ASTM (formerly the American Society for Testing and Materials), a national and international full-consensus standards development organization, has recently (spring 1988) established a committee on search and rescue. In concert with the ASTM committee on Emergency Medical Services, the search and rescue committee may work on national standards for wilderness search and rescue medical training.

#### **Where does SAR end, and EMS begin?**

Cliff rescue might be thought of as part of wilderness rescue, but if one can drive an ambulance or rescue truck to the top or bottom of a small cliff, there's really no "wilderness" involved, and the rescuers may use standard urban rope rescue techniques without difficulty. On the other hand, consider a patient a quarter of a mile from the road, at night, in wind and freezing rain, down in a deep and rugged ravine. In this case, standard (non-wilderness) rescue techniques will be very inefficient. Using standard mountain rescue manage-

ment and techniques (such as careful land navigation, the Incident Command System for coordination, and standard rope team rotations for changing belayers during a semi-technical evacuation) might scale down a ten-hour evacuation to a two-hour operation. Given the conditions described above, it might make a difference in the rescuers' limbs and lives, as well as the patient's, and when one can't figure out exactly where to find a wilderness patient. . .

Search theory, strategy, and tactics have advanced in leaps and bounds in the past fifteen years, and one might even argue that it is EMS malpractice not to use modern search methods when the patient can't be promptly located. Thus, wilderness rescue includes a variety of disciplines, including some that are much different from most other rescue training (land navigation, short-term survival, wilderness travel, search, and semi-technical evacuation).

There is a whole spectrum of activities that fall under the term wilderness rescue. The dividing line between wilderness rescue and non-wilderness rescue is not clear, and indeed urban rescue has adopted many mountain rescue techniques, blurring the distinction even more. Depending on the ruggedness of the terrain, 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, the EMS system must gear up for a wilderness rescue.

Wilderness Emergency Medical Technician: The ASRC--CEM Approach

The ASRC/CEM Wilderness Emergency Medicine Curriculum Development Project is a joint project of the Center for Emergency Medicine of Western Pennsylvania (CEM) and the Appalachian Search and Rescue Conference (ASRC), although many individual and organizational consultants are participants. Our overall goal is to provide training that will "fill in the gaps" and integrate the search and rescue and Emergency Medical Technician training that members of wilderness EMS agencies already have. (To us, a wilderness EMS agency is a wilderness search and rescue team that is also an integral part of the local or regional EMS system.)

The Project consists of four parts. The first was to define the goals and purposes of the project, and we will discuss this in a moment. The second is to run pilot courses to smooth out our rough-hewn curriculum, and the third is to develop a formal written curriculum. The final part of the Project is to implement the WEMT curriculum as part of a regional Wilderness EMS system.

Our first and most important task was to refine our conviction that there was a need for a local Wilderness Emergency Medical Technician course curriculum, and to answer some basic questions about the philosophy of our course curriculum. To do this, we consulted all the knowledgeable people we could reach. We spoke to many experts directly, and depended heavily on the members and staff of the Pennsylvania Search and Rescue Council, Virginia Search and Rescue Council, Appalachian Search and Rescue Conference, Center for Emergency Medicine of Western Pennsylvania, National Cave Rescue Com-

mission, and Mountain Rescue Association. We sent out about 200 copies of a *Prospectus* to those interested in wilderness EMT training. This *Prospectus* provided about 100 pages of background information on Wilderness Emergency Medical Technician training and related topics, accompanied by an informal questionnaire that addressed the questions considered below. By questionnaire, letter, direct contact, or telephone calls, we received responses from about 100 people with expertise in wilderness search and rescue and wilderness emergency medicine. We were not looking for statistical support for our own opinions, and therefore one will find no statistics in this article.\*

\*A quote from a recent book by two mathematicians explains:

"Mathematics is not only applied to the physical sciences, where successes have been thrashed out over the centuries, but also to economics, sociology, politics, language, law, and medicine. These applications are based on the questionable assumption that problems in these areas can be solved by quantification and computation. There is hardly any limit to the kind of things to which we can attach numbers or to the kinds of operations which are said to permit us to interpret these numbers. We are awash in questionnaires and statistics. Standard deviations and correlation coefficients are spat out by computers held in the hands of the uncritical and used as hammers to pulverize us into compliance with the conclusions of the investigator. (Do you think of yourself as deprived? Yes: 17%. No: 48%. Don't understand what deprived means: 12%. Other: 23%.) The Criterion Makers tell us that society should move so that such and such a norm is optimized, and they base policy on this, but no one can say why the criterion itself is appropriate." (continued next page)

What we wanted was the constructive and perceptive thoughts of experts, which we could then use to help formulate our own positions on controversial WEMT issues.

#### **What Shall the WEMT Course Contain?**

"Wilderness Medicine" includes a wide spectrum of medical, paramedical, and non-medical topics. These include preventive measures for foreign travelers, definitive care of minor injuries, care of environmental exposure in the wilderness, improvised evacuation of patients, and the physiological study of altitude effects. Based on our wilderness search and rescue experiences, and those of our consultants, the ASRC--CEM Wilderness Emergency Medicine Curriculum Development Project deals only with a particular subset of these topics. We define this as the training needed by medical and paramedical personnel working with a wilderness search and rescue team. This includes the management of patients over extended periods, the treatment of exposure, trauma, shock, and infections, and the use of drugs, IV's, and other invasive procedures in the wilderness environment.

If faced with a medical problem, when in the wilderness and medical facilities are not readily available, the non-physician faces with three choices. First, one might leave the wilderness area and seek a

physician. (Depending on the type of problem and the distance to the roadhead, the problem might even resolve before one reaches the doctor.) As a second option, one might take over-the-counter (OTC) medication, or prescription medications if one's doctor has provided prescriptions for a wilderness medical kit. For minor surgical problems, one might attempt simple surgical procedures (e.g. lancing a small boil or removing a splinter). The third and final option is simply to suffer. When the minor problem occurs to an irreplaceable member of a wilderness search and rescue team, it assumes greater significance. What might just be an inconvenience to a recreational backpacker could be much more important to the team and their patient; i.e. litter team members are simply not very useful if they all have severe gastroenteritis. We elected to include such primary care in our Wilderness Emergency Medical Technician training, so graduates could care for minor problems in themselves and their team-mates.

A second major decision was to decide which advanced skills we should include in the curriculum. After a great deal of thought and investigation, we realized that, with a few minor exceptions, all the skills needed by the Wilderness Emergency Medical Technician are already found in the EMT-Basic and EMT-Paramedic curricula (straightening a fractured extremity for splinting, or placing NG tubes or central IV lines). We believe that any WEMT who needs to perform advanced skills should obtain training and certification through an EMT-P or other advanced EMT course. (While not all EMT-P courses offer training in skills such as NG tubes and Foley catheters, they are all included as options in the DOT Curriculum.)

We have elected, for the pilot courses, to offer a single class for EMT-Basic's, EMT-Paramedics, and any levels between.

The course content, we decided, should be virtually the same for EMT's and Paramedics; most of a WEMT course is adaptation of and extension of basic knowledge and skills, and for the type of material we teach, there is little difference in the preparation of EMT's and Paramedics. However, since there are a few lectures we could shorten for the EMT-Paramedics, and spend the additional time on practical adaptation of EMT-P skills to the wilderness, we will probably offer separate classes for EMT-Basic's and EMT-P's.

Providing medical command to a wilderness medic, especially one who is on a 36-hour evacuation in freezing rain on the side of a mountain, involves problems encountered by few command physicians in their routine practice. A wilderness command physician should have a solid understanding of general emergency medicine, and possess particular expertise in wilderness medical problems (hypothermia, environmental poisonings, and the like). This command physician should have an understanding of the wilderness environment and the problems encountered by the Wilderness EMT's. This is true for any physician giving command to paramedics, but is particularly important in wilderness EMS. Before becoming a Wilderness Command Physician, a command physician, even if an experienced outdoors enthusiast, should participate in wilderness rescues or simulations, to appreciate the difficulty of wilderness rescue and the severity of the environment. For all these reasons, we believe that specialized training for Wilderness

Command Physicians is a necessity, and in addition to the Wilderness Emergency Medical Technician curriculum, we plan to draft a Wilderness Command Physician curriculum.

Another major decision in our Project was how much SAR training to include. We found strong sentiment within the search and rescue community. Surprisingly, SAR team members felt that search and rescue training should not form part of any wilderness EMT training. A second group felt just as strongly that SAR training was one of the things they desperately wanted to see in a WEMT class. This second group comprised those with no formal SAR training or affiliation, including both outdoor enthusiasts and EMS agency members, and they looked to a WEMT course to fill this gap. While we agreed that SAR training is essential for WEMT's, we also agreed with the wilderness SAR teams that SAR is the province of SAR groups and that independent standards already exist. Attempts to duplicate aspects of training would be costly in terms of money, resources, and time (increasing the length of the course). The SAR question becomes even more complicated. Which SAR skills should we include? Cave, whitewater, desert, or mountain? And to what level?

Our final decision was to not dilute the medical content of the course with search and rescue skills that are already available through SAR groups and commercial classes. However, basic wilderness SAR training, including outdoor competence, is essential for the WEMT for several reasons. First, the WEMT must be able to safely accompany a wilderness search and rescue team. Second, the WEMT



must be sufficiently comfortable in the wilderness environment to be able to concentrate on medical problems; the WEMT must be an asset to the SAR team, not a liability.

Therefore, we require students to meet an accepted regional standard for outdoor and search and rescue competence, such as the membership standards of the Appalachian Search and Rescue Conference, or the Virginia Search and Rescue Training and Certification Program (we will accept either the Ground Search and Rescue Program Level I, or the planned Cave Rescue Program).<sup>12,13</sup> The National Association for Search and Rescue is considering national standards similar to Virginia's, and these may also become accepted.<sup>14</sup>

#### **Who Should Take our WEMT course?**

As stated above, our primary audience is EMT's with wilderness search and rescue teams that are integrated into the EMS system ("Wilderness EMS Agencies"). However, we have found that our potential audience is much larger. Some EMT's with rural rescue squads have some wilderness rescue responsibilities, although the rescue squads are not recognized SAR teams. On the other hand, some people who want to take the course are EMT's with SAR teams that have no formal EMS affiliation. Both would like to take the WEMT course, and certainly seem to have legitimate need for the training. Our way of dealing with these requests is to ask non-EMS SAR teams to apply for EMS agency status, and to begin regular EMT continuing education, and for members of non-SAR EMS agencies to obtain and maintain approved SAR certification.

A third type of applicant for WEMT training is the outdoor enthusiast or trip leader with neither SAR nor EMS affiliation. After due deliberation, we decided the following. We view the Wilderness EMT as a medical professional (even if a volunteer professional) who must meet minimum standards of continuing education, medical control, and accountability. Although outdoors enthusiasts need advanced wilderness medical training, the Wilderness EMT curriculum we are now developing is not designed for them.

Wilderness SAR teams must have physician supervision and standing orders (or on-line control) to ensure professional-quality medical care and to allow them to provide advanced care in the wilderness. Outdoor enthusiasts will rarely have such physician backing for their club. Therefore, outdoor enthusiasts will not be able to provide the same level of medical care and should not have the same training as a Wilderness Emergency Medical Technician. We believe, however, that their need for a separate, non-EMS wilderness medical course should be met. This course should include wilderness medical topics and a specially-designed SAR segment, both selected specifically for the outdoor enthusiast and trip leader. While providing advanced medical training, it must do so with the understanding that regular physician supervision will not be available to course participants.

### **The Pilot Courses**

The first part of our Project was done. We had developed a firm conviction as to the broad outline of the content and goals of the WEMT course. We have now moved on to the second part: to offer

several pilot classes based on our evolving curriculum. By using students who are already working as Emergency Medical Technicians with a wilderness search and rescue team, we ensured a highly critical audience that would guarantee that the curriculum was continuously reshaped to meet the needs of the EMT on the mountain or in the cave. By using Medic Command physicians and paramedics with wilderness search and rescue experience as instructors, we made sure our curriculum is oriented to the EMT in the field. We offered our first pilot course in Pittsburgh, Pennsylvania in the fall of 1987, under the auspices of the Center for Emergency Medicine of Western Pennsylvania. We offered a second pilot course in Charlottesville, Virginia in the spring of 1988 for the Virginia Department of Health and Department of Emergency Services, and we plan a third pilot course in fall 1988, again in Pittsburgh.

The third part of our Project is to create a complete WEMT curriculum. We will do so by taking the recommendations of our consultants, our pilot course instructors, and our students, and distilling them into a comprehensive written curriculum consisting of Instructor's Lesson Plans for each class (basic Wilderness EMT, Wilderness Paramedic, and Wilderness Command Physician) and a Wilderness Emergency Medicine Textbook. To do this, we are establishing small Task Groups, starting with about 10 members each, to originate draft lesson plans for each subject area.

Task Group coordinators will welcome suggestions from any source, although those with significant contributions are in danger of being asked to join the Task Group. Once the lesson plans are robust

enough to stand public scrutiny (a few months), we will release them to the interested public for review and discussion.\* We will post them on a computer Bulletin Board System for downloading.\*\* After reviewing the comments on the individual draft lesson plans, we will publish a comprehensive set of draft lesson plans for public scrutiny. We hope to make the complete set of draft Lesson Plans available by autumn of 1988.

### **Wilderness EMT's for Disaster Response**

A Wilderness EMT is self-sufficient in food, water, and shelter, and can stay mobile in a hostile outdoor environment. The Wilderness EMT can deal with medical problems (concentrating on trauma and environmental illnesses) for extended periods, sometimes without medical control, and can provide definitive care for minor medical and surgical problems when the patient cannot be brought to a physician or hospital in a reasonable time. These qualifications seem ideal for a cadre of paraprofessional medics in the setting of a major disaster.

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\*If you would like to offer suggestions for one of the Task Groups, please request a list of the Task Group Chairmen. Send a self-addressed stamped envelope, and a note with your name, address, telephone numbers, and special WEMT-type interests to: ASRC--CEM Wilderness Emergency Medicine Curriculum Development Project, 36 Robinhood Road, Pittsburgh, PA 15220-3014. You may also obtain this information directly from the computer BBS; see below.

\*\*The number for your modem to call is 412-247-4488; check the Allegheny Mountain Rescue Group message area.

By a major disaster, we mean not just a plane crash, but when the disaster is widespread enough to overwhelm medical and EMS systems, or when medical facilities are themselves the victims of the disaster; think of the recent Mexico City earthquake, or, think ahead to the day when California "falls into the ocean." In view of this, the ASRC--CEM curriculum is being considered as a component of the training for an international disaster response team.

#### Why a WEMS "system"?

The fourth part of the Project will be to establish a regional Wilderness Emergency Medical Services System. We view the "WEMS System" not as a new entity, but as an extension of existing emergency medical services (EMS) and search and rescue (SAR) systems and agencies. Just as EMS and trauma systems extend the reach of emergency medical and surgical facilities into surrounding communities, so the WEMS System will extend their reach into the backcountry. Components of a WEMS system might include additional in-hospital clinical training, written and practical testing and certification for all levels of WEMT, continuing education programs, physician medical direction and on-line control, and a sophisticated communications network to extend on-line medical control as far as possible. Quality control and accountability are imperative for such a system, if the medical community is to accept it.

A Wilderness EMS System will, most importantly, provide for smooth interaction of SAR and EMS resources. Some Wilderness EMS agencies might be SAR teams, and some might be rural rescue squads, but all

should work together to provide the best patient care possible. In times past, such interaction would come only during an actual search or rescue, and then only at the trailhead or in the field.

The Appalachian Search and Rescue Conference has made a beginning on this by establishing Wilderness Basic Life Support ("BLS"; EMT-Basic level) guidelines for its members operating anywhere in its entire region (Virginia, West Virginia, North Carolina, Maryland, and Pennsylvania) and by establishing Wilderness Advanced Life Support ("ALS") guidelines for its EMT-Paramedics and other advanced providers throughout Virginia. We hope that regional WEMS systems will develop similar guidelines that are available to all wilderness providers in the region.

#### **Afterword: Why Pittsburgh?**

Pittsburgh might strike one as an unlikely place for Wilderness EMT training to develop. However, Pittsburgh lies at the western edge of the central Appalachian Mountains, the country's most heavily-used backcountry recreation area. Within a half-day's drive of Pittsburgh are three large National Forests and a National Park, both designated and undesignated Park Service and Forest Service wilderness areas, and many other popular backcountry areas. The region is criss-crossed by thousands of miles of backpacking trails (including the Appalachian Trail), and contains popular whitewater streams, famous climbing areas like Seneca Rocks, and some of the world's longest and most interesting caves. With such an outstanding outdoor recreation area near New York, Philadelphia, Baltimore, and Washington,

backcountry emergencies are common and becoming more so. Pennsylvania has about 40 volunteer search and rescue teams, including a Mountain Rescue Association group in Pittsburgh.

With both local needs and outstanding search and rescue as well as wilderness medicine resources, Pittsburgh is an ideal site to develop Wilderness EMT training.

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