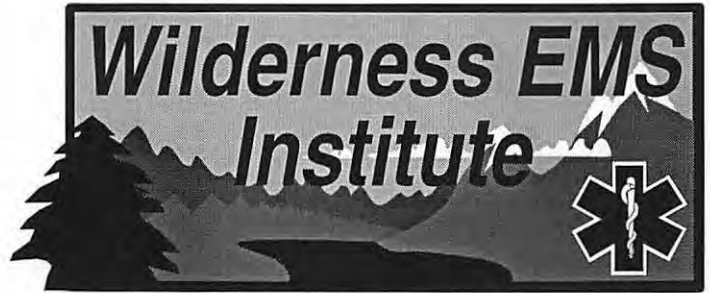


# Wilderness EMT



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

## **Wilderness Emergency Medical Technician Curriculum Course Guide**

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Updates to this document will be available from  
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## **Preface**

The purpose of this guide is to share the intent, history, direction and experience accumulated over many “pilot” and formal. The WEMT curriculum is dynamic in both the manner in which it is presented and the ongoing development of the curriculum itself.

This guide, coupled with the *Wilderness Emergency Medical Technician Textbook* and *Lesson Plans*, allows coordinators and instructors to conduct a Wilderness Emergency Medical Technician course that meets the educational objectives set forth in the WEMSI WEMT curriculum.

The Guide is broken into three sections and a set of appendices. The first section gives an overview of what we feel makes up the training of a Wilderness EMT and the roles that Wilderness EMT can fulfill. The second section goes into some detail on the actual curriculum. Section three is for the more pragmatic of you; it covers some of the details you should consider when planning a WEMT class based on this curriculum.

Note that with this version we are now publishing a large Practical Station Manual as an Appendix. The Practical Skills Station Manual is designed to be used during the Practical Skills Stations, so it will continue to be bound separately, though distributed as part of this Course Guide.

We plan to revise the curriculum somewhat during 1997, going to a less-crowded 6-day (six sequential days) format, as well as some expansion of the public-health role of the WEMT, also expanding the Stress and CISD section into a more general treatment of psychological considerations; a revision of this Course Guide in early 1998 will reflect these changes.

The Wilderness EMS Institute and the editors of these materials welcome your input. Tell us about the courses you have conducted, and we will use your comments to guide future revisions of this Course Guide. We can then jointly improve the conduct of courses based on the Curriculum, improve the Curriculum itself, enhance the learning experience, and ultimately improve the care of the sick and injured in the backcountry.

--KC, DWL, and DAS, Summer 1997

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## Introduction

The purpose of the Wilderness EMS Institute Wilderness EMT Curriculum is to “fill the gap” between the traditional search and rescue (SAR) and emergency medical services (EMS) communities by providing the additional education and skills necessary for the EMT-Basic/EMT-Paramedic to better care for the person who becomes ill or injured in the wilderness environment. Additionally, the Wilderness EMS Institute (WEMSI) envisions an extension and integration of the “formal” EMS system into the wilderness/SAR environment through the person of the Wilderness EMT (WEMT). The ultimate goal is to provide better care for those injured or ill in the wilderness.

The Wilderness EMS Institute Wilderness EMT Curriculum is, in a sense, free. The *Course Guide* and *Lesson Plans* are copyrighted. But, if you look carefully at the copyright notice, you’ll see that it allows unlimited copying, provided you copy the whole publication, and leave the copyright notice intact. (If the photocopy you have is in bad condition, you can always order a fresh copy from us for the cost of copying and postage). You can also use the material in any way you want. If you are a non-profit rescue organization, and want to use our Curriculum to provide regular continuing education for your members, that’s fine. If you make money by teaching Wilderness EMT courses, and want to use our Curriculum, that’s fine, too. We only require that you tell your students that you’re using our Curriculum. We expect no payment for any such use of the Curriculum.

A textbook based on the Curriculum will be published soon. The textbook will carry a normal copyright; besides, copying the whole textbook would probably cost more than buying a copy in

the first place. Any profits from the sale of the textbook will be used solely to support the activities of the Wilderness EMS Institute.

This *Course Guide* provides the information you need to set up and operate a Wilderness EMT training course using the WEMSI Wilderness EMT Curriculum. It provides useful background material describing what an EMT is, what a **Wilderness EMT** is, and what a Wilderness EMT can do. A section describes the use of WEMT training for disaster response teams, and describes **why** Wilderness EMT training is ideal for disaster response teams. Another section outlines the prerequisites for the curriculum (in brief: previous EMT and search and rescue training), why there are such prerequisites, and the target population for the WEMT curriculum. This guide also explains why there is a single curriculum, rather than separate curricula for EMTs and paramedics. It also explains why EMTs and paramedics should take the class together. Sections outline what is included in the curriculum, and what is deliberately excluded.

Sections of the *Course Guide* describe scheduling considerations, including the sequence in which the course unfolds, and the amount of time that is required. This guide discusses the necessary facilities, equipment and supplies necessary for this program. The number and qualifications of instructors is addressed. You will also find information about discussion group methods; conducting practical exercises, both indoor and outdoor; written and practical testing considerations; and information on clinical training. Suggestions for “add-on” modules are presented. A final section describes the various publications of the Wilderness EMS Institute.

## **WEMSI WEMT Course Policy**

Classes based on the WEMSI Wilderness EMT Curriculum fall into four types: WEMSI-Conducted Classes, WEMSI-Recognized Classes, non-recognized classes, and adaptations. WEMSI conducts classes only at the request of a state or national government or its lead search and rescue agency. Such classes help the state or nation develop its own WEMT program. Most recently, WEMSI has taught such classes for the Irish Mountain Rescue Association and the Maryland Institute for EMS Systems.

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### **Adaptations**

The WEMSI Wilderness EMT Curriculum is a comprehensive curriculum for EMTs, paramedics, and other prehospital professionals. Assuming students have EMT and SAR training (see below), the Curriculum provides intensive training on Wilderness EMS. For certain situations, prehospital providers may not need all of the Curriculum. Organizations are welcome to incorporate WEMT modules, or portions, into their training.

An example is a rural EMS agency—their personnel need to deal with delayed transport, but not with specifics of the wilderness environment or search and rescue. Or, urban disaster response teams—again, certain portions of the Curriculum apply, others don't. Organizations may wish to integrate parts of the Curriculum into their own wilderness classes, or use it to upgrade their training. SAR teams or EMS agencies may wish to use WEMSI WEMT modules for continuing education. Some organizations may want to use parts of the Curriculum for training outdoor trip leaders. We welcome such uses; our only request is for acknowledgment when the Curriculum is used this way.

---

### **Non-Recognized WEMSI WEMT Classes**

The WEMSI Curriculum may be used freely by any organization or individual. An organization could use the entire WEMSI Curriculum to mount its own WEMT course. There is no requirement for special permission to do this; the Lesson Plans and Course Guide may be freely copied (see below). The textbook is copyrighted and will be commercially published. Until the text is commercially published, course sponsors may arrange to get preliminary student text materials from WEMSI.

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### **WEMSI-Recognized Classes**

Organizations may sponsor WEMT courses based on the WEMSI Curriculum, and, provided they meet certain basic requirements for quality control, may issue WEMSI course completion certificates and patches. Students in WEMSI-Recognized WEMT classes must complete specified lectures, complete required practical exercises, and successfully complete the standard WEMSI written and practical tests. There is a minimal charge for patches, certificates, and test processing. Sponsoring organizations must also provide food, lodging and transportation reimbursement for a WEMSI QI monitor to be present at the class.

Sponsoring organizations are responsible for all other financial arrangements with faculty and students, for instructor selection and monitoring, and for quality control.

Several organizations currently conduct WEMSI-recognized classes. The Center for Emergency Medicine offers WEMSI WEMT classes in the Laurel Highlands of western Pennsylvania, the western edge of the Appalachian Mountains. Field exercises are held in the Laurel Mountains. These courses are offered each



fall on a 6-day-long basis, and in the spring when there is sufficient demand. Those wishing to run their own class are advised to attend this, WEMSI's premier class. WEMSI-recognized courses are also offered on a six-day-long basis as part of the "weeklong" cave rescue training offered by Eastern Region, National Cave Rescue

Commission. This training is held each summer, in the mountains just south of Elkins, West Virginia. Field exercises are held underground in nearby caves. WEMSI-recognized courses are also currently offered in north-central and south-central Pennsylvania, and in Ireland.

## Wilderness EMT Roles

*Note: for those not familiar with the U.S. Emergency Medical Technician program and its development relative to the Wilderness EMT, please see Appendix I for some background.*

The WEMT's roles include educating other SAR team members in wilderness prehospital care, standing by at base providing medical support during a search, serving in the Medic position on a search team to care for wilderness patients during a rescue.

When not on an operation, the WEMT helps educate team members in wilderness medical problems and their management, maintains SAR, EMT/EMT-P and WEMT skills and knowledge through continuing education and clinical rotations and helps maintain the medical supplies and equipment necessary for search and rescue missions. When standing by at Base, the WEMT helps the Plans Section of the Incident Command System plan for the rescue and/or may serve as safety officer. A WEMT will generally standby for rescue with the rescue team, and may provide incidental medical care for those at Base when needed.

In the field, the WEMT is the medical expert on a search and rescue team while in the wilderness, and provides "primary care" as needed 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 physician when the team gets back from task. The WEMT may decide it is necessary to abort the task and walk the team member out or initiate an emergency evacuation of the team member if the situation warrants.

On a search team that makes a find, the WEMT provides care for the patient with, initially, only the small medical kit carried in, calling for additional materials if needed. The WEMT provides continued 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 (PA)". 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. Further more, the WEMT must be

able to operate independently if the Wilderness Command Physician can't be contacted, similar to some physicians assistants. If appropriate, the WEMT accompanies the patient to the hospital, along with local prehospital personnel if needed or may simply transfer care to the transporting personnel.

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## Why Wilderness EMTs?

Why Wilderness EMTs? Because the problems are different in the wilderness, and because standards of prehospital care are different for wilderness rescues. 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).

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.

Wilderness patients need longer-term care (e.g., on long evacuations, the monitoring of the patient's urine output by a Foley catheter or Texas drain may be required). Infections, atelectasis, and deep venous thrombosis may become problems during an extended wilderness evacuation.

Wilderness emergency medical equipment is limited by what the team members can carry on their backs or improvise.

Some special procedures (e.g., reducing dislocations) may require special licensing by the state (although this depends on the state).

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, the WEMT is the team's medical expert. During this time for whatever problems arise; team members will ask your advice, even if the problem is outside the scope of "street" EMT/EMT-P training.

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 and trauma center care.

Wilderness EMTs need special training for the wilderness environment and for search and rescue.

The safety of the WEMT depends on his or her ability to coexist safely with the wilderness in a search and rescue situation.

The WEMT must carry out emergency medical tasks despite severe environmental stresses (e.g., freezing rain, blizzards, 105° F (41° C) heat).

In closing, to keep the operation moving smoothly, the WEMT must interface smoothly into a large SAR operation (even if not actually assisting with SAR tasks).

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## **Can WEMT Training be Used for Disaster Teams?**

The WEMTs role after a catastrophic disaster can be very similar to that on a wilderness search and rescue team.

First, we must define the types of disaster. A multi-casualty incident may be considered a disaster, and most local “disaster plans” deal with such a disaster. 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. A

“major disaster” occurs when the incident strains available resources, for example, a school bus or urban plane crash. A “catastrophic disaster” completely overwhelms local resources (or has already destroyed all local resources, as in the earthquake in Armenia December 7, 1988.).

A catastrophic disaster is very similar to a wilderness search and rescue operation. There is no shelter, and exposure to environmental extremes (e.g., heat, cold, snow, or rain) is important to victims and rescuers alike. There is no potable water or food. EMTs need overland evacuation skills (i.e., the roads and streets may be impassable). EMTs must be ready to care for patients for a long time: The local hospitals may be destroyed or overwhelmed, and many local doctors and nurses may be dead or injured themselves. 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. Although victims may be entrapped in ways that require special urban rescue skills, many may simply need evacuation by simple mountain/cave rescue techniques. As in the wilderness, WEMTs must be self-sufficient in terms of food, water, and shelter. 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. WEMTs may consult on relevant public health issues such water treatment and the disposal of human waste. In short, we believe Wilderness EMT training is ideal for members of disaster response teams.

# ***The WEMSI Wilderness EMT Curriculum***

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## **Target Population**

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.

Developing the true “Wilderness EMT” is the object of our curriculum.

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 at a more extensive level. 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 found on urban streets. The urban EMT’s most critical patients are those who will die within minutes unless attended at a trauma center or the EMT/EMT-P uses 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 WEMTs 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 the WEMT.

Hypothermia, the delayed effects of shock, acute renal failure, sepsis, deep venous thrombosis and pulmonary embolism, compartment and adult respiratory distress syndromes are some of the

potential, 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.

Would-be “non-EMS Wilderness EMTs” posed a problem for us. Those who travel in 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.)

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.

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

---

## Prerequisites

The prerequisites for the WEMSI WEMT curriculum and the reasons for them, are described in this section. In brief, the prerequisites are:

- Medical training: EMT-Basic or equivalent training.
- Search and Rescue Training: Search and Rescue training (Virginia Ground Search and Rescue Field Team Member, NASAR, NASAR FunSAR, NCRC Orientation to Cave Rescue, or equivalent).

### *Medical Training:*

EMT or EMT-P training, or equivalent, is a prerequisite. EMT training is readily available in the U.S. and some other English-speaking countries, and is the basis for all recognized U.S. pre-hospital continuing education courses (e.g., Pre-hospital Trauma Life Support and Basic Trauma Life Support courses). We don't think that you should necessarily require certification prior to a student enrolling in a WEMSI WEMT course – but the student must have the knowledge contained in the U.S. EMT-Basic course, as the WEMT Curriculum assumes this as base knowledge. We do recommend, however, that agencies issuing WEMT certificates require EMT-Basic or equivalent certification prior to issuing WEMT certificates, or at least prior to allowing the WEMT authorization to practice in the field. The actual certification required is also country dependent; those planning to present this curriculum outside the United States may need to specify different prerequisites.

### *Search and Rescue Training:*

WEMSI started building the WEMT Curriculum in the early 1980s, first surveying mountain and cave rescue organizations to ascertain their needs. One question was: should SAR training should be included in a WEMT curriculum? The answer was no — team members already had SAR training. As WEMSI was focusing particularly on

the needs of SAR team members, not EMS agency EMTs or outdoor trip leaders that would be more likely to need such training, this answer was not unexpected.

But, the boundary between SAR skills and wilderness EMS skills isn't a sharp line – for instance, is patient packaging *SAR* or *wilderness EMS* training? So, in order to decide what to include in the WEMT Curriculum, we needed to assume, and require, a certain minimum amount of type of SAR training.

We looked around for a convenient standard of SAR training to use as a prerequisite. One of our sponsoring organizations, the Appalachian Search and Rescue Conference, has about 500 SAR team members spread over several central Appalachian states – and has uniform standards at the Field Team Member level. Not only that, the Virginia state SAR standards for Field Team Member are a subset of the ASRC Field Team Member standards. Other widely-available introductory SAR courses, such as the National Association for Search and Rescue (NASAR) *Fundamentals of SAR* or the National Cave Rescue Commission (NCRC) *Orientation to Cave Rescue* are available across the continent, are roughly equivalent to Virginia FTM training, and should be adequate preparation for a WEMSI WEMT course. For organizations that provide their own SAR training, and wish to measure their member's SAR training for adequate preparation for a WEMSI WEMT class, the Virginia Field Team Member standards are available from:

SAR Office,  
Virginia Department of Emergency Services  
310 Turner Road  
Richmond, VA 23225-6491  
<http://www.state.va.us/~des/sarguide.htm>

### *Which SAR Skills?*

Your organization may wish to combine SAR (or SAR and EMT) training with a WEMSI WEMT class. For instance, many organizations offer a NASAR *FunSAR* course, and NCRC *Orientation to Cave Rescue*, or an informal two-day "Introduction to SAR" course as part of their WEMT courses. The following notes from WEMSI's early debate on the SAR training prerequisite may be of some benefit

The question we addressed was: "Do we require complete wilderness search and rescue certification, or does the WEMT student only need to know a selected subset of search and rescue skills?"

First, consider the parallel case of EMT training. The ambulance driving portion of the basic EMT class is essentially irrelevant to Wilderness EMTs.

Similarly, you can make a strong argument that the search portion of most search and rescue training courses is irrelevant to the WEMT. A WEMT who does rescues but not searches need have no more than passing familiarity with search techniques.

Reviewing the topics in a standard basic search and rescue certification class, we decided that search is not very important. But, incident management, survival, wilderness travel, basic land navigation, improvisational techniques, and non-technical, semitechnical, and limited technical rescue familiarity were all legitimate needs for the WEMT. The WEMT must understand enough SAR to: a) interface with other members of the SAR system, b) to estimate evacuation time and difficulty, and c) to provide for safe in operations in rough terrain or bad weather. Because of these needs it makes sense to require a standard SAR certification class, since search comprises only a small section of the SAR course. In parallel to our decision to recommend EMT training for the WEMT class because it is widely available and standardized, we decided to recommend "complete" SAR training. 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.

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## **Aren't There Different Courses for EMTs and Paramedics?**

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?

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-P's supervision).

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.

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-Paramedic 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.

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## **What is Included in the Curriculum?**

There are twenty sections to the curriculum, and an appendix on clinical training. All are described briefly below.

### *Introduction to Wilderness EMS, the Wilderness Emergency Medical Technician, and the WEMSI Curriculum*

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.

It contains, to a degree, a review of material from EMT and SAR training. However, students must 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.

This section also reviews the various roles of the WEMT. These include not only care of rescued patients, but incidental care of SAR team members when in the wilderness and wilderness medicine education for team members and others.

### *The Wilderness Environment: Hazards, Safety, and Patient Care Implications*

This section reviews the dangers of the wilderness environment for both rescuer and the rescued. Protection against sunburn, protection against blood-sucking arthropods, and removal of ticks are among the important points discussed.

All students should already have a basic understanding of wilderness travel and survival from experience or other reading. Thus, no basic survival material is to be presented in the WEMT class. (The book *Search and Rescue Fundamentals* by Cooper, LaValla, and Stoffel is an excellent introduction. The book is available from: Emergency Response Institute, 4537 Foxhall Drive, NE, Olympia, WA 98506; (206) 491-7785).

This session sets the proper tone for the entire WEMT class. The central precept is to teach how to care for patients in the wilderness. Stress this idea here, then reinforce it in all sessions. WEMSI WEMT classes reinforce the idea strongly with practical exercises in a wild area (sometimes with heat, cold, wind, rain, or snow).

Reviewing environmental hazards here also introduces pertinent medical topics: hypothermia, heat exhaustion, envenomations, altitude illness, and trauma. Protection from the environment is one of the WEMT's few constants. Everyone in the field (including the WEMT) is always at risk for becoming a patient. This session helps to establish, at the outset, a wilderness environment theme persisting through the entire WEMT class.

### *Patient Assessment*

The area of Patient Assessment is one of the most important aspects of this curriculum. Street EMS providers have had little practice in or need to greatly refine their assessment skills.

To effectively manage the victim of illness or injury, the WEMT must first determine the scope and nature of the problem. This is challenging to the physician in the hectic but still controlled environment of the Emergency Department. WEMTs must contend with the additional pressures of a potentially hostile environment, limited resources and personnel, and until now, limited training. EMT training stresses rapid assessment of life threatening problems followed by stabilization and prompt transportation to a medical facility. WEMTs face rescues taking hours or even days. As such, WEMTs will have to manage chronic as well as acute problems. The body is complex; the spectrum of injury and illness goes far beyond a rote secondary survey. As with medical students, WEMTs must learn the general principles of taking a history and performing a physical exam. WEMTs may also have to care for members of the search and rescue team. To care for them, WEMTs also need more than WEMTs can get from a brief primary and secondary survey. The fundamentals of taking a history and conducting a physical exam will be reviewed, with an emphasis placed upon performing a directed physical exam.

The "street" EMT can usually bank on an ED doctor re-examining the patient in a few minutes. Faced with a long evacuation, WEMTs will have ample time to suffer the consequences of any injury or illness missed during the history and physical. By teaching WEMTs some of the principles of medicine, they should be able to handle, with reasonable grace and style, and with a good outcome for the patient, situations not covered in EMT or WEMT training.

### *Scene Management, Communications, Reporting, & Documentation*

This part of the curriculum might seem, at first glance, to fit into the search and rescue training prerequisite, or to duplicate facets of EMT

training. However, management of the scene and management of the patient are inextricable. The management of the scene for the purpose of insuring safety of the rescuers and patients must be stressed. WEMTs who have had this specific training in scene management do much better on both indoor and field exercises (and in the field "for real" too, one hopes).

Communications, reporting, and documentation are even more important to a WEMT than to a "street" EMT. When medical command and search and rescue team communications are spread out over many hours, small mistakes can mean big problems. ("No, I didn't want pills, I wanted IV Dilantin; the patient is nauseated and isn't keeping anything down! Go back and get me some of the IV Dilantin!" Team member prepares for the 3-mile hike back down the mountain to Base). The picture the WEMT paints to the Wilderness Command Physician must be accurate if the WEMT expects good command and good medical advice.

### *Wilderness Surgical Problems*

This part of the curriculum is a condensed summary of surgical, as opposed to medical, problems. The division between surgical and medical problems is somewhat arbitrary, but generally based on whether a surgeon or a medical physician more commonly cares for the problem. The criteria for including a problem are: (1) the problem is common in the wilderness and can be treated by a WEMT; (2) the problem is important to recognize, even if just to decide to abort the task and return to base, or to start an immediate evacuation; (3) management of the problem in the wilderness differs from that on the street; or (4) the problem might develop during a long evacuation.

This section discusses which dislocations to reduce in the wilderness and why, when to suspect a subcapsular hemorrhage of the spleen, how to manage wounds including open fractures, how to drain a subungual hematoma, how to deal with a team member who hurt his back lifting the litter, and how to "clear the C-spine" in the field when necessary.

The treatment for many surgical conditions involves the use of over-the-counter or prescription medications or minor surgical procedures. The choice of wilderness medical kit drugs and their use, and surgical procedures, is up to the WEMT's medical director and appropriate state laws and regulations. However, medications are carried and used by most wilderness travelers, including search and rescue team members, and the WEMT, as the team medical expert, must understand proper use of these medications, including their interactions and any problems that might be expected from their use. The Pharmacology section summarizes this information, but specific surgical indications are covered here.

### *Thermal Regulation*

This part of the curriculum provides an overview of the physiology of human heat regulation, a necessary prelude to the sections on cold and heat injuries. Students should have had some exposure to this material in their search and rescue and EMT training. However, a deeper understanding is important to allow the students to master the more complex and controversial topics in heat and cold illness.

This section omits details of environmental stresses, including windchill and wetchill. These are covered in the *Wilderness Environment* section. It also omits any discussion of clothing materials or cold/wet survival techniques. These are covered in search and rescue training.

### *Heat-Related Disorders*

This part of the curriculum reviews pertinent aspects of heat-related disorders in the wilderness context. Burns and lightning are covered in a separate section.

Since the WEMT serves as the field team's medic, it includes recognition and treatment of mild dehydration, a common summer problem for field team members. It also uses the topic of heat syncope to discuss the general management of syncope and near-syncope in wilderness SAR team members.



## *Burns and Lightning*

The immediate management of burns and of victims of lightning are taught as part of EMT and EMT-P classes. However, these problems, which are relatively common in the wilderness, deserve greater emphasis than given in EMT classes. And, there are particular aspects of extended care for each – possible prolonged coma after a lightning strike but with full neurological recovery, or infection of burns, for example – that are of vital importance to the Wilderness EMT. It emphasizes problems that are seldom relevant to the “street” EMT, such as how to prevent myoglobinuria from causing acute renal failure.

## *Cold-Related Disorders*

This part of the curriculum reviews pertinent aspects of cold disorders in the wilderness context. Since field treatment of hypothermia (and to a lesser extent, frostbite) is still controversial, and since cold injury is such a problem for victims and rescuers alike, it provides detailed background information on cold injuries. And, because of the many complex and controversial issues that bear directly on wilderness prehospital care questions, it discusses hypothermia in detail and provides many references to the literature.

It does not dwell on the recognition of hypothermia in team members, nor does it discuss clothing materials or survival techniques for cold or wet weather, as these topics are heavily emphasized in search and rescue training.

Environmental stresses, including windchill and wetchill, are covered in the *Wilderness Environment* section. Details of thermal regulation appear in their own special section of the curriculum and are not repeated here.

## *Altitude Illness*

The immediate management of altitude illness is taught in EMT and EMT-P classes. However, the coverage is scanty, and the information is often out-of-date in this rapidly-changing field. Details of the pathophysiology of altitude illness,

are still somewhat murky. However, certain principles are now well established, in addition to the well known imperative of descent. Wilderness EMTs must know about the roles of acetazolamide, nifedipine, and steroids for altitude illness.

## *Bites and Stings*

*Bites and Stings* provides an extension of the EMT's training about poisoning, specifically focusing on common bites and stings that might present in a wilderness patient or in a wilderness search and rescue team member. Particular attention is given to controversial aspects of snakebite treatment.

Removal of ticks and prevention of insect and arachnid bites are covered in the section on *The Wilderness Environment*. Treatment of mosquito and similar bites are covered in the dermatology part of the section on *Wilderness Medical Problems*, and animal bites are covered in the wounds part of the section on *Wilderness Surgical Problems*. Anaphylactic reactions to bee stings (and to other allergens) are covered in the section on *Wilderness Medical Problems*.

## *Wilderness Medical Problems*

This chapter provides a condensed summary of medical problems (as opposed to surgical problems, covered in the *Wilderness Surgical Problems* section). There are three criteria for including a problem. A problem is included if: (1) It is common in the wilderness and can be treated by the WEMT. (2) A problem is included if it is important for WEMTs to recognize, even if they cannot treat it. Why? Even if they can't treat, WEMTs may make a significant intervention by notifying Incident Staff and aborting the task or starting an immediate evacuation. (3) The problem is included if management of the problem in the wilderness differs from that taught to “street” EMTs. (4) The problem is included if it is one that might develop in a patient during a long evacuation.

*Wilderness Medical Problems* covers diseases such as rabies, hepatitis, and tetanus. It explains how to deal with common eye problems such as a corneal

abrasion, snowblindness, conjunctivitis, and subconjunctival hemorrhage. Colds, ear and sinus infections, cystitis, and dental problems all occur in the backcountry and are discussed; they are often treated with medications from a SAR team members' own medical kit.

The section on *Principles of General Medicine* contains general information on the care of patients, including considerations such as nutrition and hydration, whereas this section covers specific medical problems.

In many cases, the treatment for medical conditions involves the use of over-the-counter or prescription medications. The choice of wilderness medical kit drugs and their use is up to the WEMTs medical director and appropriate state laws and regulations. However, OTC and prescription medications are carried and used by most wilderness travelers, including search and rescue team members, and the WEMT, as the team medical expert, must understand proper use of these medications, including their interactions and any problems that might be expected from their use.

### *Wilderness Trauma*

Specific surgical problems are discussed in the section on *Wilderness Surgical Problems*. The principles of general medical and nursing care are covered in the section on *Principles of General Medicine*. What is left for *Wilderness Trauma*?

This section, covers the epidemiology, etiology, and mechanism of injury for wilderness trauma (or at least the little that is known). It also discusses the general approach to the wilderness trauma patient, which is very different from urban and rural trauma. This section provides a review of background information on the physiology of trauma and shock. Even though the section on *Patient Assessment* reviews the physical exam in detail, here specifics that are important in the trauma patient are re-emphasized. A large optional section reviews the physiology of shock and trauma.

Unlike on the street, interventions such as intravenous fluid may be lifesaving for wilderness trauma patients. This section stresses fluid management; though basic EMTs do not start

IVs, they may need to care for the patient after the EMT-P is gone or incapacitated. Or, basic EMTs may need to choose the fluids to carry into the site for an EMT-P who is already there. This is especially true in cave rescue.

Perhaps most importantly, it presents complications of trauma that are likely to occur while the Wilderness EMT is caring for the patient, complications such as renal failure, crush injuries, myoglobinuria, hyperkalemia, ileus, glycogen depletion, compartment syndrome, ARDS, and fluid overload. Some of these complications can be treated by a Wilderness EMT, others can be recognized and evacuation plans changed, or perhaps a surgeon can be brought into a cave to perform a fasciotomy during a lengthy evacuation.

### *Pharmacology*

This part of the curriculum provides the Wilderness EMT (EMT-Basic, EMT-Paramedic, or in between) with an overview of pharmacology oriented to common oral prescription and over-the-counter medications. This causes some to object – they find it immoral to teach pharmacology to EMT-Basics, who are not supposed to administer medications to others. The originators of this curriculum disagree. Most of those in the outdoors for recreation take a medical kit with them. This includes members of wilderness search and rescue teams. And, since WEMTs will need to deal with team members' medical problems, the more they know about the medications members are taking, the better. Having WEMTs educated to care for their own minor medical problems is an added benefit. Some wilderness search and rescue teams' medical directors, in fact, provide team members with prescriptions for a personal wilderness medical kit similar to the one described in this section.

And, the naysayers go on, EMT-Ps already know all about pharmacology. But, what is contained here is, for the most part, as new to EMT-Ps as to EMT-Basics.

Other naysayers hold that EMT-Basics are ineducable, that one cannot teach pharmacology adequately to EMT-Basics. The Center for

Emergency Medicine has disproved this in its Pilot Classes.

Lest it seem that this curriculum is training EMTs to go out to play doctor indiscriminately, this trains WEMTs about medications they will encounter in wilderness patients, and to use over-the-counter medications to care for themselves only while in the wilderness. This section firmly recommends that every WEMT have a family doctor for routine medical problems.

### *Immobilization, Packaging, and Transportation*

This section reviews the basics of patient packaging as presented in search and rescue courses. It then goes on to assess the effects on the patient of various types of packaging and splinting over the course of a wilderness rescue. (How long *can* a person stay on an unpadded backboard before (1) developing pressure necrosis, or (2) attempting to get out of the packaging and kill the rescue team?) It presents various improvised splinting and evacuation methods, and evaluates their safety and effectiveness. A series of packaging problems guides the student through the thought process for selecting packaging and transportation methods. This section does not explain how to perform various sorts of wilderness rescue; that is left leave that to SAR training.

### *Disasters*

Wilderness EMTs are ideally trained for service in a catastrophic disaster. Lack of food, lack of water, lack of shelter, lack of transportation: these are everyday occurrences for the Wilderness EMT. Dealing with patients with traumatic and environmental injuries, dealing with patients with acute stress reactions, dealing with patients over an extended period, dealing with patients with improvised equipment: this too is the province of the WEMT. Surviving in a hostile environment and attending to the medical needs of a rescue team when remote from a hospital: all part of the WEMT's job.

So, a Wilderness EMT is already suited for first-in emergency care during a catastrophic disaster. Our purpose in crafting this curriculum was not to make it into a "Disaster EMT" curriculum. However, when a catastrophic disaster occurs, someone may notice that the local WEMTs are an ideal resource to immediately drop into the disaster site. Therefore, this section prepares Wilderness EMTs for the hazards and special considerations of such a situation.

This section starts by defining: multi-casualty incident, single-casualty/multiple resource incident, and catastrophic disaster. It then compares and contrasts these different types of disasters, and reviews the principles of triage with specific modifications for wilderness disasters. The chapter then discusses the political, logistical, public health, and medical aspects of catastrophic disasters. Then, it covers the sort of medical and surgical problems that are likely to be associated with different types of catastrophic disasters, and how to apply Wilderness EMT training to each.

This WEMT Curriculum could be used to train Disaster WEMTs. For such a class, it should have another add-on module with more in-depth coverage than provided in this short section.

### *Introduction to and Review of Advanced Skills*

This section has different goals for EMT-Basics and for paramedics. For EMT-Basics, it teaches how to assist paramedics performing Advanced Life Support type skills, and how to manage the patient when the paramedic is no longer there (e.g., how to pull back an endotracheal tube that has slipped into the right mainstem bronchus, and how to check an IV). For the paramedics, the chapter teaches how to perform these skills in the wilderness environment.

### *Principles of General Medicine*

Part of the problem of training WEMTs is that WEMTs must deal with situations that have not been previously imagined, often when they have

no communication with a medical command physician. Therefore, this section teaches the WEMT the most basic principles of medicine and nursing. While the psychological aspects of the section are of benefit in all patient care, the principles of infectious diseases, wound care, and convalescence are of less direct applicability for the WEMT, but still an important part of a general medical education.

The section discusses the types of microbes that cause disease, relating them to diseases already discussed in other sections. It reviews germ theory and the principles of asepsis. It reviews medical countermeasures for infectious disease, including immunizations and antimicrobials. It pays careful attention to wound infections and their prevention. A subsection discusses nutrition, convalescence and recuperation, including the problems of pressure necrosis and the need for good pulmonary toilet. A subsection reviews how to control pain without medications, including the use of suggestion and imagery. The psychology of wilderness patients brings the section to a close.

### *Stress Management and Critical Incident Stress Debriefing*

Anyone who is taking a Wilderness EMT course is likely to share the traits of other emergency services workers, including a macho attitude toward psychological stress. EMTs know all about denial in their alcoholic patients, and may be aware of stress in a theoretical way, but seldom does stress management become part of the EMT's training. This section aims to correct that fault.

Though this section mentions stress management for the WEMT's patient, the WEMT and the WEMT's wilderness coworkers are the true objects of the section. Judging by the criteria that Dr. Mitchell popularizes for critical incidents, almost every wilderness search and rescue operation qualifies. This section should prepare the WEMT to recognize immediate stress reactions, provide on-scene psychological "first aid," and recognize the need for and value of Critical Incident Stress Debriefing.

### *Death and Dying\**

In street EMS patients almost never die while in the care of the street provider. They are already dead when the street provider arrives on scene, or they are pronounced after arrival at the Emergency Room. This section deals with the issues that may be faced by the WEMT during the extended care of a wilderness patient. The section covers a number of issues on how to deal with the expectant patient.

### *Veterinary Emergencies*

This section is about applying the WEMT's medical knowledge to the care of dogs and horses. It also discusses common or serious problems unique to dogs and horses, such as thumps and tying-up.

### *Clinical Rotations*

As with the Curriculum itself, the clinical rotation checklist is the same for EMTs and for EMT-Paramedics. However, for advanced skills, EMTs must observe, while EMT-Ps must perform the skill.

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## **What is *not* included in the Curriculum?**

Search and rescue is not included. Why not include SAR in the WEMT curriculum? Here are the reasons why we decided against including SAR.

First, most members of our target audience were members of search and rescue teams and thus already trained in SAR.

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\* Although currently available as a separate Lesson Plan, this section will be integrated with the present Stress Management and CISD and some material from Principles of General Medicine. This new *Psychological Aspects of Wilderness EMS* will replace the existing *Stress Management and CISD* section.

Second, we, along with 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. (See also the previous section on *Prerequisites* for details on the SAR prerequisite.)

We assume that everyone in the class has enough SAR training and proper equipment and personal fitness to participate in strenuous field exercises.

We assume that everyone in the class has a firm grasp of everything taught in a good EMT-Basic class. We do not expect instructors to review any EMT-Basic material except briefly, as a lead-in to new Wilderness EMT material.

The curriculum does not include instruction on advanced techniques such as placing nasogastric tubes or Foley catheters, except for a brief review/introduction with emphasis on adapting these standard medical techniques for the wilderness rescue situation. These advanced practical skills should be taught in the same place and in the same manner that advanced EMTs learn other advanced skills: through small classes and clinical instruction arranged by the EMT's physician medical director. The physician medical director is the one who must give Wilderness EMTs their orders, and is the one who must be comfortable with the EMT's level of skill.

# Certification and Licensure for Wilderness EMTs

Pardon this first section if you already know about certification and licensure. However, questions on these topics are so common for WEMSI that we thought a brief tutorial would be appropriate.

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## Licensure vs. Certification

Let's compare and contrast the concepts of **certification** and **licensure**; they are related, but different.

First, we should explain that this is a relatively theoretical discussion – some states' EMS programs use the term "certification" for what purists would call "licensure." The motivation for this seems to be to avoid the implication that an EMT or EMT-P is licensed to practice unrestricted medicine and surgery, just like a physician. But, even if a state says "We only certify EMTs, we don't license them," a law school professor would insist that they are still licensing as well as certifying EMTs, even if the state just calls it certification.

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.

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.

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 a school or National Registry, one also must obtain a separate EMT certificate or license from the state.

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**).

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.

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.

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.

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. (Unless you're in a state that licenses you automatically when it issues you a certificate.)

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## Licensing WEMTs

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?

We can argue that there is no need for Wilderness licenses beyond the EMT's "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.

Let us closely examine an example: dealing with shoulder dislocations in the wilderness.

The current teaching for street EMTs is "never attempt to reduce a dislocated shoulder." 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."

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).<sup>\*</sup> 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."

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 extremity. If possible, have someone provide countertraction . . ."

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.

An interesting and very close analogy to WEMT certification is with the EMT continuing education courses BTLS (Basic Trauma Life

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<sup>\*</sup> 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.

Support) and PHTLS (PreHospital 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.

To return to the original question: Does Wilderness EMT 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.

The approach to Wilderness EMS is based on the state's approach (or lack of an approach) to Wilderness EMS.



## Course Planning Considerations

The previous portions of this guide have provided you with some of the history and philosophy of the Curriculum. In this section we hope to provide you with some of the practical information that you need to actually run a class based on the Curriculum.

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### Class Size

Class size depends on several variables. In general, the smaller the class, the better the educational experience for the students. This is true more of the discussion sessions than the practical sessions, provided you have adequate numbers of qualified practical instructors.

Consider the nature of the usual students: highly motivated SAR or EMS people with strong egos; and the nature of the material: much of wilderness medicine is still controversial. We also want students to exit their WEMT class with a solid understanding, thus requiring time for questions and clarifications. And, for adult learners of the type usually found in Wilderness Emergency Medical Technician classes, a semi-Socratic guided discussion is far superior to straight lecture, regardless of audio-visual aids.

Taking all of these considerations in combination, we feel that small class size (less than 25) is essential to quality instruction. If a large class size is absolutely necessary, you must budget more time (up to one and on half times as much). This time would be used in discussion sessions.

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### Scheduling

With a small class, the amount of material in the Curriculum can be covered in six days, or five very intensive days. This could be a single "marathon," or could be covered in two intensive weekends, one of which is two days and the other a long weekend of three days (we are currently changing the WEMSI premier class to a six day

format). The material could also be presented as a series of evening and weekend sessions over an extended period.

We have had excellent success with the intensive two-weekend approach: excellent student test scores and practical evaluations, high student satisfaction, and high instructor satisfaction. Cramming the entire curriculum into five days over two weekends makes it "total immersion" learning, especially when the course is held in a rural/wild area with minimal student distractions. Students taking such courses have universally found it tiring yet exhilarating and recommend that others mounting a WEMT course follow the same approach.

In offering courses based on this curriculum, instructors have made useful discoveries related to effective scheduling, and these are presented below.

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### Facilities, Equipment and Supplies

#### *Classroom Facilities*

For discussion sessions, there should be adequate seating for all students. Seating with desks or tables for all students can be useful for lectures, but for the Socratic/discussion format we recommend, an informal grouping of comfortable chairs without desks or tables facilitates interaction, discussion, and the sense of informality that leads students to participate in discussion. We have had excellent success with a somewhat dilapidated lodge room with a large fireplace; for evening sessions we had a fire in the fireplace. While you might think that a fire in a fireplace might be such a distracter that students would learn nothing, we found the exact opposite. By creating a warm, informal, friendly situation, we allowed our discussion leaders the opportunity to bring students emotionally into the discussion

in a deeper sense than possible in a sterile classroom.

In one particular Pilot Class, we had finished a strenuous all-day practical session on the mountain, and had a full dinner. The students unanimously insisted they wanted to go ahead with the Stress Management and Critical Incident Stress Debriefing session before bedding down for the night. We gathered in front of the fire. The ensuing hour-and-a-half of discussion covered all of the educational objectives for the session, yet allowed students free reign to relate their experience with search and rescue stress. As we discussed several very difficult rescues, and our emotional reactions to them, there wasn't a dry eye in the room. To have students, particularly "hardened" SAR and EMS people, feel this deeply about a class, is a dream only rarely realized by any educator. The intensive yet supportive approach of small class, with informal surroundings, has much to recommend it.

Try the best that you can to keep to schedule. It is very easy to get way behind five and ten minutes at a time. We always give the instructors five minute warnings before the end of their lectures. For the longer lectures half hour warnings are appropriate.

We have one instructor monitor what is being covered during the lecture. This instructor watches what is being covered and compares that to the lesson plan for the lecture. At the end of the lecture the monitor will prompt the instructor to cover the portions of the lesson plan that were missed.

While we try to encourage interaction and debate, it can sometimes get out of hand. The instructor and the monitor need to keep the class under control.

During any given lecture there can be a number of instructors, doctors, rescue people and other bystanders in the class room. At any given time some number of these people are sure that they know more about the lecture than the person giving it. The bystanders need to exercise restraint in expressing their opinions about every detail of the material. The instructor and the monitor need to keep the other instructors under control.

Allow time for breaks and letting the students get up and walk around. But, keep the breaks to

the allotted time. Assign someone to gather up the students and get them back into the classroom on time. Remember your schedule.

### *Discussion Leader Qualifications*

Discussion leaders are needed for both the large "lectures" and for small discussion rotations (e.g., physical, neurological, and orthopedic assessment). There are two important characteristics for such leaders:

Discussion leaders need experience at public speaking or leading small group discussions. The Pediatric Advanced Life Support (PALS) instructor course emphasizes small group instructional skills, and is ideal preparation for Wilderness EMT instructors. The amount of experience and training needed for such presentations varies from individual to individuals. Some people have a natural gift for such presentations, a few are totally incapable of such presentations, and many can become good discussion leaders with adequate training and experience.

Discussion leaders must have a firm grasp of the material. More than lecture format, informal discussion opens the instructor to questions. When instructors are presenting material for the first time, have an experienced instructor in the back of the classroom. Informal discussion makes it easy for the experienced instructor to help with questions without disrupting the new instructor's presentation overmuch.

Discussion leaders will vary in the amount of material they can present in a given amount of time. To a degree, this is related to the person's instructional ability, but more often it relates to familiarity with the material. Leaving some extra time in the schedule, and allowing minor rescheduling when instructors teach slowly, are essential.

### *Discussion Techniques*

For all "lectures" and group discussion sessions, we recommend the Socratic question and answer format but never straight lecturing.

“War stories” of specific rescues or patients take time, but are major aids to students’ learning and are to be encouraged. Students may have stories of their own to contribute, and this should be encouraged, though guided or truncated by the instructor as needed.

If class is conducted in the recommended informal format, it is easy to take breaks when students show signs of sleepiness or inattention.

Discussion leaders should not feel they need to cover every single item that appears in the text, or in even in the Lesson Plans. The instructor’s primary goal is to help students learn the most important aspects of the topic.

One feature of this sort of informal discussion is that sometimes student questions prompt discussion of topics before the schedule calls for them to be presented. In a very structured lecture setting, it is standard to defer such questions to the “proper” time. In an informal class, it is generally wise not to defer the questions, but to address them immediately. Allowing the conversation to flow freely along the lines of the students’ interests and questions keeps up student interest and commitment. However, it may end up that later lecturers find that their material has already been covered. Lecturers should have the flexibility to rapidly review the material that has already been covered, and to spend most of their time on the material that is new to the students. How does a lecturer know that material has already been covered? If the discussion leader sat in on all the previous discussion, he or she will know what has already been covered. However, it’s impractical for all discussion leaders to sit through the entire class. The class coordinator, or a designated instructor, can sit in on the entire class and advise instructors as to what has already been covered.

References for learning more about questioning and Socratic techniques are available to those who attend one of WEMSI’s WEMT instructor courses, offered at the Western Pennsylvania WEMT course each fall.

A situational review session can be invaluable during the class: An experienced instructor picks out students, asks them about their particular WEMS interests (cave rescue, mountain rescue, backcountry fire suppression, rural rescue squad, etc.) and then presents cases relevant to each student. The student then discusses the case with

help from the rest of the class. If this occurs after the class has had a chance to bond during early parts of the class, it should not be unduly threatening for students.

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## Considerations for Specific Sections

### *Introduction*

We have found that an excellent introduction to the class is done by giving the *Introduction to Wilderness EMS* lecture followed by an *expert demonstration* of a Wilderness Patient Assessment. This demonstration, done by senior instructors, gives the students an idea of what is going to be expected from them in the class and just how different that is from what they have been doing on the street (we have found that, where and when possible, doing a number of these expert demonstrations throughout the class is a very useful teaching tool).

### *Pharmacology*

*Pharmacology* should be presented late in the class. Having it early overwhelms the students. If *Pharmacology* is late in the class, the students have heard about many of the problems and drugs, so the material is already somewhat familiar.

However, we have sometimes put at least an introduction to pharmacology (the first half of the lesson, roughly) early. And then we had the second part, which discusses specific drugs, late in the schedule. It then served as a review after the various drugs had already been discussed in the *Wilderness Medical Problems* and *Wilderness Surgical Problems* sections.

We have also had some success with lengthening the time for the *Wilderness Medical Problems* section, and integrating much of the pharmacology material into this section.

## Assessment

You should expect to spend a great deal of time on assessments both in the classroom setting as well as in the skill stations. We have found that performing quality patient assessments is the skill that the students have the hardest time learning. Plan to spend time at different points in the class doing expert demonstrations of patient assessments. As stated earlier you should do one of these demonstrations at the beginning of the class. Then, throughout the rest of the class do other demonstrations that emphasize things that the students have just learned.

Make sure that during the stations where students are doing assessments, that they do quality hands on work. The students need to do real palpations, vital signs, neurological exams... Having the students state "now I'm looking for blood from the ears" is not enough, they must get down and really look.

Students learn the neurological exam and detailed physical assessment (from III, *Assessment*) and detailed orthopedic assessment (from V, *Wilderness Surgical Problems*) much better in small groups than in large lectures or demonstrations. Using small groups of four or fewer students to one instructor, for an hour, has proven effective. Using this plan, you would run four one-hour small group assessment sessions:

- **Neurological Assessment I:** introduction to the neurological exam; mostly demonstration and small-group discussion. Also a discussion of the neurological exam examples provided in the text.
- **Neurological Assessment II:** practice with sequence of neurological assessment with instructor coaching.
- **Physical Assessment:** demonstration and practice of physical assessment details.
- **Orthopedic Assessment:** detailed instruction on extremity examination, including evaluation of ankle, foot, and knee injuries.

See also the separate Practical Skills Station Manual (Appendix VI), as it provides specific instructions to the instructor for each of these (and other) stations.

This is the minimum needed to teach students the basics of assessment. To solidify this

knowledge and permit the students to practice their skills, you should schedule several **Clinical Scenarios** that involve use of physical assessment skills, as well as communications and reporting skills. Each of these should be about an hour long. Each needs an instructor and a "victim." (If you are short on people, you can reasonably use one of the students as a "victim.")

The instructor should brief the "victim," and watch as the student does the H&P. During the earliest scenarios, the instructor should do plenty of teaching; later in the class, the instructor should let the students proceed through the scenario uninterrupted and critique their performance at the end.

There are various maneuvers that will increase the "realism" and teaching value of clinical scenarios. Moulage (fake wounds, etc.) is nice, but takes time and effort.

Using outdoor sites for clinical scenarios adds a great degree of realism. These stations can be spaced closely together (on opposite sides of the building) to reduce any time lost in travel. We recommend using a set of outdoor scenarios only near the end of the class, when students are more practiced and can try to practice their skills despite distractions, as opposed to learning the skills, which is what they should do in the early sessions.

Having the instructor take the student's medical reports using a handheld radio or field phone is very simple, yet provides a great degree of "realism." As time comes for the student to report, the instructor hands the student a radio, and steps outside the room with another radio.

Three such short scenarios is a minimum. An appendix provides several sample Clinical Scenarios.

In addition, several field scenarios, toward the end of the WEMT course, should test students skills in a stressful, outdoor environment. Students at courses using this approach uniformly felt these exercises were very helpful in solidifying their skills training.

See the appendix in this guide that provides guidelines for scenarios and practical stations. In those guidelines you will find a number of scenarios complete with list of goals and prerequisites.

### *Communications, Reporting & Scene Management*

A useful (and fun) demonstration that can be done uses two instructors with radios, one in the classroom and one remote; the remote instructor gives examples of bad and then good radio reports while the instructor in the classroom acts as a Wilderness Command Physician and comments on the report. This section should appear early in the schedule. It sets expectations for student performance during the Clinical Scenarios, and should be taught before any Clinical Scenarios.

The *Scene Management* session should include a demonstration of a well-done H&P by an expert WEMT, with appropriate radio reports to Base Camp and to medical command. This can also be done at a separate time from the Scene Management lecture; it makes a good opener for the day.

### *Surgical Skills Demonstrations*

There are several WEMT skills that must be taught in a hands-on fashion. Neurological, physical and orthopedic assessment are such skills; as discussed above, these are best taught in small-group sessions. However, there are several other skills that can be taught in demonstration/practice sessions with all the students. These are:

- **Applying "fiberglass" splints.** This can be done as a single demonstration followed by students practicing on each other with instructor supervision. A thumb spica splint, as for a suspected scaphoid fracture, and a posterior splint for a suspected ankle or foot fracture, make a good combination. An instructor demonstrates both splints in front of the students. After this, the students pair off and take turns applying splints to each other. One student applies a thumb spica splint, and the other student reciprocates by applying a lower leg posterior splint.
- **Removing a ring with a string.** There are usually enough students with rings to allow all students a chance to practice this

technique on one another after a single instructor demonstration.

- **"Trephining a subungual hematoma."** Simulating this is difficult. The best success is having students heat a straightened paper clip, held in a Kelly clamp, in the flame of a disposable cigarette lighter. This is then applied to a piece of plastic roughly the same thickness as a fingernail. The disposable suture removal sets we used for a source of Kelly clamps come in plastic disposable trays that are ideal for this.
- **Irrigating a wound:** with some emesis basins, a few Ziploc bags, and some water, students can practice making a hole in the Ziploc bag and trying to get an irrigation stream the right size and strength for irrigation. Having a 35 cc syringe and an 18 gauge over-the-needle catheter, which is the "standard" for wound irrigation, allows students to compare their improvised irrigation stream to it.
- **Everting the upper eyelid** to look for foreign bodies.
- **Reducing anterior shoulder dislocations.** This takes enough time that it deserves a station of its own.

Again, please see the Practical Skills Station Manual for detailed description of each of the stations.

### *Practical Stations*

Practical Stations includes the skills stations as described in the above sections as well as a number of patient assessment and patient scenario sessions. You must have enough room to set up several stations, each with a "patient" lying on a blanket. These stations must be far enough from each other that they will not interfere. Having the Practical Stations outdoors makes sense if the weather is cooperative. It makes sense to move discussion sessions outside, too; after all, this is a wilderness curriculum. However, you must have adequate indoor backup areas. The number of stations depends on how you schedule the class and how large it is. For larger classes, you may need to double or triple some of the stations. The

reason to have the indoor exercises indoors is to prevent the bad (or good) weather from interfering with students' learning in its early stages. After students have learned the basic skills involved, they can practice and test them under stressful conditions in the field exercises.

The practical sessions are designed to allow the students to gain hands on experience in delivering the types of patient care that they may not need to deal with in their day to day street operations.

The thing that we spend the most time on in the practical sessions is patient assessment. We have found that street EMS people, in general, are lacking in their patient assessment skills. In these stations the students must be made to perform real physical assessments. They must do real vitals, ask the right questions and really palpate when looking for physical evidence. As a side note here, be sure to pick instructors for patients who don't mind being poked and groped.

There is one session that is titled Advanced Skills. In this session we do a number of different things. For BLS providers, we teach them about doing IVs and intubations. This is done so that they have a real feel for what it is going to take to manage a patient that has had these interventions performed. The BLS students need to have an idea of what a blown IV is about and how to DC it or why they might need to adjust an ET tube that has dropped into the right mainstem. For the ALS providers we try to get them dealing with performing these techniques in environments that they do not normally have to deal with. Can they do an IV lying on their stomach and reaching forward to the patients or can they really do an IV in the dark?

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## Field Exercises

The Field Operations day is where we try to bring together all of the things that we have been teaching.

The first and foremost goal for this day is **safety**.

One of the goals in setting up the field operation is to make them as real as possible. Because of this it is sometimes hard to separate what is simulation and what is real. To deal with this problem we have a key phrase: **For Real**. This

phrase can be used by anyone at anytime. It means that what follows is no longer part of the simulation but is real. When this phrase is used everything must stop and all attention is focused on what is happening. The importance of this phrase must be stressed throughout the class (see "Rules of the Mock", below).

For the outdoor field exercise, you need a small wild area with enough trails and varied terrain to allow precise land navigation of the "orienteeing" type. The one time we tried to run field exercises using a small wooded that was not very "wild," students did not get the "feel" of being in the wilderness. Students found this wilderness "feel" very important for how they perceived and enjoyed the field exercises.

On the other hand, the stations must not be so far apart that students spend most of their time traveling between stations. Past class coordinators found stations about a quarter of a mile apart or less to be ideal. And, the land navigation should not be so hard that students spend all their time wandering around in the woods. Making up teams for the field exercise to ensure at least one good navigator in each group helps. In some classes, teams with weak land navigation ability were accompanied by mountain rescue team members who helped with navigation, but only as a last resort.

You should have people with experience at running search operations handle the details of team assignment, standard Task Assignment procedures, radio check-ins, status reports, and re-routing of teams when they get lost or off-schedule. The easiest way to accomplish this is to invite a local wilderness search and rescue team to come in and use your WEMT exercise as training for their search management personnel. They can usually provide the handheld radios, base radio, and base personnel to allow your instructors to concentrate on teaching in the field.

### *Parts of the Field Day*

The field operations are run in three parts:

1. The morning session is used to give the students some time in the field treating patients and learning what being outside is all about. The stations that are run in the morning are

teaching/testing stations. Students carry with them check off sheets that are signed by the instructors at each station. However, unlike a pure testing situation, the instructors are encouraged to give the students help and direction.

2. This is followed by a critique after lunch. In this short meeting we tell the students what things are going well in the field and what things are not going so well. This is our chance to give them feedback before the afternoon mock.
3. The mock is run in the afternoon and evening. It is a full scale operation with the primary objective being teaching the students about patient care in the field. It is not a time to be teaching general rescue operations and techniques. This is why we provide an on-scene commander and rescue personnel for the students.

### *"Rules of the Mock"*

A great addition to any Wilderness EMT course is "THE MOCK." This means a mock rescue. In past classes, we have interrupted the field rotations with a simulated rescue (sometimes with a real rescue), using moulage, and hours of planning to make sure it is a reasonably difficult but not too-frustrating exercise that taxes all the students. At the end of "The Mock" the students should be exhausted, somewhat frustrated with their inability to deal with the problems perfectly, but proud that they accomplished a nearly-impossible task relatively well. We time ours to go on until after dark, generally arranging for a very late dinner. Having courses during seasons when wet and cold can be expected helps in developing the atmosphere for "The Mock." Setting up a good "Mock" is very difficult. We recommend that you budget for long telephone conversations with those who have had experience at setting up such mock rescues.

Here are some rules that we have developed for past Mocks:

## **RULES OF THE MOCK:**

### **Standard Procedures for Wilderness Medical Simulations**

**version 1.2, February 18, 1997**

*Since actual wilderness emergencies do not occur often enough to provide good on-the-job training for Wilderness Emergency Medical Technicians (WEMTs), simulated rescues are an important part of the Wilderness EMT's training and continuing education.*

*To maximize the benefits and minimize the confusion on such a simulation, we all need to follow the standard "Rules of the Mock." If everyone understands and follows these rules of engagement, the simulation should run (relatively) smoothly.*

1. **Organization** Each team is organized as a standard Field Team. The positions on a Field Team are standardized throughout much of the SAR community: Field Team Leader, Medic, Rescue Specialist, Radio Operator, and generic Field Team Members.
2. **"Invisible People"** Every simulation includes a number of "Invisible People." These are people who are observing or monitoring, but not taking part in the rescue or medical activities.
  - a) Invisible people can simply be pointed out to the simulation participants, or better, each can be issued a distinctive armband, hat, or other device that clearly marks them as "off limits" to the participant. That way, team leaders may more easily look around and assess the trained and untrained manpower that is available.
  - b) There are three types of invisible people: Guardian Angels, Safety Officers, and observers. Guardian Angels and Safety Officers are described below.
3. **"Guardian Angels"** Every simulated patient must have a medically-qualified (Wilderness EMT, or better, Wilderness EMT-P or doctor) "Guardian Angel."
  - a) The Guardian Angel has primary responsibility for the safety of the simulated patient.
  - b) The Guardian Angel never leaves the side of the patient, and has unlimited access to the patient.
  - c) The Guardian Angel monitors the patient for the development of real problems.

(E.g., hypothermia can easily occur in a simulated patient who must stay inactive on the cold ground for a long time during a simulated rescue).

- d) Even a simulated wilderness rescue can be very frightening to the victim. The Guardian Angel is a person whose main concern is the patient's (real) welfare; this is reassuring to the patient.
  - e) Wilderness EMT students will always take **real** vital signs on the simulated patient and relay them to the Guardian Angel. The Guardian Angel will keep track of the real vitals to follow the patient's real condition. The Guardian Angel will then give the WEMT student the **simulated** vitals in return.
  - f) The Guardian Angel provides the (simulated) medical details to the Wilderness EMT student who is serving as Medic. The patient can tell the Guardian Angel, confidentially, of items for a later critique of the rescue team and WEMT students.
4. **Safety Officers** During field exercises, SAR team members or instructors may be present to oversee operations from a safety standpoint. Though the Safety Officer is *usually* an "invisible person" from the WEMT student's perspective, any WEMT student who sees a potential safety problem should say "For Real" (see below) and report the potential problem to the Safety Officer or to any instructor or staff who is available.
5. **"For Real"** -- *Whenever anyone says FOR REAL this means it's not part of the simulation. The words FOR REAL are to be used only for REAL emergencies. Whenever someone says FOR REAL take it at face value and act on it immediately.*

## Operations

The search/rescue operation for the field day runs as a standard operation. All of the paperwork that we would do during a real operation is done during this day. It is an excellent chance to get some of your incident staff involved and brush up on operations.

We expect every student team in the field and instructor team to have radio communications with base (don't forget the extra batteries, they'll need them). We run three standard channels during the operation:

- Base communications
- Medical Command
- Instructors

Having a second medical command channel is very useful (necessary if there are 15 or more students). The Med Chan can get fairly backed up.

The paperwork that is used will depend on what your standard operating procedures are. For WEMSI classes we use the following forms:

- SAR personnel sign in (used for instructors)
- Volunteer personnel sign in (used for students)
- Task Assignment forms
- Task log
- Communications logs
- Command Logs
- Area maps

During the morning session with 4 groups of students in the field we log about 200 communications with base. These do not include communications on the Med Chan. We average about four different tasks per student group. There is a single task for each of the instructor groups.

The afternoon tends to be a bit quieter. There are fewer tasks and fewer communications.

Angels and some other instructors are designated by some article of clothing. Emergency Services vests work well for this purpose. Students can not ask anyone wearing a vest for help during the operation. On the other hand anyone not wearing a vest is fair game (usually for something like carrying a stretcher).

Instructors and patients must be in the field and in place prior to putting the students in the field. Make sure that the instructors in the field stations are where you think that they are. It gets pretty confusing if you send the students to a set of map coordinates and they don't find a patient. In addition, it looks really bad if the instructors are the ones in the wrong place. Part of the logistics of this is to be sure that you can feed your instructors early enough that they can get into the field while your students are eating.



The field operations make for a long and strenuous day. The physical condition and well being of the students and instructors must be watched carefully. We have had, on a small number of occasions, “For Real”s that required treatment of students and/or instructors and on at least one occasion a full evacuation.

At a number of the WEMT class we video taped the field exercises. The taping started with moulaging the patients and then captured all parts of the operation. The tape was then shown after dinner on that night. There was an amazing response to this tape. Even though everyone was dead tired, not a single person left the showing. We would strongly suggest taping the operations and showing the tape later that night if possible.

## Personnel

This section gives some general guidelines that can be used to figure out how many people and what skill types are needed to run a WEMT class. Not covered in this section are the people that are needed to do the lectures during the class room portions of the class. Personnel requirements for the classroom sessions are driven by the class schedule and available instructors.

### *Teaching Stations - During Class*

We often run three stations during each of the skills parts of the class. In some of the stations we will run two different groups. Note that the number of stations is based on the number of students in the class. The numbers given here and below are based on a class size of about ten students. *Note that details of each station are available in the Practical Skills Station Manual, Appendix VI, which should be distributed to instructors.*

The skills stations are:

- **Neurological Assessment I and II - 1**  
Instructor - We strongly suggest an MD/DO for this station. Neuro exams are generally not part of the street practitioners skill set. Having a doctor teach this section seems to work best.

- **Physical Assessment - 1 Instructor** - The thing that we concentrate most on in the WEMT class is Patient Assessment and Physical Exams. This section should be taught by a senior instructor (MD/DO/Medic) who has very good skills in this area.
- **Orthopedic Assessment - 1 Instructor** - We like to have one of the doctors handle this section (mainly for the C-Spine exam). We get the instructor to do a C-Spine exam on each of the students so that they can feel what they should be looking for.
- **Shoulder Dislocation - 2 Instructors** (Can be done with one) - This station can be handled by most instructors. Sometimes it is better handled by one of the Wilderness Medics than one of the doctors. WEMSI teaches one preferred method for shoulder reductions and shows some others. Most doctors have their own favorite method that may or may not be the WEMSI preferred way.
- **Advanced Skills - 2 Instructors** - Another good station to bring in new instructors. It is a useful training experience (for new instructors) to take the BLS students and start to show them some of the ALS aspects of this rotation.
- **Splinting & Minor Surgical Skills - 1**  
Instructor - This is a pretty straight forward rotation. It can be handled by any of the instructors that you are comfortable with.
- **Scenarios - 2 groups \* (1 Instructor + 1 PT) = 4 Total** - A very good mix for the instructors in this section is to have a senior instructor teamed up with a new instructor or instructor candidate. The senior instructor should have a great deal of patience and possess high quality instructional skills. The students tend to need a lot of help in this area and having a good instructor is very important.

### *Field Ops*

There are two parts to the field operations day. In the morning we run a set of teaching/testing stations. The students navigate to these stations

and perform patient care. In the afternoon and evening there is a full mock rescue.

The day of Field Ops runs as a standard operation. We run a command base that consists of the following personnel:

- Incident Commander
- Two additional incident staff
- Communications officer
- Medical Command officer
- Safety officer

Operations becomes a fairly hectic area during the field exercises. The number of tasks/communications that must be handled is fairly high (see the section of Field Operations). Your command staff should be able to deal with this type of high energy operation.

You need to pick your highest quality instructors for the job of Guardian Angels. These instructors need to be able to let the students make mistakes while insuring the safety of the patient and of the students. They need to have a sense of when to step in and give the students a hand or some direction and when to just let them continue on their way. The angle is responsible for the changes and evolution of the scenario. She needs to be able to come up with new patients vitals and status based on what the treating team is currently doing, right or wrong.

During the morning session, we normally run four of five testing stations. Two of these stations can have a single instructor in them. The remaining stations must have an instructor and a patient.

The number of personnel in the mock is dependent on the size of the class. For a class of twenty, the following patient load is a good one: a) three critical with one being expectant and b) two walking wounded. So for that size operation, the field personnel for the mock should be:

- On-scene commander
- six patients
- six Guardian Angels

There are two way of handing the issues of on-scene command during the mock. The first is to provide the on-scene command for the incident. The second is to let one of the students become the on-scene commander. Which every way you chose, this position must be filled and filled well. The quality of the learning experience will be

greatly effected by how well the scene is run. We go back and forth in our opinions on how this should be handled. On one hand this is a medical class and the students should not need to be involved in the minute by minute operation of the scene. On the other hand at some point one of these students may need to do this for real. We have had good success lately sending a qualified command with the first in group of students. This person can then either step back and let the students handle it if things are going well or provide additional help (either through suggestions or through taking over control of the scene) if things are not going so well.

The walking wounded and expectant patients can be converted into rescue personnel when it needed for patient movement.

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## Things to Copy

This section provides a list of the documents that you will need to have copied for the class. This list is based on the current documents at the time that this Guide was revised. The latest information can be found on the WEMSI web site, <http://www.wemsi.org>.

### *WEMT Class*

The largest document that you will need to deal with is the text book. See the information in the appendices on the current versions on sizes of the text book sections.

You will need one copy per student of all of these except for the Patient Info Reporting Cards. You should have multiple (10) copies of this for each student.

See the information in the appendices on the most recent version and sizes of the following documents:

- Practical Test
- Written Test
- Answers Sheets
- Class Evaluation forms
- Drug Information Handouts
- Antibiotic Chart

- Patient Info and Reporting Cards
- WEMT Reporting Card
- WEMT Quick Reference
- Protocols - Pocket Version
- Protocols Full Version
- Personnel Medical Kit List
- Team Medical Kit

### *For Instructors*

The instructor should have access to all of the documents listed above as well as the following (see the section in the appendices for current versions and page counts) :

- Field Exercise scenarios instructions
- Field Scenarios

- Answer Key ( you only need one or two of these)
- Class evaluation forms
- Class roster
- Class schedule
- Patient Reporting forms - These are a two page card that is used to gather patient information. They should be printed on card stock. You will need lots of these.
- WEMT Quick Reference - This is a card that provides a quick reference for the students. It should be on card stock and laminated.
- WEMT Reporting Card - A card that provides a format for giving patient reports to medical command. It should be on card stock and laminated.

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## Equipment

Below is a list of the equipment that is needed for the WEMT class.

### *Station Equipment*

The following lists are for equipment that is needed during the practical sessions.

### *Office/AV*

- Slide Projector
- Overhead projector
- White board (board, markers, eraser)
- Video Projector for computers (if to be used) with adapters for laptop computers
- Projector Screen
- Music Stand/Lectern
- Office Supplies (pens, paper, paper clips...)
- Extra bulbs for projectors

### *Class Materials*

- Books - Insides (curriculum) - These are the actual portions of the text book.
- Binders - Something to hold the text book together.
- Tests
- Answer sheets

### *Splinting/Minor Surgical*

- String - Used for ring removal.
- Paper Clips - Used for subungual hematoma.
- BIC lighters - Used for subungual hematoma.
- Plastic to simulate a finger nail - Used for subungual hematoma.
- Kelly clamps
- Casting Material
- Casting Pad
- Ace bandages
- Gloves
- Small plastic bags - Improvised irrigation method.
- Syringes 30cc for irrigation.
- 18 Ga. angiocaths for irrigation.
- SplashShields for irrigation.
- Q-Tips
- Advanced Skills

- Intubation Heads
- Intubation Equipment - ET Tubes, Laryngoscopes...
- IV Equipment - Fluid, catheters...
- IV Arms
- Chest Decompression Mannequins
- Chest Decompression Needles
- General bandage stuff
- Sharps Container
- Stapler & Staple Remover

### *Shoulder Dislocations*

- Webbing for reduction

### *Patient Packaging*

- Packaging Kit including:
- 3 Wool Blankets
- Vapor Barrier
- Goggles
- Helmet
- Sling for tie in
- Duct Tape
- Marker
- Stokes

### *Field Ops/Skills Evaluation*

- Scenarios
- Skill/Practical Evaluation Guide
- Maps
- Student Check off sheets
- Splinting material (cast & padding)
- Mock WEMSI BLS Kits
- Mock WEMSI ALS Kits
- Ops Kit
- Base Station (3 channels required, 4 useful)
- Student/Instructor radios
- General Comms stuff
- Batteries
- Cell Phones
- Moulage kit

- Vests for Angels and Safety officer
- Marker Board or Flip Chart
- Rescue Equipment (stokes, blankets, packaging kits)
- Extra foam pads
- Shelter

### *"For Real" Kit:*

- ALS Team Kit
- Heat packs
- Stoves

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## Sample WEMT Class Schedule

This section provides an example schedule for a WEMT class. This schedule is for a five day class that is run over two weekends.

### *Day 1*

0800 - 0830 - Breakfast  
 0830 - 0900 - Intro to WEMS  
 0900 - 0930 - Wilderness Environment  
 0930 - 0945 - Break  
 0945 - 1200 - Patient Assessment  
 1200 - 1300 - Lunch  
 1300 - 1400 - Wilderness Trauma  
 1400 - 1530 - Wilderness Surgical Problems - Non-Ortho  
 1530 - 1545 - Break  
 1545 - 1715 - Wilderness Surgical Problems - Ortho  
 1715 - 1800 - Dinner  
 1800 - 1900 - Death & Dying  
 1900 - 2200 - Skill (Neurological, Physical, Patient Assessment)

*Day 2*

0800 - 0830 - Breakfast  
0830 - 0915 - Patient Survey and Reporting  
0915 - 1000 - Thermal Regulation, Heat, Burns,  
Lightning  
1000 - 1015 - Break  
1015 - 1100 - Bites & Stings  
1100 - 1200 - Immobilization, Packaging  
1200 - 1300 - Lunch  
1300 - 1700 - Skills (Shoulder Reduction  
Advanced Skills  
Pt Assessment)

*Day 3*

0800 - 0830 - Breakfast  
0830 - 0930 - Disasters  
0930 - 1000 - Pharmacology  
1000 - 1015 - Break  
1015 - 1215 - Wilderness Medical Problems  
1215 - 1300 - Lunch  
1300 - 1445 - Wilderness Medical Problems  
1445 - 1500 - Break  
1500 - 1630 - Scene Management, Comms,  
Reporting, Doc.  
1630 - 1645 - Break  
1645 - 1815 - Cold Disorders

1815 - 1900 - Dinner  
1900 - 2200 - Skill (Neurological,  
C-Spine & Lower Ext,  
Splinting/Minor Surgical)  
2200 - ??? - Optional - "To Tell of Death"

*Day 4*

0800 - 0830 - Breakfast  
0830 - 1230 - Field Exercises (Stations) - Staff  
1230 - 1330 - Lunch  
1330 - 1400 - Critique - Staff  
1400 - 2000 - Field Exercises (Mock) - Staff  
2000 - ??? - Dinner

*Day 5*

0800 - 0900 - Breakfast  
0900 - 1000 - Stress and CISM  
1000 - 1015 - Break  
1015 - 1115 - Veterinary Medicine  
1115 - 1215 - Principles of General Medicine  
1215 - 1300 - Lunch  
1300 - 1330 - Altitude Illness  
1330 - 1430 - Questions & Answers  
1430 - 1630 - Written Test

## Testing

There should be three minimum requirements for completing a Wilderness EMT course: participation in class, passing a written test, and passing a practical test.

We do not at present provide written Wilderness EMT tests unless you run a WEMSI-Recognized class, in which case the WEMSI QI monitor will bring the standard WEMSI written test and grade it. We do plan to offer a compilation of test questions for student study at some time in the future.

A copy of the Practical Test is provided in the Practical Skills Station Manual (Appendix VI).

Practical testing can be accomplished in a variety of way.

- You can do the practical test using a “checkoff” approach during rotation among field stations. This has the advantage of diminishing student test anxiety. But, if you use the big field exercise for testing, this diminishes the time students have to practice scenarios before testing. The checkoff approach is used by Eastern Region, National Cave Rescue Commission and has been successful in both cave rescue and WEMT training.
- You can run a formal and separate (indoor or outdoor) practical test on the last day of the class. If indoors, this can be run concurrently with the written test – you can stick all the students in a room with the written test, then pull out pairs of students at a time to do practical test stations. At the cost of making the written test disjointed for the students, this however has the benefit of no waiting lines for the testing stations.
- You can use the latter half of the large field exercise to test students on two scenarios, then have separate testing at the end of the class for the two other practical stations.

## ***Clinical Training***

Clinical training in the Emergency Department is considered a “post-requisite” 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.

In many clinical training sites, EMTs are not expected or permitted to perform skills such as nasogastric intubation or rectal exams. We urge physician medical directors, hospital administrators, nursing, and medical personnel, and state and regional EMS officials to cooperate in allowing Wilderness EMT students to complete this vital clinical training. As a special note to hospital administrators, we wish to point out the excellent public relations value of being a clinical training site for Wilderness EMTs.

## Appendices

### Appendix I. What is an EMT?

In 1967, Farrington's classic article "Death in a Ditch," in the Bulletin of the American College of Surgeons, started the non-wilderness prehospital ball rolling. He pointed out that, with just a little medical training, ambulance attendants could save the lives of some of the people they transported to hospitals.

Officials of the Department of Transportation (DOT) realized, as pointed out in Farrington's article, that (a) ambulance attendants were trained inadequately or not at all, (b) people were dying in the back of ambulances as a result, and (c) nobody was doing anything about it. Newspapers carried reports of deaths from poor handling of the sick and injured on their way to the hospital. Since this was happening primarily to victims of the carnage on the highways, this seemed a reasonable place to spend the taxpayers' dollars: develop a program to train ambulance attendants to deal with traffic accidents. Thus the EMT program was born.

The EMT program, as initially conceived, was an 81-hour program of lecture and practical training, with associated in-hospital clinical training. The program covered basic airway management, cardio-pulmonary resuscitation, splinting, emergency childbirth, basic vehicle rescue, and ambulance operation.

This new **Emergency Medical Technician-Ambulance** training program dovetailed neatly with DOT's plans to improve ambulances. Medical training programs might seem far afield from the purview of the Department of Transportation, and this was seen by those at DOT, too. Tying the EMT training program to the automobile ambulance, which was certainly a legitimate concern of DOT, may have been a way to protect the program from those who objected to DOT's entering the medical arena. Luckily for those with heart attacks or other medical problems, and for injuries inflicted by objects other than automobiles, DOT included a broad-based emergency medical education for the EMT. Yet, the EMT program to this day carries a bias

toward ambulances and highway accidents, at the expense of other medical problems and environments (e.g., at sea, on the farm, or in the wilderness).

They even called the program "EMT-Ambulance!" The National Registry of EMTs used to have separate categories for ambulance and non-ambulance EMTs, but the eventually decided that wilderness search and rescue EMTs were "honorary" EMT-Ambulances. They reserved the term EMT-non-Ambulance for those serving in hospitals. The EMT program took no note of what wilderness and mountaineering medicine and mountaineering first aid training had developed over the previous two decades.

The appellation EMT-A became the standard designation for one who had graduated from such an EMT-A class, whether in an ambulance, in a rescue truck, in a fire engine, in a police car, or in a pair of boots on a backcountry rescue. No real alternative to the EMT-A program developed, and the name gradually crept up the alphabet to become "EMT-B" for **EMT-Basic**. However, even as the EMT-B training program was settling down, other events were conspiring to create a new type of EMT with many new areas of controversy.

The Viet Nam war saw great strides in military field medicine, including field surgical hospitals à la M\*A\*S\*H, and highly-trained paramedical corpsmen working independently in the field ("medics"). As a result, the survival rate of soldiers with severe battlefield trauma rose remarkably. However, such advances did not occur in the civilian medical system back in the states, leading some pundits to observe that one's chance of surviving major trauma was much higher on the battlefield than on the streets of any American city. One of the outcomes of this comparison was Shock-Trauma centers such as the famous Maryland Institute for Emergency Medical Service Systems ("MIEMSS") in Baltimore, and its use of State Police helicopters to rapidly transport injured patients to the Shock-Trauma center. Another outcome was the development of civilian prehospital medic programs. Many fledgling paramedic programs



benefited from recruiting returning military medics.

Early paramedic programs were also patterned after pioneering cardiac prehospital programs such as that of Pantridge in Northern Ireland. Although Pantridge's program used doctors rather than paramedics, it showed the advantages of cardiac resuscitation at the site of the arrest. The first civilian paramedic program was *Freedom House*, started by Dr. Peter Safar in Pittsburgh. Dr. Ronald Stewart was also responsible for an early paramedic program in Los Angeles, California.

Soon, paramedic programs began sprouting around the country, and at the same time DOT began working on an "EMT-Advanced" program (another "EMT-A" to add to the EMT alphabet soup). In attempt to avoid confusion between the Ambulance EMT-A and the Advanced EMT-A, DOT planned to change the name from EMT-A to EMT-I (that's Roman numeral one, not an "i"). The advanced EMT could be called an EMT-II, with EMT-III, EMT-IV, and so on presumably following. Some states (notably California and Hawaii) adopted this terminology, but DOT soon dropped the idea. The name of the advanced EMT program was changed to **EMT-Paramedic**, in large part due to use of the term Paramedic on the aforementioned TV series, and the resulting public acceptance of, and demand for, Paramedics.

After a time, a national standard EMT-P curriculum was written. Many state and local "paramedic" programs didn't measure up to the national standard, and some bettered it. Bitter infighting followed, some persisting to this day. Some states complained that their volunteer paramedics, though they couldn't train to the full

DOT standard, were still effective and safe in their limited roles. (E.g., they were starting IVs and giving drugs such as Epinephrine and Benadryl), but were not diagnosing and treating cardiac arrhythmias via an EKG.) Even a little advanced EMT training could be useful, they maintained. In many rural areas, where volunteers could not afford the time to become full paramedics, an intermediate level of training was better than having no advanced EMTs at all.

DOT finally bowed to pressure from these states, and thus was born the "**EMT-Intermediate**." (EMT-I, not to be confused with the old "EMT-Roman-numeral-1.") In a few states, (e.g., Maryland) they were still called paramedics, and other states used the title EMT-Intermediate. But, for the most part, states made up new names for them: IV Technician, EMT-Shock/Trauma, Cardiac Technician, or Mobile Intensive Care Technician.

In response to this, the national DOT EMT-Paramedic training program (originally a monolithic 480-hour curriculum) was broken into 15 modules. States could pick and chose from among the modules for their "intermediate" advanced EMT training. Still, this would promote uniformity among advanced EMT training at the Module level. (Not all states agreed to use the modules, however.)

More recently, the EMT-Paramedic program has been revised once more, this time more-or-less officially sanctioning a single EMT-Intermediate level. However, many states are still following their own course. Pennsylvania, for example, has EMT-Basics and EMT-Paramedics but nothing in between, whereas nearby Virginia has several levels between EMT and Paramedic.

## Appendix II: Student Feedback Form

### Wilderness Emergency Medical Technician Program Evaluation Form



The Wilderness EMS Institute strives to provide the very best educational programs possible. In order for us to continue to improve the programs, we are asking for your input. Please take the time to fill out this evaluation form. We greatly appreciate your attending this program and your comments on this form.

Date: \_\_\_\_\_

Location: \_\_\_\_\_

I am a: Physician ☐ Nurse: ☐ Paramedic: ☐ EMT: ☐ Other: \_\_\_\_\_

I am associated with an organized SAR unit: Yes ☐ No ☐

	Poor				Excellent
Were the facilities adequate?	1	2	3	4	5
How was the administration of the program?	1	2	3	4	5
Did instructional technique fit the subject matter?	1	2	3	4	5
Did the instructors present a friendly, helpful climate for learning?	1	2	3	4	5
Were audio/visual materials used effectively?	1	2	3	4	5
Were examinations conducted in a fair manner?	1	2	3	4	5
What was the overall quality of the program?	1	2	3	4	5

Would you recommend this program to others? YES NO

The length of the program was: JUST RIGHT TOO LONG TOO SHORT

Speakers who impressed me were: \_\_\_\_\_

Additional comments and suggestions for future programs: \_\_\_\_\_

**Continued on Reverse!**

Please rank the individual sections of this program.  
Classroom Sessions:

	Poor				Excellent
Introduction to Wilderness EMS	1	2	3	4	5
Wilderness Environment	1	2	3	4	5
Patient Assessment	1	2	3	4	5
Scene Management	1	2	3	4	5
Wilderness Surgical Problems	1	2	3	4	5
Thermal Regulation	1	2	3	4	5
Cold Related Disorders	1	2	3	4	5
Altitude Illness	1	2	3	4	5
Bites & Stings	1	2	3	4	5
Wilderness Trauma	1	2	3	4	5
Pharmacology	1	2	3	4	5
Disasters	1	2	3	4	5
Principles of General Medicine	1	2	3	4	5
Stress & CISD	1	2	3	4	5
Veterinary Medicine	1	2	3	4	5

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Hands On Sessions:

	Poor				Excellent
Patient Assessment	1	2	3	4	5
Neurological Exams	1	2	3	4	5
Patient Scenarios	1	2	3	4	5
Shoulder Reductions	1	2	3	4	5
Advanced Skills	1	2	3	4	5
Splinting & Minor Surgical	1	2	3	4	5


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Field Sessions:

	Poor				Excellent
Patient Scenario Stations	1	2	3	4	5
The Mock	1	2	3	4	5

**Thank you!**

## Appendix III: WEMSI Patient Record Form

Page <input type="text"/> of <input type="text"/>		Patient Record Form Version 1.1			
Patient Name: <input type="text"/>		Date: <input type="text"/>		Age: <input type="text"/>	
DOB: <input type="text"/>		Sex: <input type="text"/>		Wt.: <input type="text"/>	
<b>Field</b> <b>Diagnoses</b>	<b>Physical Exam</b> (Vitals on reverse)	<b>History</b> Chief Complaint/history of present illness Allergies Meds Past History: med/surg/family/social	Reason for clearing, time cleared and medic signature to left.		
			<b>C-spine clearing</b> <input type="checkbox"/> Alert/no intoxication <input type="checkbox"/> No distracting injury <input type="checkbox"/> No neck pain <input type="checkbox"/> No neck tenderness <input type="checkbox"/> No numb., tingling, weakness <input type="checkbox"/> Normal motor/sens. <input type="checkbox"/> Painless range of motion		
<b>Neuro Exam</b> Mental Status; Cranial (vision, eye movement [EOM], face sens., smile, hearing, shoulder, tongue); Sensory; Motor; Motor, deep tendon reflexes (DTR); Cerebellar.					

[illegible]

## WEMSI Wilderness EMT Course Guide

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## Appendix IV: WEMT Reporting Reference Card

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<p>WEMSI Wilderness EMT Reporting Reference Card Version 1.12 February 21, 1997</p> <hr/> <p><b>ID:</b> Team Identifier and Medic name and level of training</p> <hr/> <p><b>Chief Complaint</b></p> <hr/> <p><b>HISTORY:</b></p> <p><input type="checkbox"/> History of Present Illness</p> <p><input type="checkbox"/> Past medical history</p> <p><input type="checkbox"/> Medications</p> <p><input type="checkbox"/> Allergies</p> <hr/> <p><b>PHYSICAL EXAM</b></p> <hr/> <p><b>Field Diagnoses (or Problem List)</b></p> <hr/> <p><b>Scene:</b></p> <p><input type="checkbox"/> Weather</p> <p><input type="checkbox"/> Terrain</p> <p><input type="checkbox"/> Resources</p> <p><input type="checkbox"/> Prior Treatment</p> <p><input type="checkbox"/> Evacuation Time Estimate</p> <hr/> <p><b>Evacuation Priority:</b></p> <p><input type="checkbox"/> Hasty (Very Urgent) or</p> <p><input type="checkbox"/> Urgent or</p> <p><input type="checkbox"/> Routine or</p> <p><input type="checkbox"/> Delayed (bivouac)</p> <hr/> <p><b>Treatment Now</b></p> <hr/> <p><b>Plans for Possible Problems During Evacuation</b></p> <hr/>
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## Appendix V: WEMT Quick Reference Card

WEMSI Wilderness EMT Quick Reference Card  
Version 1.01 February 21, 1997 page 1/2

### "Clearing the C-Spine": Only in wilderness

- ☐ totally alert, not intoxicated
- ☐ no painful "distracting" injury
- ☐ no neck pain
- ☐ no neck tenderness
- ☐ no numbness, tingling, weakness
- ☐ normal motor/sensory exam of extremities
- ☐ painless full range of motion of neck

### Shoulder Dislocations

- ☐ Check and document distal NVI incl. "patch area" and forearm.
- ☐ Can pt. bring affected hand to opposite shoulder? If so, unlikely is shoulder dislocation.
- ☐ Palpate for deformity: AC sprain? Humerus fx?
- ☐ pain medications, muscle relaxants, suggestion, or hypnosis; ask patient to relax muscles
- ☐ Stimson method: face down on ledge/table, padding under shoulder at edge; attach weight to elbow or wrist and monitor for neurovascular impairment from weight; use other method if no results in 30 minutes.
- Milch technique: traction upwards.

### Emergency water disinfection:

- ☐ if dirty, flocculate (alum or white campfire ash)
- ☐ 8 drops Betadine/L for 30 minutes; use more or leave longer if dirty or very cold water
- ☐ 4 cc of Clorox 5% bleach for 40 L (10 gallons) overnight; double if have to use in an hour

WEMSI Wilderness EMT Quick Reference Card  
Version 1.01 February 21, 1997 page 2/2

### Neurological Exam: Mental Cases Sometimes Make Deepdish Casserole: MCSMDC

#### ☐ Mental Status: AVPU

#### ☐ Cranial Nerves:

"How many fingers?" [CN II, optic: vision]  
 "Look up, look down, look right, look left." EOMI (ExtraOcular Motions Intact) [CNs III, IV, VI, oculomotor, trochlear, abducens: move eyes in all directions]  
 "Close your eyes and say "now" when you feel a touch." {forehead, cheek, chin}) [CN V, trigeminal: bilateral face sensation]

"Smile; raise your eyebrows." [CN VII, facial: bilateral face strength]

"Which side do you hear the sound on?" {rub fingers next to ear, then other} [CN VIII, auditory: hearing]


"Hold your shoulders up." {press down on shoulders} {alternate: have patient turn head against resistance} [CN XI, accessory: elevates shoulders, turns head side to side]

"Stick out your tongue" {tongue in midline?} [CN XII, hypoglossal: protrudes tongue]

Not tested: CN I, olfactory: smell; CN IX, glossopharyngeal: sensation back of throat; CN X, vagus: parasympathetic to internal organs

☐ Sensory: light touch, pinprick

☐ Motor: strength

☐ Deep Tendon Reflexes: forearm [brachioradialis], elbow [biceps], knee jerk [patellar], ankle jerk; also response to stroking lateral sole ("Babinski": normal=  >1 yr. old.

☐ Cerebellar: "finger → nose" "heel → shin"  
 Gait ("Walk a straight line, heel to toe.")



## Appendix VI: Latest Versions of WEMSI Documents

Starting in Spring 1997, WEMSI documents will be updated frequently. The latest version of this document is available at <http://www.wemsi.org>. Note also that preliminary versions (1.xx) and Textbook Chapters (4.xx) are available only to coordinators of WEMS-recognized courses. Formal Lesson Plans (3.xx) and ancillary publications are available to the public for the cost of copying, postage and handling, from: Center for Emergency Medicine of Western Pennsylvania, 230 McKee Place, Suite 500, Pittsburgh, PA 15213-4904, 412-578-3203, [wemsi+@pitt.edu](mailto:wemsi+@pitt.edu).

**April 14, 1997** Version numbering: 1.xx - preliminary (verbose) Lesson Plan

2.xx - temporary internal versions 3.xx - Lesson Plan (released) 4.xx - Textbook Chapter (released)

Document	Versions/Dates	# pages*
I. Introduction to Wilderness EMS: Barry Burton	1.61: October 17, 1991	27(28)pp
II. The Wilderness Environment: David Lindell	3.02: August 19, 1994 4.02: August 19, 1994	17(18)pp 18pp
III. Patient Assessment: Roy Alson	1.68: August 10, 1992	30pp
IV. Scene Management, Communications, Reporting and Documentation: Art Dodds and Gene Harrison	1.6: August 21, 1996	24pp
Va. Wilderness Surgical Problems – General: Chuck Stewart	1.61: Aug 15, 1994	18pp
Vb. Wilderness Surgical Problems – Orthopedic: Brett Bender	1.61: Aug 15, 1994	55(56)pp
VI. Thermal Regulation: Eric Swanson	1.32: September 4, 1992	14pp
VII. Heat-Related Disorders: Eric Swanson	1.33: September 3, 1993	15(16)pp
VIII. Burns and Lightning: Keith Conover	3.02: August 12, 1994 4.02: August 12, 1994	8pp 10pp
IX. Cold-Related Disorders: Keith Conover	3.01: September 3, 1993 4.02: February 18, 1997	43(44)pp 38pp
X. Altitude Illness: Keith Conover	3.2: April 12, 1994 4.2: April 12, 1994	10pp 12pp
XI. Bites and Stings: Keith Conover	1.6: April 17, 1994	22pp
XII. Wilderness Medical Problems: Michael Baumann	3.11: July 22, 1994 4.11: July 22, 1994	49(50)pp 44pp
XIII. Wilderness Trauma: Mike Yee	1.8: July 20, 1994	38pp
XIV. Pharmacology: Ron Roth	3.00 October 4, 1992 4.00 October 4, 1992	30pp 29(30)pp
XV. Packaging and Transportation: Jack Grandey	0.30: August 19, 1994	5(6)pp
XVI. Disasters: Bernie Roche	1.11: September 2, 1992	8pp
XVII. Advanced Skills: Mike Yee	1.00: August 16, 1992	5(6)pp
XVIII. Principles of General Medicine: Roy Alson	1.71: September 4, 1992	15(16)pp

\* (rounded to even number for double-sided photocopying)

XIX. Stress Management and Critical Incident Stress Debriefing: Bob Koester	3.31: July 4, 1992 4.32: July 4, 1992	12pp 14pp
XIXb. Death and Dying: Jack Grandey	1.00 April 14, 1997	6pp
XX. Veterinary Emergencies: Bob Wagner	(0.3): November 13, 1994	24pp
Appendix A: Clinical Rotations: Editorial Board	1.23: July 10, 1992	4pp
WEMT Reporting Reference Card	1.11: June 16, 1995	1-sided card
WEMT Quick Reference Card	1.01: June 16, 1995	1-sided card
Course Guide + Appendices	2.0: September 30, 1997	53(54)+118= 172pp
Practical Skills Station Manual <i>(also included in Course Guide as Appendix)</i>	2.3: September 30, 1997	67(68)pp
Pennsylvania SAR Council Forms Packet <i>(also included in Course Guide as Appendix)</i>	March 1, 1992	42pp
ASRC Grid System Explanation <i>(also included in Course Guide as Appendix)</i>	3.1: April 13, 1997	8pp
Written Test	1.6: November 12, 1996	25(26)pp
Practical Test	2.01: January 26, 1997	2pp
Operations Policy Manual	1.01: January 24, 1995	11(12)pp
Wilderness EMS Protocols	Full: 1.2, May, 1994 Pocket: 1.2, May, 1994	42+ii (44)pp 13+ii (16)pp
Patient Record Form	1.1: undated	2-sided form
Continuation Sheet	1.1: undated	2-sided form
Wilderness Command Physician Curriculum Notes <i>(includes Wilderness EMS Rotation document)</i>	1.1: May 3, 1994	7pp+7pp (14pp)
Wilderness Command Physician Class: Course Guide and Lesson Plan	0.5: August, 1997	7pp
"The Wilderness EMS Institute" 2-page, 8.5"x11" brochure	February 1997	2pp (free)
"Wilderness EMT and Wilderness Command Physician Classes" 2-page, 8.5"x11" 3-fold brochure	February 1997	2pp (free)
"Wilderness EMT Curriculum" 2-page, 8.5"x14" 4-fold brochure	March 1997	2pp (free)
"Wilderness EMT Documents" (order form) 2 page, 8.5"x11" 2-fold brochure	April 1997	2pp (free)

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**Appendix VII: Practical Skills Station Manual (separate document)**

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**Appendix VIII: Pennsylvania Search and Rescue Council Forms Packet (separate document)**

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**Appendix IX: ASRC Grid System Handout and Grid Master (separate document)**

