

Allegheny Mountain Rescue Group

Medical Policy Manual

Version 2.0 approved 8/5/14



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Definitions

- Accurate** As used in this Policy Manual, Accurate means allowing verbal or text information to be communicated without errors in meaning.
- Allegheny Mountain Rescue Group** AMRG is a wilderness search and rescue team based in the Pittsburgh area of Pennsylvania. It is a local Group of the Appalachian Search and Rescue Conference, and a member team of the Mountain Rescue Association and Pennsylvania Search and Rescue Council. It is currently licensed by Pennsylvania as a Quick Response Service (QRS) EMS Agency, though once new EMS regulations are in effect, it may become a Special Operations (Wilderness) EMS Agency. In addition to search and rescue services, AMRG's ASRC Members provide First Aid, EMS, and Medical Care.
- Appalachian Search and Rescue Conference** The ASRC is a multistate wilderness search and rescue organization that provides operational, training and administrative guidance and support for member Groups, including the Allegheny Mountain Rescue Group in Pittsburgh, but also nearby groups such as the Mountaineer Area Rescue Group in Morgantown, WV, Maryland Search and Rescue and Potomac Valley Rescue Group in Maryland, and Shenandoah Mountain Rescue Group in northern Virginia that respond into Pennsylvania on a regular basis. Every member of an ASRC Group is also a member of the ASRC.
- AMRG Member** As used in this Policy Manual, an AMRG Member is a member of the ASRC affiliated with AMRG, at the Callout Qualified certification or above, who is qualified to serve in the field and provide First Aid, EMS or Medical Care, per this Policy Manual. Note that this requires that Wilderness Command Physicians, who are required to be ASRC Members, to be at the Callout Qualified level or better.
- ASRC Member** As used in this Policy Manual, an ASRC Member is a member of the ASRC affiliated with AMRG or any other ASRC Group, at the Callout Qualified certification or above, who is qualified to serve in the field and provide First Aid, EMS or Medical Care, per this Policy Manual. Note that this requires that Wilderness Command Physicians, who are required to be ASRC Members, to be at the Callout Qualified level or better.
- Bi-directional** As used in this Policy Manual, Bi-directional means allowing both Wilderness Command Physician and ASRC Member to initiate communications and to send and receive information.
- Emergency Medical Services (EMS)** As used in this Policy Manual, EMS is a level of patient care distinct from First Aid, and distinct from Medical Care. EMS is regulated by the Commonwealth of Pennsylvania, and falls under the Pennsylvania EMS Law and EMS Regulations. EMS is provided following the Pennsylvania EMS Protocols (both BLS and ALS) and with the medical direction of a Medical Command Physician. EMS is provided by individuals licensed in Pennsylvania as:
- An emergency medical responder,
 - An emergency medical technician,



- An advanced emergency medical technician,
- A paramedic,
- A prehospital registered nurse,
- A prehospital physician extender, or
- A prehospital emergency medical services physician.

Other states may have different levels of certification and licensure for EMS providers.

Field Provider As used in this Policy Manual, a Field Provider is any AMRG Member who has training in medicine or allied fields, or EMS or Wilderness EMS training, beyond the first aid level. This includes credentialed Wilderness EMTs and Wilderness Medics, but also those who have EMS or medical training and/or certification but who are not credentialed by AMRG to provide Medical Care in Pennsylvania. This includes, but is not limited to, the list of Pennsylvania EMS providers above (see EMS), as well as the following training, certification or licensure:

- OEC (Outdoor Emergency Care)
- WFR (Wilderness First Responder)
- Emergency Care – First Responder, Emergency Medical Technician-Basic, EMT-Advanced, EMT-Intermediate, EMT-Paramedic (certified or licensed in other states)
- RN (Registered Nurse),
- CRNP (Certified Registered Nurse Practitioner), PA-C (Physician Assistant – Certified), which used to be known as “Mid-Levels” and are generally now called “Advanced Practitioners”,
- CRNA (Certified Registered Nurse Anesthetist),
- DPM (Doctor of Podiatric Medicine),
- DDS (Doctor of Dental Surgery),
- DMD (Doctor of Dental Medicine),
- MD (Medical Doctor), and
- DO (Doctor of Osteopathic Medicine).

Field Providers may provide First Aid, EMS or Medical Care depending on their AMRG medical credentialing and the specific situation at hand. Note that some Field Providers, such as MDs or DOs licensed in Pennsylvania, have an independent right to practice medicine, regardless of whether they are accredited as AMRG Wilderness Medics. Such physicians or osteopathic physicians who are not accredited as AMRG Wilderness Medics and provide care on ASRC or AMRG operations or training in Pennsylvania do so under their own licenses and not under the ASRC PA Medical Director’s license.

First Aid As used in this Policy Manual, First Aid is a level of care for medical illness and injury that is generally taught in first aid classes, such as those by the American Red Cross, and that does not involve administering medications, or invasive procedures such as orotracheal intubation or starting intravenous lines. First Aid is not regulated by the Commonwealth of Pennsylvania. In the wilderness context, First Aid may include skills not included in Street Context first aid classes, including the reduction of dislocations by those trained to do so.

Force Protection As used in this manual, Force Protection is Medical Care provided by a



Wilderness EMT or Wilderness Medic to other team members on an ASRC or AMRG search and rescue operation or training session, while in the wilderness context. These team member patients need not be ASRC or AMRG Members. The goal of Force Protection is to provide incidental medical care to team members, to prevent mortality and morbidity, to return team members to being able to carry out search and rescue tasks, and to help prevent the need to evacuate injured or ill team members. As EMS is “bringing the hospital to the patient” and Wilderness EMS is “bringing the hospital *all the way* to the patient,” Force Protection is “bringing the Urgent Care Center to the team member.”

Medical Care As used in this Policy Manual, Medical Care is a level of care for medical illness and injury that is distinct from First Aid or EMS. Medical Care is not regulated by the Pennsylvania EMS Law or Regulations, but instead is considered the practice of medicine, and is regulated by the Commonwealth of Pennsylvania through the Boards of Medicine and Osteopathic Medicine. Physicians (MDs or DOs) may provide Medical Directly, or delegate certain individuals to act under their authority to provide Medical Care. Credentialed AMRG Members may provide Medical Care to themselves, to other AMRG or ASRC Members, or to others involved in an operation, under delegated practice from the AMRG Medical Director, or another AMRG or ASRC Wilderness Command Physician. Under the new (2013) Pennsylvania EMS Regulations, Wilderness EMS will start to fall under the EMS Regulations; however, Medical Care may be provided in addition to any new EMS Regulations for providing Wilderness EMS. Medical Care requires a Physician-Patient relationship.

Personal Wilderness First Aid Kit As used in this Policy Manual, a Personal Wilderness *First Aid* Kit is a personal kit, carried by AMRG Members, that is intended for personal use, and that is used to administer First Aid. Personal Wilderness First Aid Kits may contain personal over-the-counter or prescription medications, but AMRG Members are not authorized to administer such medications to any other individual.

Personal Wilderness Medical Kit As used in this Policy Manual, a Personal Wilderness *Medical* Kit is a personal kit, carried by AMRG Members who are Field Providers (Wilderness EMTs or Wilderness Medics), that is used to provide Medical Care. It is intended for personal use, but also for Force Protection. When a team medical kit is not yet available, a Personal Wilderness Medical Kit may be used for Medical Care for a search subject or rescue victim. It may also be used to treat family and friends, but only while in the Wilderness Context.

Physician –Patient Relationship Physician-Patient Relationship can be defined as “a consensual relationship in which the patient knowingly seeks the physician’s assistance and in which the physician knowingly accepts the person as a patient.” *QT, Inc. v. Mayo Clinic Jacksonville*, 2006 U.S. Dist. LEXIS 33668 (N.D. Ill. May 15, 2006) In the context of this Policy Manual, Medical Care is provided (1) directly by an ASRC physician in the field, (2) by protocols and standing orders provided by the AMRG Medical Director, or (3) by an AMRG or ASRC Wilderness Command Physician via Medical Communication.

Protocols As used in this Policy Manual, a protocol is a general way to deal with a specific



wilderness medical problem. It does not address administering prescription medications or performing procedures that require a physician's order. However, protocols should be taken as general orders of the AMRG Medical Director. An example of a protocol is: "always add heat and try your best to rewarm hypothermic patients, unless victims of cold-water submersion (near-drowning)."

Standing Orders As used in this Policy Manual, a standing order is a specific physician's order to be carried out when not in direct contact with a physician. An example of a standing order is: "If significant soft tissue infection, open fracture, fever over 102°F with abdominal pain, suspected meningitis, suspected pyelonephritis, or suspected pneumonia; and if evacuation and transport time to a hospital is estimated at more than four hours; and if patient has no history of allergy to ceftriaxone (Rocephin®) or to other cephalosporins such as Keflex® or Ceclor®, or history of anaphylactic allergy to penicillin: then give one (1) gram of ceftriaxone. Give IV push if an IV is available, else give by deep IM injection."

Street Context As used in this Policy Manual, Street Context is the standard prehospital situation of urban and rural contexts, in which EMS delivery is routine, and provided by or near ambulances, or in otherwise relatively "civilized" surroundings.

Wilderness Context As used in this Policy Manual, Wilderness Context includes the specialized prehospital situations of wilderness, backcountry, and other delayed and prolonged transport contexts such as catastrophic disasters, in which EMS delivery is complicated by one or more of the following four factors:

- remoteness as far as logistics and access;
- a significant delay in the delivery of care to the patient;
- an environment that is stressful to both patients and rescuers; or
- lack of equipment and supplies.

Wilderness Command Physician As used in this Policy Manual, a Wilderness Command Physician is an ASRC Member (as per the definition of ASRC Member above, at the Callout Qualified level or above), and not necessarily a member of AMRG, who also:

- is a licensed physician (MD) or licensed osteopathic physician (DO),
- has training in remotely directing care for sick or injured persons,
- has training in remotely directing care for the specialized prehospital situations of wilderness, delayed, or prolonged transport contexts (such as the Wilderness EMS Institute Wilderness Command Physician class, or similar training meeting the objectives of Appendix C, such as that acquired during an EMS Fellowship), and
- has been accredited by AMRG to remotely direct Medical Care by AMRG Field Providers.

Wilderness EMT As used in this Policy Manual, a Wilderness EMT is an AMRG Member who cares for sick or injured persons in the Wilderness Context, who:

- is trained as an Emergency Medical Technician in accordance with the current U.S. Department of Transportation (DOT) Emergency Medical Technician-Basic: National Standard Curriculum or a prior or subsequent DOT EMT-Basic Training Curriculum, and ASTM F1287-



90(2012) Standard Practice for the Training of the Emergency Medical Technician (Basic), and

- has completed an additional Wilderness EMT class and/or equivalent training that meets the requirements of Appendix B, and
- has been accredited by AMRG to provide Medical Care.

Wilderness EMTs may provide First Aid. Wilderness EMTs who are currently certified as a Pennsylvania EMT-Basic may provide EMS. AMRG Members who are accredited Wilderness EMTs may provide Medical Care.

- Wilderness First Responder** As used in this Policy Manual, a Wilderness First Responder is an AMRG Member who cares for sick or injured persons in the Wilderness Context, who:
- is trained as a First Responder in accordance with ASTM F1287-90 Standard Guide for Performance of First Responders Who Provide Medical Care and ASTM F1453-92 Standard Guide for the Training and Evaluation of First Responders Who Provide Medical Care, and
 - has completed additional training in applying their training in the wilderness context in accordance with ASTM F1655 - 95(2007) Standard Guide for Training First Responders Who Practice in Wilderness, Delayed, or Prolonged Transport Settings, *or* has completed a National Ski Patrol or equivalent Outdoor Emergency Care course.

Wilderness First Responders may provide First Aid. Wilderness First Responders who are currently certified as a Pennsylvania Emergency Medical Responder may provide EMS. Wilderness First Responders may not provide Medical Care.

- Wilderness Medic** As used in this Policy Manual, a Wilderness Medic is an AMRG member who cares for sick or injured persons in the Wilderness Context, who:
- is an actively practicing Pennsylvania-licensed Advanced EMT, EMT-Paramedic, Physician Assistant, Registered Nurse, CRNA, CRNP, podiatrist, oral surgeon, physician, or osteopathic physician; and
 - has completed an additional Wilderness EMT class and/or equivalent training that meets the requirements of Appendix B, and
 - who has been accredited by the Allegheny Mountain Rescue Group to administer medications and provide Medical Care.



AMRG Medical Control Policy

Purpose: The Allegheny Mountain Rescue Group (AMRG) provides First Aid, EMS and Medical Care to patients in the Wilderness Context.

The specific purpose of this policy is to establish criteria under which individuals may provide First Aid, EMS and Medical Care under auspices of AMRG.

Scope and Applicability:

1. This policy shall apply to all AMRG Members unless overruled by specific and relevant state or federal law.
2. This policy applies to all AMRG Members rendering First Aid, EMS or Medical Care in Pennsylvania or in other states.
3. This policy applies to AMRG or ASRC Wilderness Command Physicians who direct Medical Care in Pennsylvania.
4. This policy applies to First Aid, EMS and Medical Care of patients for whom AMRG Members are searching, to patients who are being rescued and evacuated by AMRG Members, and for “force protection”: when AMRG Members are providing First Aid or Medical Care for other AMRG or ASRC Members, or for other personnel involved in the operation, in the field or at Base on an actual search and rescue operation, or during a field training session.
5. This policy applies to members of the Allegheny Mountain Rescue Group (AMRG), which is based in Pennsylvania.
6. AMRG is licensed by the Pennsylvania EMS Office as a Quick Response Service (QRS) Emergency Medical Services (EMS) Agency. Street Context EMS provided by AMRG ASRC members is governed by applicable Pennsylvania EMS Regulations and shall be provided according to Pennsylvania EMS Protocols. Pennsylvania EMS Protocols are available at http://www.portal.state.pa.us/portal/server.pt/document/1324791/statewide_bls_protocols-2013_pdf and http://www.portal.state.pa.us/portal/server.pt/document/1324790/statewide_als_protocols-2013_pdf or simply by searching for “Pennsylvania EMS Protocols.” However, the majority of patient care provided by AMRG is in the Wilderness Context, where the standard of care may differ from the current Pennsylvania EMS Protocols, and this patient care may be provided as First Aid, EMS or Medical Care.
7. AMRG Members operating in Pennsylvania may provide EMS provided they are certified or licensed as a EMS providers by the Pennsylvania EMS Office. AMRG Members who are licensed as EMS providers in another state but not Pennsylvania shall provide EMS in Pennsylvania only in one of the following two situations:
 - a. if they contact a Pennsylvania Medical Command Physician, identify as an out-of-state EMS provider, and obtain orders from the Medical Command Physician to provide such care, or
 - b. when in the judgment of the non-Pennsylvania EMS provider,



withholding EMS would result in a significant detriment to the patient, despite the personal risk of being accused of practicing medicine without a license, notwithstanding the protections of the Pennsylvania Good Samaritan Law and the common-law Doctrine of Necessity.

8. AMRG Members shall only direct or provide Medical Care in Pennsylvania when accredited in accordance with the AMRG Accreditation Policy; see below.
9. AMRG Members may provide First Aid in Pennsylvania and in other states without accreditation.



Medical Care Protocols and Standing Orders:

The AMRG Medical Director shall establish, publish, and from time to time update Medical Care Protocols and Medical Care Standing Orders. These shall have the effect of a physician's orders, delegated to AMRG Members, under the Pennsylvania Medical Practice Act.

Field Expedients

Search and rescue operations are inherently difficult. Scarcity of resources, urgency, the presence of more patients than Field Providers, severe weather, rugged terrain, fatigue and other factors are common complications of search and rescue operations. Therefore, the following Medical Control policy, while designed to be a set of best practices, may need to be modified as a field expedient, based on the best judgment of the AMRG personnel at the scene. Such field-expedient modification of Medical Control procedures should be documented (likely after the fact) and reviewed through AMRG's standard quality-improvement mechanisms for opportunities to improve future operations, as well as updating these policies.

Medical Control:

1. When faced with a patient care situation in the Wilderness Context that, in their judgment, might require Medical Care that differs from EMS, Field Providers shall attempt to establish Medical Communication with, and obtain patient-specific medical control from, an ASRC-Credentialed Wilderness Command Physician. As used in this policy, *Medical Communication* is a specific and circumscribed term defined below. This Wilderness Command Physician need not be resident in Pennsylvania or an AMRG Member, but must be an ASRC Member. Field Providers will ensure that the patient understands and agrees that a Physician-Patient Relationship has been established and care is being rendered in the context of this relationship.
2. If the delay in making such an attempt will adversely affect the patient, or if unable to establish Medical Communication, Field Providers may start acting on the basis of the AMRG Medical Care Protocols and Standing Orders (see separate document). If the Protocols or Standing Orders do not address the problem at hand, Field Providers shall provide patient care in accordance with their training, their best judgment, and the patient's best interests, and shall continue attempting to establish Medical Communication.
3. Field Providers are not authorized to provide Medical Care under remote or direct medical control of physicians who are not AMRG-accredited Wilderness Command Physicians.
 - a. However, they are authorized to accept medical *advice* from such physicians, and, if the member is also credentialed as a Pennsylvania EMS provider, to accept EMS medical direction from Pennsylvania EMS Command Physicians.
 - b. Field Providers who are also credentialed as a Pennsylvania EMS provider are authorized to provide care at the authorization of a Pennsylvania EMS Command Physician, even if that care is beyond the scope of standard state EMS protocols, and might be otherwise considered Medical Care.



- c. As the legal counsel for the Pennsylvania EMS Office once observed, medical direction of EMS gives Command Physicians wide latitude in exceeding the standard EMS protocols when indicated.
4. **Physician on-scene:** If a non-AMRG-accredited but *Pennsylvania-licensed* physician is at a Wilderness Context scene, Field Providers may, at their discretion:
 - a. continue to provide Medical Care following the direction of the Wilderness Command Physician; or
 - b. if unable to establish Medical Communication, follow the AMRG Pennsylvania Medical Care Protocols and Standing Orders with the assistance of the on-scene physician; or
 - c. turn patient care over to the physician at the patient's side, if and only if said physician
 - i. identifies self by name and by state license number in writing, and
 - ii. signs a statement accepting all responsibility for the patient's care on a continuing basis.
 - iii. Field Providers may (but are not required to) continue to assist this physician in caring for the patient, but will be doing so under Delegated Practice from the on-scene physician, not as a AMRG Field Provider. The physician at the scene may use Medical Communication to obtain advice from the Wilderness Command Physician.
5. Once a patient is out of the wilderness context, Field Providers are authorized to transfer patient care responsibility to
 - i. a "street" EMS agency's (ground, air or water) ambulance crew
 - ii. a licensed physician or osteopathic physician in a health care facility, or
 - iii. directly to a Wilderness Command Physician.
 - b. A Field Provider should continue to attend the patient and provide advice to the "street" EMS agency's physician and ambulance crew, except
 - i. when safety concerns dictate otherwise (e.g., aircraft payload limitations), or
 - ii. the Field Provider, preferably in consultation with a Wilderness Command Physician, believes that the patient is stable, and that the Field Provider's special training is unlikely to be needed during transportation to a health care facility, or
 - iii. a law enforcement officer with jurisdiction orders the



Field Provider orders the Field Provider to turn over care to the EMS agency.



Medical Care – EMS Interface:

1. **EMS and Field Provider on scene:** If
 - a. an AMRG Field Provider and local EMS personnel are both caring for a patient, and
 - b. this patient care is in a setting where the AMRG Field Provider believes that Medical Care may be more appropriate than the Pennsylvania EMS Protocols, then:

direct orders by an AMRG or ASRC Wilderness Command Physician and the AMRG Medical Care Protocols and Standing Orders shall take precedence over Pennsylvania EMS protocols. Local EMS personnel may treat this as “physician on scene,” and if requested, the AMRG Field Provider will print on the form the name of the physician directing care (AMRG or ASRC Wilderness Command Physician for direct orders, or, if the Field Provider is acting under AMRG Medical Care Protocols and Standing Orders, the AMRG Medical Director), shall sign the form with the ASRC Member’s name on behalf of the physician directing care, and the physician directing care shall cosign the form after the fact.

2. **Transfer of Care:** When an ASRC Member has been providing Medical Care to a patient, and then transfers the patient to an EMS agency ground or air ambulance for transport to a hospital, it is quite different from a typical EMS scene run. It has more in common with EMS picking up a patient from a physician’s office, or with an interhospital transfer, in that a sophisticated amount of care beyond typical EMS may have already occurred. Therefore, there are two types of transfer of care that should be accomplished:
 - a. **Transfer from AMRG Field Provider to EMS:** The AMRG Field Provider rendering Medical Care should make a full verbal and written report to EMS personnel who will be assuming care. When possible, written reports should be on two-part forms, so one copy may be retained for ASRC records, and one copy may be given to EMS, thence to be given to the receiving Emergency Department (ED).
 - b. **Transfer from AMRG or ASRC Wilderness Command Physician to ED:** As is standard for physicians transferring a patient to the ED, or an ED-ED transfer, the physician providing or directing care should make a verbal report to an ED charge nurse or physician at the receiving Emergency Department (which to report to is determined by the practice of the receiving ED). If care is rendered by an AMRG Field Provider without the involvement of an AMRG or ASRC Wilderness Command Physician, then the AMRG Field Provider should make this report.

Documentation:

All patient care by Field Providers shall be documented using ASRC Patient Record forms and Pennsylvania EMS report forms, and submitted to the AMRG and ASRC Medical Committees for Quality Improvement review.



AMRG Medical Accreditation Policy

Field Provider and Wilderness Command Physician Credentialing:

1. All individuals seeking accreditation as Field Providers must complete an application for accreditation established by the AMRG Medical Officer, including, but not limited to, the following information:
 - a. Current certification or license from their home states as an Advanced EMT, EMT-Paramedic, Physician Assistant, Registered Nurse, CRNA, CRNP, podiatrist, oral surgeon, physician, or osteopathic physician. Copies of relevant certificates are required.
 - b. Present affiliation, which must with a recognized ALS or BLS EMS service, with a medical practice, or with a hospital.
 - c. Endorsement of the EMS service's medical director, the medical practice's lead physician (may be omitted for solo practitioners or the head or equal partner of a practice), or the hospital service supervisor.
 - d. Evidence of having successfully completed a Wilderness EMT or equivalent training that meets the educational objectives specified in Appendix B, including all required clinical training, or equivalent training. The AMRG Board of Directors, acting on the advice of the AMRG Medical Officer and Medical Director, shall determine equivalency of specific training courses.
 - e. A letter of endorsement from a AMRG-accredited Wilderness Command Physician.
2. All individuals seeking accreditation as Wilderness Command Physicians must complete an application for accreditation established by the AMRG Medical Officer, including, but not limited to, the following information:
 - a. evidence that they have obtained and are maintaining certification or licensure in their home states as a physician or osteopathic physician (copy of license required),
 - b. current and valid DEA Controlled Substances Registration Certificate,
 - c. specialty board certification(s), or evidence of board eligibility,
 - d. evidence of malpractice insurance and claims history.
 - e. evidence of successfully completing a Wilderness Command Physician course or equivalent training that meets the educational objectives of Appendix C, and
 - f. a letter of endorsement from a ASRC-Pennsylvania-accredited Wilderness Command Physician of Field Provider.
3. Those seeking accreditation as Field Providers or Wilderness Command Physicians shall complete an interview and oral examination, based on



guidelines provided by the AMRG Medical Officer, appropriate to their level of care.

- a. This interview may be conducted by the AMRG Medical Director, or a Wilderness Command Physician or Field Provider designated by the ASRC Pennsylvania Medical Director.
 - b. Those conducting the interview and oral examination shall provide a written summary and a formal recommendation to approve or not approve to the AMRG Medical Director, with the AMRG Medical Director making a final determination. The Allegheny Mountain Rescue Group Medical Officer shall maintain records of all such determinations.
 - c. The AMRG Medical Director shall be the final arbiter of all accreditation decisions.
4. AMRG Field Provider and Wilderness Command Physician accreditations are not property rights, but are permission to use the AMRG Medical Director's and Wilderness Command Physicians' medical licenses, and may be denied or withdrawn without due process of law.
 5. AMRG shall maintain a record for 7 years of the AMRG Medical Director's assessments and recommendations.
 6. AMRG shall not permit an Field Provider to provide Medical Care if the AMRG Medical Director determines that the Field Provider has not demonstrated the knowledge and skills to competently perform the skills within the scope of practice at that level or the commitment to adequately perform other functions relevant to a Field. Under these circumstances, AMRG may continue to permit the Field Provider to provide Medical Care for AMRG only in accordance with the restrictions as the AMRG Medical Director may prescribe.

AMRG Medical Communication Policy

- Purpose:** This policy lays out the communication parameters required for adequate patient-specific medical direction (“on-line command,” “direct medical control”) in the wilderness context, where technical difficulties may make “direct” voice contact difficult or impossible. Such Medical Communication must provide accurate, bi-directional voice or text data transfer.
- Scope:** This policy applies to all patient-specific messages by Wilderness Command Physicians and Field Providers. This includes messages between Wilderness Command Physicians and Field Providers. It also applies to Wilderness Command Physicians if requested to provide patient-specific medical direction or advice to other physicians or AMRG Members who are providing First Aid.
- Policy:**
1. Medical Communication – Voice
 - a. Medical Communication exists when a Wilderness Command Physician and Field Provider can speak directly to one another: real-time bi-
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directional voice communication. Examples are as follows:

- when the Wilderness Command Physician and Field Provider are in direct proximity (e.g., the Wilderness Command Physician is looking over the Field Provider's shoulder); or
 - when the Wilderness Command Physician and Field Provider are close but not in direct physical proximity, and can still speak to one another by voice (e.g., shouting down a cave passage); or
 - when the Wilderness Command Physician and Field Provider are not in proximity, but may speak with one another via technical means that enable accurate real-time bi-directional voice communications (e.g., radio, telephone, field phone, or combinations of these three).
- b. Digital voice retransmission equipment, sometimes used as a single-frequency alternative to automatic repeater stations, is considered the same as other forms of electronic voice communication for the purposes of this policy.
- c. This does not require a full-duplex communications mode; an alternate unidirectional communications mode, such as the standard radio communications mode where one cannot listen while pressing the push-to-talk button, is acceptable.
- d. All medical voice communication shall be in standard American English. Standard medical terms, abbreviations, and acronyms are acceptable provided they are understood by both parties.
- e. Should voice communications quality be marginal (due to such factors as poor communications equipment or channel quality), personnel shall use the ASTM Standard Practice for Phonetics (including the ITU-ICAO Phonetic Alphabet).

2. Medical Communication – Data

- a. Medical Communication exists when a Wilderness Command Physician and Field Provider can exchange data messages or digital information with one another that include text data. Though some unidirectional or bi-directional non-text information may be transmitted, the data must include bi-directional voice or text data to be Medical Communication. EKG or other telemetry by itself would not constitute Medical Communication as it does not include bi-directional voice or text data. However, communication need not be real-time if the medical mission can still be performed successfully. Potential examples of data Medical Communication are as follows:
- hand-written or typed notes;
 - facsimile;
 - imagery, electronic or otherwise;
 - voice recordings;
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- texting via cellphone using SMS or similar protocols;
 - machine transmissions such as teletype or TTD;
 - wireless data transmissions using international Morse code, or CCITT alphabets 5 (Baudot) or 7 (ASCII) (e.g., HF radio, VLF cave radio, VHF/UHF packet data systems)
- b. Medical data communication that uses written or recorded language shall be in standard American English. Standard medical abbreviations are acceptable provided they are known to both parties.
- c. Should recorded voice or data communications quality be marginal (due to such factors as poor communications equipment or channel quality), personnel shall use the ASTM Standard Practice for Phonetics (including the ITU-ICAO Phonetic Alphabet).

3. Medical Communication – Relay

To be Medical Communication, a relay or series of relays must:

- transmit all messages word-for-word;
 - read back the message word-for-word from the recipient to the originator;
 - have an acknowledgment from the originator to the recipient that the message was returned intact; and
 - have a written or typed log of the message at the originator, and at the recipient. Logs may be kept at intermediate relay stations but are not required.
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Policy Manual Approvals

Allegheny Mountain Rescue Group Medical Director

Date

Approved by AMRG Board of Directors (date): _____



Appendix A: Medical Communication Background

Medical care is best delivered with a qualified physician at the patient's side. An alternative level of care is having field providers providing care based on standing orders. Intermediate between the two is having a physician direct care through two-way communication with field providers in the field: not as good as having a physician present, but better than field providers directed only by standing orders.

Traditional EMS requires immediate, bi-directional, real-time voice communication for field providers to act on the direction of a remote physician. This requires sophisticated communications equipment. It also requires sophisticated system design. In the wilderness and in the backcountry, sophisticated

communications infrastructures are seldom available. Nonetheless, wilderness and backcountry patients deserve the benefit of physician control of their care when possible. Despite technical limitations of the wilderness/backcountry context, physicians can and should, with adaptations, provide medical control to field providers. For the ASRC in Pennsylvania, instead of "direct" communication for on-line medical control, we use the term "Medical Communication" to signify the situations when field providers in the field may accept and act on orders from a remote physician. This policy outlines and defines how patient-specific medical control can be accomplished through Medical Communication.

Accurate, Immediate, and Bi-directional Communication for Urban EMS

Patient-specific medical control ("on-line command") generally requires "direct" communication between the physician and the out-of-hospital providers in the field. The legal definition of this "direct" communication varies from publication to publication and from state to state. Used in its precise meaning, "direct" communication only occurs when the physician and field provider are standing near one another. However, communications equipment such as two-way radios, telephone, and cellular phones provide communications that are so similar to direct communication as to substitute for it.

"Direct medical control" for traditional urban EMS supports information interchange that has three important characteristics. First, it is without intermediaries that might introduce significant

errors: it is accurate. Second, it allows real-time (instant) interactive exchanges: it is immediate. Third, it allows both physician and medic to initiate communications and send and receive information: it is bi-directional. The two-way nature of medical communication is essential to the proper functioning of patient-specific medical control. Some aspects of medical communication, such as EKG telemetry, may be unidirectional. The usual radio or telephone connection between hospital ED physician and urban medic is accurate, immediate, and bi-directional.

While such communications are the ideal, they may not always be available in the backcountry. However, other forms of communication may be adequate to legitimately support patient-specific medical control.

Modification for the Wilderness/Backcountry Context

In the wilderness/backcountry context, immediate communications are not always possible. An extreme example is during the initial stages of a cave rescue. In such a case, written notes between the physician at the surface and the medic underground convey all medical (and other) information.

Wilderness rescue operations often last for hours or days. Therefore, a delay of minutes (or even hours) will not invalidate the value of a link between physician and field providers. Provided that

information is passed accurately both ways, even written messages can be a valid method of medical control. Personnel in the field must have written standing orders to follow in the gaps between such communications. However, written standing orders do not negate the value of a physician's patient-specific medical control.

The two critical requirements for Medical Communication are that it is accurate and that it is



bi-directional. Delays should be minimized but Medical Communication need not be immediate.

Traditional EMS, which emphasizes the real-time nature of direct medical control, does not permit relaying of messages. There is good reason for this. The classic game of “gossip” illustrates the problem: a message is started at one corner of a classroom and whispered from one student to another. When the message arrives at the far corner of the classroom, it is unrecognizable. In wilderness search and rescue, however, relays are common. Backpackable automatic repeaters are sometimes used, but not

always available or in the right location. A rescuer at the top of a mountain uses a handheld radio to relay messages from people on one side to those on the other side. Because of the problems of relaying accurate messages, reliable relay protocols have evolved. They involve composing a written message at one end, transmitting it word-for-word through the relay, then reading it back to the originator word-for-word for confirmation. This protocol has provided reliable error-free communication for military and search and rescue operations for many years.



Appendix B: Wilderness EMT Educational Standards

Scope:

- This Guide is for AMRG Members trained or training as Emergency Medical Technicians who will care for sick or injured persons in the Wilderness Context.
- To be credentialed as a Wilderness EMT, AMRG Members must be initially or concurrently trained in accordance with the current U.S. Department of Transportation (DOT) Emergency Medical Technician-Basic: National Standard Curriculum or a prior or subsequent DOT EMT-Basic Training Curriculum, and ASTM F1287-90(2012) Standard Practice for the Training of the Emergency Medical Technician (Basic).
- Individuals responsible for training Emergency Medical Technicians for the wilderness or delayed/prolonged transport setting must insure that personnel are competent in all necessary skills including those for the Wilderness Context.

Educational Objectives: Introductory

- 1) Define certification and licensure, compare and contrast them, and apply them to the Wilderness Emergency Medical Technician.
- 2) List the components of an EMS system, and describe how these should be implemented in a Wilderness EMS system.
- 3) Describe the role of the WEMT:
 - a) when not involved in an operation;
 - b) when on a wilderness search and rescue, operation, either at base, on a search team, or on a rescue; and
 - c) during a catastrophic disaster.
- 4) Describe important EMS medico-legal issues that are relevant to WEMTs:
 - a) law suits: negligence and tort claims;
 - b) standard of care;
 - c) duty to act;
 - d) abandonment;
 - e) medical practice acts;
 - f) delegated practice;
 - g) on-line command;
 - h) off-line command;
 - i) protocols and standing orders;
 - j) doctor-patient relationships versus EMS medical command; and dealing with a dead patient, including
 - i) determining death,
 - ii) declaring death, and
 - iii) certifying death ("signing the death certificate")
- 5) Identify important guiding principles for the WEMT, including:
 - a) keeping up certification and competence via continuing education in three areas:
 - i) search and rescue,
 - ii) "street" EMT skills and knowledge, and
 - iii) Wilderness EMT specific skills and knowledge;
 - b) recognizing the psychological stress of wilderness and taking appropriate countermeasures as needed; and
 - c) meticulously documenting all care given.

Educational Objectives: The Wilderness Environment: Hazards, Safety, and Patient Care Implications

- 1) Define "wilderness," "wilderness EMT," and "wilderness EMS."
- 2) Discuss the importance of air and oxygen in respect to:



- a) its presence or absence in the wilderness environment;
 - b) its quality in the wilderness environment; and
 - c) the relationship between available oxygen, barometric pressure, and altitude.
- 3) List human compensations for altitude exposure and hypoxemia.
 - 4) Discuss the role and importance of sun protection in the wilderness SAR environment.
 - 5) List the types of sun protection and their advantages and disadvantages, citing specific examples of each.
 - 6) Discuss the problems and dangers associated with wind in the wilderness environment.
 - 7) Discuss the windchill effect and its importance to the wilderness EMT.
 - 8) List the hazards associated with each type of precipitation.
 - 9) Describe thunderstorm and lightning hazards to the wilderness EMT.
 - 10) List six good safety rules for when lightning is imminent.
 - 11) Define the term "ground current" as it relates to lightning strikes.
 - 12) Discuss drinking water in the wilderness environment with respects to its:
 - a) presence or absence;
 - b) role in homeostasis;
 - c) quality; and
 - d) use for wound irrigation.
 - 13) List five contaminants of drinking water in the wilderness environment.
 - 14) Describe three methods of purifying (disinfecting) water and the advantages and disadvantages of each.
 - 15) Discuss the role and effects of water in regards to the following:
 - a) drowning;
 - b) thermal conductivity; and
 - c) force while moving.
 - d) ice
 - e) ocean currents and tides
 - 16) Summarize the hazards presented by terrain as they relate to the following areas:
 - a) vegetation:
 - b) physical, and
 - c) chemical;
 - d) animal:
 - e) mammalian dangers,
 - f) reptilian dangers, and
 - g) dangers from insects and arachnids.
 - 17) Discuss the prevention of insect bites and tick attachment.
 - 18) Describe the recommended method of tick removal and explain why it is recommended.
 - 19) List and explain five man-made hazards that might be found in the wilderness environment.
 - 20) Discuss the role of subjective hazards as they relate to the wilderness SAR environment.
 - 21) Describe the cave environment.
 - 22) List five specific hazards of the cave environment.
 - 23) List and differentiate the major components of "the wilderness ambulance."

Educational Objectives: Assessment

- 1) Demonstrate the ability to apply knowledge of EMT primary survey principles in wilderness situations, including:
 - a) discussing wilderness hazards to patient and rescuer;
 - b) positioning of the patient to maintain the airway, while protecting the cervical spine, even if the patient is in a litter;
 - c) use of improvised materials to splint a flail chest;
 - d) indications for a chest tube or chest decompression in the wilderness;
 - e) appropriate methods of hemorrhage control, including the use of a tourniquet in the wilderness; and
 - f) other wilderness management priorities that must be dealt with concurrent with the primary survey.
- 2) Explain the following principles as applied to taking a history and performing a physical exam:
 - a) directed versus complete screening exams;
 - b) proper order and components of a history and physical; and
 - c) general techniques for approaching a wilderness patient, including:



- d) developing rapport;
 - e) guiding the history;
 - f) keeping the patient informed of your exam; and
 - g) completeness.
- 3) Identify each of the following elements of a wilderness history, and give an example of each:
- a) Chief Complaint, including five important qualifications of a painful chief complaint;
 - b) History of Present Illness;
 - c) Past Medical History, including five major components;
 - d) Review of Systems; and
 - e) directed questioning.
- 4) Identify the four modes of physical examination, and give major examples of each in physical diagnosis.
- 5) Explain how to check for orthostasis and how to interpret the results.
- 6) Demonstrate a general screening physical exam for a patient who just suffered minor trauma.
- 7) Demonstrate the ability to perform detailed physical exams of the following, and properly report the results:
- a) General appearance;
 - b) Skin;
 - c) Rashes;
 - d) Head;
 - e) Ears;
 - f) Eyes;
 - g) Nose;
 - h) Mouth;
 - i) Neck;
 - j) Lungs;
 - k) Heart;
 - l) Back;
 - m) Abdomen;
 - n) Genital/Rectal; and
 - o) Neurological exam, including
 - p) Mental Status:
- i) Alertness,
 - ii) Orientation,
 - iii) Cognition and Memory, and
 - iv) Affect (mood);
- q) Cranial Nerves,
- r) Sensory,
- s) Motor,
- t) Deep Tendon Reflexes (DTRs) and Babinski response, and
- u) Cerebellar (and possibly Gait.)
- 8) Demonstrate the ability to interpret simple neurological exam results in terms of common acute neurological problems.
- 9) Identify the temperature measurement needs of the WEMT, and identify important characteristics of the following places temperature may be measured:
- a) the skin;
 - b) the mouth;
 - c) the rectum;
 - d) the axilla (armpit);
 - e) the tympanic membrane (eardrum); and
 - f) the esophagus.
- 10) Identify important characteristics of different types of thermometers, including:
- a) glass thermometers;
 - b) disposable paper thermometers for forehead and oral use;
 - c) infrared tympanic thermometers; and
 - d) continuous-reading electronic temperature monitors, including improvisation from inexpensive non-clinical thermometers.
- 11) Identify the importance and wilderness application of the following monitoring devices:
- a) EKG monitors;
 - b) BP cuffs;
 - c) pulse monitors;
 - d) pulse oximeters;
 - e) end-tidal CO₂ monitors; and
 - f) Foley catheters or Texas catheters.

Educational Objectives: Scene Management, Communications, Reporting, and Documentation

- 1) Describe important concepts in the initial management of a patient who has been lost, including possible dehydration, hyponatremia, hypothermia, starvation, and disorientation.
- 2) Describe important concepts in the initial management of patients who are being rescued, including:
 - a) removing patients from water immersion, including:
 - i) hydrostatic "squeeze," and



- ii) possible ill effects of patient self-assisting in rescue efforts;
 - iii) removing entrapped patients from entrapment, including "third-space" losses, hyperkalemia, and crush syndrome; and
 - b) moving and realigning patients into a standard anatomic position for further immobilization and packaging.
- 3) Describe the components and important concepts embodied in the "FAST" and "STOP" mnemonics for scene management.
- 4) Give the rationale for having three separate sequential reports (initial contact report, preliminary situation report, full situation report) for search "finds" and initial rescue contacts.
- 5) Describe how the following communications concepts apply to a WEMT in contact with a Wilderness Command Physician:
- a) roles of communication, including direct medical control and medical advice, reporting to Base, arranging support and additional resources, and arranging for the transition from evacuation to transportation;
 - b) direct communication and "direct medical control";
 - c) security;
 - d) acknowledgement;
 - e) logging and recording messages;
 - f) using clear English without codes; and
 - g) standard search and rescue "Status Codes" and their meaning.
- 6) Outline and describe the major components a WEMT's report to a Wilderness Command Physician should include, including:
- a) medical information, including:
 - b) introduction,
 - c) history (patient ID and chief complaint, history of present illness, and past medical - history),
 - d) physical exam,
 - e) field diagnoses,
 - f) treatment thus far,
 - g) the current situation;
 - h) tentative plans for further medical care, evacuation, and transportation; and
 - i) plans for further contact.
- 7) Discuss the variation in estimates of wilderness evacuation time by those trained and untrained in wilderness rescue, and indicate how to provide Base or a Wilderness Command Physician with the means to assess the accuracy of evacuation time estimates.
- 8) Identify important differences between "street" and wilderness documentation, including:
- a) need for durable waterproof records;
 - b) roles of documentation, including:
 - i) following trends in vital signs and patient condition;
 - ii) information for other WEMTs who care for the patient during the evacuation;
 - iii) legal documentation;
 - iv) research;
 - v) quality control and improvement; and
 - vi) education.
- 9) Identify important non-patient-care points to include in wilderness patient documentation, including:
- a) the environment;
 - b) the terrain;
 - c) equipment and personnel limitations;
 - d) any extrication, packaging, or evacuation problems;
 - e) the mechanism of injury;
 - f) your decision-making process, and any changes in your field diagnoses over time; and
 - g) any wilderness-specific treatments you employed, and documentation of the reasons for employing them.

Educational Objectives: Wilderness Surgical Problems

- 1) Outline the differences in prognosis and management between closed head injury and skull fracture.
- 2) Define "concussion," "increasing intracranial pressure," and "the lucid interval," and outline the diagnostic features of each.



- 3) Outline the pathophysiology and major characteristics of:
 - a) epidural bleeds;
 - b) subdural bleeds;
 - c) subarachnoid bleeds; and
 - d) intracerebral bleeds.
- 4) Outline important points in the diagnosis and wilderness management of:
 - a) midface fractures;
 - b) nasal fractures, including the significance of a septal hematoma;
 - c) zygomatic arch (zygoma) fractures;
 - d) blowout fractures;
 - e) jaw fractures;
 - f) other facial fractures; and
 - g) laryngeal trauma.
- 5) Differentiate these three kinds of neck injuries, in diagnosis, need for immobilization, and prognosis:
 - a) muscle strains;
 - b) bony injuries; and
 - c) neurological injury.
- 6) Explain how to estimate the approximate probability that a patient brought to an Emergency Department on a backboard, or a wilderness patient encountered by you, has a cervical fracture.
- 7) Outline your management of a patient with a potential cervical spine injury on the street, and in the wilderness; in particular:
 - a) outline the position of the Wilderness Medical Society; and
 - b) describe the role of "distracting" injuries in the physical examination of the cervical spine.
- 8) Describe the diagnosis and wilderness treatment for pulmonary contusion.
- 9) Describe the complications that may be caused by a myocardial contusion.
- 10) Describe the diagnosis and wilderness management of an isolated rib fracture.
- 11) Describe problems in the wilderness management of patients with blunt abdominal trauma, including:
 - a) the two organs most likely to be injured;
 - b) the classic history for a patient with a subcapsular hemorrhage of the spleen; and
 - c) proper management for a team member with minor blunt abdominal trauma.
- 12) Outline the wilderness management of penetrating abdominal trauma, including protruding abdominal contents.
- 13) Outline the wilderness management of a patient with a pelvic fracture.
- 14) Outline the problems associated with straddle injuries and their wilderness management.
- 15) Give two examples of common wilderness medical kit medications that should be avoided during pregnancy.
- 16) Outline vaginal delivery procedures in the wilderness.
- 17) Define "threatened abortion" and describe the management of a woman with a threatened abortion.
- 18) Describe the clinical signs and symptoms of lower back strains, evaluation of people with possible strains, and appropriate wilderness treatment.
- 19) Describe the mechanism of a herniated intervertebral disk, the signs and symptoms, and the wilderness management for a patient with a herniated disk.
- 20) Outline the examination and management of a team member who has developed back pain after lifting.
- 21) Define contusion, hematoma, and subungual hematoma, and outline the wilderness management of each.
- 22) Demonstrate the ability to:
 - a) trephine a subungual hematoma;
 - b) remove an impacted ring using a piece of string; and
 - c) clean a wound using proper irrigation.
- 23) Present arguments for and against closure of wounds in the wilderness, including:
 - a) scarring and limitation of function; and
 - b) the risk of anaerobic and other infections.
- 24) Describe the effect, on wound infection rates, of the time from injury until closure, and define:
 - a) primary intention;
 - b) primary closure;
 - c) secondary intention;
 - d) delayed closure; and
 - e) delayed primary closure.
- 25) Define "high-risk" and "low-risk wounds" for the wilderness context, give examples of each, and describe the wilderness management of each.



- 26) Describe the purpose and method of wound irrigation, and list fluids that are suitable for wound irrigation.
- 27) Describe proper procedures for caring for a wound in the wilderness, and outline factors that affect the likelihood of wound infection.
- 28) Outline the proper wilderness management of friction blisters.
- 29) Outline the proper wilderness management of impaled objects, including splinters.
- 30) Define "open fracture" in detail, and outline the proper management of open fractures in the wilderness.
- 31) Define: sprain, strain, contusion, fracture, dislocation, subluxation, and tendinitis.
- 32) Outline the principles of musculoskeletal examination of the extremities after trauma.
- 33) Outline standard musculoskeletal examinations of injured upper and lower extremities.
- 34) Outline the principles of management for traumatic extremity injuries including sprains, strains, and contusions.
- 35) Describe the causes, prevention, and treatment of tendinitis of the heel and of the wrist.
- 36) Outline the advantages, disadvantages, and risks of reducing dislocations in the wilderness, and list dislocations you should try to reduce when in the wilderness.
- 37) Outline the diagnosis and wilderness management of the following face and upper extremity injuries:
 - a) jaw dislocations;
 - b) finger and toe sprains, dislocations, and fractures, and "mallet finger" injuries;
 - c) hand fractures, including "boxer's fractures";
 - d) wrist fractures, including scaphoid fractures;
 - e) elbow injuries; and
 - f) clavicle fractures, AC joint sprains, rotator cuff tears, and shoulder dislocations.
- 38) Outline the diagnosis and wilderness management of the following lower extremity injuries:
 - a) hip dislocations;
 - b) knee injuries, including patellar dislocations and fractures, knee dislocations, and knee sprains and cartilage injuries;
 - c) ankle sprains and fractures, including
 - i) the use of the "Ottawa Rules" for ankle injuries; and
 - ii) taping for ankle sprains
 - d) foot sprains, dislocations, and fractures.

Educational Objectives: Thermal Regulation

- 1) Describe normal human temperature homeostasis (balance), including
 - a) the role of the hypothalamus,
 - b) defining "fever,"
 - c) defining basal metabolic rate, and
 - d) describing the relationship of body core and periphery to heat balance and core temperature.
- 2) Describe how the human body senses temperature stresses, including
 - a) the roles and relative balance of peripheral and central receptors,
 - b) the suggested role of central vs. peripheral clothing, and
 - c) arguments for and against giving hot drinks to a mildly hypothermic person.
- 3) Give wilderness rescue-related examples of the following physical modes of heat loss, the approximate amount of heat loss possible through each mode, and methods to counter such heat loss in a wilderness patient:
 - a) conduction,
 - b) convection,
 - c) radiation,
 - d) evaporation, and
 - e) respiration, including the relative effect of air humidification.
- 4) Explain the concept of the body as a heat reservoir, and relate daily food intake to the amount of heat that can be lost from the body before hypothermia sets in.
- 5) Describe how blood circulation is related to heat loss control; specifically,
 - a) local versus central control of blood vessel size,
 - b) shifts between deep and superficial veins and the end results of artery-vein countercurrent heat exchange,



- c) areas where the deep vein circulation is close to the surface, and
- d) consequences of vasoconstriction and vasodilation, including cold diuresis.
- 6) Explain the role of sweating in temperature balance, including
 - a) the major constituents of sweat and seasonal variation, and
 - b) the consequences of prolonged sweating.
- 7) Explain the role of shivering in temperature balance, including
 - a) consequences of prolonged shivering, including exhaustion and fatigue,
 - b) the nature of body energy reserves, including glycogen, fat, and protein,
 - c) the appropriateness of giving sugar to hypothermic patients, and
 - d) the nature of fatigue.
- 8) Identify the effects of the following on normal temperature homeostasis:
 - a) tobacco,
 - b) alcohol, and
 - c) aspirin, acetaminophen, and ibuprofen.

Educational Objectives: Heat-Related Disorders

- 1) Identify the cause of, seriousness of, and treatment for, heat edema.
- 2) Describe the diagnosis and management of syncope (fainting) or near-syncope in a hot environment. Specifically,
 - a) outline common and serious causes of syncope and clues to each;
 - b) describe the means of venous return from the legs when standing, and the consequences of being kept in an upright position after fainting;
 - c) describe the role of low blood sugar in syncope and near-syncope;
 - d) describe the mechanism of psychogenic shock;
 - e) describe the mechanisms of and treatment of heat syncope; and
 - f) outline a protocol for managing a team member with a syncopal or near-syncopal episode.
- 3) List the factors that supposedly distinguish heat cramps from "regular" cramps, describe the suspected cause of heat cramps, and describe proper treatment for heat cramps.
- 4) List the signs and symptoms of dehydration, identify a simple test for dehydration that may be used by field team members, describe the accuracy of thirst for indicating dehydration, and identify the effect of dehydration on core temperature.
- 5) Describe the causes, diagnosis, and wilderness treatment for heat illness. Specifically:
 - a) define and describe the clinical features of dehydration, heat illness, heat exhaustion, and heatstroke;
 - b) list predisposing factors for heat illness;
 - c) describe two distinct populations at risk for heat illness; and
 - d) describe the signs, complications, immediate treatment, and extended prehospital treatment of severe heat illness (heatstroke).
- 6) Explain important factors in the choice of oral fluid and electrolyte replacement, including
 - a) the best concentration of salt for oral rehydration fluids for hot weather use; and
 - b) the dangers of using salt tablets.

Educational Objectives: Burns and Lightning

- 1) Describe the immediate care of burns, and address the appropriateness of analgesia for burns in the wilderness.
- 2) Describe the extended care of sunburn.
- 3) Describe the extended care of small second and third degree burns in the wilderness, specifically:
 - a) cleaning and debriding;
 - b) the advantages and disadvantages of applying ointments or creams;
 - c) when to drain blisters; and
 - d) the role of prophylactic antibiotics in burn care.



- 4) Describe the causes of "burn shock" and ways to determine the fluid replacement needs for a burn patient.
- 5) Describe the possible complications of inhalation burns and their management in the wilderness, including:
 - a) upper airway burns; and
 - b) toxic inhalations.
- 6) Define "ileus," outline its diagnosis, and describe its impact on the burn patient in the wilderness, especially as regards oral fluid replacement.
- 7) Identify the need for tetanus immunization for burns.
- 8) Define the term "escharotomy" and describe two major indications for escharotomy in a burn patient.
- 9) List three different kinds of lightning strike injury pattern.
- 10) Identify the common neurological complications of a lightning strike.
- 11) Identify the pattern of cardiorespiratory arrest following a lightning strike.
- 12) Identify pertinent facets of burns associated with a lightning strike.
- 13) Define "vasospasm" and identify its importance in lightning strike victims.
- 14) Describe the damage that lightning may cause to muscles, and possible consequences.
- 15) Identify the mechanisms of fractures in lightning strike victims.
- 16) Explain the importance and effectiveness of cardio-pulmonary resuscitation in lightning strike victims.
- 17) List several clues that might indicate a lightning strike as the cause of unconsciousness of a patient found in the wilderness, and outline the management of a conscious victim of a lightning strike.
- 18) Give an explanation of triage for a large group of people struck by lightning.
- 19) Identify two important points in public education about lightning strikes.

Educational Objectives: Cold-Related Disorders

- 1) Define chilblain (pernio), describe the suspected cause, describe prevention, and outline the usual treatment.
- 2) Describe the differences between immersion foot (trench foot) and frostbite; outline the features of the three phases of immersion foot.
- 3) Describe the diagnosis, pathophysiology, causes and predisposing factors, prevention, immediate treatment, and extended management of frostnip and deep frostbite. Specifically, describe:
 - a) the diagnostic and treatment differences between frostnip and deep frostbite;
 - b) the difference between the initial and secondary phases;
 - c) the effects of trauma on frostbitten tissue;
 - d) predisposing factors, including the effects of common drugs including tobacco;
 - e) recommended rewarming methods and post-rewarming wilderness treatment; and
 - f) the basis for the adage "it's OK to walk on frostbitten feet," and its dangers.
- 4) List criteria for diagnosing hypothermia without a thermometer.
- 5) Define "incipient hypothermia" and its management.
- 6) List predisposing factors for accidental hypothermia.
- 7) Explain why it is important for hypothermic patients to avoid exertion, and why it is important not to transport hypothermic patients in the head-up position.
- 8) Define:
 - a) mild and deep hypothermia;
 - b) primary and secondary hypothermia; and
 - c) acute, subacute, and chronic hypothermia.
- 9) Describe the role of Basic Cardiac Life Support (CPR) in the severely hypothermic patient, including:
 - a) artificial respiration and oxygen;
 - b) the appropriate ways to check for cardiac function in a very cold patient;
 - c) when external cardiac compression is appropriate in a very cold patient and when it is not; and
 - d) the appropriate rate for CPR (external cardiac compression and artificial



- respiration) in a severely hypothermic patient.
- 10) Describe the appropriate use of Advanced Cardiac Life Support techniques in the severely hypothermic patient, including:
 - a) orotracheal intubation;
 - b) cautions for avoiding ventricular fibrillation, and management of ventricular fibrillation in a hypothermic patient;
 - c) the role of cardiac drugs in the severely hypothermic patient; and
 - d) the role of bretylium in the hypothermic patient.
 - 11) Discuss the role of cardiopulmonary bypass rewarming in decisions about where to transport nearly-dead hypothermic patients.
 - 12) Explain the importance of the concepts "adding heat" and "active insulation."
 - 13) Explain how the dictum "don't rewarm hypothermic patients in the field" may lead to poor patient care; explain why rapid rewarming is impossible in the wilderness, and why rescuers should add as much heat as possible to wilderness hypothermia patients.
 - 14) Assuming access to a bathtub and hot water, but no way to transport hypothermic patients to a hospital for rewarming (e.g., a disaster or being stranded in winter), discuss the reasons for selecting rapid or slow rewarming for different types of patient.
 - 15) Discuss the pros and cons of delaying the evacuation of a hypothermic patient for rewarming, or of delaying the evacuation for fluid replacement.
 - 16) Explain the importance of administering fluids, intravenous or oral, and the importance of food calories, for hypothermic patients.
 - 17) Define:
 - a) passive rewarming;
 - b) active rewarming;
 - c) surface rewarming;
 - d) core rewarming;
 - e) afterdrop; and
 - f) rewarming shock.
 - 18) Outline the advantages, disadvantages, proper technique, and appropriate uses of the following methods for adding heat to a hypothermic patient:
 - a) a warm sleeping bag;
 - b) warm inspired air or oxygen;
 - c) warm IV solutions;
 - d) heat packs;
 - e) hydraulic sarong; and
 - f) charcoal vest.
 - 19) Discuss the advantages, disadvantages, and technique of warm bath rewarming of hypothermic patients when unable to transport to a medical facility.

Educational Objectives: Altitude Illness

- 1) List common medical problems that may be exacerbated by altitude exposure.
- 2) List the symptoms of acute mountain sickness.
- 3) Describe major predisposing factors for altitude illness, and describe the effect, if any, of aerobic condition on the likelihood of acute mountain sickness.
- 4) List three measures to prevent altitude illness.
- 5) Describe the signs, symptoms, and natural history of:
 - a) mild and severe acute mountain sickness;
 - b) high altitude cerebral edema (HACE);
 - c) high altitude pulmonary edema (HAPE);
 - d) peripheral edema from altitude; and
 - e) high altitude retinal hemorrhage (HARH).
- 6) Outline the recommended treatment for mild acute mountain sickness, for mild and severe HACE, and for mild and severe HAPE.

Educational Objectives: Bites and Stings

- 1) Rank, in order of their threat to human life, the following envenomations:
 - a) Hymenoptera (bees and wasps);
 - b) pit vipers; and
 - c) coral snakes.



- 2) Outline standard wilderness treatment for bee, wasp, and ant stings, and indicate any clinically important differences between honeybee and wasp stings.
- 3) Describe the geographic distribution, mode of transmission, diagnostic features, and standard medical treatment for suspected Rocky Mountain Spotted Fever.
- 4) Outline the geographic distribution, mode of transmission, diagnostic features, and standard medical treatment for suspected Lyme Disease.
- 5) Describe the means of transmission of tularemia.
- 6) Describe the signs of, cause of, and treatment for tick paralysis.
- 7) Identify the common names of the two most dangerous types of venomous North American spiders; identify the signs and symptoms of their bites, and identify any specific wilderness treatment for their bites.
- 8) Describe the signs and symptoms of North American scorpion stings, and describe appropriate wilderness treatment.
- 9) For coral snakes, outline the geographic distribution, the hazard to humans, and the recommended wilderness treatment for their bites.
- 10) For North American pit vipers, describe:
 - a) a simple means to identify pit vipers;
 - b) the natural history of untreated pit viper bites in healthy people;
 - c) the risks and benefits of capturing or killing snakes to identify them;
 - d) signs and symptoms of an envenomated snake bite;
 - e) appropriate wilderness treatment of envenomated bites, including arguments against unproven or disproven treatments, including cold, lymph constrictors, cut-and-suck, and electric shock;
 - f) any snakebite circumstances that might make you consider an arterial tourniquet or the Australian pressure technique; and
 - g) the role of antivenin in the hospital and in the field.
- 11) Outline the wilderness management of suspected compartment syndrome and generalized bleeding when occurring as complications from snakebite.

Educational Objectives: Wilderness Medical Problems

- 1) Identify the causative organism, means of spread (including common vectors), clinical course, prevention, and treatment for the following:
 - a) rabies;*
 - b) hepatitis;
 - c) AIDS; and
 - d) tetanus.
- 2) Outline an approach to headache in the wilderness setting; give examples of episodes of headache:
 - a) that can be managed in the wilderness without aborting a task;
 - b) that are cause for ending a task and a nonurgent evacuation; and
 - c) that are cause for immediate evacuation.
- 3) Outline the diagnosis and wilderness treatment for:
 - a) foreign bodies in the eye, corneal abrasions, and snowblindness;
 - b) conjunctivitis;
 - c) sudden one-sided blindness;
 - d) subconjunctival hemorrhage;
 - e) retinal detachment;
 - f) epistaxis;
 - g) dental fractures and infections;
 - h) pharyngitis and peritonsillar abscess;
 - i) laryngitis; and
 - j) esophageal foreign body.
- 4) Outline the diagnosis, wilderness treatment, and effects on air travel or diving of:
 - a) otitis externa;
 - b) otitis media;
 - c) tympanic perforation;
 - d) viral upper respiratory infections;
 - e) sinusitis; and
 - f) allergic rhinitis.

*Rocky Mountain Spotted Fever, Lyme Disease, Tularemia, and Tick Paralysis are covered in the section on *Bites and Stings*.



- 5) Outline an approach to chest pain in the wilderness setting; give examples of episodes of chest pain:
 - a) that can be managed in the wilderness without aborting a task;
 - b) that are cause for ending a task and starting a non-urgent evacuation; and
 - c) that are cause for immediate evacuation.
- 6) Outline the diagnosis, causes, and wilderness treatment for:
 - a) bronchitis and pneumonia; and
 - b) asthma, COPD, and other bronchospastic disorders.
- 7) Define deep venous thrombosis and pulmonary embolism, and describe their risk factors, diagnosis, and prevention in team members and wilderness patients.
- 8) Outline the principles for management of hypertension in the wilderness.
- 9) Outline guidelines for cardiopulmonary resuscitation in the wilderness, including:
 - a) indications for CPR in the wilderness;
 - b) contraindications for CPR in the wilderness;
 - c) modifications of standard CPR procedures for wilderness patients, especially those who are profoundly hypothermic or victims of near-drowning.
- 10) Describe how to identify an acute abdomen, and identify appropriate management in the wilderness.
- 11) Describe how to manage motion sickness, both with and without medications.
- 12) Describe the signs and symptoms and treatment for gastritis, esophageal reflux, peptic ulcer disease, and constipation.
- 13) Describe the causes and wilderness management of acute gastroenteritis, including the advantages and disadvantages of anti-motility drugs (e.g., Imodium).
- 14) Describe the difference between hemorrhoidal and other types of GI bleeding, and the wilderness management of each.
- 15) Outline the signs and symptoms, wilderness treatment, and disposition of team members with cystitis, pyelonephritis, and urinary retention.
- 16) Describe the wilderness management of a team member with nontraumatic testicular pain.
- 17) Define the following:
 - a) menses;
 - b) dysmenorrhea;
 - c) menorrhagia; and
 - d) metrorrhagia.
- 18) Identify the signs, symptoms, and wilderness treatment for impacted renal stones.
- 19) Identify the differences in management of stroke and seizure between "the street" and the wilderness.
- 20) Outline the signs and symptoms, prevention, and treatment for plant contact dermatitis, fungal skin infections, and stinging nettle stings.
- 21) Describe the signs and symptoms and wilderness management of:
 - a) impetigo;
 - b) cellulitis;
 - c) ascending lymphangitis; and
 - d) abscesses.
- 22) Outline the differences between "street" and wilderness treatment of those with diabetic illness.
- 23) Describe the range of generalized allergic reactions, and the wilderness management of each.

Educational Objectives: Wilderness Trauma

- 1) Describe the differences between urban and wilderness trauma care philosophy due to the effects of time and distance.
- 2) Describe the concepts of "the Golden Hour" and "the Golden Day" as they apply to trauma care.
- 3) Outline epidemiologic differences between urban and wilderness trauma, and identify medical problems that are commonly found in search and rescue patients.
- 4) Describe how to evaluate a wilderness patient for shock and for state of hydration.
- 5) Define "fluid challenge" and explain its importance in assessment and treatment of shock.



- 6) Define each of the following terms and explain its importance for choosing fluids for wilderness patients:
 - a) crystalloid;
 - b) colloid; and
 - c) blood.
- 7) Outline the advantages and disadvantages of each of the following resuscitation fluids for wilderness patients:
 - a) D5W;
 - b) NS or LR;
 - c) D5NS or D5LR;
 - d) hypertonic saline/dextran; and
 - e) blood.
- 8) Outline the role of tranexamic acid (TXA) in massive trauma.
- 9) Define:
 - a) blood type; and
 - b) transfusion reaction.
- 10) Outline management of a patient who is suffering a transfusion reaction.
- 11) Describe the proper use of pressors in wilderness rescue.
- 12) Outline a standard differential diagnosis of decreased urine output in a patient with a Foley urinary catheter.
- 13) Define acute renal failure.
- 14) Define each of the following complications of crush injury or burns, and describe management in the wilderness:
 - a) hyperkalemia; and
 - b) myoglobinuria.
- 15) Define glycogen depletion, outline the reasons for assuming that all wilderness patients are glycogen depleted, and outline wilderness management for patients with glycogen depletion.
- 16) Define compartment syndrome, identify where it most commonly occurs, outline its diagnosis and natural history, and identify the procedure needed for definitive treatment.
- 17) Define ARDS and describe its management in the wilderness.
- 18) Identify three physical exam findings found in fluid overload.
- 19) Outline appropriate decision-making for a patient with both multiple system trauma and severe hypothermia.
- 20) Demonstrate the ability to conduct an appropriate initial physical exam on a wilderness multiple-trauma patient.

Educational Objectives: Pharmacology

- 1) Define pharmacology, and describe the dangers of self-medication.
- 2) Explain the principles of drug administration, including:
 - a) eight routes of drug administration;
 - b) how two drugs may interact to alter the response of either drug; and
 - c) the effects of young and old age, pregnancy, and existing diseases and conditions.
- 3) Choose the correct definition for the following terms:
 - a) indication;
 - b) contraindication;
 - c) side effect;
 - d) toxicity;
 - e) allergic reaction; and
 - f) abuse.
- 4) Describe the effect of individual variation on drug dosage, and define "loading dose."
- 5) Outline the considerations that go into selecting drugs for a personal wilderness medical kit.
- 6) Given a list of the following medications, identify important contraindications and side effects:
 - a) common non-prescription and prescription medications carried by backpackers and other outdoors enthusiasts; and
 - b) medications commonly carried in wilderness search and rescue team advanced medical kits.
- 7) Given a list of clinical situations described in the section on *Wilderness Medical Problems*, and a list of standard oral medications commonly carried in a personal or team wilderness medical kit, choose an appropriate drug, drug dosage, and route of administration.



Educational Objectives: Immobilization, Packaging, and Transportation of Wilderness Patients

- 1) Demonstrate the ability to apply different extremity immobilization materials in an appropriate manner, and to evaluate the adequacy of immobilization effected.
- 2) Demonstrate the ability to effectively and efficiently apply the following immobilization devices:
 - a) "fiberglass" and similar splinting (casting) material for extremities;
 - b) flexible aluminum/foam splints (e.g., SamSplints_) for extremities; and
 - c) finger and toe taping.
- 3) Describe good ways to implement the following immobilization techniques:
 - a) improvised splinting using foam pads;
 - b) improvised splinting using sticks and clothing; and
 - c) improvised splinting using duct tape and other body parts.
- 4) Describe the advantages and disadvantages of the following methods for splinting femur fractures for wilderness evacuation, including:
 - a) Jones' dressing (bulky dressing and splint);
 - b) simple splinting;
 - c) traction splint with a commercial or improvised ankle hitch, or with skin traction using moleskin (or duct tape) and benzoin;
 - d) improvised traction splinting in a litter using the litter as a splint.
- 5) Outline the advantages and disadvantages of the following methods for spinal immobilization:
 - a) cervical collars, both commercial and improvised with SamSplints, foam sleeping pads, pack hipbelts or similar foam pads;
 - b) padding inside a litter and duct tape;
 - c) helmet and duct tape;
 - d) ThermoRest or similar foam pads for lumbar immobilization;
 - e) full-body vacuum splints;
 - f) unpadded backboards;
 - g) wire basket or plastic basket litters without backboards;
 - h) cervical immobilization devices (e.g., CID); and
 - i) short-board extrication devices (e.g., KED, Sked-Ked, XP-1).
- 6) Demonstrate an acceptable method for packaging a minimally-injured patient for a lengthy wilderness evacuation.
- 7) Outline methods for packaging patients in a basket ("Stokes") litter given the following problems:
 - a) pelvis fracture;
 - b) leg fractures;
 - c) unilateral or bilateral chest trauma (e.g., rib fracture, pulmonary contusion);
 - d) unilateral pneumonia;
 - e) decreased level of consciousness, with and without trauma;
 - f) hypothermia/cold exposure;
 - g) diarrhea/vomiting; and
 - h) oozing wounds.
- 8) Discuss methods to deal with the following packaging problems:
 - a) patient becomes incontinent of urine/feces;
 - b) patient complains of pain in pressure areas; and
 - c) IV line comes out.
- 9) Outline the advantages, disadvantages, specific patient-care considerations, and general packaging considerations for the following litters:
 - a) improvised litters and backboards (outhouse doors, packframes, skis and ski poles, pole-and-parkas, pole-and-blankets, rope stretcher);
 - b) wire-basket and plastic-basket ("Stokes") litters;
 - c) "Army" stretchers;
 - d) toboggans; and
 - e) flexible plastic litters (e.g., Sked).
- 10) Outline the advantages, disadvantages, and specific patient-care considerations for the following evacuation methods:
 - a) vertical and near-vertical lowering, raising, and high-line traverses;
 - b) hand-carried litter evacuations;
 - c) wheeled litters;
 - d) drags and carries; and
 - e) improvised carries (pack-and-pole, strap and rope-coil "piggyback" carries, "tragsitz" vertical carries).
- 11) Given a choice of several evacuation routes with different times, and different special problems



(e.g., necessity for a vertical head-up lower or raise), give medical recommendations for choice of evacuation route for the following patients:

- a) multiple trauma with ongoing fluid resuscitation;
 - b) uncomplicated mild (>90.5°F) subacute hypothermia;
 - c) isolated head injury with decreasing level of consciousness;
 - d) uncomplicated cervical spine injury; and
 - e) acute myocardial infarction.
- 12) Outline the advantages, disadvantages, and specific patient-care considerations for the following transportation methods:
- a) helicopter:
 - b) ground-loading,
 - c) long-line "pick-off" or "pull-out",
 - d) hoist ("horse collar," jungle/forest penetrator, and litter;
 - e) watercraft:
 - i) rafts,
 - ii) canoes and kayaks, and
 - iii) larger rescue boats;
 - f) motor vehicles:
 - i) All-Terrain Vehicles (ATVs),
 - ii) motorcycles and trail bikes, and
 - iii) snowmobiles; and
 - g) pack animals.

Educational Objectives: Disasters

- 1) Define: multi-casualty incident; single-casualty/multiple resource incident; and catastrophic disaster.
- 2) Cite the major difference between a multi-casualty incident and a catastrophic disaster.
- 3) List three similarities between emergency medical services for wilderness rescues and for catastrophic disasters.
- 4) Outline principles of triage for a large multi-casualty incident in the wilderness.
- 5) Estimate the likely number surviving victims found within the first 24 hours after a catastrophic disaster compared with the number found thereafter.
- 6) Describe the effect of the first 24 hours of a large catastrophic disaster on local government, and outline an approach to organizing response teams in such a situation.
- 7) List logistical support services that are usually lacking in the first 24 hours of a catastrophic disaster.
- 8) Explain how simple medical and surgical problems can cause death or severe injury in the first 24 hours after a catastrophic disaster; indicate four important simple interventions that a WEMT can provide for such patients.
- 9) Identify appropriate strategies for dealing with large numbers of psychologically injured people.
- 10) Give four specific examples of how you can use "Murphy's Laws" to help analyze disaster plans.
- 11) Identify specific major hazards and medical conditions associated with:
 - a) volcanic eruptions;
 - b) avalanches, landslides, and mudslides;
 - c) large storms;
 - d) wildfires; and
 - e) floods.
- 12) Describe important public-health and sanitation during the first days of a catastrophe, including:
 - a) food preparation and food handlers;
 - b) latrine siting; and
 - c) dealing with corpses.
- 13) Identify specific major hazards of travel to areas outside North America, and appropriate countermeasures, including:
 - a) sociocultural and political hazards;
 - b) language differences,
 - c) major cultural taboos and other important differences,
 - d) political instability, and
 - e) coordination with other foreign (non-local) personnel;
 - f) animal hazards;
 - g) major poisonous reptiles,
 - h) major poisonous insects, and
 - i) hazardous large animals;
 - j) plant hazards; and
 - k) infectious diseases:
 - l) malaria,
 - m) cholera, and
 - n) tuberculosis.



14) Identify appropriate roles for a WEMT in the

early stages of a catastrophic disaster.

Educational Objectives: Advanced Skills

- 1) Identify ways to help verify endotracheal tube placement, including:[†]
 - a) lung and abdominal auscultation;
 - b) checking tube length at the teeth or gums;
 - c) end-tidal CO₂ monitors; and
 - d) syringe aspiration.
- 2) Demonstrate proper technique to pull back an endotracheal tube that may have become lodged in a mainstem bronchus, including:
 - a) deflating the balloon;
 - b) repositioning the tube;
 - c) re-inflating the tube; and
 - d) securing the endotracheal tube again.
- 3) Identify the roles and usefulness of intravenous therapy, including:
 - a) hydration;
 - b) electrolyte supplementation;
 - c) drug administration;
 - d) blood administration; and
 - e) obtaining blood samples.
- 4) Identify dangers of IV therapy for patient and EMT, including:
 - a) catheter shear;
 - b) air embolism;
 - c) infection;
 - d) local irritation (phlebitis);
 - e) clotting (thrombophlebitis); and
 - f) needlesticks and other blood exposure.
- 5) Identify equipment used for IV therapy and its function, including:
 - a) peripheral over-the-needle catheters;
 - b) central through-the-needle catheters;
 - c) central over-the-wire ("Seldinger") catheter kits;
 - d) macrodrip and microdrip tubing;
 - e) blood warming tubing extension sets;
 - f) three-way stopcocks; and
 - g) solution bags.
- 6) Identify common sites for peripheral IVs, including:
 - a) dorsal hand veins;
 - b) veins of the forearm;
 - c) veins of the antecubital fossa;
 - d) saphenous vein of medial ankle; and
 - e) external jugular vein.
- 7) Identify common sites for central IVs, including:
 - a) internal jugular vein;
 - b) subclavian vein; and
 - c) femoral vein.
- 8) Identify proper technique for starting a peripheral IV, including:
 - a) site choice and preparation;
 - b) venipuncture and threading the catheter;
 - c) securing intravenous catheters for the wilderness context;
 - d) aseptic technique, site rotation, and site care.
- 9) Outline the Seldinger Wire Technique for central lines, and describe how to assist in such a procedure.
- 10) Demonstrate how to assess the patency of an intravenous catheter, including:
 - a) inspection for swelling;
 - b) checking for backflow of blood; and
 - c) observing continued flow of intravenous solution.
- 11) Demonstrate proper technique for discontinuing an intravenous infusion when the catheter has become dislodged or is infiltrating, including:
 - a) proper care to prevent contamination with blood;
 - b) proper disposal of contaminated materials in the backcountry setting; and
 - c) shutting off the intravenous infusion and pulling the catheter.
- 12) Demonstrate how to adapt intravenous infusions for the wilderness environment, including:
 - a) how to attach heat packs and insulation to provide a warm infusion;
 - b) how to secure intravenous lines against inadvertent dislodging;
 - c) how to use a blood pressure cuff as an infusion pump;

[†] These skills allow a Wilderness EMT-Basic to assist more advanced Field Providers with Advanced Life Support procedures.



- d) how to place an intravenous bag under the patient and use the patient's own weight for pressure infusion, including clearing the line of air;
 - e) how to carry an intravenous bag on a single-length runner in the armpit, and run the intravenous line down one's parka sleeve to protect from cold.
- 13) For nasogastric intubation:
- a) discuss indications, contraindications, limitations, and the role of orogastric intubation as an alternative, as applied to the wilderness context;
 - b) describe equipment used for gastric intubation in the wilderness context, and modifications needed for wilderness use;
 - c) describe patient positioning and the general technique of gastric intubation;
 - d) discuss securing gastric tubes and site care;
 - e) discuss considerations of clogging when administering food via a gastric tube; and
 - f) the method to check for residual volumes and their significance.
- 14) For urinary catheterization:
- a) discuss indications and contraindications;
 - b) describe the standard equipment used;
- c) describe how to choose an appropriate size catheter;
 - d) explain the need for aseptic technique;
 - e) describe standard site preparation;
 - f) describe the technique for catheter insertion;
 - g) describe securing the catheter;
 - h) discuss site maintenance and urine output monitoring for litter patients;
 - i) discuss the role of urinary catheterization in patients with suspected pelvis fracture or genital trauma; and
 - j) discuss the use of a "Texas" (condom) catheter as an alternative to standard urinary catheterization, and its advantages and disadvantages.
- 15) Describe the purpose, indications, general technique, complications, and equipment needed for:
- a) escharotomy;
 - b) fasciotomy;
 - c) surgical cricothyroid membrane airways;
 - d) needle thoracentesis; and
 - e) chest tubes, including the use of flutter ("Heimlich") valves in the wilderness context.

Educational Objectives: Principles of General Medicine

- 1) Briefly define the following terms, and give an example of a disease caused by each:
 - a) parasites;
 - b) bacteria;
 - c) aerobic bacteria;
 - d) anaerobic bacteria;
 - e) gram negative bacteria;
 - f) gram positive bacteria;
 - g) viruses;
 - h) Rickettsiae; and
 - i) fungi.
- 2) Define the following:
 - a) "normal flora";
 - b) white blood cells;
 - c) vector;
 - d) "the Four Fs": Flies, Fecal contamination, Food, and Fomites;
 - e) antibiotics;
 - f) immunizations.
- 3) Identify four factors that make a wound likely to become infected.
- 4) Identify major potential sources of bacterial contamination of wounds that a WEMT will care for.
- 5) Briefly explain the appropriate use of antiseptics in wound care.
- 6) Define atelectasis, and describe means to prevent it in an immobilized patient.
- 7) Identify three major criteria for giving oral fluids to a wilderness patient.
- 8) Identify four factors that increase daily fluid needs over baseline.
- 9) Identify the usefulness and limitations of providing food calories by adding ampules of dextrose solution to the IV bags of wilderness patients.
- 10) Define decubiti and describe means to prevent their development in litter patients.



- 11) Describe how pain influences and is influenced by the psychological state of an individual.
- 12) Identify methods for dealing with a wilderness patient's pain without medications.
- 13) Identify three signs of psychotic reasoning, and identify three important principles in dealing with a patient with psychotic reasoning.
- 14) Explain the use of intellectualization as a psychological defense by experienced outdoors enthusiasts who are injured, and how a Wilderness EMT can use this to improve interactions with such a patient.
- 15) Describe the role of physical conditioning in preventing illness and injury.

Educational Objectives: Stress Management

- 1) Describe the critical incident stress concept and its long-term consequences, and define:
 - a) Critical Incident Stress Debriefing, and
 - b) Critical Incident Stress Management.
- 2) Describe the controversy over the efficacy of formal Critical Incident Stress Debriefing sessions, and provide an overview of the scientific literature and recommendations from EMS organizations as regards formal CISD sessions
- 3) Define three major types of stress reactions.
- 4) Give examples of the physical, emotional, cognitive, and behavioral effects of immediate stress reactions.
- 5) Describe the signs and symptoms of delayed stress reactions.
- 6) Describe six major psychological characteristics of emergency services workers.
- 7) Describe appropriate stress management for WEMTs and others involved in critical incidents. Specifically, discuss the effects of
 - a) shift length,
 - b) briefing about expected sights or smells,
 - c) body part recovery,
 - d) food,
 - e) soap and water for hand-washing,
 - f) caffeine and tobacco use,
 - g) relief of those with behavioral clues suggesting the beginning of a stress reaction,
 - h) post-operation debriefings, and
 - i) criteria for instituting mandatory referring team members for psychological evaluation prior to return to operational status.
- 8) Describe stress factors that are common in wilderness search and rescue operations, including
 - a) the experience and "hardening" of wilderness search and rescue personnel,
 - b) the role of cumulative stress in wilderness search and rescue,
 - c) the constant nature of environmental stress for wilderness search and rescue personnel, and
 - d) the need for CISM workers, especially mental health professionals, to use restraint in "pulling" personnel, lest this cause additional stress.
- 9) Outline the principles of on-scene psychotherapeutic "first aid" during a wilderness search and rescue operation. Specifically, discuss:
 - a) rest breaks,
 - b) behavioral clues to an immediate stress reaction,
 - c) sensory isolation,
 - d) the role of group vs. one-on-one debriefing for on-scene use,
 - e) techniques for starting a debriefing session, and
 - f) methods for dealing with a person who "breaks down" during debriefing.
- 10) Describe stress management techniques that can be used for wilderness and disaster patients. Specifically,
 - a) describe the applicability of these stress management methods (ones designed for emergency services workers) to a victim of a wilderness or other disaster;
 - b) describe the three most prevalent psychological states seen in the survivors of a disaster;
 - c) outline a screening mental status exam to be used for classifying disaster survivors;
 - d) outline the criteria for classifying a survivor as having psychosis; and
 - e) outline a management plan for shocked and hysterical disaster survivors.



Educational Objectives: Veterinary Emergencies

- 1) Outline major principles of veterinary medicine relevant to treating dogs and horses, including:
 - a) differences in species anatomy compared to human anatomy;
 - b) general care of ill or injured dogs or horses;
 - c) approaching, handling, and restraining dogs and horses; and
 - d) euthanasia.
- 2) Outline differences between human emergency medicine and dog or horse emergency medicine, specifically including differences from human medicine in:
 - a) assessment, Basic Life Support, and Advanced Life Support procedures;
 - b) recognizing and managing surgical problems;
 - c) trauma to head, neck, chest, and abdomen;
 - d) wound management;
 - e) soft tissue injuries; and
 - f) fractures and dislocations.
 - g) dealing with heat, cold, and altitude, specifically:
 - h) thermal regulation;
 - i) dehydration and fluid repletion;
 - j) heat exposure and heat illness;
 - k) cold exposure and frostbite;
 - l) hypothermia; and
 - m) altitude exposure.
 - n) managing burns and lightning injury;
 - o) managing bites and stings;
 - p) recognizing and managing medical problems, including:
 - q) eye problems;
 - r) ENT problems;
 - s) infectious diseases; and
 - t) skin problems;
 - u) managing dogs or horses with major trauma;
 - v) immobilization, packaging, and transportation of injured or ill dogs or horses;
 - w) applying the following advanced skills to dogs or horses:
 - x) intravenous therapy; and
 - y) endotracheal intubation;
 - z) administering human drugs to dogs or horses;
 - aa) recognizing and managing grief reactions and stress reactions of dogs, horses, or their human companions to injury or death of the other.
- 3) Identify specific problems common to dogs, including:
 - a) exposure to hazardous animals (e.g., skunks, porcupines);
 - b) exposure to hazardous materials (e.g., ethylene glycol poisoning, nettle stings, plant contact dermatitis)
- 4) Identify specific problems common to horses, including:
 - a) colic and grain overload;
 - b) lameness, including laminitis;
 - c) exercise-related problems, including:
 - d) exhausted horse syndrome;
 - e) synchronous diaphragmatic flutter ("thumps") and
 - f) muscle problems, including tying-up.



Appendix C: Wilderness Command Physician Educational Standards

Key code for objectives:

C - Cognitive

- C-1 cognitive knowledge
- C-2 cognitive application
- C-3 cognitive problem-solving

P - Psychomotor

- P-1 psychomotor knowledge
- P-2 psychomotor application
- P-3 psychomotor problem-solving

A - Affective

- A-1 affective knowledge
- A-2 affective application
- A-3 affective problem-solving

Educational Objectives: Roles and Responsibilities/Medicolegal

- 1) C-2 Discuss the implications of the following major differences between "street" and wilderness on-line/direct medical command/control:
 - a) length of time for patient care,
 - b) evacuation route and hastiness, and
 - c) the environment.
- 2) C-1 Define the terms Wilderness Command Physician and Wilderness Emergency Medical Technician (WEMT), and explain the roles of the WCP and the roles of the WEMT in the AMRG Wilderness Emergency Medical Services (WEMS) System.
- 3) C-1 Define the following terms:
 - a) Appalachian Search and Rescue Conference,
 - b) ASTM,
 - c) Atlantic EMS Council,
 - d) delegated practice,
 - e) interstate EMS reciprocity agreements.
 - f) medical control across state lines,
 - g) Medical Practice Acts,
 - h) NAEMSP Clinical Guidelines for Delayed/Prolonged Transport,
 - i) NASAR,
 - j) National Association of EMS Physicians,
 - k) scope of EMS practice,
 - l) SOLO,
 - m) Wilderness EMS Institute,
 - n) Wilderness EMS,
 - o) Wilderness Medical Society Clinical Guidelines,
 - p) Wilderness Medical Society,
 - q) wilderness,
 - r) WMA,
 - s) WMI, and
 - t) WMS Wilderness Prehospital Emergency Care Curriculum.
- 4) C-3 Describe the moral, ethical and legal implications of the doctrine of abandonment and level of care as regards extended wilderness rescues.
- 5) C-1 Outline the current general state of authorization for a WEMT's wilderness care in U.S. states and Canadian provinces.
- 6) C-1 Describe the potential role of WEMT training for catastrophic disasters.
- 7) C-1 Describe the legal status of the WCP when a WEMT is caring for an injured search and rescue dog or horse.
- 8) C-3 Discuss the wilderness EMS management implications of the following political considerations:
 - a) scope of practice,
 - b) EMS agency "turf,"
 - c) EMS command/control hospital "turf,"



- d) Wilderness EMT training provider "turf," and
- e) the advantages and disadvantages of different models for delivering wilderness EMS:
 - i) through an existing ambulance EMS agency;
 - ii) through an existing SAR agency; and
 - iii) through a new system outside the existing EMS or SAR systems.

Educational Objectives: Medical Direction/Medical Control

- 1) C-1 Describe the communications parameters which a WCP should assure before attempting to direct patient-specific medical care by a WEMT, referencing the ASRC PA medical communications policy.
- 2) C-3 Explain the moral, ethical, and legal implications of wilderness emergency and primary medical care given by WEMTs with and without physician direction.
- 3) P-2 Demonstrate the ability to employ standard search and rescue radio usage, prowords, and patient Status Codes to communicate with WEMTs.
- 4) P-3 Demonstrate the ability to constructively critique WEMTs in the use of the standard ASRC PA radio reporting format.
- 5) C-2 Describe the role, importance and frequency of various vital signs for wilderness search and rescue, and the patient-care implications of vital sign frequency.
- 6) C-3 Describe various patient monitoring equipment in terms of weight-to-usefulness ratio for wilderness search and rescue.
- 7) C-2 Describe the medical and psychological effects of being lost or stranded, and their implications for a WEMT's patient care.
- 8) P-3 Demonstrate the ability to constructively critique a WEMT's clinical documentation.

Educational Objectives: The Wilderness Environment

- 1) C-1 Explain, in simple terms, four characteristics that define the wilderness context (given in the Wilderness EMS Institute Operations Policy Manual),
- 2) A-2 Appreciate how the wilderness environment impacts Wilderness Emergency Medical Technicians (WEMTs) and wilderness patients.
- 3) A-3 Experience and appreciate the stresses and limitations of emergency care in realistic field situations, and their implications for patient care and WEMT health and safety.
- 4) C-1 List specific environmental and infectious diseases to which WEMTs may be prone.

Educational Objectives: Wilderness EMT Curriculum

- 1) C-2 Describe the level of training and ability of WEMTs to perform a directed history and physical exam.
- 2) C-2 Outline the diseases, injuries, treatments and drugs that are presented in standard Wilderness EMT training, and the depth in which these are presented.
- 3) C-2 Outline the major differences between WEMSI and other WEMT curricula.
- 4) C-2 Outline the clinical training that is expected of WEMSI-trained WEMTs.

Educational Objectives: Wilderness EMS Standard of Care



- 1) C-1 Identify the major documents, textbooks and periodicals that set the current clinical standard of care for Wilderness EMS.
- 2) C-3 Make analogies between the various components of a wilderness search and rescue team and the functions of an ambulance.
- 3) C-2 For each of the following situations, briefly explain the clinical standard of care for "the street," and the wilderness context if different from that on the street, and the clinical justification for any differences.
 - a) water purification,
 - b) major and minor head injury,
 - c) blunt chest trauma,
 - d) evisceration,
 - e) wounds (including the role of tetanus immunization status),
 - f) impaled objects,
 - g) potential cervical spine injury,
 - h) dislocations,
 - i) femur fractures,
 - j) open fractures,
 - k) back injury from lifting,
 - l) extremity fractures and sprains,
 - m) heatstroke and heat exhaustion,
 - n) syncope,
 - o) burns,
 - p) an ileus,
 - q) frostbite,
 - r) hypothermia, including BCLS, ACLS, intubation, transport method, medications, and categorization for transport to a facility with full-bypass rewarming,
 - s) field rewarming methods for hypothermia,
 - t) altitude illness,
 - u) snakebite,
 - v) recluse spider bites,
 - w) immobilization and packaging,
 - x) headache,
 - y) eye pain,
 - z) sore throat, earache, sinusitis,
 - aa) hypertension,
 - bb) chest pain,
 - cc) GI reflux,
 - dd) motion sickness,
 - ee) gastroenteritis,
 - ff) UTIs,
 - gg) vaginitis, dysmenorrhea, metrorrhagia,
 - hh) stroke and seizure,
 - ii) testicular pain,
 - jj) skin rashes and infections,
 - kk) abdominal pain,
 - ll) diabetic emergencies,
 - mm) compartment syndrome,
 - nn) myoglobinuria,
 - oo) simple entrapment,
 - pp) crush entrapment,
 - qq) painful injuries,
 - rr) hunger,
 - ss) thirst,
 - tt) waste elimination, and
 - uu) stress reactions.

Educational Objectives: Wilderness EMS Pharmacology

- 1) C-1 Given a list of oral medications, identify those with which AMRG WEMTs and Wilderness Medics should be generally familiar.
- 2) C-1 Outline the design principles for the AMRG standard personal and team wilderness medical kits.