



Wilderness EMS Institute

Wilderness EMS

Protocols

for

- Appalachian Search and Rescue Conference (Pennsylvania)
- Eastern Region, National Cave Rescue Commission (all states)

comments and suggestions to:
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Available online at <http://www.wemsi.org>.

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Authority

Appalachian Search and Rescue Conference Medical Director for Pennsylvania Dr. Keith Conover assigned oversight for all medical care rendered by the ASRC in Pennsylvania to WEMSI. Medical Director for Eastern Region, National Cave Rescue Commission Dr. Sam Chewning assigned oversight for all medical care rendered in multiple states to WEMSI. Both organizations recognized as "special response" EMS agencies in Pennsylvania's EMS Region (SR003 and SR004) as is WEMSI (SR005); ER-NCRC personnel, and WEMSI as its medical control source, provide medical care outside Pennsylvania on a mutual aid request basis. Additional details in WEMSI Operations Policy Manual at www.wemsi.org.

These protocols shall have the same force as a physician's order. The only acceptable reasons to deviate from these protocols, by physician's order, are:

1. an accredited WEMSI Wilderness Command Physician has established Medical Communications, as defined in the WEMSI Operations Policy Manual, with those at the patient's side, or
2. a licensed physician is at the patient's side and has accepted full responsibility for the patient's care.

Scope and Applicability

These protocols shall be followed whenever:

1. a patient of any state or country being cared for by ER-NCRC personnel, OR a patient in Pennsylvania is being cared for by Appalachian Search and Rescue Conference personnel, OR a patient is being cared for by personnel of another wilderness EMS agency for which WEMSI has agreed to provide medical direction; AND
2. the patient is in a cave, or backcountry area, or disaster area, or has not yet reached a ground or air ambulance.

Based on agreements between WEMSI and SAR organizations for which WEMSI provides medical control and oversight, these protocols apply to all SAR team personnel providing medical care, whether or not the SAR team personnel are trained or accredited by WEMSI.

If a patient is being cared for by both WEMSI personnel and local EMS personnel, these protocols take precedence over local EMS protocols, unless those local EMS protocols have specific provisions for care of wilderness/backcountry patients.

Once the patient reaches a ground or air ambulance, however, the responsibility of WEMSI personnel comes to an end, and the local EMS agency protocols and standing orders take over. The only exception is due to WEMSI personnel's specialized training in managing certain problem such as hypothermia. If the patient has a problem about which WEMSI personnel have special training, then the highest-trained WEMSI medical person will ride to the hospital with the patient. (To do otherwise would be abandonment: allowing someone with less training to take over patient care.) If, during transport, WEMSI personnel find a significant conflict between their protocols or standing orders and those of the transporting EMS agency, they should attempt to contact their own Wilderness Command Physician and ask the Wilderness Command Physician to speak to the local command physician. If they cannot reach a Wilderness Command Physician, they should contact the local command physician directly themselves, explain that the specific protocols and standing orders related to wilderness patients that conflict with local

ones, and request a decision from the local command physician.

These protocols apply to patients which WEMSI personnel are rescuing, and to SAR team members who become injured or ill in the backcountry or underground.

Unless there are specific notations about different skill levels, protocols apply to personnel of all skill levels (First Aid/First Responder, Wilderness EMT, Wilderness Paramedic, etc.) The generic term "medic" used herein refers to WEMSI medical personnel of any level of training. "Wilderness Medic" refers to those accredited by WEMSI to operate under WEMSI Standing Orders (see below). Specific training levels noted in these protocols include "Wilderness EMT" and "WEMSI Wilderness EMT." "Wilderness EMT" includes all "standard" WEMT classes that generally follow the Wilderness Medical Society "WPHEC" (Wilderness PreHospital Emergency Care) Curriculum: WEMSI, WMA, NASAR, SOLO, WMI, and WPT certification. "WEMSI Wilderness EMT" refers specifically to the WEMSI WEMT certification, which goes beyond these to include a rigorous amount of "advanced" techniques and medications.

Protocols vs. Standing Orders

A *Protocol* is a general way to deal with a specific problem. It generally does not require a physician's order (though these specific protocols should be taken as orders of the WEMSI Medical Director).

A *standing order* is a specific physician's order to be carried out when not in direct contact with a physician.

General Protocols

A more detailed version of these protocols, designed for reading rather than carrying, is available at www.wemsi.org.

Previous Training; Judgment

Personnel providing medical care should follow their first aid or emergency medical training except in those specific situations covered in these protocols. In situations not covered by these protocols or by previous training, personnel must use their best judgment.

Medical Command/Control

Personnel caring for a patient or team member with any significant injury or illness should always attempt to contact a Wilderness Command Physician as provided for in the WEMSI Operations Policy Manual; easiest is to call the U.S. tollfree number 1-888-866-3729 or the non-tollfree number 1-412-232-5678.

Choice of Medic; Rotation of Medics; Reports

The *medic* can be a physician, nurse, paramedic, EMT-Basic, First Responder, or simply a first aider. All communication with the patient should be by the medic.

In general, the person with the best medical qualifications should be the medic. However, if this person is needed for other vital functions; the best alternate should be medic.

Medics should hand over care to a more experienced medical person when available, or for needed rest.

When a medic turns over care of a patient during a rescue, the medic *must* make and turn over a written report to the new medic, unless taking the time for a written report would place the medic or patient at risk, with:

1. results of the initial examination of the patient, including all injury or illness detected,
2. any care rendered so far, vital signs, and
3. medical plans for the remainder of the rescue.

Obvious exceptions would be if the original medic were exhausted, hypothermic, or seriously injured.

Primary and Secondary Surveys; Vital Signs

Primary Survey, Bleeding Control

- Firm *localized pressure* over bleeding vessels with gloved finger, covered with single gauze pad to make it less slippery, full ten minutes.
- Release pressure; if starts bleeding again, apply direct pressure for fifteen minutes. If release pressure or slip off blood vessel, start again for full count.
- Once bleeding controlled, apply pressure dressing with wad of small gauze pads under it to prevent from bleeding.



- If rebleeds, remove blood-soaked dressings, identify bleeding vessels, and apply pressure as above.
- If can't identify the bleeding vessels, use temporary tourniquet to identify the bleeding sites, apply direct pressure with gloved finger/gauze pad, and release tourniquet. If you put a tourniquet on someone's limb, the limb (won't become severely painful for about half an hour, and no irreversible damage for another fifteen minutes).
- Only apply tourniquet by a specific doctor's order or standing orders from your medical director.
- Tourniquet must be *wide* and *tight*; BP cuff ideal, clamp the BP cuff tubes after inflating, check regularly for leaking.

Thrombin topical powder, GelFoam® and oxidized regenerated cellulose (Surgicel®) acceptable for bleeding control but seldom needed.

Extent of Secondary Survey

- Extent of survey up to medic.
- Complete primary and secondary survey is not needed for team members with minor injury.
- Complete survey needed for severely injured patients.

In almost all rescue situations the medic should take off previously applied splints and examine the patient completely prior to evacuation.

The only situations where an arriving medic should *not* interrupt the rescue to perform an exam are:

1. if the environment is so dangerous that the patient must be moved immediately for safety of life or limb, or
2. if the medic trusts the previous medic, finds the reported survey to be as complete as needed, and it is consistent with the patient's observed condition, or
3. if a realistic estimate of the evacuation and transportation time indicates the patient will soon be in a medical facility (on the order of an hour) and has no gross evidence of life- or limb-threatening injury.

Vital Signs

The interval for taking vital signs, and the vital signs to take, are medical decisions to be made by the medic, in consultation with the Wilderness Command Physician if desired by the medic. Factors that enter into the decision include any danger to the patient from taking vital signs (e.g., exposure to cold), delay in evacuation from taking vital signs, and the stability of the patient. Frequent vital signs are not needed for stable patients.

Medics should take and report a temperature on every patient. Even if no thermometer is available, feel the patient's skin and make an assessment of whether the patient's core temperature is normal, cold, or hot.

- Ear thermometers except the Exergen Ototemp® 3000SD are not acceptable.
- Continuous-reading Radio Shack indoor-outdoor thermometers acceptable.
- Becton-Dickson 'electronic fever thermometers acceptable.
- If in the cold, can use oral or axillary temperature to rule out hypothermia.
- If treating a patient for possible heat illness, oral or axillary temperatures are not acceptable. An Ototemp® 3000SD ear temperature is ideal; a rectal temperature is an acceptable alternate.

Orthostatic Vital Signs

A sustained drop of more than 10 in systolic blood pressure or a sustained rise of more than 20 in pulse with sitting or standing is a positive test for orthostasis and indicates dehydration or mild shock.

If patient sits or stands and feels like fainting, is also adequate indication of orthostasis.

Reporting to Medical Command/Base

ID: Team Identifier and Medic name and level of training

Chief Complaint

History:

- History of Present Illness
- Past Medical History
- Medications

- Allergies

Physical Exam (primary and secondary survey)

Field Diagnoses (or problem list) and Extended Status Code (see below)

Scene:

- Weather
- Terrain
- Resources
- Prior Treatment

Evacuation Time Estimate

Evacuation Priority:

- Hasty (Very Urgent) or Urgent or
- Routine or
- Delayed (bivouac)

Treatment Now

Plans for Possible Problems During Evacuation

Extended Status Codes

Status I: alive and well, able to evacuate self.

Status II: ill or injured, requiring evacuation and/or medical treatment.

Status III: dead.

Extended Status Codes:

IIA: ill or injured but able to walk/climb out with assistance

IIB: minor to moderate injury or illness; requires evacuation but at a measured pace because patient appears stable for a long evacuation.

IIC: serious injury or illness; stable but requires urgent evacuation.

IID: serious injury or illness; unstable and requires hasty evacuation (e.g., start improvised evacuation even if litter not yet available)

IIF: serious injury or illness, death seems likely before evacuation completed

Documentation

Decision-making

E.g., Why did you start an improvised evacuation? Why did you move the patient

without even trying to clear the cervical spine? Why did you request a higher level of medical personnel before moving the patient?

Field Diagnoses

List specific field diagnoses. (All will understand that these are tentative diagnoses made under field conditions.)

Exam

Give details of your examination of the patient: What was your overall assessment of the nature and severity of the injuries?

Vital Signs and Repeat Examinations

Of these two, repeat examinations and repeat overall assessments are more important.

Initial Care of Those Lost or Stranded

Dangers in giving fluids or food to a starving or dehydrated patient:

1. Some may have a very low level of salt in their blood; giving water may drive the level down even more, causing confusion, seizures, or coma. Instead of water, give electrolyte drinks such as Gatorade™. Even if the patient has a normal or high salt level in the blood, electrolyte drinks are still good. *Don't give water* unless there will be a long delay until an electrolyte drink is available. An alternative is to add a small amount of salt (one fast-food salt packet, or about a half-teaspoon of salt) to a liter of water or flavored drink.
2. Start with small sips of electrolyte drink, then small bites of food, to avoid nausea and vomiting.
3. If the patient has been starving for several weeks, don't give food unless you also give a thiamine or multivitamin pill.
4. Patients may be disoriented and even perhaps slightly agitated when found. Even if sedative medication is available, best to simply wait about an hour for the patient to recover spontaneously or due to interaction with rescuers. Use medication during this first hour only if the patient is a risk to self or others.

Oral Fluids and Food

Give food and fluid to all patients more than a few hours from hospital, unless:



1. Patient is so *lethargic* or *confused* that the patient may choke if trying to eat or drink. If unsure, may give the patient sips of water or electrolyte drink and see if the patient chokes.
2. Patient has an ileus: stomach and intestines not working properly; patient nauseated, not farting, no bowel sounds at all, often after trauma/burns, also in cases of "acute abdomen" (severe pain).
If unsure, give the patient sips of water or electrolyte drink and see if the patient vomits.
However, some patients with a simple "stomach flu" may be able to keep down some oral fluids despite vomiting; keep trying to give such patients oral fluids even if they vomit a lot.
3. Patient will certainly have surgery and general anaesthesia in the next 1-2 hours.

Do not give patients caffeine. Chocolate is acceptable, as are decaffeinated coffee or tea.

Even if very hungry, give patients only small bits of food to begin with. Easily digestible foods such as trail mix or gorp are ideal to start with.

Rehydration

Oral Rehydration

Unless there is a good reason to avoid oral fluids (described above), start oral rehydration for all backcountry patients.

- Oral rehydration fluids must contain salt. Do not attempt oral rehydration without some salt in the fluid.
- For diarrhea and vomiting, or for shock from blood loss or burns or crush injury, the ideal fluid is the World Health Organization (WHO) Oral Rehydration Salts.
- For dehydration from sweating, less salt is needed; athletic drinks (e.g., Gatorade™) are better. Dilute them half-and-half with water, or alternate a liter of athletic drinks with a liter of plain water.
- If you only have ORS, it may be used for dehydration from sweating; if only "athletic" drinks available, they may be used for dehydration from vomiting and diarrhea or shock.
- If you have neither ORS nor "athletic" drinks, but do have some salt, add between half a

teaspoon and a teaspoon of salt per liter of fluid. (A full teaspoon of salt will result in an average "athletic" drink's salt concentration.) Salt can be added to any type of fluid.

Hypothermia Prevention

During or after the primary survey, rescuers of all levels shall move the patient and place available insulation under the patient, then over the patient. If there are reasons to suspect a spine injury, the rescuer shall employ a log roll or similar technique to move the patient while protecting the spine. In certain situations (cold water immersion, severe winter storms), rescuers may legitimately consider hypothermia a life-threatening hazard and do whatever is needed to protect the patient from hypothermia even before completing a primary survey.

Rescuers should generously insulate patients unless (1) the patient complains of being too hot, (2) an unconscious or uncommunicative patient's core temperature has climbed to normal levels, as judged by a thermometer, or as judged by the rescuer by feeling the patient's skin temperature, or (3) the patient is being treated for heat illness.

In cold environments, rescuer should not hesitate to use hot packs, charcoal vests, or warm inspired O₂ or air as "active insulation" for patients who are not yet hypothermic.

Water Disinfection

Medics who are asked to make recommendations for backcountry water purification for drinking by patients or team members should recommend iodine tablets or other acceptable iodine methods, using adequate contact time given the temperature and turbidity of the water, or iodine-resin filtration systems.

Medics should take care to point out the limitations of most filter systems: except for iodine-resin systems, they will permit diarrhea, hepatitis, and other viruses through. And, Giardia filters will not filter out either bacteria or viruses.

For disaster situations, medics may use the following for drinking water:

- if dirty, flocculate (alum or white campfire ash)
- 8 drops Betadine®/L for 30 minutes; use more or leave longer if dirty or very cold water

- 4 cc of Clorox™ 5% bleach for 40 L (10 gallons) overnight; double if have to use in an hour

For irrigating contaminated wounds, medics should not hesitate to use clean but not sterile water. The preference, however, is for water from a filter system that removes bacteria (simple Giardia filters not useful for this purpose). There is no need to eliminate viruses from irrigation water, so most backcountry filters will be adequate for this.

"Clearing the Cervical Spine"

Medics who have completed a Wilderness EMT class, and *only* those who have completed a Wilderness EMT class, may use the following protocol to exclude the need for spinal immobilization.

A person who has sustained a significant injury with the potential for cervical spine injury may be managed without cervical spine immobilization in the wilderness if and only if:

1. The person is alert and oriented, and not intoxicated; and
2. The person has no significantly painful "distracting injury": suspected fracture of a long bone, pelvis or skull, deep lacerations, severe contusions, large burns, or suspected multiple rib fractures; and
3. The person has no complaints of neck pain or neurological symptoms; and
4. You can find no tenderness on examination of the neck, nor any abnormality on motor and sensory exam of the extremities; and
5. The person can demonstrate a full range of motion of the neck without pain.

Rescuers may find patients in situations so hazardous that the patient must be immediately evacuated without even trying to clear the cervical spine. This must be a decision of the rescuers at the scene, and the decision-making process *must* be documented in the rescue's medical records, even if well after the decision was made.

Monitoring Devices

The selection and use of monitoring devices is up to the medic. Rescuers of any level of

training may place a Texas (condom) drain on male patients and attach to a urine bag either for monitoring or to keep patient dry.

SPECIFIC PROTOCOLS

Head Injury

(Blow to head *with* loss of consciousness neurological abnormalities, including confusion, memory lapses, partial paralysis)

Head Injury and Hypothermia

Treat hypothermia with head injury as other cases of hypothermia: add as much heat as possible.

Head Injury and Shock or Dehydration

Do not withhold fluid from a head-injured patient with shock or dehydration, but do not fluid overload. Provide fluids until signs of dehydration or shock are gone.

Positioning and Evacuating Head-Injury Patients

Position a head-injury patient flat in the litter unless must place on the side to protect the airway. Head should be in neutral position with respect to the rest of the body (not twisted). Package so that nothing constricting the jugular veins across the neck.

Evacuate with head slightly up if possible.

Do not hyperventilate unless patient definitely progressively and severely worse.

Chest Injury

1. *Position with the good side down, and the injured side up.*
2. *Encourage the patient to take deep breaths and cough.* Have the patient hold the injured area (or you may do this for the patient) while the patient coughs, to minimize pain. If long evacuation, use postural drainage, chest PT, as described in the section on lung infections, below (page 3).
3. *If a team member or patient appears to have one or two rib fractures without other injury, do not splint or tape the ribs.*



Abdominal Injury

History

Any team member with even minor abdominal injury who develops sustained lightheadedness or develops new pain in the shoulder should be evacuated from the field immediately.

Examination

For any team member with even minor abdominal injury, check orthostatic blood pressure and pulse as described (page 2). Evacuate immediately if team member is orthostatic.

Penetrating Abdominal Trauma

If evacuation and transport time to hospital will be more than an hour, *gently replace* protruding abdominal contents after irrigation with cleanest water available. Note carefully any visible tears of intestine, any fecal odor from abdominal cavity, or any visible intestinal contents in abdominal cavity. Cover wound with a dressing soaked in povidone-iodine (e.g., Betadine®) diluted with 10 parts water, then an occlusive dressing.

Suspected Pelvic Fracture

WEMSI Wilderness EMTs only: if you suspect a pelvic fracture and have gloves and lubricant available, perform a rectal exam for gross blood and in men note whether prostate is normal.

Back Injuries: Team Members with Back Pain After Lifting

Ask: "Have you had any trouble passing your urine?"

Ask: "Do you have any pain, numbness, tingling, or weakness going down your legs?"

If answer to either is yes, or back pain is so severe as to prevent walking, carry team member out of field.

WEMSI Wilderness EMTs only: perform exam as follows: Check sensation to pinprick between the first and second toes, and in both medial and lateral aspects of foot, ankle, lower leg, and thigh. Do this on both sides. Check motor strength in the lower leg (this can easily be done by having the person walk first on toes, and then on heels, with the toes up). Check motor strength in the thigh. Check deep tendon reflexes in the knee and ankle. Do a *straight-leg-raising test*. With the patient lying on his or her

back, or sitting on a chair or equivalent, hold the thigh and knee both bent at 90°. Gently, without moving the back at all, straighten the knee. Markedly increased back pain, or increasing pain down the leg, is a positive straight leg raise test. If exam suggests herniated disk, carry team member out -- however, if no actual weakness in the leg or foot, and carry-out will be risky, may walk patient out with assistance.

Wounds

Contusions

Use standard "RICE" treatment for first 24-48 hours: Rest, Ice, Compression (elastic bandage) and Elevation. Do not let people sleep with elastic bandages; swelling may turn them into tourniquets overnight. After 36-48 hours, apply heat, to bring more blood to area and speed healing.

Subungual Hematoma (blood trapped under fingernail)

Clean the nail with soap and water, alcohol, or povidone-iodine (e.g., Betadine®) and then trephine the nail (make a hole in it). Preferred: red-hot paper clip, alternative is #11 scalpel blade to drill a hole.

Open Soft-Tissue Wounds

Examine the wound and classify it as either *low risk* or *high risk* for complications.

High risk wounds include: open fracture, bone or tendons exposed, human or other bites, deep punctures, grossly contaminated wound, or severe crushing.

Never put alcohol, merthiolate, mercuriochrome, or peroxide into an open wound. Povidone-iodine may be used around but not in wounds; the only exception is diluted povidone-iodine for high-risk wounds as described below.

High-Risk Wounds

- Control bleeding.
- Irrigate the wound (see below).
- Leave the wound open, and pack and cover it with gauze soaked in povidone-iodine (e.g., Betadine®) diluted with 10 parts water.
- Change the dressing every six hours; *wash your hands* or wear gloves before changing

dressings, and keep your mouth shut when dealing with open wounds.

- Evacuate the patient.

Low-Risk Wounds

- Control bleeding.
- Irrigate the wound (see below) if deep enough to require it.
- Apply bacitracin (antibiotic) ointment and a clean dry dressing. Clean the wound with drinking water and soap twice a day.
- If the wound will require surgical repair, alert Base, but there is no need for evacuation, unless the team member is unable to continue because of pain or for some other reason.

Irrigation

- Use water as described above under *Water Disinfection* (page 3).
- If from a clean sharp object, or from blunt force, and has not been contaminated, use *low-pressure irrigation* with a small amount of clean water, gently sloshed through the wound.
- Contaminated wounds, from dirty object or from dirt in wound, or delayed treatment: high-pressure irrigation.
- For high-pressure irrigation, use a 30 cc syringe and 18 ga plastic intravenous catheter, or a zipper plastic bag with small hole to provide a small forceful stream.
- Use about 100 cc of fluid per inch of wound.
- Aim away from yourself and wear glasses or goggles and keep mouth closed to prevent splashing into your eyes or mouth.

Tetanus Status

If a team member has a wound that requires surgical repair or medical attention, and has not had a tetanus immunization within the past five (five) years, have the team member return to Base to obtain tetanus immunization.

Friction Blisters

Leave most blisters intact; but if will obviously rupture, make small hole at edge with sterilized pin, needle, or #11 scalpel blade. Press gently to remove fluid.

If top partially ripped off, trim away; clean, cover with povidone-iodine or bacitracin ointment and Bandaid™ or similar.

Instruct person to keep blister clean.

Impaled Objects

Splinters: Wilderness EMTs only: attempt removal with a #11 scalpel blade.

Large Impaled Objects: whenever possible, discuss with Wilderness Command Physician; if cannot contact WCP, most experienced medic at scene must decide whether to attempt to stabilize or to remove the object. Most impaled objects cannot be "stabilized" during a wilderness evacuation, so you should generally remove an impaled object before transport.

Remove impaled objects slowly, gently but firmly, along line the object entered; stop if encounter significant resistance or significant increase in pain.

Fishhooks: May push hook through and clip off tip, or clip off most of hook, and stabilize it in place for later removal.

Orthopedic Injury

Muscle Strains

Use standard RICE treatment for the first 24-48 hours: Rest, Ice, Compression (elastic bandage) and Elevation.

Do not let people sleep with elastic bandages.

After 36-48 hours, apply heat.

For spasms or cramps or stiffness, use gentle stretching after heat.

Probable Sprains

Minor injuries that appear to be sprains, and do not interfere significantly with use of the part, should be treated with RICE treatment for the first 24-48 hours: Rest, Ice, Compression (elastic bandage) and Elevation.

Do not let people sleep with elastic bandages; swelling may turn them into tourniquets overnight.

After 36-48 hours, apply heat, to bring more blood to the area and speed healing.



For more significant sprains (or possibly minor fractures) management depends on the medic's level of training:

First Aid/First Responder level: splint and evacuate.

Wilderness EMT level and above: evaluate and treat in accordance with Wilderness EMT training. Some team members with such injuries will need to be splinted and evacuated, others may be taped and walk out, and still others may be splinted or taped and continue with the task.

Closed Fractures:

Indications for realigning a deformed long bone fracture (including open fractures):

- to improve sensory or vascular deficit (numbness, tingling, weakness, or lack of pulse beyond fracture)
- to align severely deformed long bone fractures to allow splinting with adequate immobilization

Don't try to reduce (set) the fracture or force all the bone fragments back into anatomic alignment.

- Pull along the normal axis of the injured extremity.
- Grasp the extremity distal to (beyond) the fracture firmly.
- Don't release traction until the limb is fully splinted.
- Have an assistant stabilize by countertraction, holding the extremity proximal to (closer to the torso than) the fracture.
- Use the least amount of force needed to align the extremity.
- Having a person support the injured extremity under the site of the fracture will make the patient more comfortable.
- If patient strongly resists, or if it causes markedly increasing pain that continues, stop, and splint in deformed position.
- Attempt realignment of a long bone fracture only twice, unless there is a sensory or vascular deficit. If unsuccessful, or if encounter resistance, splint as is.

Femur Fractures

For the initial management of a femur fracture, use a traction splint.

If evacuation more than 3-4 hours, use *skin traction*: apply tincture of benzoin (Friar's Balsam) to the calf on both sides, then run a piece of duct tape in a "U" shape under the instep and up along both sides of the calf; fold the section under the instep over on itself so it does not stick to the skin. Attach the traction to the duct tape under the instep.

If no traction splint is available, apply a Jones' dressing: bulky padding surrounded by plaster, fiberglass, or flexible SamSplints™, and held together with elastic bandages.

If none of these splints are available, transport the patient supine on a well-padded backboard with the legs strapped together or with a tree limb or another reasonable substitute secured between them.

Open Fractures

- immediate evacuation
- any fracture (or suspected fracture) with a nearby laceration or wound is an open fracture.

If evacuation estimate six hours or less:

- brush off dirt with clean gauze or cloth
- apply dry, sterile dressing
- control hemorrhage with pressure dressing
- immobilize

If evacuation six hours or more:

- limited debridement (trim away any obviously dead tissue)
- irrigate as described for wounds, above
- sterile dressing
- control hemorrhage with a pressure dressing,
- immobilize
- if numbness or absent pulse, and extremity is deformed, realign fracture and reevaluate before splinting and evacuating

Dislocations

First Aid/First Responder level: attempt reduction only if numbness, or if no pulse beyond dislocation.

Wilderness EMT level:

- Attempt reduction of all dislocations if numbness, or if no pulse beyond dislocation.

- Attempt reduction of the following dislocations: jaw, finger or toe, elbow, shoulder, patella, knee, ankle.
- Attempt hip dislocation reduction only if needed to evacuate patient.

Amputations

- Control hemorrhage by direct pressure.
- Clean the amputated part with water or saline, wrap it in a moistened sterile gauze or towel, place it in a plastic bag, and transport it as cool as possible without freezing.
- Never place amputated part in direct contact with ice or icy water.
- Keep amputated part with the victim throughout the evacuation process.

Heat Illness

Syncope (Fainting, Passing Out)

If you are on a wilderness SAR task and team member has had syncopal or near-syncopal episode (passing out or nearly passing out):

First Aid/First Responder level: evacuate team member.

WEMSI Wilderness EMTs only: You may allow a team member who meets the following criteria to resume duties after a few minutes' rest and some rehydration and sugar replenishment:

- some lightheadedness or nausea prior to episode;
- unconscious for only a few seconds;
- no history of heart problems, no chest pain or chest pressure;
- had no specific neurological symptoms;
- no seizure activity, no tongue biting, no urinary or fecal incontinence;
- no significant injury from falling; and
- on exam, no heart murmur, does have a regular pulse, and normal neurological exam.

Use the above protocol with caution. Anything that makes you suspicious that it was not heat syncope, even if team member meets all criteria: terminate the task and head back to base.

Any team member with syncope should be examined by a physician when the team returns to base, even if you have cleared the team member to continue with the task.

For all levels of training:

You should carefully check the team member for orthostatic changes in blood pressure (or pulse, if you do not have a blood pressure cuff), and should continue rehydration and sugar replenishment until the person is no longer orthostatic.

Heat Cramps

Treat heat cramps with gentle stretching and oral rehydration as described in the section on oral rehydration, above.

Dehydration

If you suspect dehydration in team member (common symptoms are: lightheadedness, weakness, nausea, redness of vision or tunnel vision):

- Ask team member to urinate. If can produce only small amount of dark urine, has dehydration.
- Check for orthostatic changes in pulse and blood pressure.
- Check patient's temperature to rule out heatstroke.
- Rehydrate as described in the section on oral rehydration, above.

Heat Illness (Heat Exhaustion, Heatstroke)

If a patient or team member has a temperature more than about 101°F (38°C), with neurological symptoms (e.g., confusion, decreased level of consciousness, weakness or numbness or tingling of one leg or one arm), in a proper setting for heat illness, and without history or physical exam evidence to suggest fever, treat for heat illness:

- rehydrate if any suspicion of dehydration
 - place in cool area
 - dampen patient's clothes with water (preferably tepid, not cold), and fan
 - may place cold packs at sides of the neck, in armpits, and in groin
- Use cooling to bring temperature down to 102°F (39°C), then stop.



- Monitor temperature for decreases or increases.
- Evacuate.

If you have no thermometer, and patient feels hot and seems to have heat illness, treat for heat illness.

Burns

Small Second or Third Degree Burns

(Burns the size of five palms, which is about 5%, or less):

- remove loose blister fragments, and any foreign material
- clean with soap and water
- apply silver sulfadiazine (Silvadene®) cream or bacitracin ointment twice a day.
- if no silver sulfadiazine (Silvadene®) or bacitracin, canned non-mentholated shaving cream acceptable
- leave complete blisters intact, unless (1) sure to rupture (e.g., the soles of feet), or (2) very large and tightly filled with bloody fluid.

To drain sure-to-rupture or large and bloody blisters:

- prep with povidone-iodine (e.g., Betadine®)
- make small incision at edge of blister with a sterile scalpel blade or needle
- press the blister flat
- apply a dry dressing

Large Burns

Treat as for small burns, above.

Evaluate carefully for shock, and be prepared to give large amounts of fluid by mouth if tolerated. Use urine output to gauge adequacy of fluid replacement.

Evaluate for airway burns and toxic inhalation.

Lightning Strikes

Patient may have *respiratory paralysis, unconsciousness, and undetectable pulses; despite which, prolonged artificial respiration may allow the patient to recover with no neurological deficit.* (Vasospasm is a "cramp" of blood vessel muscles that may make a pulse impossible to feel.)

- immediate ABC's

- careful attention to C-spine
If patient near thunderstorm, with coma, dendritic burns, ruptured eardrums, or confused, treat for lightning strike.
 - Perform trauma exam; if you have an otoscope, check for tympanic (eardrum) perforations.
 - evacuate with cardiac monitoring if available.
 - check patient's urine for signs of myoglobinuria (see below) and treat if found
- To triage group hit by lightning: "resuscitate the dead;" those showing signs of life likely already recovering.

Hypothermia

Mild Hypothermia

Team members with mild hypothermia: (> 90°F/32°C): may return to duty after rewarming (any method) and adequate food and drink.

Treating Hypothermia

All hypothermic patients: add as much heat as you can, using any and every method available.

Rewarm core first.

Acceptable methods:

- warm IVs
- warm fluids by mouth
- hot packs at lateral neck, armpits, and groins
- warm humidified air or O₂
- rewarming devices such as a charcoal vest
- provide fluids and food.

Don't delay evacuation to rewarm patient.

Handling Hypothermic Patients

- Handle gently to prevent ventricular fibrillation (cardiac arrest).
- Do not let hypothermic patients exert themselves during rescue.
- Carry hypothermic patients flat or in slightly head-down position.
- Provide fluids.
- Monitor for signs of fluid overload when giving fluids (lung congestion, ankle or lower back swelling).

Hypothermia and Possible Cardiac Arrest

Cold and apparently dead person:

- Start artificial respiration.
- No external cardiac compression if there are any signs of life; check for three (3) minutes for pulse, heartbeat, and respiration.
- Check for a rhythm if have an EKG monitor. If organized rhythm, even as slow as 20, start artificial respiration but don't start external cardiac compression.
- Use normal rates for artificial respiration and external cardiac compression.
- Give O₂ if available.
- If CPR must be interrupted for periods up to 20-30 minutes during rescue, do so, and resume CPR afterwards.
- If no signs of life, consider transport to facility with emergency bypass rewarming; call ahead early.

Special Hypothermia ALS Notes for Paramedics

Arrest and Core temperature > 30°C (86°F): use standard ACLS protocols.

Arrest and Core temperature < 30°C (86°F): May try bretylium (if available) and defibrillation, but don't give other ACLS drugs, particularly procainamide.

Core temperature < 30°C (86°F) but not in arrest: If bretylium becomes available (no longer made as of early 2001), call a Wilderness Command Physician for an order to give a single dose of 350 mg of bretylium slow IV push to prevent ventricular fibrillation during evacuation.

Criteria for endotracheal intubation same for normothermic and hypothermic patients.

If your hypothermic patient has atrial fibrillation, atrial flutter, PVCs, or various kinds of atrioventricular block, don't treat; specifically, no atropine, no pacemaker.

Submersion (Near-Drowning)

Cold water submersion (near-drowning) *not* same as acute (immersion) hypothermia.

Do not rewarm victims of cold water submersion; keep them cold.

Frostbite and Immersion Foot

Superficial Frostbite (Frostnip)

- Sudden blanching of the nose, ear, or fingertip, still soft to the touch.
- Rewarm by a warm hand over nose or ear, or by placing a frostnipped finger in mouth, armpit, or warm pocket. May administer oxygen if readily available.

Deep Frostbite

- Subcutaneous tissues frozen solid, hard like a piece of frozen meat.
- Best "street" treatment: transport rapidly to hospital for definitive rewarming.
- If more than an hour to hospital, rewarm en route. If the patient is hypothermic, rewarm the core and protect the patient from cold exposure before treating frostbite.
- *No justification for keeping the frostbitten part cold during transportation.*
- Definitive treatment: *rapid rewarming* in 105-110°F (41-43°C) water.
- Patients must *not* smoke, and don't give the patient caffeine (coffee, tea, or cola drinks).
- *Frostbitten limbs are numb*, so don't cook them in too-hot water, or burn them by rewarming in front of a fire. If don't have thermometer, use your elbow in the water for a few minutes; should feel very warm but not painful.

Frostbite in Litter Patients

- Wrap frostbitten extremities in towels or thick pieces of clothing soaked with warm (40-42°C = 104-110°F) water.
- Wrap waterproof plastic and pieces of closed-cell foam around the towel-wrapped extremity, then place the patient in litter.
- No benefit to continued warmth once the frostbitten part has rapidly thawed. If evacuation long, take off wet towels off several hours later.
- Make sure hot packs aren't in direct contact with skin.
- May treat frostbite this way even if patient hypothermic.



Altitude Illness

Acute Mountain Sickness

Suspect acute mountain sickness:

- above 4000 feet,
- rapid ascent to altitude,
- headache and nausea,
- tiredness, malaise, and drowsiness;
- weakness and dyspnea on exertion;
- anorexia (loss of appetite); and
- difficulty sleeping, often including prominent periodic ("Cheyne-Stokes") breathing, with waxing, waning, and periods of apnea.

Many of above also suggestive of alcohol hangover, or a migraine headache:

Severe acute mountain sickness, if increasing:

- confusion,
- ataxia (abnormal walking gait)

Treatment: *Stop ascending or go down.*

After the symptoms have gone, ascend at a slower rate.

For severe AMS, a descent of 500-1000 meters (1500-3000 feet) is adequate.

If the patient recovers completely, he or she may safely reascend (gradually), but with the understanding that he or she is predisposed to altitude illness.

High Altitude Cerebral Edema

Symptoms of acute mountain sickness also with:

- *Ataxia.* Ask patient to walk a straight line, placing heel of one foot directly in front of the toes of the other foot.

Later stages of HACE: increasing somnolence and coma, followed by death.

Only accepted treatment is to go back down.

High Altitude Pulmonary Edema

- dry cough,
- decreased exercise tolerance,
- intermittent slight shortness of breath and chest tightness, usually at night.
- Onset slower than AMS, usually days 2-4 after ascent.

- Hypoxia from HAPE may cause confusion, neurological symptoms, or even coma, all without shortness of breath.
- Patients with severe HAPE often have frothy sputum.
- Once a patient becomes unconscious from HAPE, death usually in 6-12 hours.

For patients with altitude illness and severe pulmonary symptoms, as for those with severe neurological symptoms, the only accepted treatment is to *go back down.*

Snakebite

General

Do not use electric shock, pack in ice, or use any other snakebite treatments except for those given here.

Coral Snake Bites

- If within 30 minutes of the bite, use a Sawyer Extractor™ (see below). If the patient is very young, very old, or very ill, use the Australian treatment:

The Australian Treatment

- Use an elastic bandage or roller gauze, wrapping firmly but not tightly (pressure of 55 mmHg) proximally (toward the torso) most of the way up the arm or leg, then immobilize the limb in a splint.
- Do *not* use Australian for North American pit viper bites unless patient very young, very old, or very ill, and willing to sacrifice the limb to save a life.

Pit Viper (Rattlesnake, Copperhead, Water Moccasin/Cottonmouth)

- Have patient lie down and relax; give no alcohol.
- Use a Sawyer Extractor™ if available and within 30 minutes of the bite. Do not use a Cutter™ snakebite kit, or make any incisions.
- Treat as contaminated puncture wound. (See the discussion of wounds, above.)

Check for envenomation:

- Fang marks?
- local reaction of pain, swelling, and tenderness?
- Metallic taste in mouth?

- Observe for myoglobinuria (see page 9) and treat if necessary.

Beestings

Apply ice to sting to reduce pain. See also anaphylactic reactions under Allergic Reactions (see page 9).

Rabies

If person is bitten by mammal (other than rodents, squirrels, or rabbits), that might potentially be rabid, or contaminated by its saliva:

- Attempt to capture or kill the mammal if you can do it *without risk of additional bites.* Do not damage the brain, as it is needed for testing for rabies. Arrange for the head to be taken to a public health service laboratory.
- Scrub the bite or wound vigorously with a scrub brush or gauze pad. Use both alcohol and soap and water if available. (Note: exception to rule about not putting alcohol into wounds.)
- After scrubbing, evacuate patient for possible postexposure vaccination. If the patient has already been vaccinated for rabies, need for evacuation depends on the wound itself (discussed under wounds, above).

Headache

Team member with headache:

WEMSI Wilderness EMTs:

- Perform history, exam of the head and neck, and a neurological exam.
- If patient has neurological symptoms (confusion, visual disturbances, weakness, numbness, or tingling in an arm or a leg), a stiff neck, a fever, or it is the worst headache the person has ever had, evacuate urgently.
- For other headaches, assess the possibility of serious causes; evacuate at a routine pace if you think indicated, or let team member continue with task. Consult with Wilderness Command Physician if possible.

All other levels of provider: If patient has neurological symptoms (confusion, visual disturbances, weakness, numbness, or tingling in an arm or a leg), a stiff neck, a fever, or it is the worst headache the person has ever had, evacuate urgently. Otherwise, evacuate at a routine pace.

Foreign Body Sensation in Eye

Examine eye and remove foreign bodies:

- Check visual acuity
- Evert eyelid if trained to do so, and gently remove any foreign bodies with Q-Tip™ or improvised equivalent.
- Use irrigation with clean water to attempt to remove foreign bodies from the cornea (clear part of eye).
- If foreign body sensation persists, and medications available, give pain medication (if needed) and eye antibiotic ointment.
- Do not patch eye.
- Evacuate at pace determined by patient's discomfort level.

Nosebleeds

- Pinch nostrils together firmly, as close to the face as possible. Have the patient sit forward during pressure. Check back of throat for trickle of red blood indicating continued bleeding.
- Use uninterrupted pressure for 10 minutes then recheck. Hold for another 10 minutes if still bleeding.
- If bleeding persists, roll up small gauze pad (*not* a tissue or paper towel that will partially dissolve) and place in bleeding side of nose. Continue pressure.
- May use double-compressed nasal tampons, instead of gauze.
- To avoid infections, leave packing in place for no more than 1-2 days.
- If unable to control bleeding (remember to check back of throat for thin trickle of red blood indicating continued bleeding), treat as for uncontrolled bleeding elsewhere: treat for shock and evacuate urgently.

Dental Injury

If tooth completely out of socket:

- Rinse dirt off, but don't scrub, even with gauze pad.
- If within 1-2 hours of dentist or oral surgeon, keep tooth in the patient's cheek, since the patient's own saliva is the best protection. However, if the route out involves some difficult climbing, or if the patient is only



semiconscious, don't put the tooth in the mouth. Instead, place it in a gauze pad dampened with the patient's saliva and a bit of clean water or saline, then put it in a plastic bag.

- If distant from dentist or oral surgeon, replace tooth in its socket as soon as possible. Apply dental splinting material to keep tooth in place; large wad of chewing gum often works fairly well.

Chest Pain

WEMSI WEMTs:

- If episode of chest pain in team member is clearly due to trauma, muscle strain, gastroesophageal reflux, pneumonia or bronchitis, team member may walk out or continue with task. If any doubt, treat as possible myocardial infarction and proceed with evacuation. Any team member who had chest pain in the field should be evaluated by physician on return to civilization.
- All other level of providers: evacuate patient.

Asthma

- Ask if the patient has his or her own medicine to take.
- Several cups of coffee, tea, or caffeine-containing soft drink will help asthma, though with side effects (sweating, tachycardia, tremor, irritability).
- If signs of severe respiratory distress, and Epi-Pen™ is available, show team member how to use it, and assist if necessary.

Lung Infections

(pneumonia or bronchitis):

- Postural Drainage. Assess where the pneumonia or secretions are located in the chest, and then position the patient with this part uppermost (i.e., on one side). Tilt patient in slightly head-down position. If can't tell which side, have patient alternate lying on left and right sides.
- Chest PT: pounding moderately on the chest, with cupped hands. Action comes from wrist, with alternate clapping of hands. Use a minute of this clapping every hour or two.
- Deep Breathing Exercises: on a regular basis, encourage patient to take a deep breath.

- Coughing: have patient cough on a regular basis, holding chest or painful areas if needed.
- If the patient is sick enough to need chest PT and deep breathing/coughing exercises, you should evacuate promptly but not hastily.

Deep Venous Thrombosis

Suggested by swelling, tenderness, redness, and warmth in one (and only one) leg and ankle. If any suggestion the patient might have a deep venous thrombosis, don't let patient walk out. Evacuate with leg elevated and keep warm with heat packs.

To prevent DVT:

- If patient conscious, prompt patient to regularly tighten and relax the legs.
- If long wait during evacuation, and patient doesn't have suspected spine injury, untie the patient and let him or her move around a little.
- Hydrate the patient as best you can.
- *Be careful of your leg tie-in.* Anything tight around the leg or ankle will decrease venous flow and promote clotting. If you can leave room for the patient to wiggle his or her legs, that's even better.

CPR

Always start CPR in a pulseless victim well away from a road unless one of the following contraindications is present:

- If cardiac arrest is due to trauma;
- If a drowning victim has been immersed for more than an hour, even in cold water;
- If Advanced Cardiac Life Support is more than an hour away;
- In cases of unwitnessed cardiac arrest, when there is no way of knowing when it began;
- Persons who appear dead because of:
 - * Rectal temperatures that are the same as that of the environment;
 - * Rigor mortis or dependent lividity; but, only in a non-frozen patient; or
 - * Lethal injuries, such as decapitation, massive head or chest injuries, severed trunk.

In the backcountry, discontinue CPR if, after 30 minutes of effort, you can detect no evidence of spontaneous pulse or respirations, and if CPR

cannot be continued throughout the evacuation. For certain situations, the possibility of resuscitation with Basic Cardiac Life Support is high, so continue CPR for more than half an hour:

- Cold water immersion less than an hour (hypothermia and possibly the mammalian diving reflex tend to slow metabolism)
- Avalanche burial;
- Arrest after known hypothermia;
- Lightning or arrest secondary to electric shock.

Abdominal Pain

Acute Abdomen:

severe abdominal pain, spasm of the abdominal wall muscles (guarding), and exquisite tenderness.

- Evacuate urgently.
- Give nothing to eat or drink.
- For pain control, transport with the hips and knees bent.

Less-Severe Abdominal Pain

WEMSI Wilderness EMTs only:

- Careful history and physical exam.
- Discuss with Wilderness Command Physician if possible.
- If not possible, form tentative diagnosis, at least as far as the severity of problem, and decide whether to evacuate or not based on diagnosis.
- Perform repeated abdominal exams (e.g., every 2-3 hours).

Other provider levels:

- Evacuate immediately.

Vomiting and Diarrhea

Motion Sickness

Instruct person to fix vision on the horizon or on a distant object.

Gastroenteritis:

cramps, diarrhea, or vomiting.

- Fluid replacement. (Oral rehydration discussed above, see page 2.)

- Start clear fluids as soon as patient can tolerate, even if still vomiting.
- Advance to food as soon as patient will tolerate. Bread, toast, crackers, rice, potatoes, cooked vegetables and the BRAT diet are commonly recommended: Bananas, Rice cereal or noodles, Applesauce, and Toast. Muesli/Granola bars also good.
- Avoid greasy or spicy foods. Avoid *fruit and milk sugars*: milk, milk shakes, ice cream, or fresh fruit or fruit juices for three to four days. Table sugar acceptable, as in sherbet, gelatin desserts, and soda drinks, and dextrose, as found in Gatorade™ and similar drinks.

Urinary Tract Infection

Diagnose by classic symptoms:

- dysuria (burning on urination);
- frequency of urination; and
- urgency of urination (having to go *right now*), possibly with:
 - incontinence of urine (dribbling of urine, especially with coughing or sneezing); and
 - blood in the urine ("hemorrhagic cystitis")

Instruct patient to drink *lots* of fluids and to urinate frequently to wash out infection. Evacuation not necessary unless severe discomfort.

If patient develops fever or significant back pain, evacuate immediately.

Testicular Pain

If no direct trauma: evacuate urgently.

WEMSI Wilderness EMTs may try to determine if there is testicular torsion, and attempt to untwist the spermatic cord.

Vaginal Bleeding

- If small amounts of unexpected menstrual bleeding, or
- If menses more than normal menstrual flow, but no more than 1 pad/hr, and no pain worse than usual menstrual cramps, check orthostatic vital signs. If normal orthostatic vital signs, may continue with task. If flow > 1 pad/hour, or if the pain more than usual (*dysmenorrhea*), but not orthostatic and no increased pain, send back to base. If flow is



more than a pad an hour, or if she is orthostatic, evacuate immediately.

Kidney Stones

If suspect a kidney stone, immediate evacuation.

If unable to give pain medications, consider asking for a more advanced provider to respond to provide pain relief so team member can walk out with assist.

Have the person strain all urine to try to collect the stone, and have patient take the stone to family doctor.

Diabetes

If diabetic seems ill, give oral glucose or other sweets/candy.

If diabetic does not improve with sugar, start oral rehydration, preferably with WHO Oral Rehydration Solution (see oral rehydration, page 2, above).

Allergic Reactions

Generalized allergic reaction: itchy rash, may be made up of many flat, itchy, red macules (tiny patches), or wheal-like rash (hives: like mosquito bites without the bite), may occur over entire body.

Anaphylactic reactions: wheal (hive) formation, very severe. May have volume depletion and shock, wheezing, and airway obstruction from swelling.

Danger signs for progression toward anaphylaxis:

- syncope (unconsciousness);
- symptomatic hypotension (low blood pressure);
- lip swelling;
- hoarseness; or
- wheezing or shortness of breath.

All PA-ASRC/ER-NCRC personnel should see their personal physicians and obtain prescriptions for Epi-Pens®. (Paramedics, nurses, nurse practitioners, physician assistants and physicians may carry injectable epinephrine instead.) This device allows injection of epinephrine without special training. If providers of any level have an Epi-Pen® and are confronted by a patient with the above signs of a severe allergic reaction progressing toward

anaphylaxis, they should offer the Epi-Pen to the person and assist the person in using it.

Crush Injury and Myoglobinuria

If patient dehydrated from long entrapment, *rehydrate* prior to release. Intravenous fluids ideal but can use oral fluids if the patient meets requirements (see page 2).

Myoglobinuria

If patient has had crush injury, massive muscle bruising, lightning strike, or large burns, suspect myoglobinuria or hemoglobinuria:

- Check patient's urine.
- If brown or tea-colored, start treating for possible myoglobinuria:
- Increase oral (or IV) fluids as necessary to maintain urine output of 100 cc/hr (4 cc/kg/hr in children) unless definite signs of fluid overload.
- Give fluids with salt but without potassium for first several liters: drinks salted with table salt are best.

Compartment Syndrome

Diagnose compartment syndrome by:

- severe pain, swelling, and tenderness after trauma or crushing of a limb;
- progression: patient loses sensation, then motor strength, and finally, loses pulse.

If suspect compartment syndrome, and long evacuation, try to have a surgeon brought in to operate, or urgent evacuation and transportation to trauma center.

MAST Garment Use

- Use MAST only temporarily, i.e., about 1.5 hours,
- May find MAST helpful in patients with mild dehydration or mild shock when must be raised or lowered vertically (head-up) out of pit. Inflate MAST prior to raising, and slowly deflate the MAST right after leveling stretcher, monitoring blood pressure carefully. May help prevent seizures from lack of blood to the brain; using the MAST garment as "G suit" and not for usual medical purpose, and thus is not against standard EMT training for using MAST.

Psychological Management

Pain Management

- Give patient a clear statement of suspected injuries
- May give an absorbing task to a patient or engage his interest in a discussion.
- May ask patient to imagine his favorite place or event as vividly as possible and describe in detail.
- If you have training, light hypnosis recommended.

Anxiety Management

- *Minimize sensory overload.* Tell Field Team Leader that a quiet scene is required for the patient's health and safety.
- *Channel patient contact* through one and only one person (you, the medic).
- Even if a patient appears confused and inappropriately, continue to talk as if the patient understands.
- For experienced *outdoorspeople*: explain details of the search and rescue technique.
- *Laying on of hands:* unless patient expresses displeasure, medic (and only medic) should use a reassuring hand on the shoulder when possible.

Psychological First Aid

Recognize a psychological *critical incident*, by:

- serious injury or death of emergency services worker in line of duty;
- serious injury or death of bystander from emergency services operation;
- multiple deaths or serious injuries;
- serious injury or death of child or infant;
- situation that attracts an unusual amount of attention from the media;
- loss of life after extraordinary and prolonged search and rescue efforts; and,
- any situation charged with emotion and that causes emotional response beyond normal coping mechanisms of emergency services workers.

Recognize *immediate stress reactions* by, within 24 hours of incident, some or all of:

A most important point: *an immediate stress reaction is the response of a normal person to an abnormal situation, and not a sign of any psychological weakness or chronic psychiatric problems.*

Physical symptoms:

- profound fatigue and weakness;
- fine tremor or muscle twitches;
- diaphoresis;
- vasovagal orthostatic hypotension or vasovagal syncope (simple fainting);
- nonspecific lightheadedness;
- nonspecific headache;
- difficulty focusing one's eyes;
- nonspecific difficulty hearing;
- palpitations;
- dyspnea and chest pain with or without hyperventilation;
- nausea, vomiting, diarrhea, or abdominal pain; or
- sensation of a lump in the throat (globus hystericus).

Emotional symptoms include:

- anticipatory or generalized anxiety (anxiety about the future, or unconnected with any present danger or fear);
- strong fear or even panic reactions;
- psychological shock (described later);
- survivor guilt uncertainty (guilt over surviving when others have died);
- acute grief reactions;
- depression; or
- intensified or inappropriate emotional reactions to normal occurrences.

Cognitive symptoms include:

- blaming others (sometimes even those who are logically blameless) for the critical incident;
- generalized confusion;
- inability to concentrate;
- inability to perform simple calculations;
- poor attention span;
- memory lapses;



- anomia (inability to find the right words);
- inability to distinguish the difference between serious and trivial concerns;
- inability to make decisions; and
- greatly increased (or greatly decreased) alertness and awareness of surroundings.

Behavioral symptoms are relative to the person's normal behavior patterns, which may vary widely between individuals. They include:

- changes in normal activity patterns;
- changes in speech patterns;
- withdrawal;
- angry outbursts;
- hypervigilance (increased suspicion and attention to one's environment or even outright paranoid behavior);
- changes in interactions with others (i.e., wife, friends, team members);
- increase or decrease in appetite~ or alcohol consumption;
- sleep disturbances, including early morning awakening, early insomnia, hypersomnia, and generalized fatigue; or
- visits to health professionals (possibly including the team medic) for seemingly minor or even nonexistent problems.

Look for those with signs of stress and arrange rest breaks. Look for those with immediate stress reactions: a person walking about aimlessly, a person sitting and staring blankly (unless simply exhausted), or a person behaving irrationally.

For immediate stress reactions:

- isolate person from the sights, sounds, and smells of incident.
- If you determine that the person should not be moved, place an object to block the person's view.

When engaged in on-scene psychological first aid, peers (e.g., other rescuers) can ask "Hey, are you OK?" However, *not* acceptable coming from a mental health worker. Just need to lend a sympathetic ear. If you need to prompt the person to start talking, start asking about facts first, and only after some rapport is established, start asking about feelings.

When emergency services worker "breaks down" during psychological first aid,

- *validate* the feelings ("hey, this is pretty hard for *all* of us to take.")
- *back off*, going to another person or another topic.
- Do not abandon person; monitor, and arrange extra help if necessary.
- *No Group* interventions at scene; all psychological first aid should be one on one.