



# CURRICULUM ON MILITARY SUBJECTS

Strand M10: Survival

Level 11

This Strand is composed of the following components:

- A. Prepare to Survive
- B. Survival Care and First Aid**
- C. Basic Survival Techniques
- D. Advanced Survival Techniques



*If there are others around me that need help, I will render aid first, and then I will take care of myself. I will work harder than ever before to maintain health and hygiene.*

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## B. Prepare to Survive

### OBJECTIVES

*After completing sections A, B, and C, Cadets will have the foundation to be able to successfully complete a Basic Survival Course during Summer Encampment and earn their red beret. After completing a Basic Survival Course and section D, Cadets will have the experience and knowledge to complete an Advanced Survival Course and earn the Red Beret with advanced flash.*



*Video 1 CACC Survival Program (2017)*

1. Identify one way in which wilderness first aid is different from first aid in an urban environment. (B1)
2. List how long a person can go without air, water, and food (Rule of 3s). (B2)
3. Select the symptoms of dehydration. (B2)
4. List three ways to prevent dehydration. (B2)
5. Describe three ways to identify if someone is dehydrated. (B2)
6. Select the symptoms of food/calorie deprivation. (B2)
7. Identify two methods of making soap in the wilderness. (B3)
8. Describe how to identify and remove a tick. (B4)
9. Describe where and how to dig and use a cathole. (B4)
10. Describe how to open an airway of an unconscious victim. (B5)
11. Demonstrate at least two methods to control bleeding. (B5)
12. Roughly outline treatment for shock. (B5)
13. Identify field-expedient methods to splint or immobilize bone injuries. (B6)
14. Given a list of actions in response to a venomous snake bite, separate them into categories of what to do and what not to do. (B7)
15. Describe how to treat open wounds. (B8)
16. Given a list of treatments for blisters, select which ones to use for closed blisters and which ones for open blisters. (B8)
17. Given images of leafy shrubs, identify which ones are poison oak. (B9)

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### B1 Basic Survival Medicine

Foremost among the many problems that can compromise a survivor's ability to return to safety are medical problems resulting from accidents, extreme climates, lack of hygiene, illness, and lack of proper nutrition.

Many survivors have reported difficulty in treating injuries and illness due to the lack of training and medical supplies. For some, this led to failure and death.

Survivors have related feelings of apathy and helplessness because they could not treat themselves in this environment. The ability to treat themselves increased their morale and cohesion and aided in their survival and eventual return to civilization.

One person with a fair amount of basic medical knowledge can make a difference in the lives of many. Without qualified medical personnel available, it is you who must know what to do to stay alive.



*Figure 1 Cadets Practicing Casualty Transport*



*Figure 2 Treatment Options are Limited*

Rendering aid in a wilderness situation is different than aid in an urban scenario because the patient (which may be yourself) will require care for greater periods of time, will be exposed to environmental extremes, will likely be treated with limited or improvised equipment, and may be treated by unqualified personnel.

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### B2. Requirements to Maintain Health

To survive, you need air, water, heat, and food. You must also maintain health, treat injuries, and apply high personal hygiene standards.



*Figure 3 Survival Rule of 3s*

#### *Water*

Your body loses water through normal body processes (sweating, urinating, and defecating). During average daily exertion when the atmospheric temperature is 20 degrees Celsius (C) (68 degrees Fahrenheit), the average adult loses and therefore requires 2 to 3 liters of water daily.

Other factors, such as heat exposure, cold exposure, intense activity, high altitude, burns, or illness, can cause your body to lose more water. You must replace this water. Dehydration results from inadequate replacement of lost body fluids. It decreases your efficiency and, if injured, increases your susceptibility to severe shock. Consider the following results of body fluid loss:

- A 5 percent loss of body fluids results in thirst, irritability, nausea, and weakness.
- A 10 percent loss results in dizziness, headache, inability to walk, and a tingling sensation in the limbs.
- A 15 percent loss results in dim vision, painful urination, swollen tongue, deafness, and a numb feeling in the skin.
- **A loss greater than 15 percent of body fluids may result in death.**

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*Video 2 Wilderness Survival: Dehydration Symptoms (eHow (1m:6s), 2008)*

The most common signs and symptoms of dehydration are:

- Dark urine with a very strong odor.
- Low urine output.
- Dark, sunken eyes.
- Fatigue.
- Emotional instability.
- Loss of skin elasticity.
- Delayed capillary refill in fingernail beds.
- Trench line down center of tongue.
- Thirst. Last on the list because you are already 2% dehydrated

You replace the water as you lose it. Trying to make up a deficit is difficult in a survival situation, and thirst is not a sign of how much water you need.

Most people cannot comfortably drink more than 1 liter of water at a time. So, even when not thirsty, drink small amounts of water at regular intervals each hour to prevent dehydration.

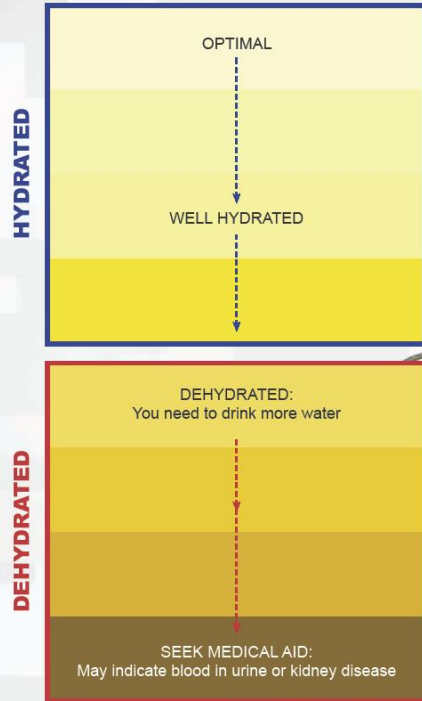
If you are under physical and mental stress or subject to severe conditions, increase your water intake. Drink enough liquids to maintain a urine output of at least 0.5 liter every 24 hours.

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## Are You Hydrated? Take the Urine Color Test

### Urine Color Chart\*



\*This color chart is not for clinical use.

### Purpose

- With normal kidney function, your level of hydration is indicated by the color of your urine. Some vitamins and supplements may cause a darkening of the urine unrelated to dehydration.
- Since heat-related illness often follows dehydration, this simple test will help protect your health.
- Dehydration also increases your risk for kidney stones.

### How does it work?

- Match your urine color to closest color in the chart and read the hydration level on the chart.
- Watch the urine stream not the toilet water, as the water in the toilet will dilute your urine color.
- In response to dehydration, the kidneys conserve water and excrete more concentrated urine; the more concentrated the urine the darker the color.

### Prevent Dehydration

- No amount of training in a new climate can reduce the body's requirement for water.
- Follow the water consumption guidelines in the water consumption table.

### Fluid Replacement Guide

| Heat Category | WBGT Index, (°F) | Easy Work                  | Moderate Work              | Hard Work                  |
|---------------|------------------|----------------------------|----------------------------|----------------------------|
|               |                  | Fluid Intake (quarts/hour) | Fluid Intake (quarts/hour) | Fluid Intake (quarts/hour) |
| 1             | 78° - 81.9°      | ½                          | ¾                          | ¾ (1)*                     |
| 2             | 82° - 84.9°      | ½                          | ¾ (1)*                     | 1 (1¼)*                    |
| 3             | 85° - 87.9°      | ¾                          | ¾ (1)*                     | 1 (1¼)*                    |
| 4             | 88° - 89.9°      | ¾                          | ¾ (1¼)*                    | 1 (1¼)*                    |
| 5             | > 90°            | 1                          | 1 (1¼)*                    | 1 (1¼)*                    |

\*Use the amounts in parentheses for continuous work when rest breaks are not possible. Leaders should ensure several hours of rest and rehydration time after continuous work. This guidance will sustain performance and hydration for at least 4 hours of work in the specified heat category. Fluid needs can vary based on individual differences (± ¼ qt/hr) and exposure to full sun or full shade (± ¼ qt/hr). Rest means minimal physical activity (sitting or standing) in the shade if possible. Body armor - add 5°F to WBGT index in humid climates. NBC (MOPP 4) - Add 10°F (Easy Work) or 20°F (Moderate or Hard Work) to WBGT Index. CAUTION: Hourly fluid intake should not exceed 1½ qts. Daily fluid intake should not exceed 12 qts.



<http://phc.amedd.army.mil>

CP-470-0615

(Also available as a tip card)

Approved for public release, distribution unlimited.

Figure 4 Urine Color Test (US Army Public Health Command, 2018)

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In any situation where food intake is low, drink 6 to 8 liters of water per day. In an extreme climate, especially an arid one, the average person can lose 2.5 to 3.5 liters of water *per hour*. In this type of climate, you should drink 14 to 30 liters of water per day.

With the loss of water there is also a loss of electrolytes (body salts). The average diet can usually keep up with these losses but in an extreme situation or illness, additional sources need to be provided. A mixture of 0.25 teaspoon of salt to 1 liter of water will provide a concentration that the body tissues can readily absorb.

Of all the physical problems encountered in a survival situation, the loss of water is the most preventable. The following are basic guidelines for the prevention of dehydration:

- ✓ ***Always drink water when eating.***
  - Water is used and consumed as a part of the digestion process and can lead to dehydration.
- ✓ ***Conserve sweat not water.***
  - Limit sweat-producing activities but drink water.
- ✓ ***Ration water.***
  - Until you find a suitable source, ration your water sensibly. A daily intake of 500 cubic centimeter (0.5 liter) of a sugar-water mixture (2 teaspoons per liter) will suffice to prevent severe dehydration for at least a week, provided you keep water losses to a minimum by limiting activity and heat gain or loss.

You can estimate fluid loss by several means. A standard field dressing holds about 0.25 liter (one-fourth canteen) of blood. A soaked T-shirt holds 0.5 to 0.75 liter.

You can also use the pulse and breathing rate to estimate fluid loss. Use the following as a guide:

- With a 0.75-liter loss the wrist pulse rate will be under 100 beats per minute and the breathing rate 12 to 20 breaths per minute.
- With a 0.75 to 1.5-liter loss the pulse rate will be 100 to 120 beats per minute and 20 to 30 breaths per minute.
- With a 1.5 to 2-liter loss the pulse rate will be 120 to 140 beats per minute and 30 to 40 breaths per minute. Vital signs above these rates require more advanced care.



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## THE DEHYDRATION PINCH TEST

For a quick and easy way to decipher if you're dehydrated, try out **the pinch test** (also known as the skin turgor test):



Lightly pinch some skin on the back of your hand and pull it up about **one centimeter** before letting go.



If you're not dehydrated, the skin will **spring back** into its regular position almost immediately.



If it **takes a few seconds to settle back down**, you may be dehydrated.

Figure 5 Pinch Test for Dehydration

### Food

Although you can live several weeks without food, you need an adequate amount to stay healthy. Without food your mental and physical capabilities will deteriorate rapidly, and you

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will become weak. Food replenishes the substances that your body burns and provides energy. It provides vitamins, minerals, salts, and other elements essential to good health. Possibly more important, it helps morale.

The two basic sources of food are plants and animals (including fish). In varying degrees both provide the calories, carbohydrates, fats, and proteins needed for normal daily body functions.

Calories are a measure of heat and potential energy. The average person needs 2,000 calories per day to function at a sedentary level, 2,500 calories to function at a moderate level, and 3,000 calories to function at an active level. An adequate amount of carbohydrates, fats, and proteins without an adequate caloric intake will eventually lead to starvation and cannibalism of the body's own tissue for energy.

### Plant Foods

These foods provide carbohydrates--the main source of energy. Many plants provide enough protein to keep the body at normal efficiency. Although plants may not provide a balanced diet, they will sustain you even in the arctic, where meat's heat-producing qualities are normally essential. Many plant foods such as nuts and seeds will give you enough protein and oils for normal efficiency. Roots, green vegetables, and plant food containing natural sugar will provide calories and carbohydrates that give the body natural energy.

The food value of plants becomes more and more important if you are in an area where wildlife is scarce. For instance--

- You can dry plants by wind, air, sun, or fire. This retards spoilage so that you can store or carry the plant food with you to use when needed.
- You can obtain plants more easily than meat, especially if you're on the move.

### Animal Foods

Meat is more nourishing than plant food. In fact, it may even be more readily available in some places. However, to get meat, you need to know the habits of, and how to capture, the various wildlife.

To satisfy your immediate food needs, first seek the more abundant and more easily obtained wildlife, such as insects, crustaceans, mollusks, fish, and reptiles. These can satisfy your immediate hunger while you are preparing traps and snares for larger game.

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### B3. Personal Hygiene

In any situation, cleanliness is an important factor in preventing infection and disease. It becomes even more important in a survival situation. Poor hygiene can reduce your chances of survival.

A daily shower with hot water and soap is ideal, but you can stay clean without this luxury. Use a cloth and soapy water to wash yourself. Pay special attention to the feet, armpits, crotch, hands, and hair as these are prime areas for infestation and infection. If water is scarce, take an "air" bath. Remove as much of your clothing as practical and expose your body to the sun and air for at least 1 hour. Be careful not to sunburn.

If you don't have soap, use ashes or sand, or make soap from animal fat and wood ashes, if your situation allows. To make soap--

- Extract grease from animal fat by cutting the fat into small pieces and cooking them in a pot.
- Add enough water to the pot to keep the fat from sticking as it cooks.
- Cook the fat slowly, stirring frequently.
- After the fat is rendered, pour the grease into a container to harden.
- Place ashes in a container with a spout near the bottom.
- Pour water over the ashes and collect the liquid that drips out of the spout in a separate container. This liquid is the potash or lye. Another way to get the lye is to pour the slurry (the mixture of ashes and water) through a straining cloth.
- In a cooking pot, mix two parts grease to one part potash.
- Place this mixture over a fire and boil it until it thickens.

After the mixture--the soap--cools, you can use it in the semiliquid state directly from the pot. You can also pour it into a pan, allow it to harden, and cut it into bars for later use



*Video 3 Making Soap (PathFinder School (8m:7s), 2016)*

OR....

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Make soap from the amazing Yucca Plant



*Video 4 Survival Soap ((4m:43s), 2013)*

### *Keep Your Hands Clean*

Germs on your hands can infect food and wounds. Wash your hands after handling any material that is likely to carry germs, after visiting the latrine, after caring for the sick, and before handling any food, food utensils, or drinking water. Keep your fingernails closely trimmed and clean and keep your fingers out of your mouth.

### *Keep Your Hair Clean*

Your hair can become a haven for bacteria or fleas, lice, and other parasites. Keeping your hair clean, combed, and trimmed helps you avoid this danger.

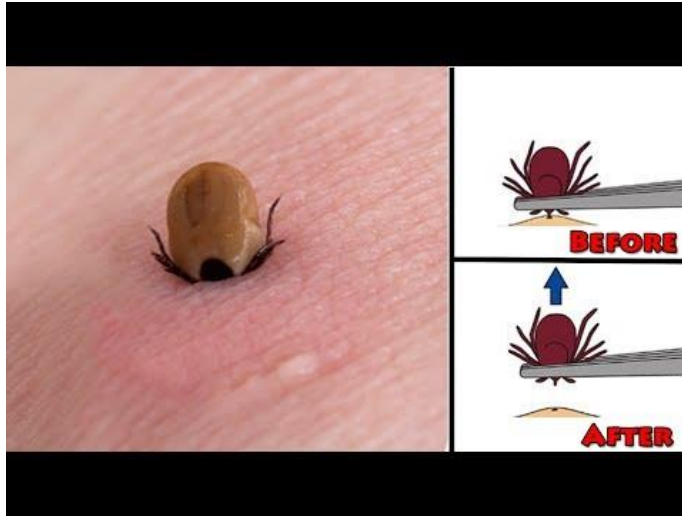
### *Keep Your Clothing Clean*

Keep your clothing and bedding as clean as possible to reduce the chance of skin infection as well as to decrease the danger of parasitic infestation. Clean your outer clothing whenever it becomes soiled. Wear clean underclothing and socks each day. If water is scarce, "air" clean your clothing by shaking, airing, and sunning it for 2 hours. If you are using a sleeping bag, turn it inside out after each use, fluff it, and air it.

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## Conduct Daily Tick Checks



*Video 5 How to Remove a Tick (Beauty DIY (2m:7s), 2017)*

Ticks are common pests in the wilderness. They can carry several diseases including Lyme Disease, Rocky Mountain Spotted Fever, Colorado tick Fever, Tularemia, and Tick Paralysis. Quick tick removal is important to reduce the chances of disease transmission. You may have heard about burning ticks out, or smothering them with Vaseline, gasoline, or nail polish, but these methods actually increase the likelihood of disease transmission from tick to you. The simplest removal method is to use a

pair of tweezers, grasp the tick near its head, and gently, slowly pull straight out without twisting. If tweezers are not available, grasp the tick with your fingers and trying not to squeeze it, pull it straight out.

Unlike fleas, ticks crawl and generally get on you when you brush up against greenery. They will then crawl upwards until they find skin to lodge into. For this reason, it's better to keep your pants bloused into your boots, and your shirt tucked in when possible. Ticks are often found in hard-to-find areas of your body and rarely do you feel them bite, so it's important to do a good check, especially after moving through brush or laying down.

## Keep Your Teeth Clean

Thoroughly clean your mouth and teeth with a toothbrush at least once each day. If you don't have a toothbrush, make a chewing stick. Find a twig about 20 centimeters long and 1 centimeter wide. Chew one end of the stick to separate the fibers. Now brush your teeth thoroughly. Another way is to wrap a clean strip of cloth around your fingers and rub your teeth with it to wipe away food particles. You can also brush your teeth with small amounts of sand, baking soda, salt, or soap. Then rinse your mouth with water, salt water, or willow bark tea. Also, flossing your teeth with string or fiber helps oral hygiene.

If you have cavities, you can make temporary fillings by placing candle wax, tobacco, aspirin, hot pepper, tooth paste or powder, or portions of a ginger root into the cavity. Make sure you clean the cavity by rinsing or picking the particles out of the cavity before placing a filling in the cavity.

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### *Take Care of Your Feet*

To prevent serious foot problems, break in your shoes first. Wash and massage your feet daily. Trim your toenails straight across. Wear an insole and the proper size of dry socks. Powder and check your feet daily for blisters.

If you get a small blister, do not open it. An intact blister is safe from infection. Apply a padding material around the blister to relieve pressure and reduce friction. If the blister bursts, treat it as an open wound. Clean and dress it daily and pad around it. Leave large blisters intact. To avoid having the blister burst or tear under pressure and cause a painful and open sore, do the following:

- Obtain a sewing-type needle and a clean or sterilized thread.
- Run the needle and thread through the blister after cleaning the blister.
- Detach the needle and leave both ends of the thread hanging out of the blister. The thread will absorb the liquid inside. This reduces the size of the hole and ensures that the hole does not close up.
- Pad around the blister.

### *Get Sufficient Rest*

You need a certain amount of rest to keep going. Plan for regular rest periods of at least 10 minutes per hour during your daily activities. Learn to make yourself comfortable under less than ideal conditions. A change from mental to physical activity or vice versa can be refreshing when time or situation does not permit total relaxation.

### *Waste Disposal and Keeping the Camp Site Clean*

Do not soil the ground in the camp site area with urine or feces. Cat Holes and trenches must be used to bury feces and cleaning materials (Toilet paper, smooth rocks, and soft pine cones). Cat holes and trenches must be located at least 200' (about 70 adult paces) from camp and at least 200' from the nearest water source. In hilly terrain, it is better to locate the site uphill. Choose an elevated site where water would not normally go during run-off or rain storms. Urine has little direct effect on vegetation or soil.

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### Cat hole



Figure 6 Cat hole

For most wilderness settings, **cat holes** are the preferred method of human waste disposal. A cat hole is a 6 to 8-inch hole dug in the ground with a small digging tool. A cat hole should be dug in soft bacteria rich soil which will help breakdown the waste. If remaining in an area for more than one night, cat holes should be widely dispersed to aid in hygiene, smell, and decomposition. When finished, the cat hole should be finished with the original dirt and re-covered with native materials. The cat hole can be marked with an X with two small sticks to identify previous

cat hole locations.

### Latrine/Trench

If surviving in a group, rather than individual cat holes, a group latrine may be used. This does not mean the survivors go together at the same time, but it does mean they share a common location. This typically involves digging one long trench. Each person uses one end of the trench and buries it, leaving the remainder of the trench for others. The downside to this approach is that rather than scattering the impact over a broad area (as with individual cat holes) it concentrates the human waste. As a result, it's even more important to locate the trench correctly. A good way to speed decomposition and maintain hygiene is to toss in a handful of dirt after each use.

### Female Hygiene

Females must work extra hard to avoid vaginal infections (VI) and urinary tract infections (UTI) while in a remote survival situation. There are several actions one can take to avoid these:

1. Keep dry. If you get wet, then consider airing out your wet underwear.
2. Don't use alcohol wipes to wipe with since they will kill "good" bacteria as well as the bad, and more likely than not invite a UTI.
3. Wash with soap and water (see section above for how to make soap in the wilderness) daily if possible.
4. Wash your underwear often, especially if you're sweating a lot.
5. Wipe well. In the field you may not have toilet paper. Use a small pee-rag made of a piece of extra cloth that you can hang out to dry in the sun (attach to your backpack if

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you're moving). The UV rays will sterilize the rag, and it will be much cleaner than anything you pick up off the ground.

6. Wipe front to back after defecation to prevent bacterial cross contamination.
7. Stay hydrated and go to the bathroom often to ensure you keep flushing your system. This can be difficult to do at first.

### B4. Medical Emergencies

Medical problems and emergencies you may be faced with, include breathing problems, severe bleeding, and shock.

#### *Breathing Problems*

Any one of the following can cause airway obstruction, resulting in stopped breathing:

- Foreign matter in mouth of throat that obstructs the opening to the trachea.
- Face or neck injuries.
- Inflammation and swelling of mouth and throat caused by inhaling smoke, flames, and irritating vapors or by an allergic reaction.
- "Kink" in the throat (caused by the neck bent forward so that the chin rests upon the chest) may block the passage of air.
- Tongue blocks passage of air to the lungs upon unconsciousness. When an individual is unconscious, the muscles of the lower jaw and tongue relax as the neck drops forward, causing the lower jaw to sag and the tongue to drop back and block the passage of air.

#### *Severe Bleeding*

Severe bleeding from any major blood vessel in the body is extremely dangerous. The loss of 1 liter of blood will produce moderate symptoms of shock. The loss of 2 liters will produce a severe state of shock that places the body in extreme danger. The loss of 3 liters is usually fatal.

#### *Shock*

Shock (acute stress reaction) is not a disease in itself. It is a clinical condition characterized by symptoms that arise when cardiac output is insufficient to fill the arteries with blood under enough pressure to provide an adequate blood supply to the organs and tissues.

### B5. Lifesaving Steps

Control panic, both your own and the victim's. Reassure him and try to keep him quiet.



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Perform a rapid physical exam. Look for the cause of the injury and follow the ABCs of first aid, starting with the airway and breathing, but be discerning. A person may die from arterial bleeding more quickly than from an airway obstruction in some cases.

### *Open Airway and Maintain*

You can open an airway and maintain it by using the following steps.

#### Step 1.

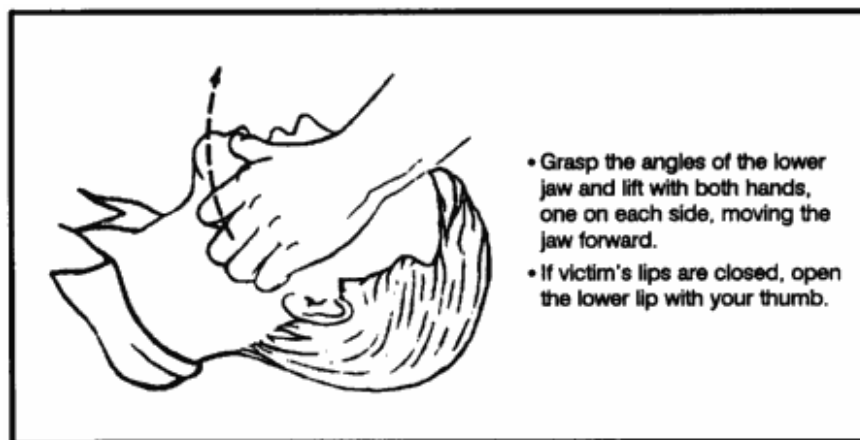
Check if the victim has a partial or complete airway obstruction. If he can cough or speak, allow him to clear the obstruction naturally. Stand by, reassure the victim, and be ready to clear his airway and perform mouth-to-mouth resuscitation should he become unconscious. If his airway is completely obstructed, administer abdominal thrusts until the obstruction is cleared.

#### Step 2.

Using a finger, quickly sweep the victim's mouth clear of any foreign objects, broken teeth, dentures, sand.

#### Step 3.

Using the jaw thrust method (*Figure 7*), grasp the angles of the victim's lower jaw and lift with both hands, one on each side, moving the jaw forward. For stability, rest your elbows on the surface on which the victim is lying. If his lips are closed, gently open the lower lip with your thumb



*Figure 7 Jaw Thrust Method*

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### Step 4.

With the victim's airway open, pinch his nose closed with your thumb and forefinger and blow two complete breaths into his lungs. Allow the lungs to deflate after the second inflation and perform the following:

- *Look*
  - for his chest to rise and fall.
- *Listen*
  - for escaping air during exhalation.
- *Feel*
  - for flow of air on your cheek.

### Step 5.

If the forced breaths do not stimulate spontaneous breathing, maintain the victim's breathing by performing mouth-to-mouth resuscitation.

### Step 6.

There is danger of the victim vomiting during mouth-to-mouth resuscitation. Check the victim's mouth periodically for vomit and clear as needed.

*Note: Cardiopulmonary resuscitation (CPR) may be necessary after cleaning the airway, but only after major bleeding is under control. See FM 21-20, the American Heart Association manual, the Red Cross manual, or most other first aid books for detailed instructions on CPR.*

### *Control Bleeding*

In a survival situation, you must control serious bleeding immediately because replacement fluids normally are not available and the victim can die within a matter of minutes. External bleeding falls into the following classifications (according to its source):

- *Arterial.*
  - Blood vessels called arteries carry blood away from the heart and through the body. A cut artery issues *bright red* blood from the wound in *distinct spurts* or pulses that correspond to the rhythm of the heartbeat. Because the blood in the arteries is under high pressure, an individual can lose a large volume of blood in a short period when damage to an artery of significant size occurs. Therefore, arterial bleeding is the most serious type of bleeding. If not controlled promptly, it can be fatal.
- *Venous*
  - Venous blood is blood that is returning to the heart through blood vessels called veins. A steady flow of *dark red, maroon, or bluish blood* characterizes bleeding

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from a vein. You can usually control venous bleeding more easily than arterial bleeding.

- *Capillary.*
  - The capillaries are the extremely small vessels that connect the arteries with the veins. Capillary bleeding most commonly occurs in minor cuts and scrapes. This type of bleeding is not difficult to control.

You can control external bleeding by direct pressure, indirect (pressure points) pressure, elevation, digital ligation, or tourniquet.

### Direct Pressure

The most effective way to control external bleeding is by applying pressure directly over the wound. This pressure must not only be firm enough to stop the bleeding, but it must also be maintained long enough to "seal off" the damaged surface.

If bleeding continues after having applied direct pressure for 30 minutes, apply a pressure dressing. This dressing consists of a thick dressing of gauze or other suitable material applied directly over the wound and held in place with a tightly wrapped bandage (*Figure 8*). It should be tighter than an ordinary compression bandage but not so tight that it impairs circulation to the rest of the limb. Once you apply the dressing, *do not remove it*, even when the dressing becomes blood soaked.

Leave the pressure dressing in place for 1 or 2 days, after which you can remove and replace it with a smaller dressing.

In the long-term survival environment, make fresh, daily dressing changes and inspect for signs of infection.

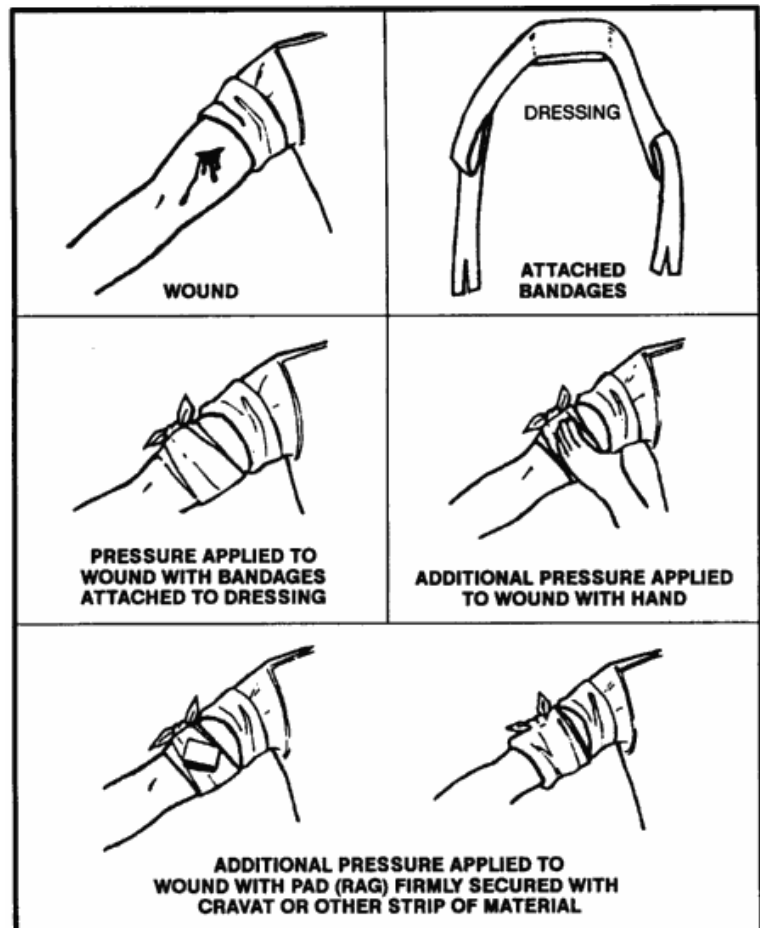


Figure 8 Application of a Pressure Dressing

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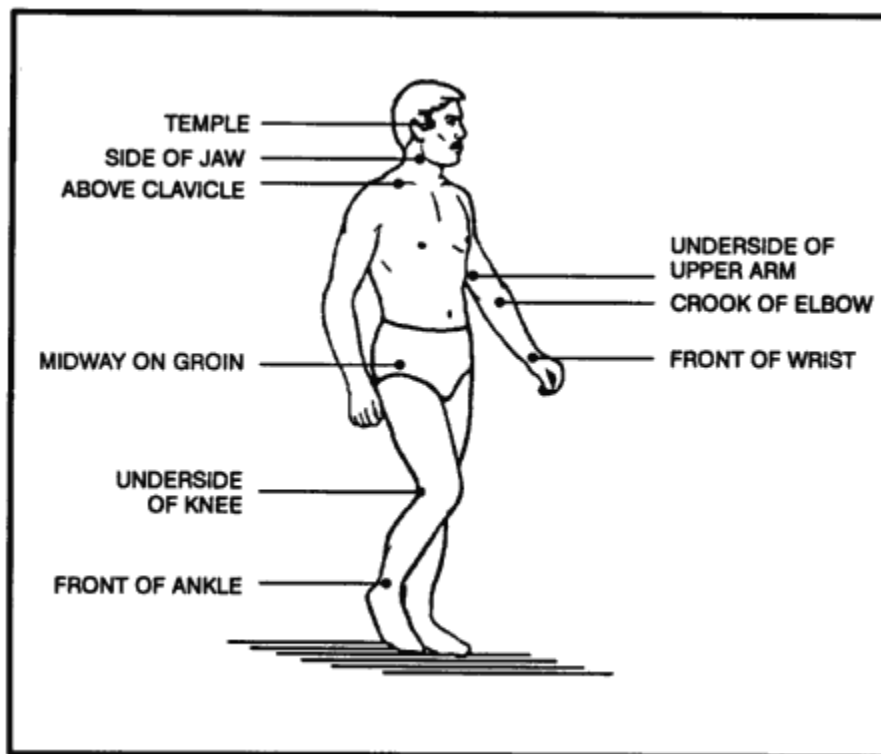
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### Elevation

Raising an injured extremity as high as possible above the heart's level slows blood loss by aiding the return of blood to the heart and lowering the blood pressure at the wound. However, elevation alone will not control bleeding entirely; you must also apply direct pressure over the wound. When treating a snakebite, however, keep the extremity lower than the heart.

### Pressure Points

A pressure point is a location where the main artery to the wound lies near the surface of the skin or where the artery passes directly over a bony prominence (Figure 4-3). You can use digital pressure on a pressure point to slow arterial bleeding until the application of a pressure dressing. Pressure point control is not as effective for controlling bleeding as direct pressure exerted on the wound. It is rare when a single major compressible artery supplies a damaged vessel.



*Figure 9 Pressure Points*

If you cannot remember the exact location of the pressure points, follow this rule: Apply pressure at the end of the joint just above the injured area. On hands, feet, and head, this will be the wrist, ankle, and neck, respectively.

# CURRICULUM ON MILITARY SUBJECTS

## Strand M10: Survival

### WARNING

**Use caution when applying pressure to the neck. Too much pressure for too long may cause unconsciousness or death. Never place a tourniquet around the neck.**

Maintain pressure points by placing a round stick in the joint, bending the joint over the stick, and then keeping it tightly bent by lashing. By using this method to maintain pressure, it frees your hands to work in other areas.

### Digital Ligation

You can stop major bleeding immediately or slow it down by applying pressure with a finger or two on the bleeding end of the vein or artery. Maintain the pressure until the bleeding stops or slows down enough to apply a pressure bandage, elevation, and so forth.

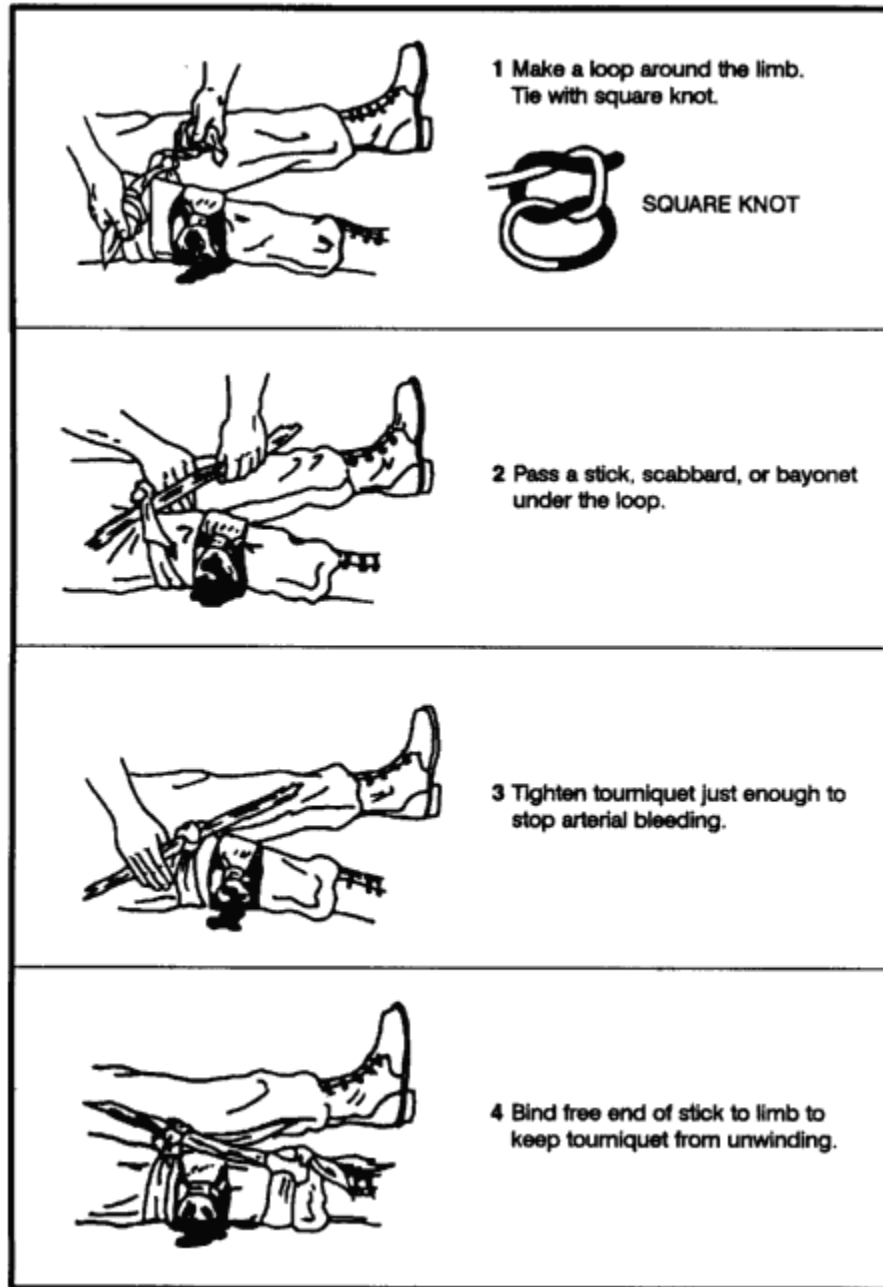
### Tourniquet

Use a tourniquet only when direct pressure over the bleeding point and all other methods did not control the bleeding. If you leave a tourniquet in place too long, the damage to the tissues can progress to gangrene, with a loss of the limb later. An improperly applied tourniquet can also cause permanent damage to nerves and other tissues at the site of the constriction.

If you must use a tourniquet, place it around the extremity, between the wound and the heart, 5 to 10 centimeters above the wound site (*Figure 10*). Never place it directly over the wound or a fracture. Use a stick as a handle to tighten the tourniquet and tighten it only enough to stop blood flow. When you have tightened the tourniquet, bind the free end of the stick to the limb to prevent unwinding.

# CURRICULUM ON MILITARY SUBJECTS

## Strand M10: Survival



*Figure 10 Application of a Tourniquet*

After you secure the tourniquet, clean and bandage the wound. A lone survivor **does not** remove or release an applied tourniquet. In a buddy system, however, the buddy can release the tourniquet pressure every 10 to 15 minutes for 1 or 2 minutes to let blood flow to the rest of the extremity to prevent limb loss.

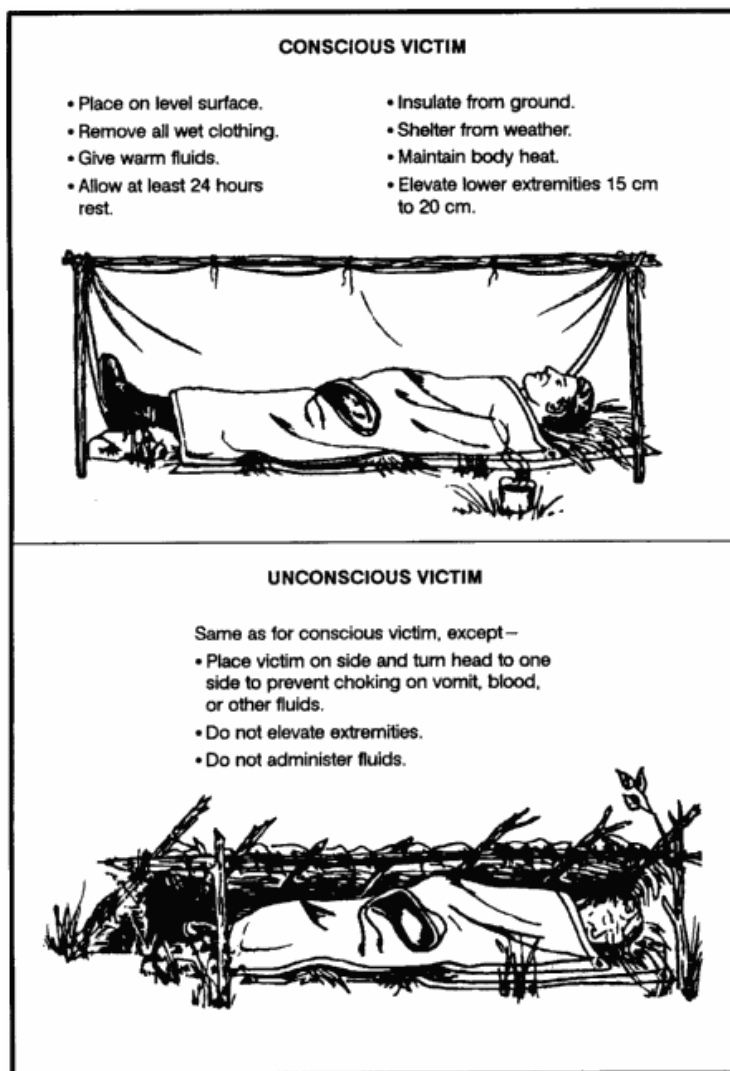
# CURRICULUM ON MILITARY SUBJECTS

## Strand M10: Survival

### *Prevent and Treat Shock*

Anticipate shock in all injured personnel. Treat all injured persons as follows, regardless of what symptoms appear (*Figure 11*):

- If the victim is conscious, place him on a level surface with the lower extremities elevated 15 to 20 centimeters.
- If the victim is unconscious, place him on his side or abdomen with his head turned to one side to prevent choking on vomit, blood, or other fluids.
- If you are unsure of the best position, place the victim perfectly flat. Once the victim is in a shock position, do not move him.
- Maintain body heat by insulating the victim from the surroundings and, in some instances, applying external heat.
- If wet, remove all the victim's wet clothing as soon as possible and replace with dry clothing.
- Improvise a shelter to insulate the victim from the weather.
- Use warm liquids or foods, a prewarmed sleeping bag, another person, warmed water in canteens, hot rocks wrapped in clothing, or fires on either side of the victim to provide external warmth.
- If the victim is conscious, slowly administer small doses of a warm salt or sugar solution, if available.
- If the victim is unconscious or has abdominal wounds, do not give fluids by mouth.
- Have the victim rest for at least 24 hours.
- If you are a lone survivor, lie in a depression in the ground, behind a tree, or any other place out of the weather, with your head lower than your feet.
- If you are with a buddy, reassess your patient constantly.



*Figure 11 Treatment for Shock*

# CURRICULUM ON MILITARY SUBJECTS

## Strand M10: Survival

### B6. Bone and Joint Injury

You could face bone and joint injuries that include fractures, dislocations, and sprains.

#### *Fractures*

There are basically two types of fractures: open and closed. With an open (or compound) fracture, the bone protrudes through the skin and complicates the actual fracture with an open wound. After setting the fracture, treat the wound as any other open wound.

The closed fracture has no open wounds. Follow the [guidelines for immobilization](#), set, and splint the fracture.

The signs and symptoms of a fracture are pain, tenderness, discoloration, swelling deformity, loss of function, and grating (a sound or feeling that occurs when broken bone ends rub together).

The dangers with a fracture are the severing or the compression of a nerve or blood vessel at the site of fracture. For this reason, minimum manipulation should be done, and only very cautiously. If you notice the area below the break becoming numb, swollen, cool to the touch, or turning pale, and the victim shows signs of shock, a major vessel may have been severed. You must control this internal bleeding. Rest the victim for shock and replace lost fluids.

Often you must maintain traction during the splinting and healing process. You can effectively pull smaller bones such as the arm or lower leg by hand. You can create traction by wedging a hand or foot in the V-notch of a tree and pushing against the tree with the other extremity. You can then splint the break.

Very strong muscles hold a broken thighbone (femur) in place making it difficult to maintain traction during healing. You can make an improvised traction splint using natural material ([Figure 12](#)) as follows:

- Get two forked branches or saplings at least 5 centimeters in diameter. Measure one from the patient's armpit to 20 to 30 centimeters past his unbroken leg. Measure the other from the groin to 20 to 30 centimeters past the unbroken leg. Ensure that both extend an equal distance beyond the end of the leg.
- Pad the two splints. Notch the ends without forks and lash a 20- to 30-centimeter cross member made from a 5-centimeter diameter branch between them.

#### Splinting Guidelines for Immobilization

- Splint above and below the fracture site.
- Pad splints to reduce discomfort.
- Check circulation below the fracture after making each tie on the splint.
- To rehabilitate the dislocation, remove the splints after 7 to 14 days.
- Gradually use the injured joint until fully healed.

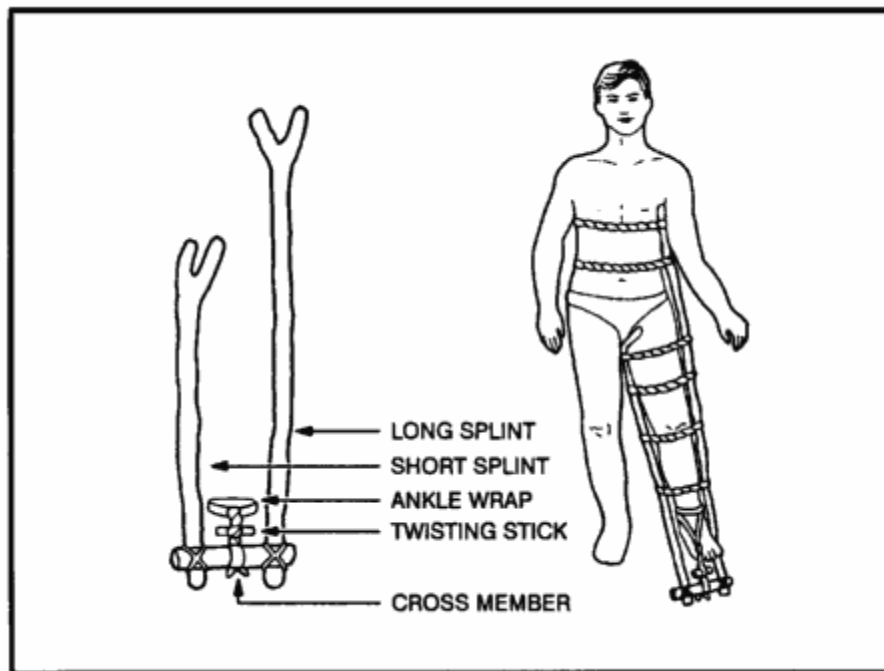


# CURRICULUM ON MILITARY SUBJECTS

## Strand M10: Survival

- Using available material (vines, cloth, rawhide), tie the splint around the upper portion of the body and down the length of the broken leg. Follow the [splinting guidelines](#).
- With available material, fashion a wrap that will extend around the ankle, with the two free ends tied to the cross member.
- Place a 10- by 2.5-centimeter stick in the middle of the free ends of the ankle wrap between the cross member and the foot. Using the stick, twist the material to make the traction easier.
- Continue twisting until the broken leg is as long or slightly longer than the unbroken leg.
- Lash the stick to maintain traction.

*Note: Over time you may lose traction because the material weakened. Check the traction periodically. If you must change or repair the splint, maintain the traction manually for a short time.*



*Figure 12 Improved Traction Splint*

### *Dislocations*

Dislocations are the separations of bone joints causing the bones to go out of proper alignment. These misalignments can be extremely painful and can cause an impairment of nerve or circulatory function below the area affected. You must place these joints back into alignment as quickly as possible.

# CURRICULUM ON MILITARY SUBJECTS

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Signs and symptoms of dislocations are joint pain, tenderness, swelling, discoloration, limited range of motion, and deformity of the joint. You treat dislocations by reduction, immobilization, and rehabilitation.

Reduction or "setting" is placing the bones back into their proper alignment. You can use several methods, but manual traction or the use of weights to pull the bones are the safest and easiest. Once performed, reduction decreases the victim's pain and allows for normal function and circulation. Without an X ray, you can judge proper alignment by the look and feel of the joint and by comparing it to the joint on the opposite side.

### *Sprains*

The accidental overstretching of a tendon or ligament causes sprains. The signs and symptoms are pain, swelling, tenderness, and discoloration (black and blue).

When treating sprains, think RICE--

- R-** Rest injured area.
- I-** Ice for 24 hours, then heat after that.
- C-** Compression-wrapping and/or splinting to help stabilize. If possible, leave the boot on a sprained ankle unless circulation is compromised.
- E-** Elevation of the affected area.

### B7. Bites and Stings

Insects and related pests are hazards in a survival situation. They not only cause irritations, but they are often carriers of diseases that cause severe allergic reactions in some individuals. In many parts of the world you will be exposed to serious, even fatal, diseases not encountered in the United States.

#### *Ticks*

Ticks can carry and transmit diseases, such as Rocky Mountain spotted fever common in many parts of the United States. Ticks also transmit the Lyme disease.



*Figure 13 Tick*



*Figure 14 Mosquito*

#### *Mosquitoes*

Mosquitos may carry malaria, dengue, and many other diseases.

# CURRICULUM ON MILITARY SUBJECTS

Strand M10: Survival

## Flies

Flies can spread disease from contact with infectious sources. They are causes of sleeping sickness, typhoid, cholera, and dysentery.



Figure 15 Fly

## Fleas

Fleas can transmit plague.



Figure 16 Flea



Lice

Lice can transmit typhus and relapsing fever.

Figure 17 Lice

The best way to avoid the complications of insect bites and stings is to keep immunizations (including booster shots) up-to-date, avoid insect-infested areas, use netting and insect repellent, and wear all clothing properly. If you get bitten or stung, do not scratch the bite or sting, it might become infected. Inspect your body at least once a day to ensure there are no insects attached to you.

## How to remove a tick

Grasp the tick as close to the skin's surface as possible with tweezers or tick-tweezers if available.

Pull upward with steady, even pressure. Don't twist or jerk the tick; this can cause the mouth-parts to break off and remain in the skin. If this happens, remove the mouth-parts with tweezers. If you are unable to remove the mouth easily with clean tweezers, leave it alone and let the skin heal.

After removing the tick, thoroughly clean the bite area and your hands with rubbing alcohol, an iodine scrub, or soap and water.

Dispose of a live tick by throwing it in a fire or water. Never crush a tick with your fingers. Wash your hands after touching the tick. Clean the tick wound daily until healed.

*Avoid folklore remedies such as "painting" the tick with nail polish or petroleum jelly, or using heat to make the tick detach from the skin. Your goal is to remove the tick as quickly as possible—not waiting for it to detach.*

# CURRICULUM ON MILITARY SUBJECTS

## Strand M10: Survival

### Treatment

It is impossible to list the treatment of all the different types of bites and stings. Treat bites and stings as follows:

- If antibiotics are available for your use, become familiar with them before deployment and use them.
- Immunizations can prevent most of the common diseases carried by mosquitoes and some carried by flies.
- The common fly-borne diseases are usually treatable with penicillin or erythromycin.
- Most tick-, flea-, louse-, and mite-borne diseases are treatable with tetracycline.
- Most antibiotics come in 250 milligram (mg) or 500 mg tablets. If you cannot remember the exact dose rate to treat a disease, 2 tablets, 4 times a day for 10 to 14 days will usually kill any bacteria.

### Bee and Wasp Stings

If stung by a bee, immediately remove the stinger and venom sac, if attached, by scraping with a fingernail or a knife blade. Do not squeeze or grasp the stinger or venom sac, as squeezing will force more venom into the wound. Wash the sting site thoroughly with soap and water to lessen the chance of a secondary infection.

If you know or suspect that you are allergic to insect stings, always carry an insect sting kit with Benadryl/EpiPen with you.

Relieve the itching and discomfort caused by insect bites by applying--

- Cold compresses.
- A cooling paste of mud and ashes.
- Sap from dandelions.
- Coconut meat.
- Crushed cloves of garlic.
- Onion.

### Spider Bites and Scorpion Stings



Figure 18 Black Widow

The **black widow spider** is identified by a red hourglass on its abdomen. Only the female bites, and it has a neurotoxic venom. The initial pain is not severe, but severe local pain rapidly develops. The pain gradually spreads over the entire body and settles in the abdomen and legs. Abdominal cramps and progressive nausea, vomiting, and a rash may occur. Weakness, tremors, sweating, and

# CURRICULUM ON MILITARY SUBJECTS

## Strand M10: Survival

salivation may occur. Anaphylactic reactions can occur. Symptoms begin to regress after several hours and are usually gone in a few days. Threat for shock. Be ready to perform CPR. Clean and dress the bite area to reduce the risk of infection. An antivenin is available.

The brown house spider or **brown recluse spider** is a small, light brown spider identified by a dark brown violin on its back. There is no pain, or so little pain, that usually a victim is not aware of the bite. Within a few hours a painful red area with a mottled cyanotic center appears. Necrosis does not occur in all bites, but usually in 3 to 4 days, a star-shaped, firm area of deep purple discoloration appears at the bite site. The area turns dark and mummified in a week or two. The margins separate and the scab falls off, leaving an open ulcer.



Figure 19 Brown Recluse

Secondary infection and regional swollen lymph glands usually become visible at this stage. The outstanding characteristic of the brown recluse bite is an ulcer that does not heal but persists for weeks or months. In addition to the ulcer, there is often a systemic reaction that is serious and may lead to death. Reactions (fever, chills, joint pain, vomiting, and a generalized rash) occur chiefly in children or debilitated persons.



Figure 20 Tarantula

**Tarantulas** are large, hairy spiders found in California and other warm places. They have large fangs, but are harmless. If bitten infection may occur so treat a tarantula bite as for any open wound, and try to prevent infection.

**Scorpions** are all poisonous to a greater or lesser degree. There are two different reactions, depending on the species:

- Severe local reaction only, with pain and swelling around the area of the sting. Possible prickly sensation around the mouth and a thick-feeling tongue.
- Severe systemic reaction, with little or no visible local reaction. Local pain may be present. Systemic reaction includes respiratory difficulties, thick-feeling tongue, body spasms, drooling, gastric distention, double vision, blindness, involuntary rapid movement of the eyeballs, involuntary urination and defecation, and heart failure. Death is rare, occurring mainly in children and adults with high blood pressure or illnesses.



Figure 21 Scorpion

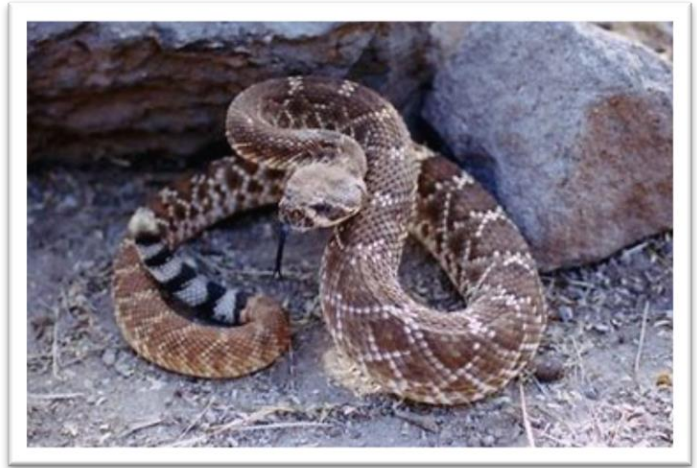
Treat scorpion stings as you would a black widow bite.

# CURRICULUM ON MILITARY SUBJECTS

## Strand M10: Survival

### Snakebites

The chance of a snakebite in a survival situation is rather small, if you are familiar with the various types of snakes and their habitats. However, it could happen and you should know how to treat a snakebite. Deaths from snakebites are rare. More than one-half of the snakebite victims have little or no poisoning, and only about one-quarter develop serious systemic poisoning. However, the chance of a snakebite in a survival situation can affect morale, and failure to take preventive measures or failure to treat a snakebite properly can result in needless tragedy.



*Figure 22 Western Rattlesnake*

The primary concern in the treatment of snakebite is to limit the amount of eventual tissue destruction around the bite area.

A bite wound, regardless of the type of animal that inflicted it, can become infected from bacteria in the animal's mouth. With nonvenomous as well as venomous snakebites, this local infection is responsible for a large part of the residual damage that results.

Snake venoms not only contain poisons that attack the victim's central nervous system (neurotoxins) and blood circulation (hemotoxins), but also digestive enzymes (cytotoxins) to aid in digesting their prey. These poisons can cause a very large area of tissue death, leaving a large open wound. This condition could lead to the need for eventual amputation if not treated.

Shock and panic in a person bitten by a snake can also affect the person's recovery. Excitement, hysteria, and panic can speed up the circulation, causing the body to absorb the toxin quickly. Signs of shock occur within the first 30 minutes after the bite.

Before you start treating a snakebite, determine whether the snake was venomous or nonvenomous. Bites from a nonvenomous snake will show rows of teeth. Bites from a venomous snake may have rows of teeth showing, but will have one or more distinctive puncture marks caused by fang penetration. Symptoms of a venomous bite may be spontaneous bleeding from the nose and anus, blood in the urine, pain at the site of the bite, and swelling at the site of the bite within a few minutes or up to 2 hours later.

Breathing difficulty, paralysis, weakness, twitching, and numbness are also signs of neurotoxic venoms. These signs usually appear 1.5 to 2 hours after the bite.

# CURRICULUM ON MILITARY SUBJECTS

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If you determine that a venomous snake bit an individual, take the following steps:

### Do:

- ✓ Reassure the victim and keep him still.
- ✓ Set up for shock and force fluids or give an intravenous (IV).
- ✓ Remove watches, rings, bracelets, or other constricting items.
- ✓ Clean the bite area.
- ✓ Maintain an airway (especially if bitten near the face or neck) and be prepared to administer mouth-to-mouth resuscitation or CPR.
- ✓ Use a constricting band between the wound and the heart.
- ✓ Immobilize the site.

### Do not--

- ⊘ Remove the poison by using a mechanical suction device or by squeezing.
- ⊘ Give the victim alcoholic beverages or tobacco products.
- ⊘ Give morphine or other central nervous system (CNS) depressors.
- ⊘ Make any deep cuts at the bite site. Cutting opens capillaries that in turn open a direct route into the blood stream for venom and infection.
- ⊘ Put your hands on your face or rub your eyes, as venom may be on your hands. Venom may cause blindness.
- ⊘ Break open the large blisters that form around the bite site.

After caring for the victim as described above, take the following actions to minimize local effects:

- ✓ If infection appears, keep the wound open and clean.
- ✓ Use heat after 24 to 48 hours to help prevent the spread of local infection. Heat also helps to draw out an infection.
- ✓ Keep the wound covered with a dry, sterile dressing.
- ✓ Have the victim drink large amounts of fluids until the infection is gone.

# CURRICULUM ON MILITARY SUBJECTS

## Strand M10: Survival

### B8. Wounds

An interruption of the skin's integrity characterizes wounds. These wounds could be open wounds, skin diseases, frostbite, trench foot, and burns.

#### *Open Wounds*

Open wounds are serious in a survival situation, not only because of tissue damage and blood loss, but also because they may become infected. Bacteria on the object that made the wound, on the individual's skin and clothing, or on other foreign material or dirt that touches the wound may cause infection.



*Video 6 Field Wound Care Tips ((8M:7s), 2017)*

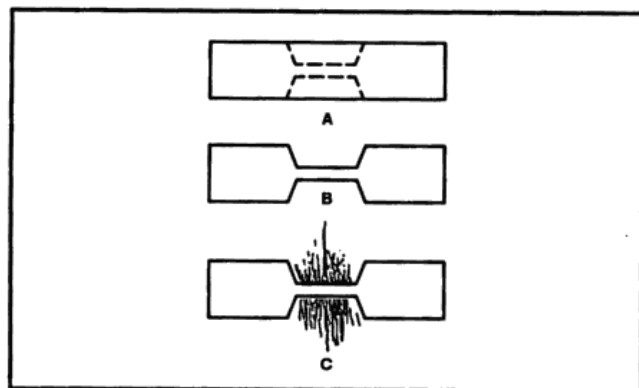
By taking proper care of the wound you can reduce further contamination and promote healing. Clean the wound as soon as possible after it occurs by--

- ✓ Removing or cutting clothing away from the wound.
- ✓ Always looking for an exit wound if a sharp object, gun shot, or projectile caused a wound.
- ✓ Thoroughly cleaning the skin around the wound.
- ✓ Rinsing (not scrubbing) the wound with large amounts of water under pressure. You can use fresh urine if water is not available.

The "open treatment" method is the safest way to manage wounds in survival situations. Do not try to close any wound by suturing or similar procedures. Leave the wound open to allow the drainage of any pus resulting from infection. As long as the wound can drain, it generally will not become life-threatening, regardless of how unpleasant it looks or smells.

Cover the wound with a clean dressing. Place a bandage on the dressing to hold it in place. Change the dressing daily to check for infection.

If a wound is gaping, you can bring the edges together with adhesive tape cut in the form of a "butterfly" or "dumbbell" (*Figure 23*).



*Figure 23 Butterfly Closure*



# CURRICULUM ON MILITARY SUBJECTS

## Strand M10: Survival

In a survival situation, some degree of wound infection is almost inevitable. Pain, swelling, and redness around the wound, increased temperature, and pus in the wound or on the dressing indicate infection is present.

To treat an infected wound--

- Place a warm, moist compress directly on the infected wound. Change the compress when it cools, keeping a warm compress on the wound for a total of 30 minutes. Apply the compresses three or four times daily.
- Drain the wound. Open and gently probe the infected wound with a sterile instrument.
- Dress and bandage the wound.
- Drink a lot of water.

Continue this treatment daily until all signs of infection have disappeared.

If you do not have antibiotics and the wound has become severely infected, does not heal, and ordinary debridement is impossible, consider maggot therapy, despite its hazards:

- Expose the wound to flies for one day and then cover it.
- Check daily for maggots.
- Once maggots develop, keep wound covered but check daily.
- Remove all maggots when they have cleaned out all dead tissue and before they start on healthy tissue. Increased pain and bright red blood in the wound indicate that the maggots have reached healthy tissue.
- Flush the wound repeatedly with sterile water or fresh urine to remove the maggots.
- Check the wound every four hours for several days to ensure all maggots have been removed.
- Bandage the wound and treat it as any other wound. It should heal normally.

# CURRICULUM ON MILITARY SUBJECTS

## Strand M10: Survival

### *Foot Problems*

#### Blister

A blister is a defense mechanism of the body. When the epidermis layer of the skin separates from the dermis, a pool of fluid collects between these layers while the skin re-grows from underneath. Chemical or physical injury can cause blisters. An example of chemical injury would be an allergic reaction. Heat, frostbite, or friction can cause physical injury.

#### **Causes**

- Improperly conditioned feet
- Heat and moisture
- Improperly fitting boots and/or socks
- Friction and pressure

#### **Signs and Symptoms**

- Fluid collection under the skin
- Mild edema and erythema around the site
- Sloughing of tissue exposing subdermal tissue layer
- Localized discomfort and/or pain



*Figure 24 Closed Large Blister*

#### **Treatment**

##### Small blisters usually need no treatment

- Clean area with soap and water
- Monitor for signs and symptoms of infection
- Apply a protective barrier (moleskin bandage) around the blister, to prevent further irritation

##### Closed, Large blisters (Figure 24) (if affecting individuals gait)

- Wash the area around the blister with Betadine solution or alcohol pad
- Drain as close to the edge of the blister as possible to allow for drainage, and then apply gentle pressure to the blister dome expelling the clear fluid
- Apply moleskin (donut) to skin surrounding the blister, using tincture of benzoin as an adhesive.
- DO NOT PUT ANY ADHESIVE DIRECTLY ON THE BLISTER
- Dust entire foot with foot powder to lessen friction and prevent adhesive from adhering to the socks
- Monitor for signs and symptoms of infection

##### Open blisters

- Wash with Betadine solution or clean with soap and water
- Remove any loose skin with a surgical blade or scissors
- Apply moleskin (donut) to cover skin surrounding the blister, using tincture of benzoin as an adhesive.

# CURRICULUM ON MILITARY SUBJECTS

## Strand M10: Survival

- Place a small amount of antibiotic ointment over wound
- Cut a telfa pad and place it inside the moleskin
- Apply moleskin over entire treated area to include surrounding skin
- Monitor for signs and symptoms of infection

### Ingrown Toenails

An ingrown nail occurs when the nail border or corner presses on the surrounding tissue. This condition is painful and often results in an infection once the skin is broken (*Figure 25*).

### Causes

- The most common causes are improper trimming of toenails and poor hygiene.
- Trauma to the nail plate or toe
- Improperly fitted footwear
- Abnormally shaped nail plate



*Figure 25 Infected Ingrown Toenail*

### Signs and Symptoms

- Pain along the margin(s) of the toenail. The great toe is the most common toe affected.
- Localized edema
- There may be signs of infection (drainage of pus, blood, or watery discharge tinged with blood)

### Treatment

- Trim a small point off the corner of the nail to relieve the pressure. Remove any dead skin that may have accumulated in the nail groove.
- Elevate the end of the nail to prevent further irritation of the soft tissue. Proper trimming should correct ingrown toenail. If not...
- Surgically correct a chronic ingrown toenail at the BAS, by complete or partial removal of toenail, under the supervision of a clinician.
- If there are signs of infection, antibiotics should be considered.

# CURRICULUM ON MILITARY SUBJECTS

## Strand M10: Survival

**Trench Foot/Immersion Foot** – a medical condition caused by prolonged exposure of the feet to damp and cold. Trench Foot was given its current name after it was found frequently among World War I troops who had been confined for long periods in trenches filled with standing water. Immersion foot describes a more severe variant of trench foot usually seen in downed pilots and shipwrecked Sailors (*Figure 26*).

### Causes

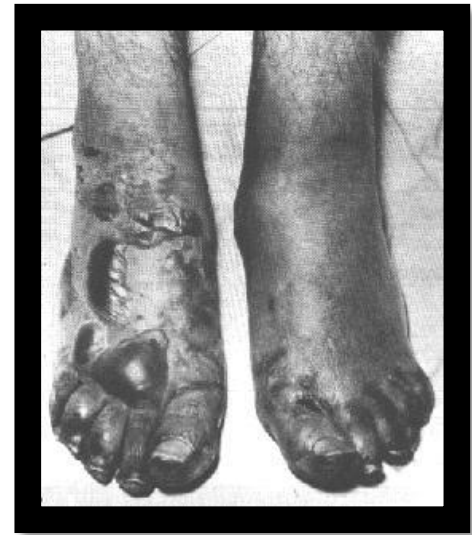
- Prolonged exposure to wet and cold conditions or outright immersion of feet in water at 32-50° F
- Condition can occur on hands due to damp or cold gloves

### Signs and Symptoms

- Initially foot is pale, mottled, numb, pulseless, and immobile
- After rewarming, severe burning pain and return of sensation
- Limb becomes hyperemic (increased amount of blood flow, skin will be warm and red). Numbness, edema, ulceration, and gangrene may develop.

### Treatment

- Keep feet clean, warm, dry, and bandaged
- Gentle rewarming
- Elevate affected extremity to reduce edema
- Consider antibiotics if there are signs of infection
- Avoid wearing boots
- Do not drain blisters in the field



*Figure 26 Trench Foot*

## *Skin Diseases and Ailments*

Although boils, fungal infections, and rashes rarely develop into a serious health problem, they cause discomfort and you should treat them.

### *Fungal Infections*

Keep the skin clean and dry, and expose the infected area to as much sunlight as possible. *Do not scratch* the affected area. During the Southeast Asian conflict, cadets used antifungal powders, lye soap, chlorine bleach, alcohol, vinegar, concentrated salt water, and iodine to treat fungal infections with varying degrees of success. *As with any "unorthodox" method of treatment, use it with caution.*

# CURRICULUM ON MILITARY SUBJECTS

## Strand M10: Survival

### Rashes

To treat a skin rash effectively, first determine what is causing it. This determination may be difficult even in the best of situations. Observe the following rules to treat rashes:

- If it is moist, keep it dry.
- If it is dry, keep it moist.
- Do not scratch it.

Use a compress of vinegar or tannic acid derived from tea or from boiling acorns or the bark of a hardwood tree to dry weeping rashes. Keep dry rashes moist by rubbing a small amount of rendered animal fat or grease on the affected area.

Remember, treat rashes as open wounds and clean and dress them daily. There are many substances available to survivors in the wild or in captivity for use as antiseptics to treat wound:

- *Iodine tablets.*
  - Use 5 to 15 tablets in a liter of water to produce a good rinse for wounds during healing.
    - *Garlic.*
  - Rub it on a wound or boil it to extract the oils and use the water to rinse the affected area.
    - *Salt water.*
  - Use 2 to 3 tablespoons per liter of water to kill bacteria.
    - *Bee honey.*
  - Use it straight or dissolved in water.
    - *Sphagnum moss.*
  - Found in boggy areas worldwide, it is a natural source of iodine. Use as a dressing.

*Again, use noncommercially prepared materials with caution.*

### Frostbite

This injury results from frozen tissues. Light frostbite involves only the skin that takes on a dull, whitish pallor. Deep frostbite extends to a depth below the skin. The tissues become solid and immovable. Your feet, hands, and exposed facial areas are particularly vulnerable to frostbite.

When with others, prevent frostbite by using the buddy system. Check your buddy's face often and make sure that he checks yours. If you are alone, periodically cover your nose and lower part of your face with your mittens.

Do not try to thaw the affected areas by placing them close to an open flame. Gently rub them in lukewarm water. Dry the part and place it next to your skin to warm it at body temperature.

# CURRICULUM ON MILITARY SUBJECTS

## Strand M10: Survival

### Burns

The following field treatment for burns relieves the pain somewhat, seems to help speed healing, and offers some protection against infection:

- First, stop the burning process. Put out the fire by removing clothing, dousing with water or sand, or by rolling on the ground. Cool the burning skin with ice or water. For burns caused by white phosphorous, pick out the white phosphorous with tweezers; do not douse with water.
- Soak dressings or clean rags for 10 minutes in a boiling tannic acid solution (obtained from tea, inner bark of hardwood trees, or acorns boiled in water).
- Cool the dressings or clean rags and apply over burns.
- Treat as an open wound.
- Replace fluid loss.
- Maintain airway.
- Treat for shock.
- Consider using morphine, unless the burns are near the face.

### B9. Environmental Injuries

Heatstroke, hypothermia, diarrhea, and intestinal parasites are environmental injuries you could face.

#### *Heatstroke*

The breakdown of the body's heat regulatory system (body temperature more than 40.5 degrees C [105 degrees F]) causes a heatstroke. Other heat injuries, such as cramps or dehydration, do not always precede a heatstroke. Signs and symptoms of heatstroke are--

- Swollen, beet-red face.
- Reddened whites of eyes.
- Victim not sweating.
- Unconsciousness or delirium, which can cause pallor, a bluish color to lips and nail beds (cyanosis), and cool skin.

*Note: By this time the victim is in severe shock. Cool the victim as rapidly as possible. Cool him by dipping him in a cool stream. If one is not available, douse the victim with urine, water, or at the very least, apply cool wet com-presses to all the joints, especially the neck, armpits, and crotch. Be sure to wet the victim's head. Heat loss through the scalp is great. Administer IVs and provide drinking fluids. You may fan the individual.*

Expect, during cooling--

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- Vomiting.
- Diarrhea.
- Struggling.
- Shivering.
- Shouting.
- Prolonged unconsciousness.
- Rebound heatstroke within 48 hours.
- Cardiac arrest; be ready to perform CPR.

*Note: Treat for dehydration with lightly salted water.*

### *Hypothermia*

Defined as the body's failure to maintain a temperature of 35 degrees C (95 degrees F). Exposure to cool or cold temperature over a short or long time can cause hypothermia. Dehydration and lack of food and rest predispose the survivor to hypothermia.

Unlike heatstroke, you must gradually warm the hypothermia victim. Get the victim into dry clothing. Replace lost fluids, and warm him.

### *Diarrhea*

A common, debilitating ailment caused by a change of water and food, drinking contaminated water, eating spoiled food, becoming fatigued, and using dirty dishes. You can avoid most of these causes by practicing preventive medicine. If you get diarrhea, however, and do not have antidiarrheal medicine, one of the following treatments may be effective:

- Drink one cup of a strong tea solution every 2 hours until the diarrhea slows or stops. The tannic acid in the tea helps to control the diarrhea. Boil the inner bark of a hardwood tree for 2 hours or more to release the tannic acid.
- Make a solution of one handful of ground chalk, charcoal, or dried bones and treated water. If you have some apple pomace or the rinds of citrus fruit, add an equal portion to the mixture to make it more effective. Take 2 tablespoons of the solution every 2 hours until the diarrhea slows or stops.
- Black charcoal may help, but remember white ashes will likely have the opposite effect.



*Figure 27 Emergency Medicinal Charcoal ((7m:26s), 2010)*

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### *Intestinal Parasites*

You can usually avoid worm infestations and other intestinal parasites if you take preventive measures. For example, never go barefoot. The most effective way to prevent intestinal parasites is to avoid uncooked meat and raw vegetables contaminated by raw sewage or human waste used as a fertilizer. However, should you become infested and lack proper medicine, you can use home remedies. Keep in mind that these home remedies work on the principle of changing the environment of the gastrointestinal tract. The following are home remedies you could use:

- *Salt water.*
  - Dissolve 4 tablespoons of salt in 1 liter of water and drink. Do not repeat this treatment.
- *Tobacco.*
  - Eat 1 to 1.5 cigarettes. The nicotine in the cigarette will kill or stun the worms long enough for your system to pass them. If the infestation is severe, repeat the treatment in 24 to 48 hours, *but no sooner.*
- *Kerosene.*
  - Drink 2 tablespoons of kerosene *but no more.* If necessary, you can repeat this treatment in 24 to 48 hours. Be careful not to inhale the fumes. They may cause lung irritation.
- *Hot peppers.*
  - Peppers are effective only if they are a steady part of your diet. You can eat them raw or put them in soups or rice and meat dishes. They create an environment that is prohibitive to parasitic attachment.

### *Poison Oak*

The oil found in poison ivy, poison oak, and poison sumac is called urushiol (you-ROO-shee-all). Most, but not all, people will break out into an itchy, blistering rash within 12-72 hours of coming into contact with these plants. Poison oak is abundant in California below 5,000' elevation. Urushiol can be spread onto your body by brushing up against any part of the plant (leaves, stems, and branches). It is an invisible but very sticky oil that is similar in tackiness to grease.



*Figure 28 Poison Oak Lining a Fence*

The good news is that it is easily recognizable and so the best treatment is prevention by avoidance:



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- Leafy Shrub
- Leaves of Three
- In spring color=green
- In summer/fall leaves turn red
- In arid areas it is often the only green plant around
- Go here to get familiar with all the different looks: <http://www.poison-ivy.org/pacific-poison-oak>



*Figure 29 Poison Oak Rash*

**Treatment:** If you are exposed to poison oak, in most cases a rash can be prevented with immediate washing. Flushing with water and soap everything that came into contact with the plant will help. Best is to use commercial cleansers like Tecnu (which was designed to remove radioactive particles) if available, for decontamination.

# CURRICULUM ON MILITARY SUBJECTS

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