CRISIS MEDIC'S GUIDE

Simple and Effective First Aid Technique for Civilians

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Introduction

There's only one way to begin a guide like this one, and that's with a strong disclaimer. No field guide or medical handbook can truly qualify you to administer primary care, or even effective first aid.

No matter how much we wish we could master this information through reading, first-hand experience and practice are the only ways to truly become proficient. First aid certification courses, CPR training, and other in-person classes are the best way to not only understand how these procedures can be administered, but to know how to perform them in a real live crisis event.

Now that we've got that out of the way, it's time to focus on what we *can* accomplish through reading a medical handbook. You can become a very valuable and effective civilian medic. Meaning that if you are someone's last resort, you will know what to do until more-qualified help arrives.

The chances that you may need to employ these techniques at some point in your lifetime are very high. That's because first aid isn't only useful in a major SHTF emergency scenario, but in simple, day-to-day life.

Much of the information in this guidebook comes from military training manuals and first-hand experiences, precisely because these are the best tools for communicating these ideas to a non-certified, civilian medic.

The goal of the "Crisis Medic's Guide" is to equip you with the knowledge, supply lists, and diagnostic know-how that will make you a highly capable civilian medic. To become someone who knows how to diagnose a medical problem and react

accordingly… someone who understands what to do, and more importantly what NOT to do in a medical emergency.

To be a truly competent first-aid medic, you must embrace the Hippocratic principle, “first do no harm.” If the level of an emergency exceeds your capability, it’s crucial that you understand this and seek someone with the proper medical skills immediately.

Assigning a Group Medic

When it comes to emergency preparedness, there are certain skill sets that everyone should obtain, like basic first aid. In every group however, there should be at least one person responsible for specializing in administering basic CPR, first aid, and low-level trauma management.

Before we get into the criteria and responsibilities of your group’s “medic,” it’s important to make the distinction between first aid and the responsibility of the medic.

First aid, as a skillset, is defined as the first level of non-expert medical care. The group medic is, at the very least, the next level above that. For all intents and purposes, your group medic is your team’s highest medical authority.

Your medic or medics are the ones with the most experience. Thus, they have the responsibility for making medical decisions, even if that decision is simply to transport a patient to the nearest MD in your area. If there is a Registered Nurse, Veterinarian, or EMT in your group, these are naturally the top candidates. If not, you’ll have to determine the next best candidate.

This person should be ready and willing to read all of the instructional materials available (this is why a medical guide

book like this one is essential) and catalog all of the group's medical supplies.

If your medic is not a trained professional, their greatest responsibility is to know when to escalate an illness or injury to a real world medical professional. In practical terms, they need to understand what symptoms make it necessary to transport an ailing team member to the nearest hospital.

Get Serious About Your Med Kit

Most of us have our food and water storage plans well underway. But, after talking with lots of fellow survivalists, it seems that very few of us have a plan for advanced medical supplies. Many don't think about it until someone in their family experiences a serious medical condition.

What do you do if you can't get to the emergency room in time? What if there's some kind of trouble and you can't just call 911, and get that first response we count on?

Truthfully, it's not even a "what if?" This has happened before in urban areas, and happens regularly in remote areas. During widespread SHTF scenarios, first responders will simply be overwhelmed. There's no prioritization of care or queue… it's just pandemonium.

It's important to know that this idea is not just a "what if?" This is something that has happened in the very recent past. It's something that can happen in the aftermath of any natural or weather event, and it's a given in a breakdown of society, of course.

It can also happen in a situation that's a slow burn or rust. Things just degrade slowly. It is not a case of the doctor being unavailable due to an event, but because there's a line there (8 weeks for an appointment?) or it's too far away. This will intensify in many states because of the implementation of Obamacare. There is a critical shortage of primary care physicians. The whole American medical system is disintegrating.

Pharmacies are having problems stocking certain medications these days. You'll occasionally hear on the news that this or that medication is in short supply. EMTs and paramedics are out of the medications they may need. And, who's first in line for receiving pharmaceuticals? Hospitals... and they're having difficulty keeping up their stores of medication.

We don't even realize these things are happening.

Most of the various medical books covering survival medicine are aimed at outdoor hikes, ocean voyages, or trips to underdeveloped countries. The amazing thing is, even in the ones aimed at people that live in a remote and austere environment, nearly every chapter concludes with: go to the hospital. Or, get the patient to the doctor as soon as possible.

But the truth of the matter is that there may come a time when the hospital is not a reasonable option. Or there might not be doctors of various specialties available in the nearest big town.

The goal of this section is to explore what supplies you should have on hand to deal with medical issues that could come up in remote or desperate situations. The assumption here is limited resources, standard medical supplies, and then when those run out, with what is in their environment that may be improvised to serve some more purposes.

In situations where modern medical care is not going to be available, somebody in your family, somebody in your group has to take responsibility to be the "combat medic." You may face the extremes: like fractures, gunshot wounds, and stabbings, to mundane things like athlete's foot and animal bites. Even simple annoyances can become more serious without proper medical care.

One of the very basic problems that you're going to experience is hygiene. Now most us are generally pretty good about keeping ourselves clean, but that will be more of a challenge than you might

think in the aftermath of a major storm, and especially in a societal breakdown situation.

Problems like lice, ticks, bedbugs will be more common. You're going to encounter problems with hygiene simply because your water sources may not be treated properly, or because you've accidentally eaten contaminated food.

These things killed many, many people in the past here in the US. For example, dysentery killed more Civil War soldiers than bullets or shrapnel. They still kill thousands in underdeveloped countries.

In a situation where we're going to be doing activities that we're not very used to doing, at least on a daily basis, like cleaning debris or chopping wood. You will wind up injuring yourself. We're going to be klutzy at any new activity; we're going to wind up hurting ourselves.

And some of these cuts will have the chance of developing an infection. If they do, unless you have antibiotics, the appropriate medications and the appropriate knowledge of how to clean these wounds, then you may wind up getting an infection that goes all the way into your bloodstream.

That's called sepsis, or septicemia. And indeed, it could turn out to be a life-threatening situation, just from something as simple as a cut on your leg or a cut on your arm.

Natural Remedies

Growing up, my grandma never wanted to take me to the doctor. If I cut myself, she would pack it, with sugar and put some tape around it. This is known as a "bacteriostatic." In fact, one of the most common veterinary medications, a treatment for open cuts and wounds is called Sugardine, and it is a mixture of sugar and Betadine, which with two ingredients is very easy to make at home.

Also, raw, unprocessed honey can replace your triple anti-biotic ointment or cream because it has a very low pH. The bacteria can't survive, plus the viscous consistency of honey is wonderful for tissue healing and for new tissue cell development. It's also great for wounds. You might have a second degree or third degree burn, and there's no burn unit available. There's really nothing else like raw, unprocessed honey to be poured into that wound after it was cooled off and cleaned.

If you seriously think that you may need to go out into a garden and get your medication, garlic is fantastic. Externally, it is similar to honey. It has antibacterial properties. You can squeeze garlic juice and use it on a wound. For preventing and healing an infection, garlic

is an excellent remedy. Garlic oil helps to cure ear infections, which, if you think about it, what else are you going to be able to use in times of trouble to cure an ear infection? If you ever had a child with one... you will see the need for this.

Another way to combat ear infections is to ingest the garlic. From a half a clove to one clove crushed and mixed in a teaspoon of raw honey, three times a day. Garlic is an internal antibiotic as well as an external. So actually ingesting garlic will help kill and take care of the infection from the inside also.

And speaking of natural remedies, you can make temporary filling cement simply by putting clove oil and zinc oxide together. It will cement a loose crown in place. If you've lost a filling it works there as well.

Here's an unsettling reality in a SHTF scenario, equipment like dental extractors are going to be extraordinarily valuable. Dental extractors come mostly in uppers and lowers extractor number 150 and number 151, if you only could have two, those probably would be appropriate.

In addition to having extractors, you need to have something that loosens the ligaments that hold your tooth in its socket. And for that, you need an elevator; it looks like a very small chisel. And that's how you loosen the tooth and then the extractor itself actually removes it.

Things we have under control now often spiral out of control in crisis situations. After Hurricane Katrina, there were lots of insect infestations because you can't spray.

There are a number of different plants that you can have in your garden that you can harvest to help protect your home or your camp from excessive insect issues. If you can grow it in your area, Citronella is one of them. Just rubbing the leaves of the citronella plant on your arm will give you a natural insect repellant.

Some people place dog fennel and other dried herbs in their pet bedding to protect against ticks and fleas. In the old days, it was common to place this stuff around your doorstep so that these kinds of insects are not as likely to get into your home.

Antibiotics

We've mentioned the natural antibiotics such as honey and garlic. But many times we really want to have some actual pharmaceuticals available. How do you stockpile these types of medications for times of trouble? This is for a situation where there is no longer modern medical care and modern pharmaceuticals aren't being produced. How do you prepare yourself? How do you stockpile these medications?

FEMA had stored millions of doses of medication and it turned out that when they expired, the agency didn't know what to do with them. So they did a study and they found that almost everything that was in pill and capsule form, and actually stayed potent and effective for 2-10 years after the expiration date. Combine this bit of information with the following and you have a solution.

Many new to survival preparation are unaware of this. As an aqua farmer (raising fish at home for food), I stumbled upon this possible solution. When fish get sick, you can give them pet antibiotics in their water to get rid of the infection. These medications are basically the

same as those for humans. Everyone should store some of these kinds of veterinary antibiotics for situations in which modern medical care is not available to you.

As far as actual items, the following list can guide you:

- Self adhering “Coban” wraps
- Kerlix or rolled gauze
- Steri strips and butterfly bandages to close minor lacerations
- TONS of gauze/dressings (BOTH: sterile and non-sterile 4x4s. Include lots of non-adherent “telfa” pads so healing wounds won’t stick to the dressing)
- Xeroform petrolatum dressings (non stick)
- ABD pads (usually 5×9), also called combine dressings
- 12×30 trauma dressings
- Maxi Pads and tampons- multi use materials
- Tapes- include DUCT, adhesive and paper (for adhesive tape allergies)
- Quality bandage scissor/trauma shears (ALL METAL, the plastic handle ones break cutting jean material!)
- Pliable splinting material (“sam” splints – everything from finger splints to 36 inch rolls that you can cut to size)
- Cast material Kit (comes in fiberglass or Plaster of Paris)
- Moleskin with padding- for blisters
- Scalpels (#10, #11, #15 most popular)
- CPR masks
- Paracord- multiple uses for this
- LOTS of nitrile gloves -hypoallergenic (NEVER touch an open wound with bare hands if you can help it)
- A few pair of sterile size 7 1/2 or 8 gloves (or more!)
- Hand sanitizer/alcohol for cleaning hands and instruments
- Antibacterial soap
- Betadine swabs/wipes- wipes are great to make a betadine solution with water
- 60cc or 100cc syringe- for wound irrigation and cleaning
- Needles # 22, # 25
- Antiseptics- get lots of various solutions, hibiclens is excellent

- Universal Cervical collar
- OPAs (Oral Airways) good for preventing occlusion of an airway due to an allergic reaction and while waiting for the epi pen or benadryl to reduce the swelling
- BZK wipes-to clean hands/wounds – great for cleaning animal bites (may decrease rabies transmission)
- Alcohol pads -to clean instruments/hands
- Sting relief Pads
- Masks- ear loop surgical (for sick people)
- N-95s (for healthy people to keep them from getting sick!)
- Dermabond (Rx) or super glue (may burn the skin)
- Needle holder (if you are learning how to suture)
- Sutures (2-0 nylon- don't bother with 3-0 or smaller unless working with delicate skin on the face, eyelids, etc. (higher the number=smaller the needle!)
- Skin stapler/remover and 2 adson forceps (if you or someone you know knows how to use properly)
- Curved and straight Kelly clamps (to remove foreign objects from wounds)
- Tweezers with pointed ends 1 pair
- Several large safety pins
- Magnifying glass
- Light source -Pen light, head lamp, glow stick, flashlight
- Some type of firestarter- to start fires for boiling water or sterilizing instruments, include a container for boiling water in your supplies!
- Tongue depressor(s)
- Mylar blankets
- Wool Blankets
- Thermometer for mouth and rectum
- Ammonia inhalants
- Cold and Hot Packs (reusable and instant)
- Cotton Sheets- can be cut into strips for multiple uses, or used to carry patients
- Chux Pads- for use in austere conditions to make a clean surface, also used under a patient to catch fluids, leaking or with incontinence

- Clotting powders/dressings (Quikclot, Celox)- cayenne pepper powder may help minor bleeding- use 35,000 HU as a minimum for bleeding.
- Oral antibiotics-(or if emergency, fish meds) may also include garlic oil, honey, cayenne, thyme oil, peppermint oil and eucalyptus oil as herbal alternatives or fresh garlic or ginger.
- Antibiotic ointment and/or antibacterial herbal salves (with calendula/tea tree oil/lavender oils)
- Epinephrine (*Adrenalin*) injections, ampules with 1 mg.

The ABCDE's of Primary Patient Assessment

When you first confront an injured person, it may or may not be immediately clear what's caused the injury. That's why your primary assessment of the injured party is so incredibly important.

The Navy's first-aid manual includes an excellent memory device for completing what's called a "primary survey" of a patient. It's a pneumonic device called the ABCDE's of primary emergency care. It's a very objective and systematic way to classify and illness and it's very much worth memorizing.

During the primary survey, you should be concerned with what are referred to as the **ABCDE**s of emergency care: airway, breathing, circulation, disability, and expose.

A = **Airway**

An obstructed airway may quickly lead to respiratory arrest and death. Assess responsiveness and, if necessary, open the airway.

B = Breathing

Respiratory arrest will quickly lead to cardiac arrest. Assess breathing, and, if necessary, provide rescue breathing. Look for and treat conditions that may compromise breathing, such as penetrating trauma to the chest.

C = Circulation

If the patient's heart has stopped, blood and oxygen are not being sent to the brain. Irreversible changes will begin to occur in the brain in 4 to 6 minutes; cell death will usually

occur within 10 minutes. Assess circulation, and, if necessary, provide cardiopulmonary resuscitation (CPR). Also check for profuse bleeding that can be controlled. Assess and begin treatment for severe shock or the potential for severe shock.

D = Disability

Serious central nervous system injuries can lead to death. Assess the patient's level of consciousness and, if you suspect a head or neck injury, apply a rigid neck collar. Observe the neck before you cover it up. Also do a quick assessment of the patient's ability to move all extremities.

E = Expose

You cannot treat conditions you have not discovered. Remove clothing– especially if the patient is not alert or communicating with you–to see if you missed any life-threatening injuries. Protect the patient's privacy, and keep the patient warm with a blanket if necessary.

As soon as the ABCDE process is completed, you will need to make what is referred to as a **status decision** of the patient's condition. A status decision is a judgment about the severity of the patient's condition and whether the patient requires immediate transport to a medical facility without a secondary survey at the scene. Ideally, the ABCDE steps, status, and transport decision should be completed within 10 minutes of your arrival on the scene.

Action Steps if an Airway is Obstructed

In the event that you discover an obstructed airway, your next move is to try to clear that airway safely. If you observe any foreign material, you may have to remove it by hand. Yes, it's gross but it may save a life.

Of course, visible obstructions are going to be the easiest to diagnose and also to clear. In most circumstances, the obstruction won't be so easy to diagnose.

Partial Airway Obstruction

The signs of partial airway obstruction include unusual breath sounds, cyanosis, or changes in breathing pattern. Conscious patients will usually make clutching motions toward their neck, even when the obstruction does not prevent speech. Encourage conscious patients with apparent partial obstructions to cough.

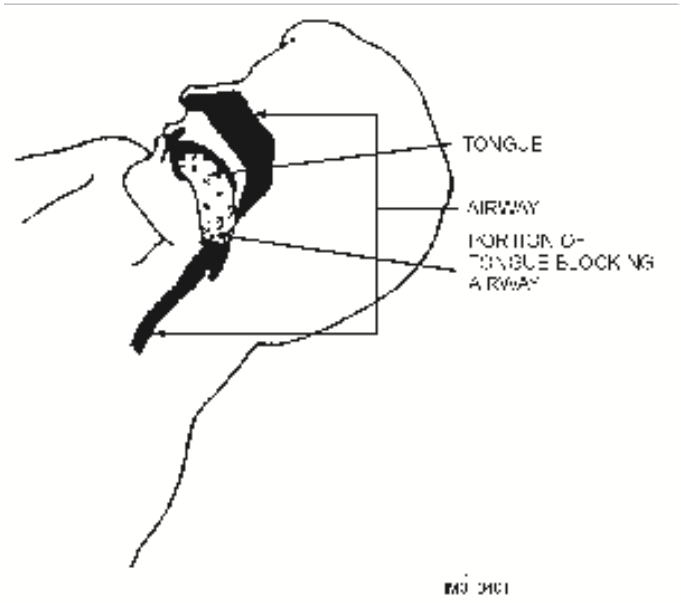


Figure 4-1.—Tongue blocking airway.

If the patient is unable to cough, begin to treat the patient as if this were a complete obstruction. (This also applies to patients who are cyanotic.)

Complete Airway Obstruction

Conscious patients will attempt to speak but will be unable to do so. Nor will they be able to cough. Usually, patients will display the universal distress signal for choking by clutching their neck. The unconscious patient with a complete airway obstruction exhibits none of the usual signs of breathing: rise and fall of the chest and air exchange through the nose and/or mouth. A complete blockage is also indicated if a correctly executed attempt to perform artificial ventilation fails to instill air into the lungs.

Opening the Airway

Many problems of airway obstruction, particularly those caused by the tongue, can be corrected simply by repositioning the head and neck. If repositioning does not alleviate the problem, more aggressive measures must be taken.

POSITIONING THE PATIENT — When a patient is unresponsive, you must determine if he is breathing. This assessment requires the patient to be positioned properly with the airway opened.

Before repositioning patients, it is imperative that you remember to check them for possible spinal injuries. If there is no time to immobilize these injuries and the airway cannot be opened with the victim in the present position, then great care must be taken when repositioning. The head, neck, and back must be moved as a single unit. To do this, adhere to the following four steps (see figure 4-2).

Step 1—Kneel to the side of the victim in line with the victim's shoulders, but far enough away so that the victim's body will not touch yours when it is rolled toward you. Straighten the victim's legs, gently but quickly. Then move the victim's closer arm along the floor until it reaches straight out past the head.

Step 2—Support the back of the victim's head with one hand while you reach over with the other hand to grasp under the distant armpit.

Step 3—Pull the patient toward you while at the same time keeping the head and neck in a natural straight line with the back. Resting the head on the extended arm will help you in this critical task.

Step 4—Roll the patient onto his back and reposition the extended arm.

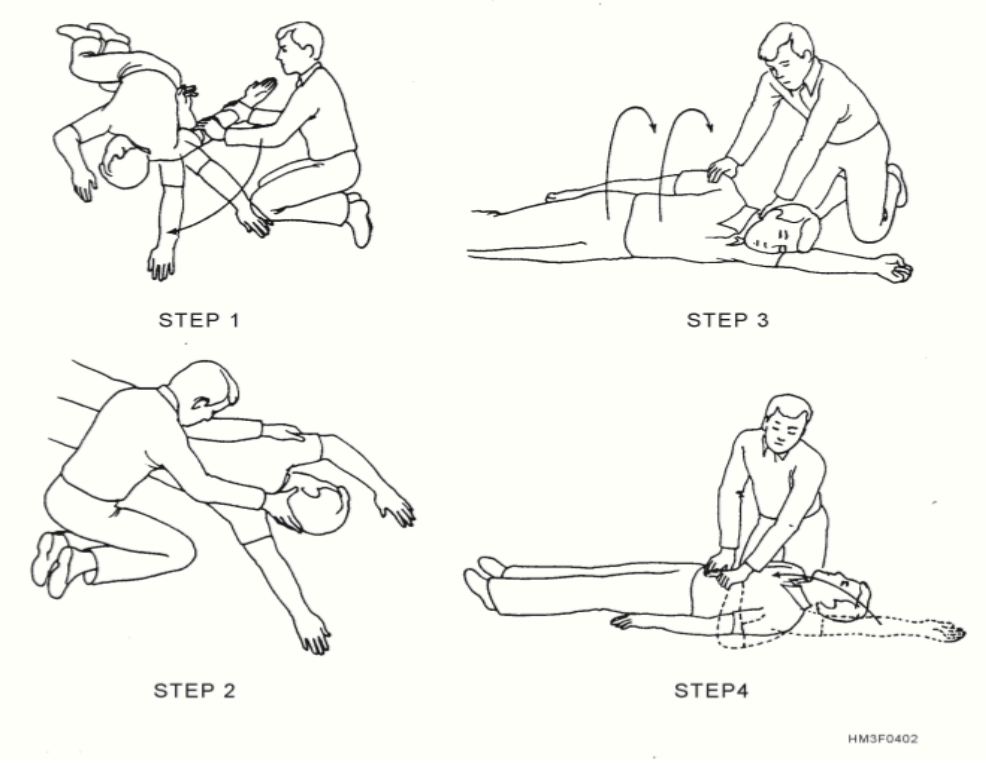


Figure 4-2.—The four steps to reposition the victims of spinal injuries.

Once the patient is supine with the arms alongside the body, you should position yourself at the patient's side. By positioning yourself at the patient's side, you can more easily assess whether the patient is breathing. If the patient is not breathing, you are already positioned to perform artificial respirations (also referred to as rescue breathing) and chest compressions.

Either one of two maneuvers—the head tilt-chin lift maneuver or the jaw-thrust maneuver—may be used to open an obstructed airway. When performing these maneuvers, you may discover foreign material or vomitus in the mouth that needs to be removed. Do not spend very much time to perform this task. Liquids or semi-liquids should be wiped out with the index and middle finger covered by a piece of cloth. Solid material should be extracted with a hooked index finger.

HEAD TILT-CHIN LIFT MANEUVER

The head tilt-chin lift maneuver is the primary method used to open the airway. To perform the head tilt-chin lift maneuver, place one of your hands on the patient's forehead and apply gentle, firm, backward pressure using the palm of your hand. Place the fingers of the other hand under the bony part of the chin. Lift the chin forward and support the jaw, helping to tilt the head back. See figure 4-3. This maneuver will lift the patient's tongue away from the back of the throat and provide an adequate airway.

PRECAUTIONS: When performing the head tilt-chin lift maneuver, do not press too deeply into the soft tissue under the chin. Undue pressure in this location may obstruct the airway. In addition, make sure the mouth is kept open so exhalation and inhalation are not hindered.

JAW-THRUST MANEUVER

The jaw-thrust maneuver is considered an alternate method for opening the airway. This maneuver is accomplished by kneeling near the top of the victim's head, grasping the angles of the patient's lower jaw, and lifting with both hands, one on each side. This will displace the mandible (jawbone) forward while tilting the head backward. Figure 4-4 illustrates the jaw-thrust maneuver. If the lips close, retract the lower lip with your thumb. If mouth-to-mouth breathing is necessary, close the nostrils by placing your cheek tightly against them.

NOTE: The jaw-thrust technique without head tilt is considered the safest approach to opening the airway of patients with suspected neck injuries because it usually can be done without extending the neck.

HEIMLICH MANEUVER WITH VICTIM STANDING OR SITTING

To perform the Heimlich maneuver with victim standing or sitting, stand behind the victim, wrap your arms around the victim's waist, and proceed as follows:

Step 1—Make a fist with one hand.

Step 2—Place the thumb side of the fist against the victim's abdomen, in the midline slightly above the navel and well below the tip of the xiphoid process.

Step 3—Grasp the fist with the other hand and press the fist into the victim's abdomen with a quick upward thrust. See figure 4-5.

Step 4—Repeat the thrusts and continue until the object is expelled from the airway or the patient becomes unconscious. Each new thrust should be a separate and distinct movement.

HEIMLICH MANEUVER WITH VICTIM LYING DOWN

To perform the Heimlich maneuver with victim lying down, proceed as follows:

Step 1—Place the victim in the supine position (face up).

Figure 4-5.—Administering the Heimlich maneuver to a conscious victim who is standing.

Step 2—Kneel astride the victim's thighs and place heel of one hand against the victim's abdomen, in the midline slightly above the navel and well below the tip of the xiphoid.

Step 3—Place the second hand directly on top of the first.

Step 4—Press into the abdomen with a quick upward thrust. See figure 4-6.

Figure 4-6.—Administering the Heimlich maneuver to an unconscious victim who is lying down.

Action Steps When The Patient Exhibits Circulatory Distress

Cardiac arrest is the complete stoppage of heart function. If the patient is to live, action must be taken immediately to restore heart function. The symptoms of cardiac arrest include absence of carotid pulse, lack of heartbeat, dilated pupils, and absence of breathing.

A rescuer knowing how to administer cardiopulmonary resuscitation (CPR) greatly increases the chances of a victim's survival. CPR consists of external heart compression and artificial ventilation. External heart compression is performed on the outside of the chest, and the lungs are ventilated by the mouth-to-mouth, mouth-to-nose, mouth-to- stoma, or mouth-to-mask techniques. To be effective, CPR must be started within 4 minutes of the onset of cardiac arrest. The victim should be supine on a firm surface.

CPR should not be attempted by a rescuer who has not been properly trained. If improperly done, CPR can cause serious damage. It must never be practiced on a healthy individual. For training purposes, use a training aid instead. To learn this technique, see your medical education department or an American Heart Association- or American Red Cross-certified Hospital Corpsman, nurse, or physician.

One-Rescuer CPR

The rescuer must not assume that a cardiac arrest has occurred solely because the victim is lying on the floor and appears to be unconscious. First, try to rouse the victim by gently shaking the shoulders and trying to obtain a response (e.g., loudly ask: "Are you OK?"). If there is no response, place the victim supine on a firm surface. **Always assume neck injuries in unconscious**

patients. Kneel at a right angle to the victim, and open the airway using the head tilt-chin lift or jaw-thrust methods described previously. Attempt to ventilate. If unsuccessful, reposition the head and again attempt to ventilate. If still unsuccessful, deliver five abdominal thrusts (Heimlich maneuver) or chest thrusts to open the airway. Repeat the thrust sequence until the obstruction is removed.

Determining Pulseless-ness

Once the airway has been opened, check for the carotid pulse. The carotid artery is most easily found by locating the larynx at the front of the neck and then sliding two fingers down the side of the neck toward you (fig. 4-13). The carotid pulse is felt in the groove between the larynx and the sternocleidomastoid muscle. If the pulse is present, ventilate as necessary. If the pulse is absent, locate the sternum and begin chest compressions.

Figure 4-13.—Locating the carotid pulse.

PROPER POSITIONING OF HANDS ON STERNUM —To locate the sternum, use the middle and index fingers of your lower hand to locate the lower margin of the victim's rib cage on the side closest to you (fig. 4-14). Then move your fingers up along the edge of the rib cage to the notch where the ribs meet the sternum in the center of the lower chest. Place your middle finger on the notch and your index finger next to it. Place the heel of your other hand along the midline of the sternum next to your index finger. Remember to keep the heel of your hand off the xiphoid (tip of the sternum). A fracture in this area may damage the liver, causing hemorrhage and death.

Figure 4-14.—Proper position of hands on the sternum for chest compressions.

CHEST COMPRESSIONS — Place the heel of one hand directly on the sternum and the heel of the other on top of the first. Interlock your fingers or extend them straight out and **KEEP THEM OFF THE VICTIM'S CHEST!**

Effective compression is accomplished by locking your elbows into position, straightening your arms, and positioning your shoulders directly over hands so that the thrust for each chest

compression is straight down on the sternum. See figure 4-15. The sternum should be depressed approximately 1 1⁄2 to 2 inches (for adults). Release chest compression pressure between each compression to allow blood to flow into the chest and heart. When releasing chest compression pressure, remember to keep your hands in place on the chest.

Not only will you feel less fatigue if you use the proper technique, but a more effective compression accomplished by locking your elbows into position, straightening your arms, and positioning your shoulders directly over hands so that the thrust for each chest compression is straight down on the sternum. See figure 4-15. The sternum should be depressed approximately 1 1⁄2 to 2 inches (for adults). Release chest compression pressure between each compression to allow blood to flow into the chest and heart. When releasing chest compression pressure, remember to keep your hands in place on the chest.

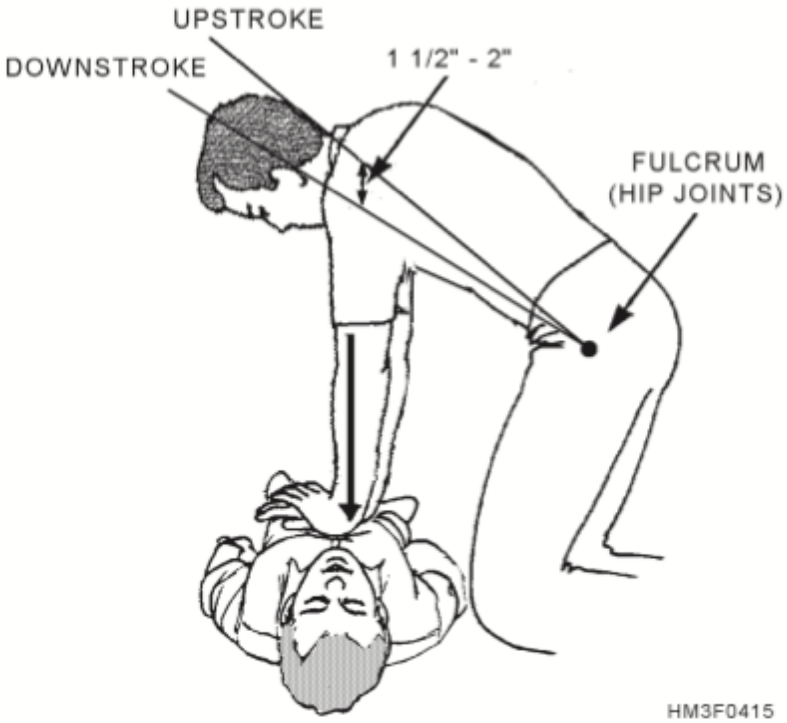


Figure 4-15.—Proper position of the rescuer.

Not only will you feel less fatigue if you use the proper technique, but a more effective compression will also result. Ineffective compression occurs when the elbows are not locked, the rescuer is not directly over the sternum, or the hands are improperly placed on the sternum.

PERFORMANCE AND REASSESSMENT OF CPR.—When one rescuer performs CPR, the ratio of compressions to ventilations is 15 to 2, and it is performed at a rate of 80 to 100 compressions per minute. Vocalize: “one and, two and, three and,...” until you reach 15. After 15 compressions, you must give the victim two slow ventilations (1 1⁄2 to 2 seconds). Continue for four full cycles. Quickly check for the carotid pulse and spontaneous breathing. If there are still no signs of recovery, continue CPR with compressions. Reassess the patient every few minutes thereafter.

If a periodic check reveals a return of pulse and respiration, discontinue CPR and place the victim in the recovery position. Continue monitoring the victim and be prepared to restart CPR.

Action Steps if the Patient is in Shock

Shock is the collapse of the cardiovascular system, characterized by circulatory deficiency and the depression of vital functions. There are several types of shock:

- **Neurogenic shock–**caused by the failure of the nervous system to control the diameter of blood vessels.

- **Hypovolemic shock–**caused by the loss of blood and other body fluids.

- **Cardiogenic shock**–caused by the heart failing to pump blood adequately to all vital parts of the body.

- **Septic shock–**caused by the presence of severe infection.

- **Anaphylactic shock**–caused by a life-threatening reaction of the body to a substance to which a patient is extremely allergic.

Multiple types of shock may be present in varying degrees in the same patient at the same time. The most frequently encountered and most important type for the Hospital Corpsman to understand is **hemorrhagic shock**, a type of hypovolemic shock, which will be discussed later in this chapter.

Shock should be expected in all cases of major injury, including gross hemorrhage, abdominal or chest wounds, crash or blast injuries, extensive large-muscle damage (particularly of the extremities), major fractures, traumatic amputations, or head injuries, or in burns involving more than 10 percent of the body surface area.

Symptoms of Shock

The symptoms of shock vary from patient to patient and even within an individual during the course of illness. Evaluation of the whole situation is more important than one particular sign or symptom.

Degrees of Shock

Table 4-2 provides a generalized overview of the degrees of shock and their symptoms correlated to the approximate volume deficit.

Table 4-2.—Correlation of Magnitude of Volume Deficit and Clinical Presentation

Approximate Deficit (ml)	Decrease in Blood Volume %	Degree	Signs
0-500	0-10	None	None
500-1200	10-25	Mild	Slight tachycardia Postural changes in blood pressure Mild peripheral vasoconstriction Increased respirations
1200-1800	25-35	Moderate	Thready pulse 100-120 Systolic blood pressure 90-100 Marked vasoconstriction Labored breathing Diaphoresis (profuse perspiration) Anxiety and restlessness Decreased urine output
1800-2500	35-50	Severe	Thready pulse > 120 Systolic blood pressure < 60 Weakened respirations Increased diaphoresis Changes in levels of consciousness No urine output

Shock Control and Prevention

The essence of shock control and prevention is to recognize the onset of the condition and to start treatment before the symptoms fully develop. The following are general signs and symptoms of the development of shock (see figure 4-19):

- Restlessness and apprehension are early symptoms, often

followed by apathy.

- Eyes may be glassy and dull. Pupils may be dilated. (These are also the symptoms of morphine use.)

- Breathing may be rapid or labored, often of the gasping, “air hunger” type. In the advanced stages of shock, breathing becomes shallow and irregular.

- The face and skin may be very pale or ashen gray; in the dark complexioned, the mucous membranes may be pale. The lips are often cyanotic.

- The skin feels cool and is covered with clammy sweat. The skin’s coolness is related to a decrease in the peripheral circulation.

- The pulse tends to become rapid, weak, and thready. If the blood pressure is severely lowered, the peripheral pulse may be absent. The pulse rate in hemorrhagic shock may reach 140 or higher. In neurogenic shock, however, the pulse rate is slowed, often below 60.

- The blood pressure is usually lowered in moderately severe shock; the systolic pressure drops below 100, while the pulse rises above 100. The body is compensating for circulatory fluid loss by peripheral vasoconstriction. This process tends to maintain the blood pressure at a nearly normal level despite a moderately severe loss of circulating blood volume. A point comes, however, when decompensation occurs, and a small amount of additional blood loss will produce a sudden, alarming fall in blood pressure.

- There may be nausea, vomiting, and dryness of the mouth, lips, and tongue.

- There are frequent complaints of thirst. Even the severely wounded may complain of thirst rather than pain.

- The kidneys may shut down. Urine formation either ceases or greatly diminishes if the systolic blood pressure falls below 80 for long periods of time.

- The person may faint from inadequate venous blood return to the heart. This may be the result of a temporary gravitational pooling of the blood associated with standing up too quickly.

General Treatment Procedures

Intravenous fluid administration is the most important factor in the treatment of all types of shock except cardiogenic shock. If intravenous solutions are unavailable or transportation to a medical treatment facility will be delayed, and there are no contraindications (such as gastrointestinal bleeding or unconsciousness), you may give the patient an electrolyte solution by mouth. An electrolyte solution may be prepared by adding a teaspoon of salt and half a teaspoon of baking soda to a quart or liter of water. Allow the patient to sip the solution.

Other treatment procedures for shock are as follows:

- Maintain an open airway. Oxygen may also be administered if proper equipment is available.

- Control hemorrhages.

- Check for other injuries that may have been sustained. Remove the victim from the presence of identifiable causative agents.

- Place the victim in a supine position, with the feet slightly higher than the head (shock position). Certain problems,

such as breathing difficulties or head injuries, may require other positioning.

- Reduce pain by splinting fractures, providing emotional support, and attending to the victim's comfort. Unless contraindicated, aspirin may be dispensed.

- Conserve the patient's body heat.

- Avoid rough handling of the victim, and transport to a medical treatment facility.

- If transportation to a definitive care facility will be lengthy or delayed, seek the radio or phone advice of a medical officer on whether to give fluids by mouth or to start an intravenous line. If this consultation is impossible, use your own judgment. In the case of cardiogenic shock, DO NOT start intravenous fluids since blood volume is sufficient and only function is impaired.

- Constantly monitor the patient and record vital signs every 15 minutes so that you are able to keep track of the patient's progress.

Action Steps in the Event of Soft Tissue Wounds

The most common injuries seen by survivalists in a first aid setting are soft tissue injuries with the accompanying hemorrhage, shock, and danger of infection. Any injury that causes a break in the skin, underlying soft tissue structures, or body membranes is known as a **wound**. This section will discuss the classification of wounds, the general and specific treatment of soft tissue injuries, the use of dressings and bandages in treating wounds, and the special problems that arise because of the location of wounds.

Classification of Wounds

Wounds may be classified according to their general condition, size, location, the manner in which the skin or tissue is broken, and the agent that caused the wound. It is usually necessary for you to consider these factors to determine what first aid treatment is appropriate for the wound.

General Condition of the Wound

If the wound is fresh, first aid treatment consists mainly of stopping the flow of blood, treating for shock, and reducing the risk of infection. If the wound is already infected, first aid consists of keeping the victim quiet, elevating the injured part, and applying a warm wet dressing. If the wound contains foreign objects, first aid treatment may consist of removing the objects if they are not deeply embedded. DO NOT remove objects embedded in the eyes or the skull, and **do not** remove impaled objects. Stabilize impaled

objects with a bulky dressing before transporting the victim.

Size of the Wound

In general, since large wounds are more serious than small ones, they usually involve more severe bleeding, more damage to the underlying organs or tissues, and a greater degree of shock. However, small wounds are sometimes more dangerous than large ones since they may become infected more readily due to neglect. The depth of the wound is also important because it may lead to a complete perforation of an organ or the body, with the additional complication of entrance and exit wounds.

Location of the Wound

Since a wound may involve serious damage to the deeper structures, as well as to the skin and the tissue immediately below it, the location of the wound is important. For example, a knife wound to the chest may puncture a lung and cause interference with breathing. The same type of wound in the abdomen may result in a dangerous infection in the abdominal cavity, or it might puncture the intestines, liver, kidneys, or other vital organs. A knife wound to the head may cause brain damage, but the same wound in a less vital spot (such as an arm or leg) might be less important.

Types of Wounds

When you consider the manner in which the skin or tissue is broken, there are six general kinds of wounds: abrasions, incisions, lacerations, punctures, avulsions, and amputations. Many wounds, of course, are combinations of two or more of these basic types.

ABRASIONS

Abrasions are made when the skin is rubbed or scraped off. Rope burns, floor burns, and skinned knees or elbows are

common examples of abrasions. This kind of wound can become infected quite easily because dirt and germs are usually embedded in the tissues.

INCISIONS

Incisions, commonly called cuts, are wounds made by sharp cutting instruments such as knives, razors, and broken glass. Incisions tend to bleed freely because the blood vessels are cut cleanly and without ragged edges. There is little damage to the surrounding tissues. Of all classes of wounds, incisions are the least likely to become infected, since the free flow of blood washes out many of the microorganisms (germs) that cause infection.

LACERATIONS

These wounds are torn, rather than cut. They have ragged, irregular edges and masses of torn tissue underneath. These wounds are usually made by blunt (as opposed to sharp) objects. A wound made by a dull knife, for instance, is more likely to be a laceration than an incision. Bomb fragments often cause lacerations. Many of the wounds caused by accidents with machinery are lacerations; they are often complicated by crushing of the tissues as well. Lacerations are frequently contaminated with dirt, grease, or other material that is ground into the tissue. They are therefore very likely to become infected.

PUNCTURES

Punctures are caused by objects that penetrate into the tissues while leaving a small surface opening. Wounds made by nails, needles, wire, and bullets are usually punctures. As a rule, small puncture wounds do not bleed freely; however, large puncture wounds may cause severe internal bleeding. The possibility of infection is great in all puncture wounds, especially if the penetrating object has tetanus bacteria on it. To prevent

anaerobic infections, primary closures are not made in the case of puncture wounds.

AVULSIONS

An avulsion is the tearing away of tissue from a body part. Bleeding is usually heavy. In certain situations, the torn tissue may be surgically reattached. It can be saved for medical evaluation by wrapping it in a sterile dressing and placing it in a cool container, and rushing it—along with the victim–to a medical facility. Do not allow the avulsed portion to freeze, and do not immerse it in water or saline.

AMPUTATIONS

A traumatic amputation is the nonsurgical removal of the limb from the body. Bleeding is heavy and requires a tourniquet (which will be discussed later) to stop the flow. Shock is certain to develop in these cases. As with avulsed tissue, wrap the limb in a sterile dressing, place it in a cool container, and transport it to the hospital with the victim. Do not allow the limb to be in direct contact with ice, and do not immerse it in water or saline. The limb can often be successfully reattached.

Management of Open Soft Tissue Injuries

There are three basic rules to be followed in the treatment of practically all open soft tissue injuries: to control hemorrhage, to treat the victim for shock, and to do whatever you can to prevent infection. These will be discussed, along with the proper application of first aid materials and other specific first aid techniques.

Hemorrhage

Hemorrhage is the escape of blood from the vessels of the circulatory system. The average adult body contains about 5

liters of blood. Five hundred milliliters of blood, the amount given by blood donors, can usually be lost without any harmful effect. The loss of 1 liter of blood usually causes shock, but shock may develop if small amounts of blood are lost rapidly, since the circulatory system does not have enough time to compensate adequately. The degree of shock progressively increases as greater amounts of blood escape. Young children, sick people, or the elderly may be especially susceptible to the loss of even small amounts of blood since their internal systems are in such delicate balance.

Capillary blood is usually brick red in color. If capillaries are cut, the blood oozes out slowly. Blood from the veins is dark red. Venous bleeding is characterized by a steady, even flow. If an artery near the surface is cut, the blood, which is bright red in color, will gush out in spurts that are synchronized with the heartbeats. If the severed artery is deeply buried, however, the bleeding will appear to be a steady stream.

In actual practice, you might find it difficult to decide whether bleeding is venous or arterial, but the distinction is not usually important. The important thing to know is that all bleeding must be controlled as quickly as possible.

External hemorrhage is of greatest importance to the Corpsman because it is the most frequently encountered and the easiest to control. It is characterized by a break in the skin and visible bleeding. Internal hemorrhage (which will be discussed later) is far more difficult to recognize and to control.

Control of Hemorrhage

The best way to control external bleeding is by applying a compress to the wound and exerting pressure directly to the wound. If direct pressure does not stop the bleeding, pressure can also be applied at an appropriate pressure point. At times, elevation of an extremity is also helpful in controlling

hemorrhage. The use of splints in conjunction with direct pressure can be beneficial. In those rare cases where bleeding cannot be controlled by any of these methods, you must use a tourniquet.

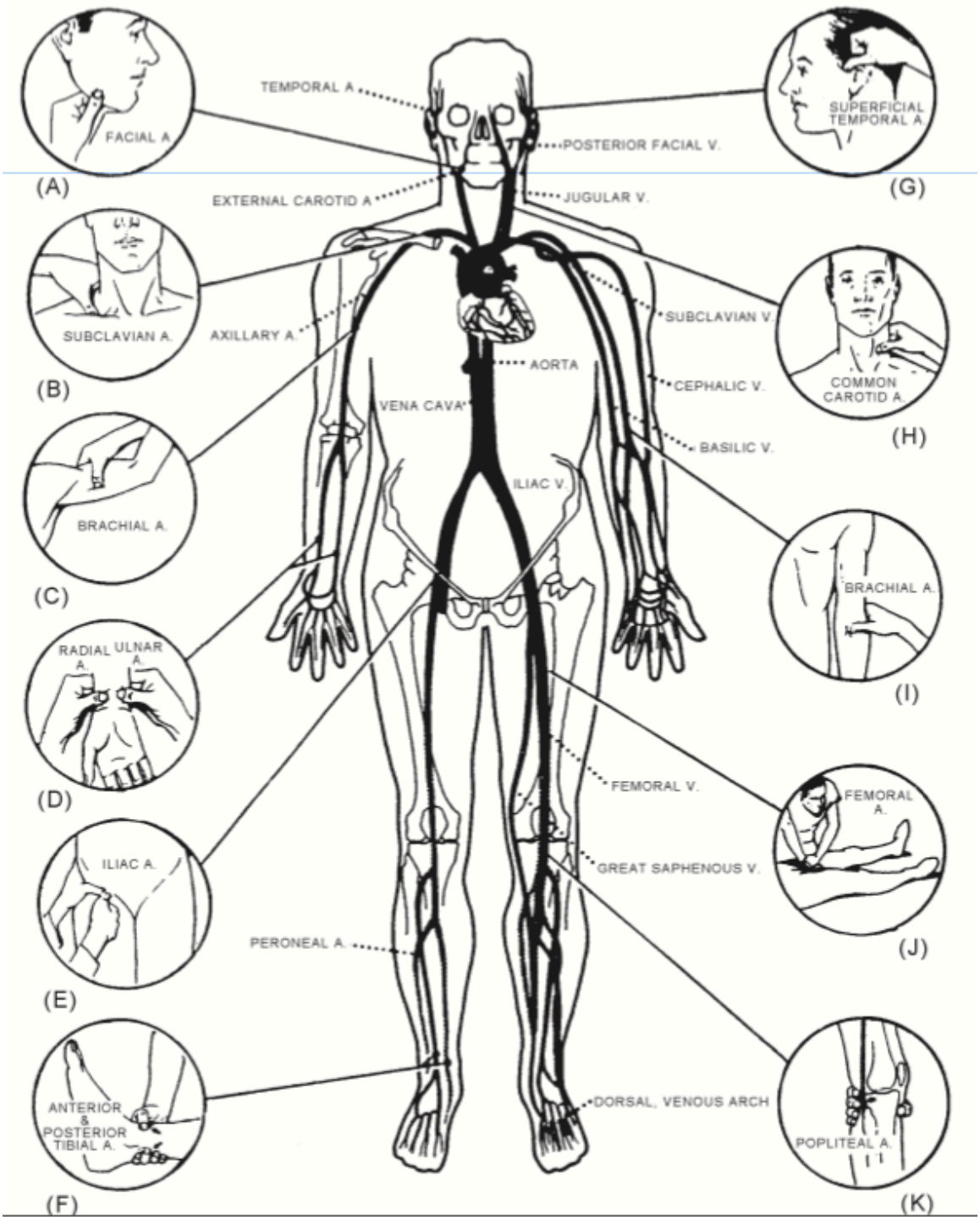
If bleeding does not stop after a short period, try placing another compress or dressing over the first and securing it firmly in place. If bleeding still will not stop, try applying direct pressure with your hand over the compress or dressing.

Remember that in cases of severe hemorrhage, it is less important to worry too much about finding appropriate materials or about the dangers of infection. The most important problem is to stop rapid exsanguination. If no material is available, simply thrust your hand into the wound. In most situations, direct pressure is the first and best method to use in the control of hemorrhage.

Pressure Points

Bleeding can often be temporarily controlled by applying hand pressure to the appropriate pressure point. A pressure point is the spot where the main artery to an injured part lies near the skin surface and over a bone. Apply pressure at this point with the fingers (digital pressure) or with the heel of the hand. No first aid materials are required. The object of the pressure is to compress the artery against the bone, thus shutting off the flow of blood from the heart to the wound.

There are 11 principal points on each side of the body where hand or finger pressure can be used to stop hemorrhage. These points are shown in figure 4-27. If bleeding occurs on the face below the level of the eyes, apply pressure to the point on the mandible. This is shown in figure 4-27A. To find this pressure point, start at the angle of the jaw and run your finger forward along the lower edge of the mandible until you feel a small notch. The pressure point is in this notch.



If bleeding is in the shoulder or in the upper part of the arm, apply pressure with the fingers behind the clavicle. You can press down against the first rib or forward against the clavicle; either kind of pressure will stop the bleeding. This pressure point is shown in figure 4-27B.

Bleeding between the middle of the upper arm and the elbow should be controlled by applying digital pressure to the inner (body) side of the arm, about halfway between the shoulder and the elbow. This compresses the artery against the bone of the arm. The application of pressure at this point is shown in figure 4-27C. Bleeding from the hand can be controlled by pressure at the wrist, as shown in figure 4-27D. If it is possible to hold the arm up in the air, the bleeding will be relatively easy to stop.

Figure 4-27E shows how to apply digital pressure in the middle of the groin to control bleeding from the thigh. The artery at this point lies over a bone and quite close to the surface, so pressure with your fingers may be sufficient to stop the bleeding.

Figure 4-27F shows the proper position for controlling bleeding from the foot. As in the case of bleeding from the hand, elevation is helpful in controlling the bleeding.

If bleeding is in the region of the temple or the scalp, use your finger to compress the main artery to the temple against the skull bone at the pressure point just in front of the ear. Figure 4-27G shows the proper position.

If the neck is bleeding, apply pressure below the wound, just in front of the prominent neck muscle. Press inward and slightly backward, compressing the main artery of that side of the neck against the bones of the spinal column. The application of pressure at this point is shown in figure 4-27H. Do not apply pressure at this point unless it is absolutely essential, since there is a great danger of pressing on the windpipe, thereby choking the victim.

Bleeding from the lower arm can be controlled by applying pressure at the elbow, as shown in figure 4-27I.

As mentioned before, bleeding in the upper part of the thigh can sometimes be controlled by applying digital pressure in the

middle of the groin, as shown in figure 4-27E. Sometimes, however, it is more effective to use the pressure point of the upper thigh, as shown in figure 4-27J. If you use this point, apply pressure with the closed fist of one hand and use the other hand to give additional pressure. The artery at this point is deeply buried in some of the heaviest muscle tissue in the body, so a great deal of pressure must be exerted to compress the artery against the bone.

Bleeding between the knee and the foot may be controlled by firm pressure at the knee. If pressure at the side of the knee does not stop the bleeding, hold the front of the knee with one hand and thrust your fist hard against the artery behind the knee, as shown in figure 4-27K. If necessary, you can place a folded compress or bandage behind the knee, bend the leg back, and hold it in place by a firm bandage. This is a most effective way of controlling bleeding, but it is so uncomfortable for the victim that it should be used only as a last resort.

You should memorize these pressure points so that you will know immediately which point to use for controlling hemorrhage from a particular part of the body. Remember, the correct pressure point is that which is (1) **nearest the wound**, and (2) **between the wound and the main part of the body**.

It is very tiring to apply digital pressure, and it can seldom be maintained for more than 15 minutes. Pressure points are recommended for use while direct pressure is being applied to a serious wound by a second rescuer. Using the pressure-point technique is also advised after a compress, bandage, or dressing has been applied to the wound, since this method will slow the flow of blood to the area, thus giving the direct pressure technique a better chance to stop the hemorrhage. The pressure-point system is also recommended as a stopgap measure until a pressure dressing or a tourniquet can be applied.

Elevation

The elevation of an extremity, where appropriate, can be an effective aid in hemorrhage control when used in conjunction with other methods of control, especially direct pressure. This is because the amount of blood entering the extremity is decreased by the uphill gravitational effect. Do not elevate an extremity until it is certain that no bones have been broken or until broken bones are properly splinted.

Splints

Another effective method of hemorrhage control in cases of bone fractures is splinting. The immobilization of sharp bone ends reduces further tissue trauma and allows lacerated blood vessels to

clot. In addition, the gentle pressure exerted by the splint helps the clotting process by giving additional support to compresses or dressings already in place over open fracture sites.

Later in this chapter we will go into the subject of splinting in greater detail.

Tourniquets

A tourniquet is a constricting band that is used to cut off the supply of blood to an injured limb. Use a tourniquet **only as a last resort** and if the control of hemorrhage by other means proves to be difficult or impossible. A tourniquet must always be applied **above** the wound (i.e., toward the trunk), and it must be applied as close to the wound as practical.

Basically, a tourniquet consists of a pad, a band, and a device for tightening the band so that the blood vessels will be compressed. It is best to use a pad, compress, or similar pressure object, if one is available. The pressure object goes under the band and must be placed directly over the artery or it

will actually decrease the pressure on the artery, allowing a greater flow of blood. If a tourniquet placed over a pressure object does not stop the bleeding, there is a good chance that the pressure object is in the wrong place. If placement is not effective, shift the object around until the tourniquet, when tightened, will control the bleeding.

Any long flat material may be used as the band. It is important that the band be flat: belts, stockings, flat strips of rubber, or neckerchiefs may be used; however, rope, wire, string, or very narrow pieces of cloth should not be used because they can cut into the flesh. A short stick may be used to twist the band, tightening the tourniquet. Figure 4-28 shows the proper steps in applying a tourniquet.

To be effective, a tourniquet must be tight enough to stop the arterial blood flow to the limb. Be sure, therefore, to draw the tourniquet tight enough to stop the bleeding. Do not make it any tighter than necessary, though, since a tourniquet that is too tight can lead to loss of the limb the tourniquet is applied to.

After you have brought the bleeding under control with the tourniquet, apply a sterile compress or dressing to the wound and fasten it in position with a bandage.

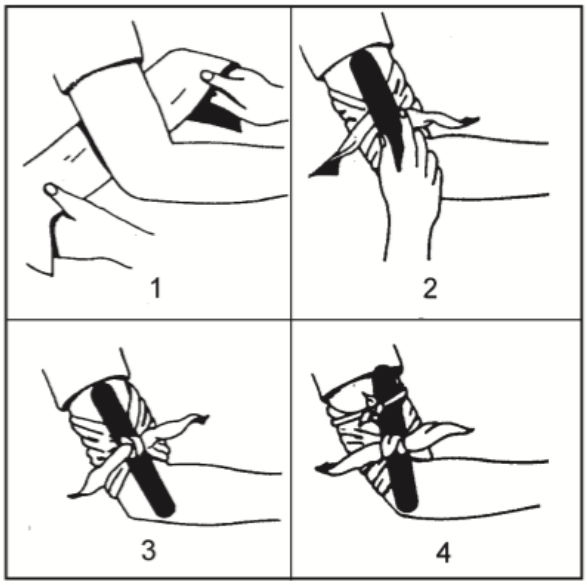


Figure 4-28.—Applying a tourniquet.

Here are the points to remember about using a tourniquet:

- **Use a tourniquet only as a last resort!** Don't use a tourniquet unless you can't control the bleeding by any other means.

- Don't use a tourniquet for bleeding from the head, face, neck, or trunk. Use it only on the limbs.

- Always apply a tourniquet **above the wound** and as close to the wound as possible. As a general rule, do not place a tourniquet below the knee or elbow except for complete amputations. In certain distal areas of the extremities, nerves lie close to the skin and may be damaged by the compression. Furthermore, rarely does one encounter bleeding distal to the knee or elbow that requires a tourniquet.

- Be sure you draw the tourniquet tight enough to stop the bleeding, but don't make it any tighter than necessary. The pulse beyond the tourniquet should disappear.

- **Don't loosen a tourniquet after it has been applied.** Transport the victim to a medical facility that can offer proper care.

- Don't cover a tourniquet with a dressing. If it is necessary to cover the injured person in some way, **make sure** that all the other people concerned with the case know about the

tourniquet. Using crayon, skin pencil, or blood, mark a large "T" and the time the tourniquet was applied on the victim's forehead or on a medical tag attached to the wrist.

Conclusion

The two most important attributes of a civilian medic are 1) the ability to remain calm under intense pressure and 2) the ability to determine when to escalate a medical emergency to a higher level of care than you are able to provide.

If you're able to do both of these things, the teachings in this guide will allow you to diagnose and manage medical situations both serious and minor.

In situations where advanced medical care is not immediately available, you will be the one who has to slow the bleeding, and keep the patient comfortable and alert. That's why it's so incredibly important to choose the right person to be your survival medic. That person must have control over his or her emotions, nerves of steel, and the discernment to know when an injury necessitates a trip to the hospital.