

# Eight Critical Survival Medic Skills

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## Introduction

The following skills are distilled from my 20-years as an EMT and as a developer and instructor for the Survival Medics course materials. While extended “first-aid” and “medic” courses provide detailed training on the recognition and care of a wide variety of injuries and ailments this article will focus only on the basic skills and priorities for the recognition and immediate care of conditions that will either kill or permanently disable the patient and where lifesaving action does not require advanced skills or medical equipment. These situations are easy to recognize and the immediate care steps need to prevent death or disability are fairly easy. **In all cases, failure to act promptly may have catastrophic consequences for the victim.**

### 1. Respiratory Arrest (cyanosis)

**Urgency:**The first act in determination of priorities in mass casualty situations is opening the airway and determining if the victim is breathing. The longer that the patient has not been breathing the less likely they are to recover. **Within 5 minutes of respiratory arrest the heart will stop circulating blood and the brain will begin to suffer irreversible damages.** In most cases respiratory arrest is the result of airway obstructions that can be corrected by use of the Heimlich maneuver or simply repositioning the head. The tongue may also create an obstruction in the prone patient.

#### Recognition:

- **Conscious** with airway obstruction: The person will be unable to speak or cough forcefully. They may give the universal sign of choking by placing a hand at their throat. **THERE IS NO EXCUSE FOR A PERSON TO DIE FROM THIS!**
- **Unconscious** or semi-conscious: pale or blue skin coloration. Unresponsive or gasping and wheezing.

#### Action:

If you observe the patient choking before loss of consciousness initiate the Heimlich maneuver. If you find an apparently unconscious patient shake their shoulders and shout to “are you okay” awaken them. **AN UNRESPONSIVE PATIENT IS A MEDICAL EMERGENCY! CALL 911 OR SEND SOMEONE TO DO SO IMMEDIATELY BEFORE INITIATING FURTHER ACTION.** Tilt the head and lift the jaw to open the airway. Look at the chest, listen for breathing and feel air on your cheek to determine if the person is breathing. **Modern protocols eliminate the steps of abdominal thrusts for airway clearing, pulse check and rescue breathing.** If the patient is not breathing **with the head tilted as shown initiate CPR (see following) immediately.**



Hands clasped just below the rib cage. Pull forcefully in and up. Keep at it until (1) the obstruction is expelled or (2) the patient loses consciousness. NOTE: be braced to lower the patient gently down if this happens. Then send for help and start CPR.



Opening the airway of someone who is unconscious.



Look Listen and feel for breathing

## 2. Cardiac Arrest (Myocardial Infarction)

**Urgency:** Better known as a “heart attack”, myocardial infarctions (MI) result from obstruction of blood flow to heart tissue. This results in the death of tissue and a cessation of normal heart function. The heart goes into atrial fibrillation which is a disorganized vibrating instead of beating. No blood is pumped and the body organs and brain begin to shut down. If the flow of oxygenated blood is not restored quickly, death is certain. Effective CPR can sustain life for a while but seldom results in restoring a normal cardiac rhythm and patient recovery. CPR provides a small chance at recovery and provides a savable patient for the EMS personnel or anyone who uses an AED. **The sooner an AED is used the better the chances of restoring the patient’s heart rhythm.**

**Recognition:** “crushing” chest pains radiating to the back or left arm are classic signs of a MI. The patient may also be sweating, weak, dizzy or even faint. The afflicted person may verbalize that they think they are going to die. **IF IT MIGHT BE A HEART ATTACK ACT LIKE IT IS A HEART ATTACK!!**

**Action:** Your first priority is to call 911 or send someone to do it. If the person is conscious ask if they have prescription heart medication to take. Aspirin is a blood thinner and can reduce the severity of a heart attack. If the patient is not allergic to aspirin taking two pills may be helpful.

**CPR:** The first course I took in CPR took 8-hours. The current courses take about 4-hours. **IT SHOULD TAKE ABOUT 5-MINUTES!** No one has ever been saved by a certificate. If you can do what is described below, you can do CPR.

1. Check for responsiveness
2. Send for help (HELP!)
3. Open airway, **Head tilt/chin lift** or jaw thrust (no pulse check)

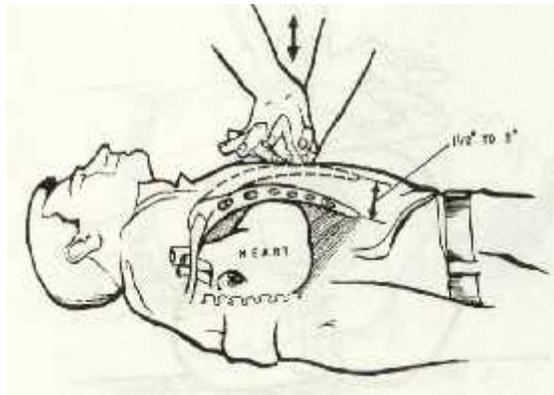
4. Initiate CPR
5. 150 compressions @ 100 pm / then 30 compressions & 2 breaths

#### Instructions

- At the nipple line (lower for children)
  - Compress chest **1 ½ to 2 inches** for adults (1/2 -3/4 for children)\*
  - Hands interlocked, fingers up
  - Elbows locked
  - Weight over the sternum
  - No bouncing or rocking
  - 30 **hard and fast** compressions straight down (100 per minute)
  - 2 **full** breaths (tilt the head, pinch The nose)
6. Continue till: exhausted, victim revives, AED is started

For two person CPR: use same count (30 & 2) alternate between compressions and breathing or take turns doing both.

Use only one hand for children and just 2-3 fingers for an infant.



Proper hand position for CPR



Proper body position for administering CPR. Elbows straight and locked. Use your body weight to compress straight down. No rocking or bouncing.

### **YOU ARE NOW QUALIFIED TO DO CPR!!**

**AED:** I cannot say this more emphatically. ANYONE CAN AND SHOULD USE AN AED IMMEDIATELY WITHOUT HESITATION ON A PATENT WHO'S HEART HAS STOPPED. **WHILE AED TRAINING IS DESIRABLE IT IS NOT NECESSARY. IF YOU CAN USE A CELLPHONE YOU ARE WAY OVER-QUALIFIED TO USE AN AED!** IF ONE IS WITHIN REACH, JUST OPEN IT UP, PUSH THE BUTTON AND DO WHAT IT TELLS YOU TO DO.

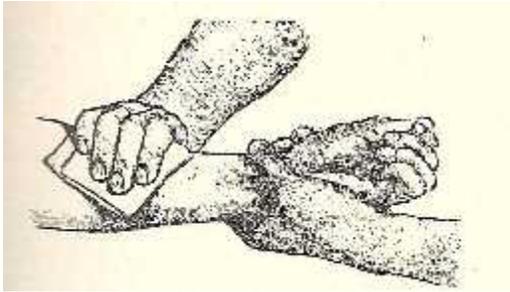
### **3. Arterial Bleeding (hypovolemia)**

**Urgency:** The normal blood volume for an adult is about 6 liters. The rapid loss of more than ten-percent (600 ml) of this volume will result in shock and then death within minutes. The blood delivers the oxygen and nutrients to the brain and body organs. Once the blood volume and pressure drop far enough the brain, heart and other organs cease to function and death is immediate. Once the blood is lost it cannot be replaced fast enough to recover the damage.

**Recognition:** Arterial bleeding is marked by pressurized spraying of bright red blood that squirts with each heartbeat. It does not take long for the heart to pump out enough blood to result in death.

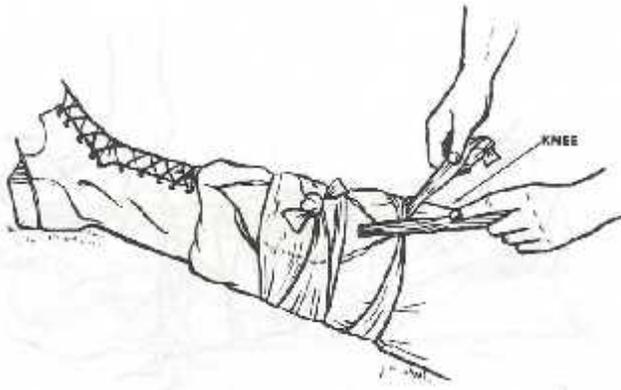
**Action:** YOU ONLY HAVE SECONDS! Apply direct pressure with your bare hand on top of the injury. Elevate the bleeding limb. If cloth dressings, (T-shirts, anything) are available apply these with pressure. If blood soaks through add more dressings over them, but do not remove the original dressing. **If direct pressure fails to stop the**

**bleeding or the patient must be moved or move on his/her own apply a tourniquet as show below.** They are seldom needed below the elbow or knee. Be sure it is visible and mark TK and the time applied in the victim's forehead.

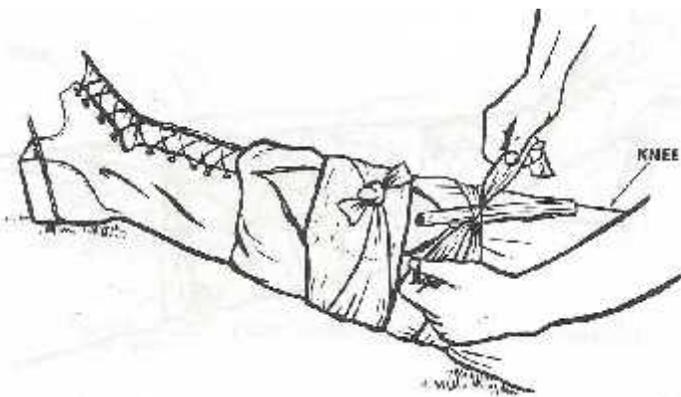


Direct Pressure applied

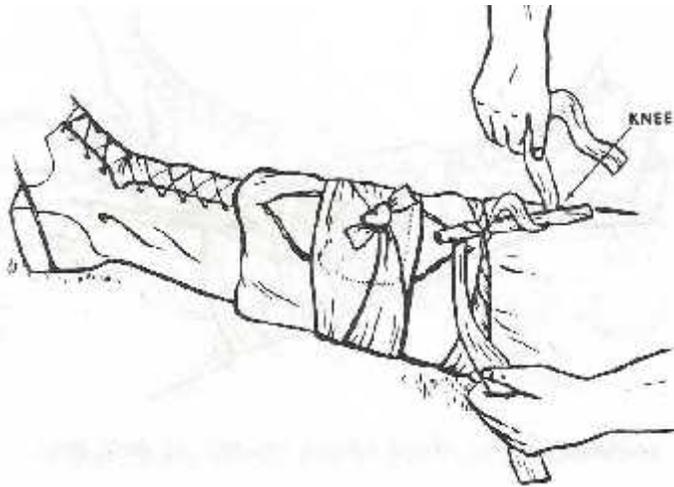
Steps to application of tourniquet to the leg or arm



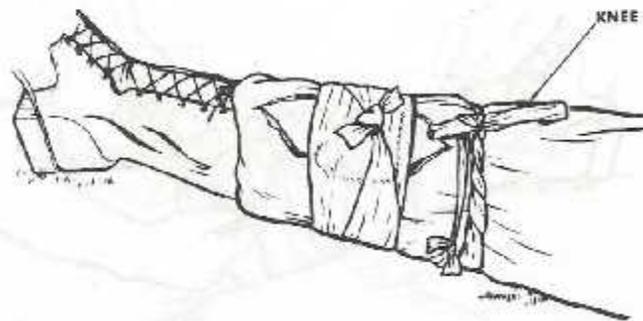
Step 1: wrap cloth band around the limb about 2-inches above the injury



Step 2: Tie stick to the tourniquet band



Step 3: turn the stick to tighten the band until bleeding stops



Step 3: Secure the long end of the stick so it will not unwind,

- The tourniquet should be applied least 1 to 2 inches wide to prevent cutting into the skin and should be applied about 2-inches above the wound
- After bleeding is controlled, the injured extremity should be splinted to prevent further bleeding, even if no fracture is present

#### 4. Heat Stroke (Hyperthermia)

**Urgency:**Heat Stroke is an immediate life threatening condition. The victim has probably gone through heat exhaustion (profuse sweating, weak, dizzy) which is a mild form of hypovolemic shock and has now progressed in to full hypovolemia. If the patient is not cooled and rehydrated immediately the condition may be irreversible.

**Recognition:** The patient who has been working/exercising under hot conditions for an extended period is at risk for heat stroke. Adequate hydration and frequent rest breaks are effective ways to prevent this life threatening condition. Heat stroke exhibits when the patient no longer sweats and the skin becomes red and dry. Weakness, thirst,

nausea, dizziness, slurred speech and even diminished levels of awareness may be present.

**Action:** Immediate cooling is the only chance to save this patient. Apply cold packs or cold wet towels to the neck, armpits, and groin areas. If possible immerse forearms in cold water. If possible immerse body in cold water. If patient is conscious provide cold drinks. If available provide “sports drinks” that supply needed electrolytes. COOL THEM NOW! Of course once they are recovering cease aggressive cooling efforts to prevent hypothermia.

## 5. Exposure (hyperthermia)

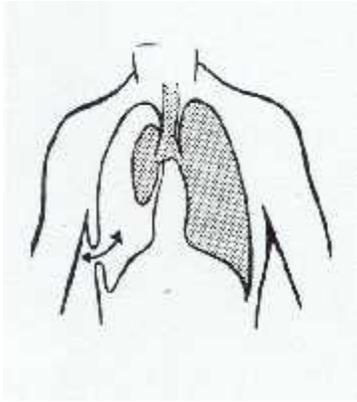
**Urgency:**Uncontrollable shivering is the final effort of the body to maintain temperature. Prolonged exposure to cold and wet conditions Exercise such as running in cold weather can use up the bodies reserves of energy leading to the fast onset of hypothermia once the exercise is stopped. If hypothermia has progressed too far the body’s ability to reheat shuts down. The temperature of a hypothermic patient brought into a warm (75 degree) room will continue to drop until death unless internal and external heat sources are applied. Prevention and early recognition and treatment are essential here.

**Recognition:** After prolonged exposure to cold or cool wet conditions the patient ceases to shiver and becomes less responsive and coordinated hypothermia is evident. Slurred speech, staggering gait, diminished levels of alertness and awareness are sure signs of advancing hypothermia that will lead to unconsciousness and then death.

**Action:**First: remove the patient from the cold environment and remove all cold wet clothing. Warming a patient with advanced hypothermia too fast can force the cold blood from the extremities to circulate to the heart causing fibrillation and death. A combination of slow external and internal warming is recommended. If the patient is conscious providing warm sweet drinks that warm from the inside is the best treatment combined with warm packs around the neck and blankets in a warm environment. Yes, putting the patient into a sleeping bag with another person is effective if no warm cabin, vehicle etc. is available.

## 6. Sucking Chest Wounds (pneumothorax)

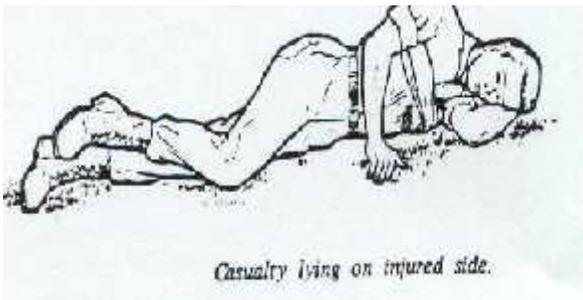
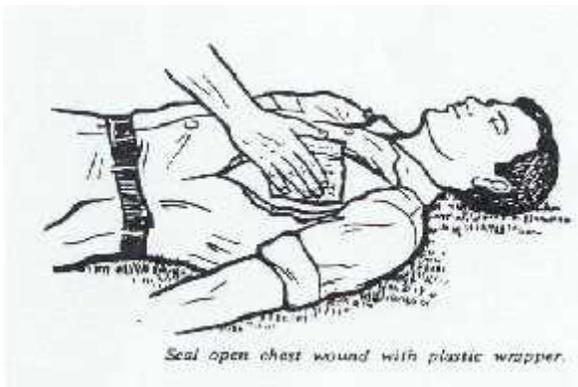
**Urgency:** When the chest wall is punctured air begins to enter the plural space between the inner chest wall and the lungs. With each breath the space fills with more air and compresses the lungs further. The lungs are pushed and squeezed smaller and smaller. In addition the heart may be compressed and blood(hemothorax) may also fill the plural spaces. Eventually the patient is unable to breathe at all and will suffocate. Fast action can markedly improve the patients chances for survival.



Punctured chest allows air to enter the plural cavity and collapse the lungs.

**Recognition:** A hole in the chest wall that is emitting air and usually some foamy blood. Consider the cause. There may be a hole in the back as well. If so both holes will need to be closed as below. The patient will experience growing difficulty in breathing. The trachea in the neck may shift away from the injured side as the lungs are forced away. The skin will be pale or bluish in coloration.

**Action:** Use anything that is airtight such as cellophane, plastic wrap, or foil to cover the hole. Tape over the wound on all four sides. Secure the cover in place and roll the patient onto the injured side. \* **NOTE: If the patient's breathing difficulties get worse you must remove the seal.**



\* This is the simple and fastest procedure. Some medical protocols call for leaving a corner of the cover/seal open to act as a one-way valve flap.

## 7. Shock

In most of the above cases death ultimately results from shock. Shock can result from any of the conditions above. Shock is caused inadequate cellular perfusion of oxygen. This is a result of:

- Not enough oxygen in the blood because of respiratory arrest, or collapsed lungs
- Not enough blood pressure to force oxygen into the cells caused by cardiac arrest, blood loss, or dehydration from burns, heat exposure or prolonged illness,

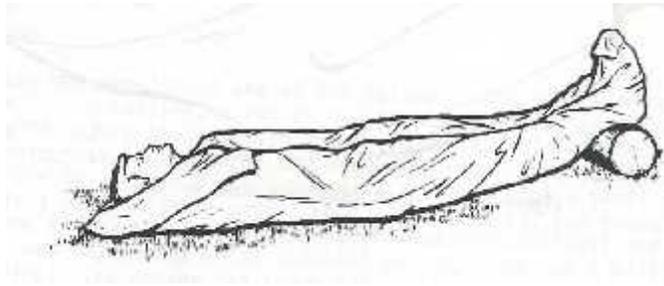
**Urgency:**In the early stages of shock the body will attempt to compensate (compensated shock) by vascular contraction, increase heart rate and respirations. The patient's level of consciousness may appear normal until the compensation fails and the patient "crashes" into uncompensated shock and death. In the absence of IV fluids and oxygen it is nearly impossible to reverse uncompensated shock. The patient's survival can only be supported by immediately treating the cause (bleeding, dehydration, etc.) and initiating treatment procedures to reduce the effects

**Recognition:** Expect shock anytime severe bleeding or dehydration is evident. The first signs of shock are restlessness and anxiety followed by a weakening and rapid pulse, cold moist skin, sweating, pale or bluish skin, thirst, lusterless eyes, nausea, vomiting and declining level of consciousness.

**Action:**Act to stop any severe bleeding, heat exposure, respiratory or cardiac issues immediately. Get the patient into a prone position with the feet elevated 12-18 inches to facilitate blood flow to the vital organs. Keep the patient warm but not hot. In general it is not advisable to provide fluids if professional medical care (IV fluids) will be available. Moistening the lips is permissible. However: if no further help is available and the patient is conscious and will tolerate oral fluids consider initiating the dehydration treatment below.



Clothes are loosened and patient's legs are raised to help circulation



If temperatures are cool provide blanket to maintain body temperature. Shock is often accompanied by the inability of the body to maintain warmth.

## 8. Severe Dehydration

**Urgency:** Dehydration can be caused by severe bleeding, heat exposure, burns, prolonged illness, radiation sickness, chemical agent exposure anything else that causes more fluid loss than is replaced. While dehydration does not happen immediately it is often the cause of death from other conditions. In the absence of IV fluids administration, dehydration is difficult to reverse once the patient's level of consciousness and/or ability to swallow is compromised. Prompt recognition of the danger and constant hydration maintenance can significantly improve the patient's ability to survive and recover from a serious injury or illness.

**Recognition:** pinch the skin on the back of the patient's hand. If it does not immediately recover there is evidence of dehydration. Pale skin, weakness, sunken eyes, thirst, nausea, headache are all signs of dehydration. Anyone who has been exposed to high temperatures, been vomiting, had diarrhea and profuse sweating will probably be dehydrated if not being frequently rehydrated. Dark yellow urine or low urine output (below 90 cc's in 2-hours) are also signs of dehydration.

**Action:** The potential for shock can be reduced by attention to hydration. A well hydrated body will tolerate blood loss and fluid loss better to begin with. **In the absence of IV fluids rehydration is difficult\***. If ambulance and ER treatment is not immediately available and the patient is fully conscious oral hydration can be sustained using the following solution.

### Rehydration Solution

Dehydration is one of the primary causes of death secondary to shock, heat stroke, radiation sickness, and many communicable diseases, 6 tsp. of sugar, 1 tsp. of salt to 1 liter of water. Provide small 4 oz. drinks every hour

*Caution: giving water or other liquids to an unconscious, semi-conscious or seriously injured patient may cause them to vomit and aspirate causing pneumonia. Generally these patients can be rehydrated by intravenous methods at the ER*

\* See proctoclysis, and subcutaneous IV articles in earlier editions for methods of improvised hydration. .

## Conclusion

Applying bandages, splints and other treatments for injuries are important skills but the recognition and immediate treatment of the eight above conditions are the most important LIFE SAVING skills that you can AND MUST apply. With these you can save most lives from immediate death and give them a chance for further treatment and recovery **FAILURE TO ACT IN THESE CASES IS ALMOST ALWAYS DISASTROUS. HAVING READ THIS, YOU HAVE NO EXCUSE FOR LETTING THAT HAPPEN ON YOUR WATCH.**

## Future Items

Allergic Reaction (anaphylaxis)

Urgency:

Recognition:

Action:

Spinal Injuries

Urgency:

Recognition:

Action:

Severe Burns

Urgency:

Recognition:

Action: