

Unit Four: Disaster Medical Operations Part 1

I. Unit Overview and objectives

A. Unit Overview

1. The need for disaster medical operations is based on two assumptions. First, the number of victims will exceed the local capacity for treatment. Second, survivors will assist others, they will do whatever they know how to do. If they are going to do the greatest good, they need to know lifesaving or post-disaster survival techniques.
2. In a disaster, there may be more victims than rescuers and immediate help will not always be available. People who have Community Emergency Response training will be able to function quickly and efficiently to save lives.
3. CERT personnel will receive training in this unit to:
 - a. Conduct triage - learning to evaluate victims sorting them based on the urgency of the treatment needed and set up for immediate or delayed treatment.
 - b. Treat for life-threatening conditions - airway obstruction, bleeding and shock. Treat non-life threatening conditions.
 - c. Do the greatest good for the greatest number of people by conducting simple triage and rapid treatment.

Unit Overview (continued)

4. There are three phases of death from trauma.
 - a. Phase 1: Death within minutes as a result of overwhelming and irreversible damage to vital organs.
 - b. Phase 2: Death within several hours as a result of excessive bleeding.
 - c. Phase 3: Death in several days or weeks as a result of infection or multiple-system failure (i.e., complications from the injury).
 - d. The goal of disaster medical operations is to do the greatest good for the greatest number. In a disaster with many victims, time will be critical. CERT members will need to work quickly and efficiently to help as many victims as possible.

B. Objectives

At the end of this unit participants should be able to:

1. Identify life-threatening conditions, commonly known as “the killers.”
2. Apply techniques for opening the airway, controlling bleeding, and treating for shock.
3. Conduct triage under simulated disaster conditions.

II. Treating Life-Threatening Conditions

A. In emergency medicine, airway obstruction, bleeding, and shock are “killers.” The first priority of medical operations is to attend to those potential killers by:

1. Opening the airway
2. Controlling excessive bleeding
3. Treating for shock

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Treating Life-Threatening Conditions (Continued)

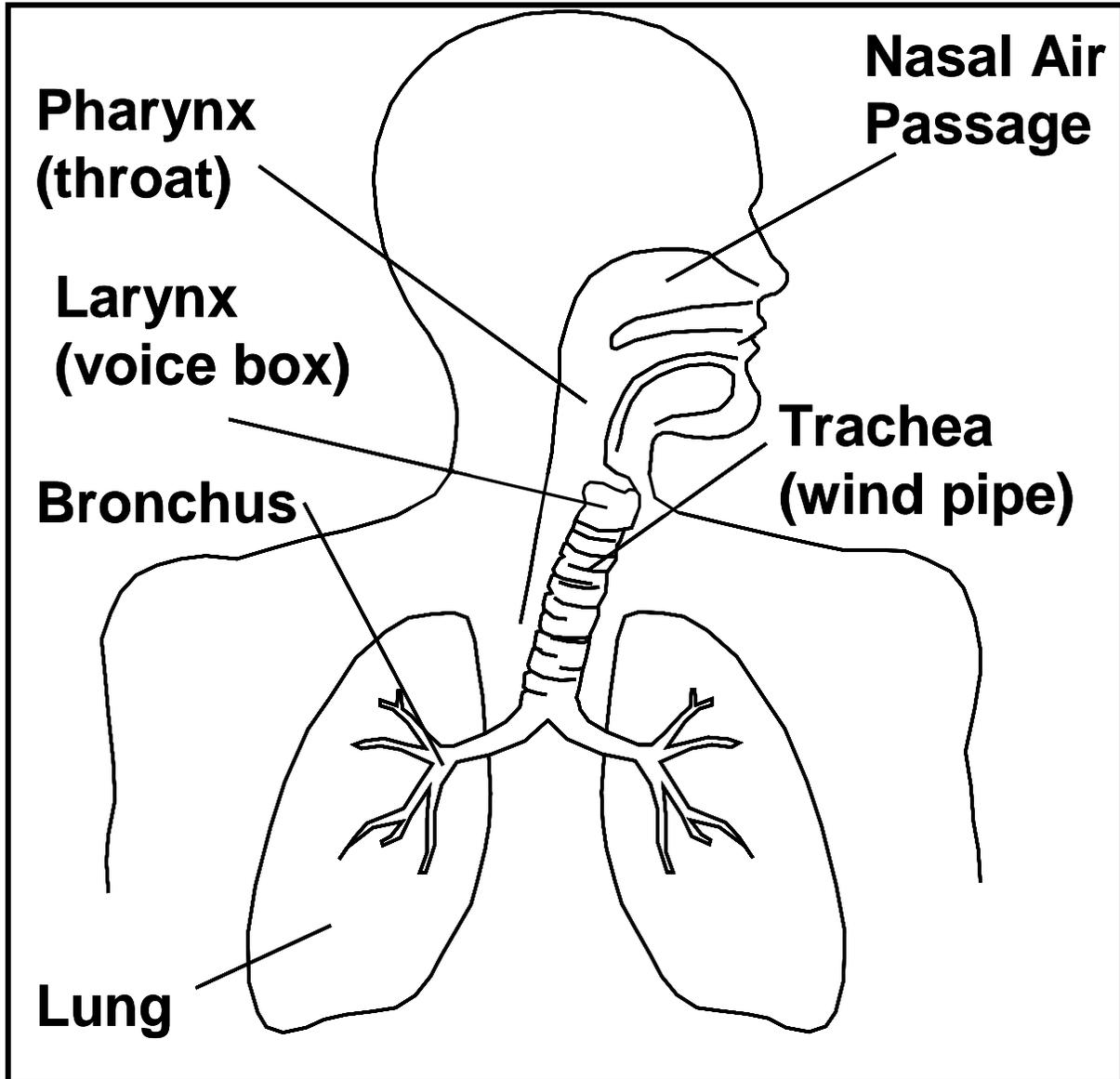
B. This section will train you to recognize the “killers” by recognizing their symptoms and their effects on the body.

C. Always wear safety equipment: Helmet, goggles, gloves, mask, and boots. A timesaving technique is to wear latex gloves under your work gloves. Then, when you find a victim, you can remove your work gloves and are ready to work with the victim.

D. Components of the Respiratory System

1. The respiratory system includes airways, lungs, and muscles

**Unit Four: Disaster Medical Operations Part One
Visual One: Components of the Respiratory System**



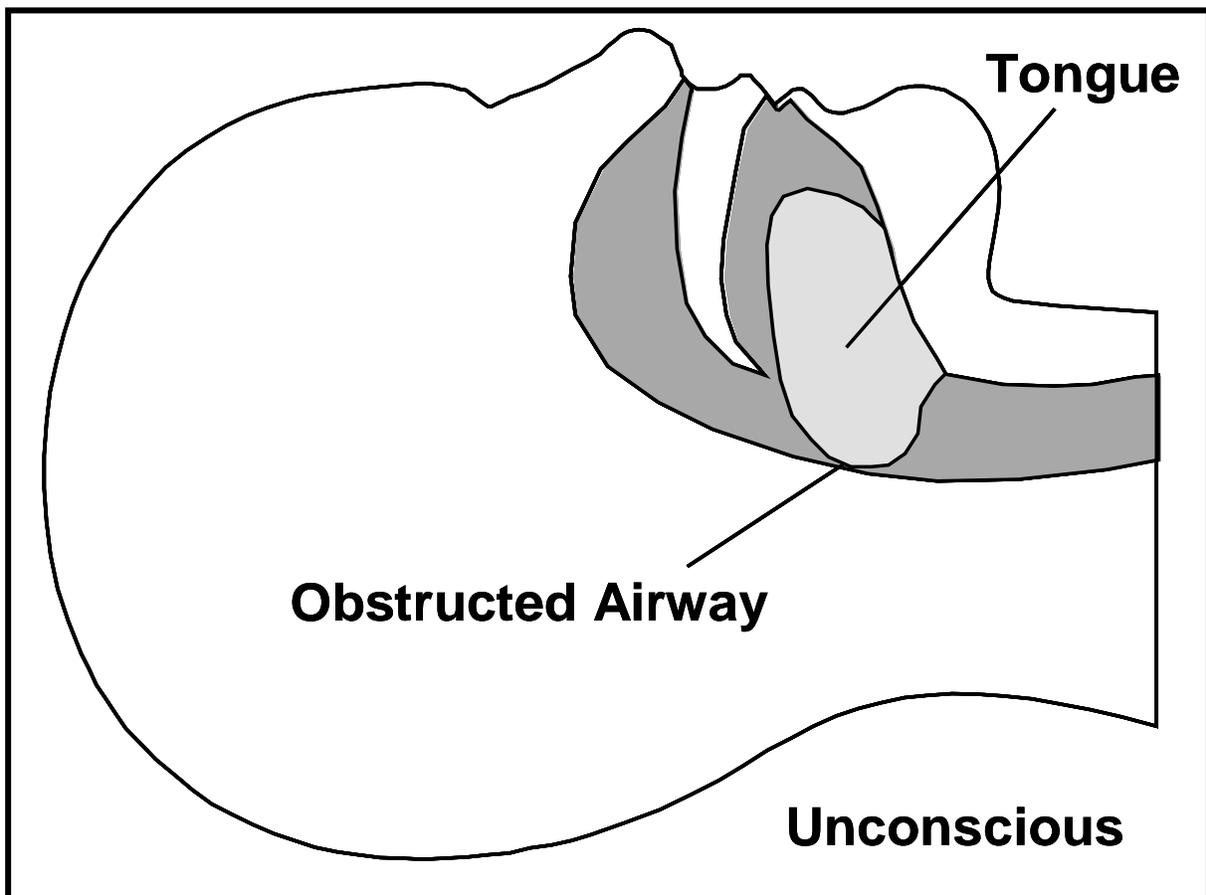
Components of the Respiratory System, showing the pharynx, nasal air passage, larynx, trachea and bronchus.

Treating Life-Threatening Conditions (Continued)

E. Opening the Airway

1. The most common airway obstruction is the tongue. In an unconscious or semiconscious victim, especially one positioned on his or her back, the tongue—which is a muscle—may relax and block the airway. A victim with a suspected airway obstruction must be checked immediately for breathing and, if necessary, the airway must be opened.

**Unit Four: Disaster Medical Operations Part One
Visual Two: Airway Obstructed by the Tongue**



Airway Obstructed by the Tongue

Disaster Medical Operations pt. 1

Treating Life-Threatening Conditions (Continued)

2. When an airway obstruction is suspected, CERT members should clear the airway using the Head-Tilt/Chin-Lift method.

Unit Four: Disaster Medical Operations Part One Chart One: Head-Tilt Chin-Lift Method for Opening an Airway

Head-Tilt Chin-Lift Method for Opening an Airway

Step	Action
1	At an arm's distance determine if the victim can communicate with you.
2	If the victim does not or cannot respond, place the palm of your hand on her/his forehead.
3	Place two fingers of your other hand under his or her chin and tilt the jaw upward while tilting the head back slightly.
4	Place your ear over the victim's mouth, looking toward the victim's feet and place your hand on the victim's abdomen.
5	Look, listen and/or feel for chest rise.
6	Look, listen and/or feel for air exchange.
7	Look, listen and/or feel abdominal movement

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Treating Life-Threatening Conditions (Continued)

3. If breathing has been restored, the airway still must be maintained. One option is to use a volunteer or walking wounded to hold the head in place. The airway also can be maintained by placing soft objects under the victim's shoulders to elevate the shoulders slightly and keeping the airway open.

4. Part of your mission is to do the greatest good for the greatest number of people. For that reason, if breathing is not restored on the first try using the Head-Tilt/Chin-Lift method, CERT members should try again using the same method. If breathing cannot be restored on the second try, CERT members must move on to the next victim.

5. Exercise: Opening the Airway

a. Purpose: This exercise allows you to practice using the Head-Tilt/Chin-Lift method on each other.

b. Instructions: Follow the steps below to complete this exercise:

c. Work in pairs—one person will be the victim and the other person the rescuer.

d. Victims should lie on the floor on their backs or stay in their wheelchairs and close their eyes.

e. The rescuer should use the Head-Tilt/Chin-Lift method on the victim to open the airway.

f. After the rescuer has made two or three attempts at using the Head-Tilt/Chin-Lift method, the victim and the rescuer should change roles.

Treating Life-Threatening Conditions (Continued)

F. Controlling Bleeding

1. Uncontrolled bleeding initially causes weakness. If bleeding is not controlled the victim may go into shock and die. An adult has about five liters of blood. Losing one liter can result in death.

2. There are three types of bleeding which can usually be identified by the speed at which the blood flows:

a. Arterial bleeding. Arteries transport blood under high pressure. Bleeding from an artery is spurting bleeding.

b. Venous bleeding. Veins transport blood under low pressure. Bleeding from a vein is flowing bleeding.

c. Capillary bleeding. Capillaries also carry blood under low pressure. Bleeding from capillaries is oozing bleeding.

3. There are three main methods for controlling bleeding: direct pressure, elevation and pressure points.

a. direct pressure

i. There are two steps involved in applying direct pressure:

o First: Place direct pressure over the wound by putting a clean dressing over the wound and pressing firmly.

o Second: Maintain pressure on the dressing over the wound by wrapping firmly with a pressure bandage.

ii. Direct pressure and elevation can take 5 to 7 minutes to completely stop the bleeding. Using dressing and pressure bandage allows the rescuer to move on to the next victim.

iii. Pressure bandages should be tied with a bow so they can be loosened (not cut) to examine the wound and then retied. This procedure helps conserve supplies and saves time.

Disaster Medical Operations pt. 1

Treating Life-Threatening Conditions (Continued)

b. Elevation. - Bleeding can also be controlled through elevation which is a process of elevating the wound above the level of the heart. Elevation can be used in combination with direct pressure.

c. Pressure points - can be used to stem the flow of bleeding. The pressure points most often used are the:

- Brachial point in the arm.
- Femoral point in the leg.

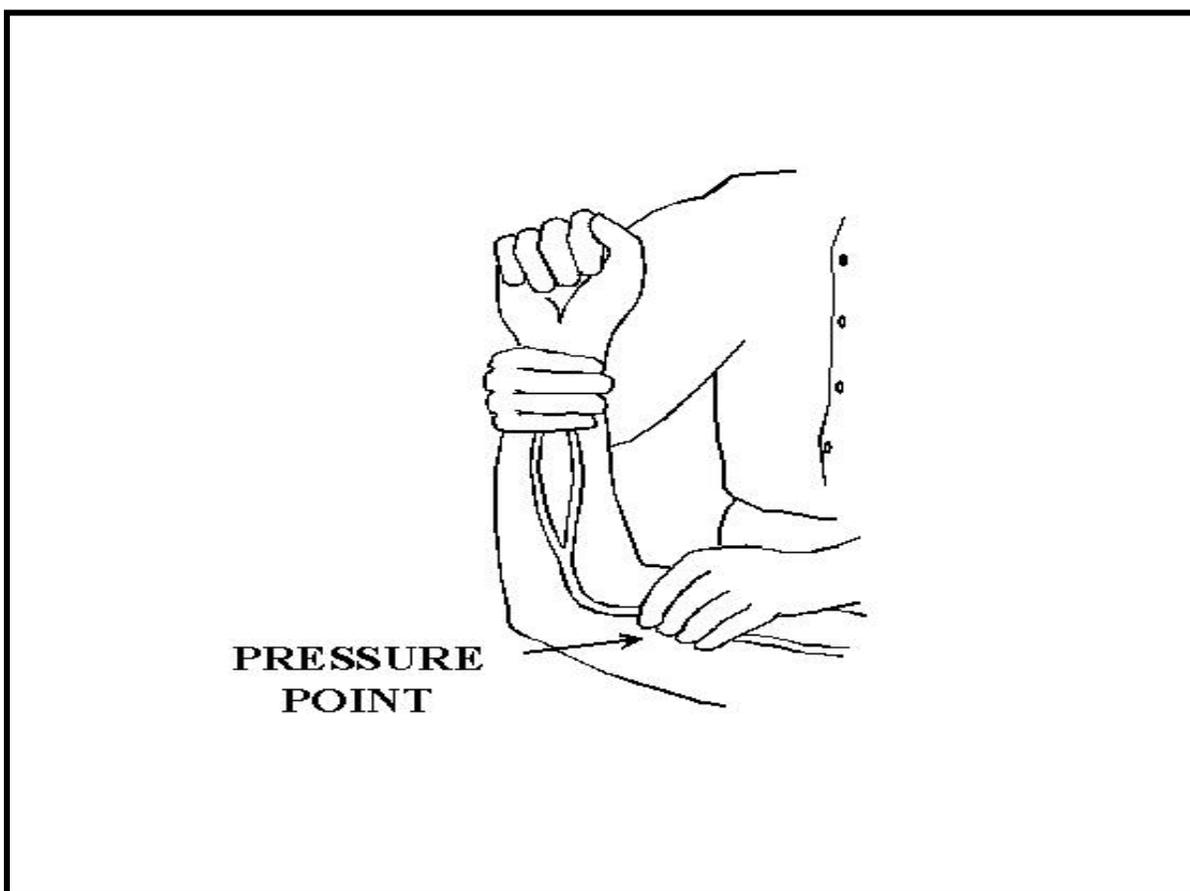
4. When dressings are in place, you can encourage victims to help themselves whenever possible by elevating and maintaining pressure on their own wounds.

Unit Four: Disaster Medical Operations Part One Chart Two: Procedure for Controlling Bleeding

Method	Procedures
Direct Pressure	<ul style="list-style-type: none">○ Place direct pressure over the wound by putting a clean dressing over the wound and pressing firmly.○ Maintain pressure on the dressing over the wound by wrapping the wound firmly with a pressure bandage.
Elevation	<ul style="list-style-type: none">○ Elevate the wound above the level of the heart.
Pressure Points	<ul style="list-style-type: none">○ Put pressure on the nearest pressure point to slow the flow of blood to the wound. Use the:<ul style="list-style-type: none">○ Brachial point for bleeding in the arm.○ Femoral point for bleeding in the leg. <p>There are other pressure points the instructor may demonstrate.</p>

Treating Life-Threatening Conditions (Continued)

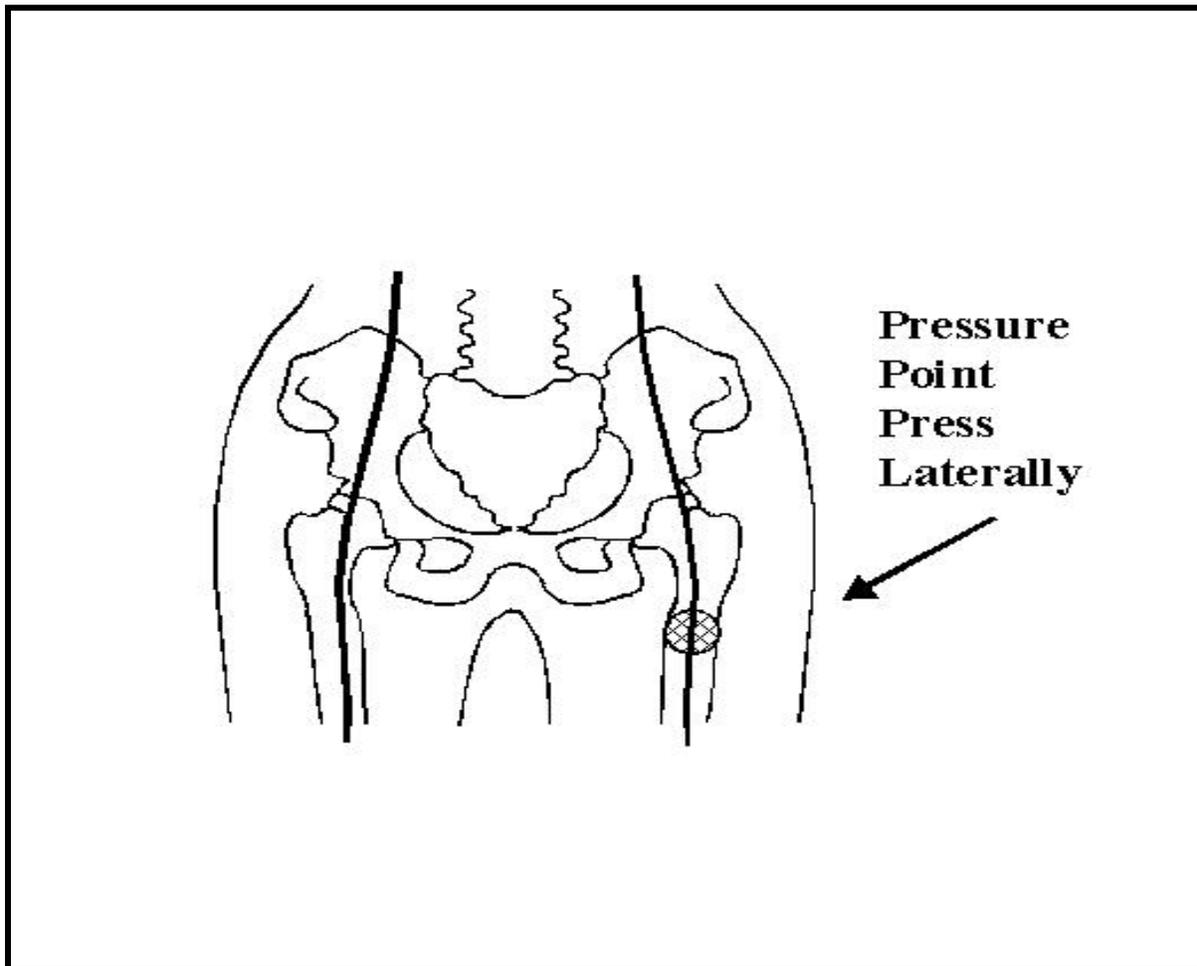
**Unit Four: Disaster Medical Operations Part One
Visual Three: Brachial Pressure Point**



**Visual of the brachial pressure point
just above the elbow.**

Treating Life-Threatening Conditions (Continued)

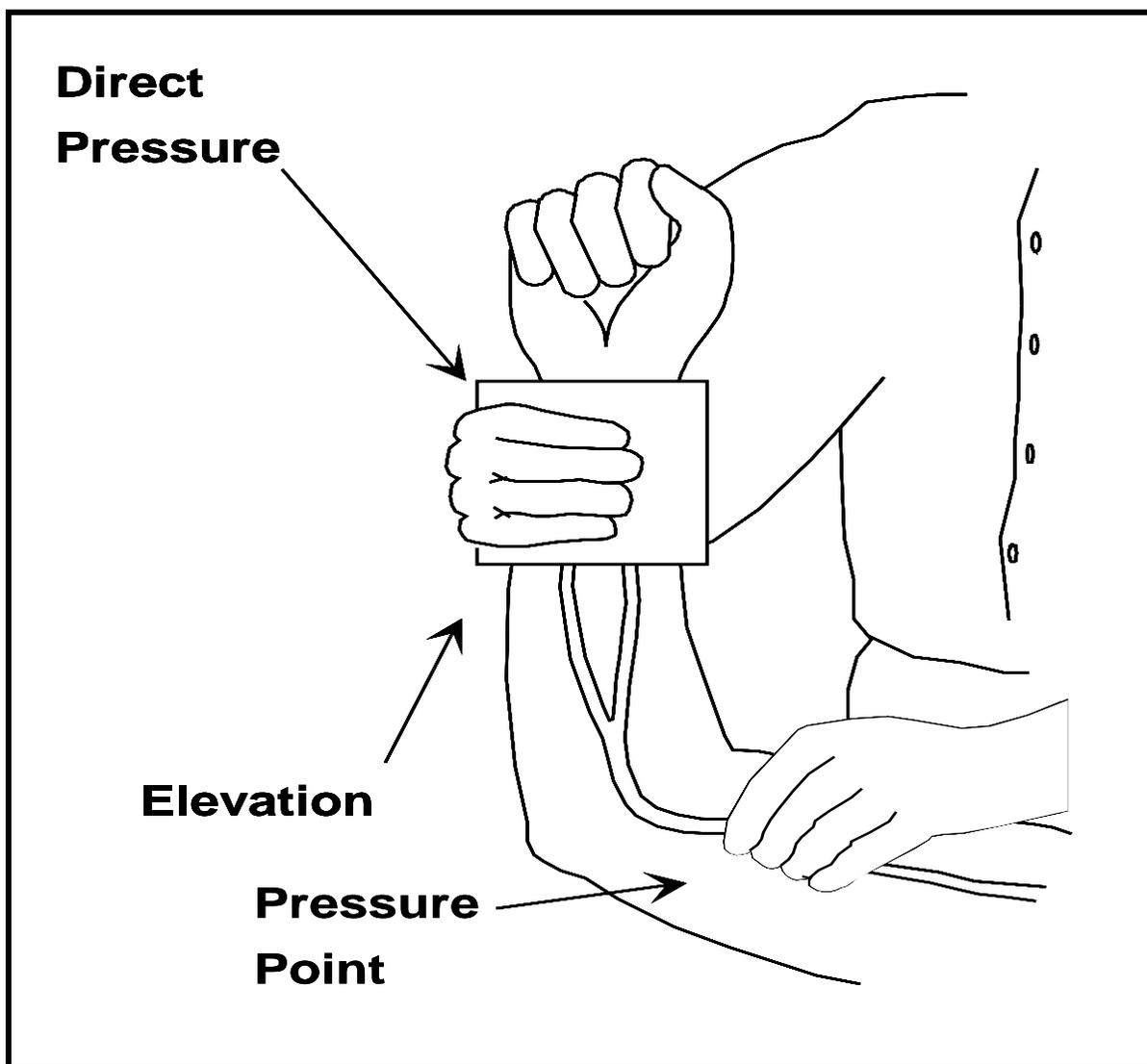
Unit Four: Disaster Medical Operations Part One
Visual Four: Femoral Pressure Point



**Visual of the femoral pressure point
in the upper thigh.**

Treating Life-Threatening Conditions (Continued)

**Unit Four: Disaster Medical Operations Part One
Visual Five: Methods for Controlling Bleeding**



Methods for controlling bleeding by using direct pressure on wound, elevation and pressure points.

Treating Life-Threatening Conditions (Continued)

G. Exercise: Controlling Bleeding

1. Purpose: This exercise allows you to practice the techniques for controlling bleeding. Bleeding must be controlled as quickly as possible so as not to endanger the victim's life from blood loss.

2. Instructions: Follow the steps below to conduct this exercise:

a. You should always wear your rubber gloves, goggles, and a mask as a protection against blood-borne pathogens, such as hepatitis and human immunodeficiency virus (HIV).

b. Work in pairs – one person will be the victim and the other the rescuer.

c. Victims should lie on the floor on their backs and close their eyes.

d. The rescuer should use direct pressure to control bleeding from a simulated wound on the right forearm just below the elbow. The rescuer should:

- Apply a pressure bandage.
- Elevate the arm.
- Repeat these two steps.
- Repeat the two steps for speed.

3. After the rescuer has made at least three attempts at using each technique, the victim and the rescuer should change roles.

III. Recognizing and Treating Shock

A. Shock is a disorder resulting from ineffective circulation of blood. Remaining in shock will lead to the death of:

1. Cells.
2. Tissues.
3. Entire organs.

B. The body will initially compensate for blood loss and mask the symptoms of shock. Therefore, it is important to continually evaluate patients for shock and monitor their condition. The main signs of shock that CERT members need to assess are:

1. Rapid and shallow breathing.
2. Capillary nail refill test* of greater than 2 seconds.
3. Failure to follow simple commands, such as, "Squeeze my hand."
4. Changes in skin color.

*The capillary nail refill test (CRT), also called a blanch test, is a quick test performed on the nail beds. It is an indicator of the amount of blood flow to tissue and dehydration. It is performed by applying pressure to the nail bed until it turns white indicating that the blood has been forced, or blanched, from the tissue. Once the tissue has blanched, pressure is removed and the time it takes for the blood to return to the tissue is measured. This is indicated by a pink color returning to the tissue. This test measures how well the vascular system is functioning in the body's extremities.

C. Although victims who are suffering from shock may be thirsty, they should not eat or drink anything, because they may also be nauseated.

Recognizing and Treating Shock (Continued)

**Unit Four: Disaster Medical Operations Part One
Chart Three: Procedures for Controlling Shock**

Step	Action
1	<ul style="list-style-type: none"> ○ Lay the victim on his or her back. ○ Elevate the feet 6-10 inches above the level of the heart. ○ Maintain an open airway.
2	<ul style="list-style-type: none"> ○ Control obvious bleeding.
3	<ul style="list-style-type: none"> ○ Maintain body temperature (e.g., cover the ground and the victim with a blanket if necessary).
4	<ul style="list-style-type: none"> ○ Avoid rough or excessive handling unless the rescuer and victim are in immediate danger.

D. Exercise: Treating Shock

1. Purpose: This exercise allows you to practice the steps for treating shock.
2. Instructions: Follow the steps below to complete this exercise:
 - a. Work in pairs of victim and rescuer.
 - b. The victims should lie on the floor on their backs if possible (or stay in their wheelchairs) and close their eyes.
 - c. The rescuer should treat the victim based on the scenario given by the Instructor.
 - d. The victim and the rescuer should then switch roles.

IV. Triage

A. Triage is a French term meaning “to sort.” During triage, victims are evaluated, sorted by the urgency of the treatment needed, and set up for immediate or delayed treatment. Triage was, in fact initiated by the military, and experience has shown that triage is an effective strategy in situations where:

1. There are many more victims than rescuers.
2. There are limited resources.
3. Time is critical.

B. Triage occurs as quickly as possible after a victim is located or rescued. During triage, victims’ conditions are evaluated and the victims are prioritized and labeled (tagged) into three categories:

1. Immediate (I): The victim has life-threatening (airway, bleeding, or shock) injuries that demand immediate attention to save his or her life; rapid, life-saving treatment is urgent.
2. Delayed (D): Injuries do not jeopardize the victim’s life. The victim may require professional care, but treatment can be delayed.
3. Dead (DEAD): No respiration after two attempts to open the airway. Because CPR is one-on-one care and is labor-intensive, CPR is not performed when there are many more victims than rescuers. Although it may be emotionally difficult to stop treatment after two attempts, remember that the CERT program goal is to do the greatest good for the greatest number of people.

C. From triage, victims are taken to the designated medical treatment areas: immediate care, delayed care, or morgue. If you have labeled your medical treatment areas using “I,” “D,” and “Morgue,” you can tell spontaneous volunteers to take the “I” victims to the “I” treatment area, and so on.

Triage (Continued)

D. Triage in a Disaster Environment

1. The rescuer's safety is paramount during triage. Wear proper protective equipment so as not to endanger your own health.
2. The general procedures for conducting triage are:

Step 1: Stop, Look, Listen, and Think. Before you start, stop and size up the situation by looking around and assessing the situation. THINK about your safety, capability, and limitations then decide if you will approach the situation and how.

Step 2: Conduct voice triage. Begin by calling out, "Emergency Response Team. If you can walk, come to the sound of my voice." If there are survivors who are ambulatory, instruct them to remain at a designated location, and continue with the triage operation. (If rescuers need assistance and there are ambulatory survivors, then these survivors should be asked to provide assistance.) These persons may also provide useful information about the location of the victims.

Step 3: Start where you stand, and follow a systematic route. Start with the closest victims and work outward in a systematic fashion.

Step 4: Evaluate each victim and tag them "I" (immediate), "D" (delayed), or "DEAD." Remember to evaluate the walking wounded.

Step 5: Treat "I" victims immediately by Initiating airway management, bleeding control and treatment for shock for "I" victims.

Step 6: Document triage results for:

- Effective deployment of resources.
- Information on the victims' locations.
- A quick record of the number of casualties by degree of severity.

Triage (Continued)

E. Performing a Triage Evaluation

1. If the victim passes all tests identified in chart four, found below, his or her status is “D.” If the victim fails one test, his or her status is “I.” Remember that everyone gets a tag. All victims tagged “I” get airway control, bleeding control, and treatment for shock.

**Unit Four: Disaster Medical Operations Part One
Chart Four: Triage Procedure**

Step	Procedures
1	<p>Check airway/breathing. At an arm’s distance, shake the victim and shout. If the victim does not respond:</p> <ul style="list-style-type: none"> ○ Position the airway. ○ Look, listen, and feel. ○ Check breathing rate. Abnormally rapid respiration (above 30 per minute) indicates shock. Treat for shock and tag “I.” ○ If below 30 per minute, then move to Step 2. ○ If the victim is not breathing after 2 attempts to open airway, then tag “DEAD.”
2	<ul style="list-style-type: none"> ○ Check circulation/bleeding. ○ Take immediate action to control severe bleeding. ○ Check circulation using the blanch test for capillary refill. <ul style="list-style-type: none"> ○ Press on an area of skin until normal skin color is gone. <ul style="list-style-type: none"> A. good place to do this is on the palm of the hand or nail beds. Time how long it takes for normal color to return. ○ Treat for shock if normal color takes longer than 2 seconds to return, and tag “I.”
3	<p>Check mental status. Give a simple command, such as “Squeeze my hand.” Inability to respond indicates that immediate treatment for shock is necessary. Treat for shock and tag “I.”</p>

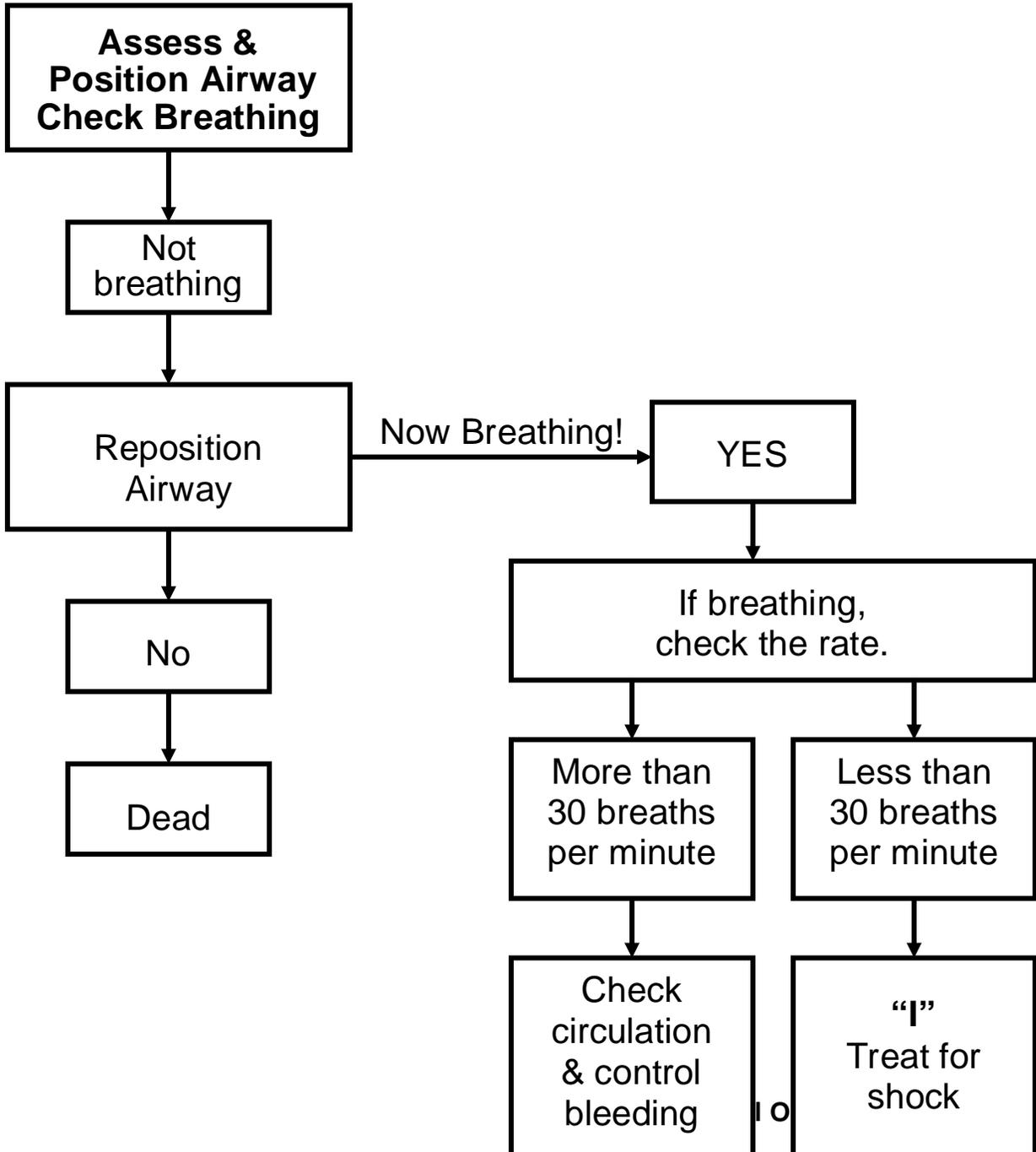
Triage (Continued)

**Unit Four: Disaster Medical Operations Part One
Chart Five: Documenting Triage**

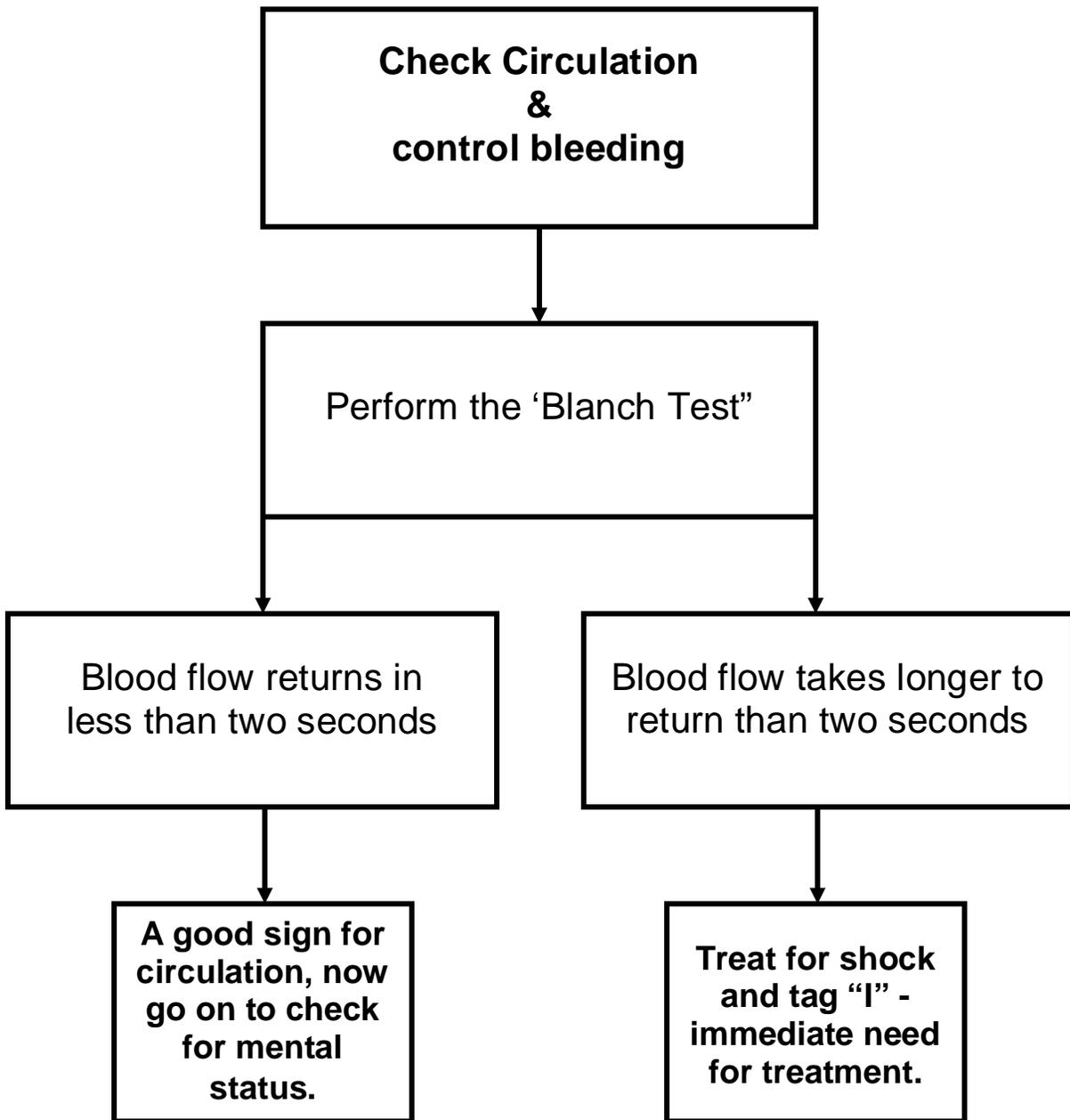
Your Name				
The Date				
Your Location				
Your Contact Information				
Triage Documentation				
Status	Location			
	A (Smith Middle School)	B (Grocery Store)	C (Movie Theater)	D (Airport)
I (Immediate)	5	6	1	3
D (Delayed)	16	11	4	0
Dead	3	0	0	12

Triage (Continued)

**Unit Four: Disaster Medical Operations Part One
Chart Six: Triage Decision Flowchart
Step One of Three**

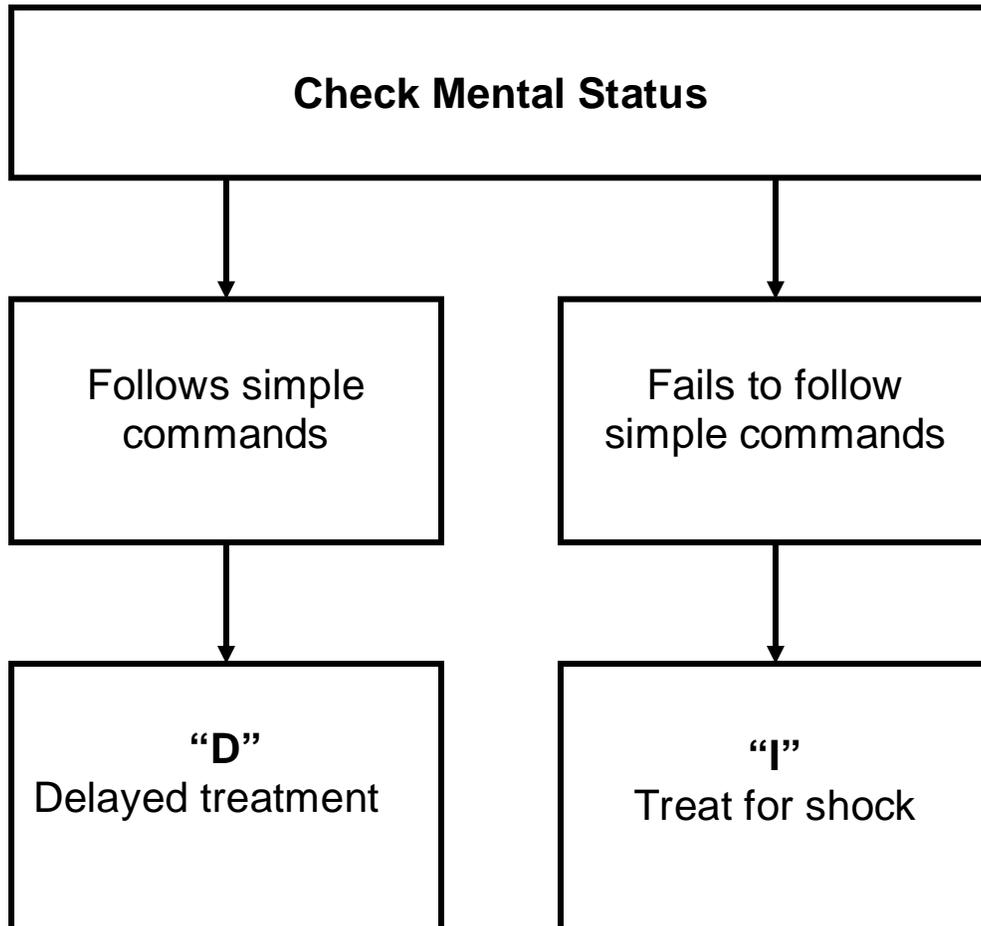


**Unit Four: Disaster Medical Operations Part One
Chart Six: Triage Decision Flowchart
Step Two of Three**



Triage (Continued)

**Unit Four: Disaster Medical Operations Part One
Chart Six: Triage Decision Flowchart
Step Three of Three**



Disaster Medical Operations pt. 1

Triage (Continued)

F. Time will be critical in a disaster.

1. You will not be able to spend very much time with any single victim.
2. Keep in mind that your role is to do good for the greatest amount of people

G. Maintain your triage skills.

1. Take advantage of local exercises as a means of maintaining your triage proficiency and to avoid the triage pitfalls.
2. Local exercises are held by volunteer organizations and local/state emergency management personnel.

H. Triage pitfalls include:

1. No team plan, organization, or goal.
2. Indecisive leadership.
3. Too much focus on one injury.
4. Treatment is performed rather than triage.

Triage (Continued)

I. Exercise: Conducting Triage

1. Purpose: This exercise is intended to allow you to practice conducting triage in a high-pressure situation.
2. Instructions: Follow the steps below to complete this exercise:
 - a. Work in 6-person groups. In each group, three participants will act as victims, and three will act as search and rescue team members, two rescuers and one runner.
 - b. The “victims” should select a card from the Instructor and tape it to their shirts.
 - c. The victims should arrange themselves within the designated “disaster” area.
 - d. The three “rescuers” will have 5 minutes to:
 - Conduct triage on each of the victims and determine how each should be tagged and treated.
 - Document the number of victims in each category of triage: immediate, delayed, dead.

Disaster Medical Operations pt. 1

Triage (Continued)

J. Unit Summary

1. CERT members' ability to open airways, control bleeding, and treat shock is critical to saving lives.
2. Use the Head-Tilt/Chin-Lift method for opening airways.
3. Control bleeding using direct pressure, elevation, and/or pressure points.
4. If there is a question about whether a victim is in shock, treat for shock.
5. Triage is a system for rapidly evaluating victims' injuries and prioritizing them for treatment. The procedure for conducting triage evaluations involves checking:
 - a. The airway and breathing rate.
 - b. Circulation and bleeding.
 - c. Mental status.
6. Disaster medical operations require careful planning, teamwork, and practice.
7. Take advantage of participating in community-wide disaster exercises whenever they are scheduled.

NEXT . . .

1. If your CERT class continues on the same day, take your break and return to this classroom.
2. If your CERT class continues on another day (next week or next month) your **Homework Assignment** is to
 - a. Read Unit 5: Disaster Medical Operations— Part 2
 - b. Bring a blanket, roller gauze, adhesive tape, and cardboard to the next session.

End of Unit Four