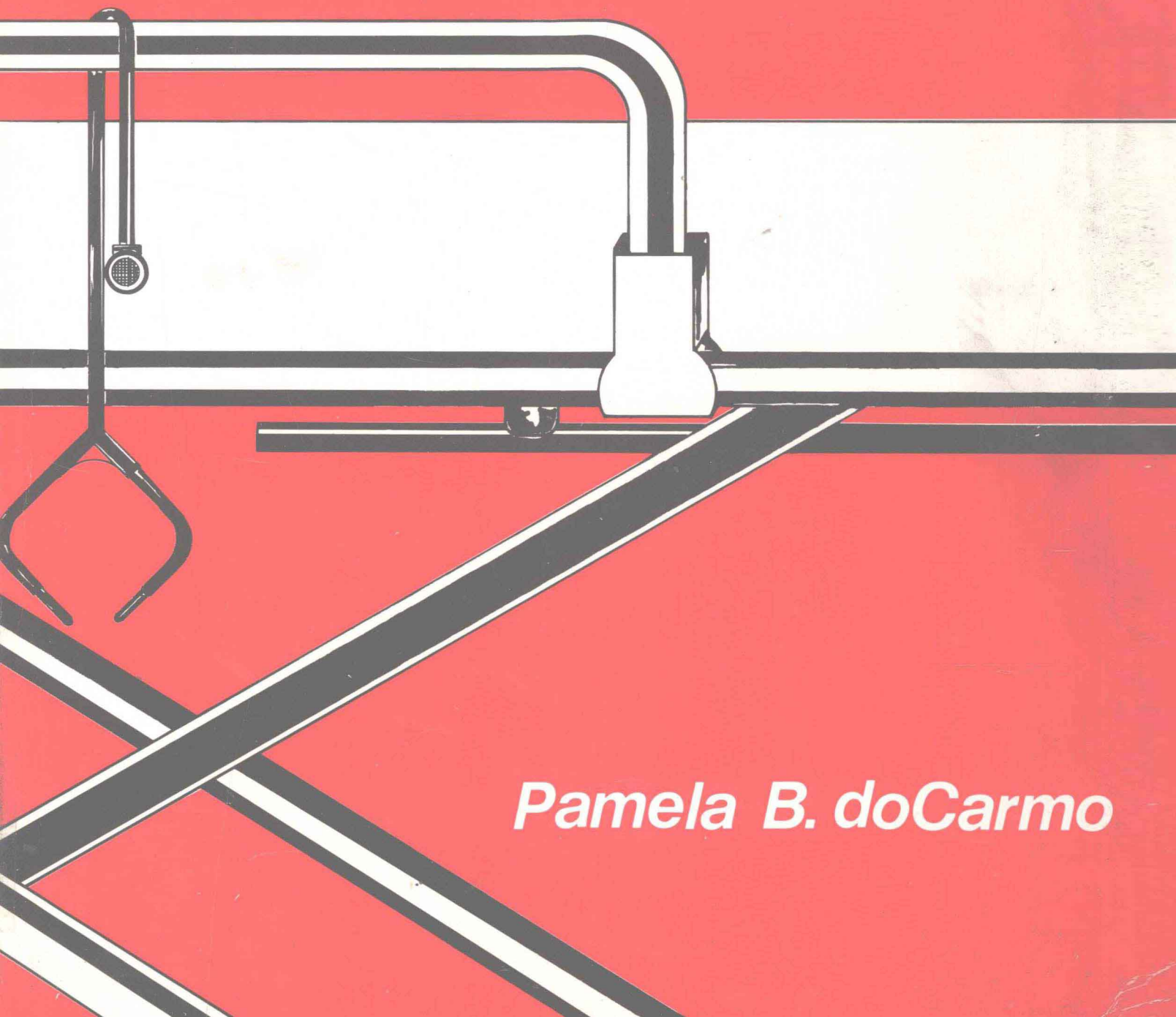
BASIC EMT SKILLS AND EQUIPMENT:
TECHNIQUES AND PITFALLS



Pamela B. doCarmo

Basic EMT Skills and Equipment

Techniques and Pitfalls

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This book is dedicated to my parents, Joseph L. and Joyce E. Bakhaus, and to my husband, Finley.

Author's Notes

*The author urges all pre-hospital care providers to wear gloves when in contact with any of a patient's body fluids.

*The personal pronoun ''he'' is used solely for grammatical purposes.

PREFACE

Prehospital care for the sick and injured has improved vastly in this country over the past 15 years. Many highly sophisticated Emergency Medical Service Systems have developed to provide rapid prehospital care and transport. These systems are often designed in a three-tiered manner: first responders (generally fire department or police personnel), basic life-support units (commonly called basic ambulances), and advanced life-support units (often called medic units), who specialize in the care of the critically ill and traumatized patients.

Levels of training for personnel who operate these units increase with the responsibilities designated to their response unit. For instance, first responders are concerned with basic life-saving techniques: airway management, cardiopulmonary resuscitation, and hemorrhage control. Basic life-support personnel handle most patient transports and must be prepared to care for a wide variety of less critically ill or injured individuals. Advanced life-support personnel are trained in highly sophisticated medical procedures that require direct medical control, such as defibrillation, intravenous therapy, and medication administration. Regardless of the specific responsibilities of each individual, common knowledge and skill techniques exist. The very essential skills of airway maintenance, cardiopulmonary resuscitation, hemorrhage control, and fracture immobilization are fundamental to all patient care providers.

When basic emergency care courses were given in the late 1960s, those enrolled brought with them certain fundamental skills. With few exceptions, all had participated in first-aid training through the American Red Cross, the predecessor of emergency care in this country. However, with the advent of highly structured emergency care courses, the American Red Cross for the most part ceased to be responsible for training even basic ambulance personnel. Today these responsibilities have been relegated to fire department training academies, community colleges, and universities, leaving the American Red Cross free to carry out its chartered responsibility of training the general public in first aid. This shift of teaching responsibility has resulted in the fact that men and women entering emergency care courses have little or no background in first aid. In other words, emergency care instructors must start from scratch and guide the learner to develop the most basic, albeit essential, practical skills.

As a result of this shift in teaching responsibility, a need for a textbook focusing on skill and equipment application became evident; thus the development of **Basic EMT Skills and Equipment: Techniques and Pitfalls.** Currently available are a number of excellent emergency care and first responder texts. However, none do justice to prehospital skills or equipment.

It is the intent of **Basic EMT Skills and Equipment: Techniques and Pitfalls** to fill this void. The text is designed to complement any currently available first responder or emergency care text, regardless of the level of training desired. It provides step-by-step explanations of the essential skills required of **all** prehospital providers. The skills and equipment discussed

ranges from the very basic, such as the proper way to hold roller gauze, to the more sophisticated skills of applying traction splints. As there is occasional disagreement in the emergency care field on exactly how to perform certain techniques, alternate terminology and techniques are included as much as possible. No attempt, however, has been made to indicate how the skill is to be used, as this is the function of local protocol. Also included in **Basic EMT Skills and Equipment: Techniques and Pitfalls** is a section entitled, *"Medic Assist."* This section includes the skills and techniques that first responders and/or EMTs may perform to assist advanced life support providers with their duties.

Each chapter begins with a list of objectives and continues with appropriate skills or equipment. As much as possible, each step is illustrated with a photograph. Chapters conclude with two important sections: (1) *Technique Errors,* designed to help the learner by pointing out common technique errors and how to correct them; and (2) *Practice Suggestions,* to assist the learner with skill development. In addition, Appendix D consists of Skill Evaluation Sheets to be used by the instructor for evaluation purposes if desired.

The intent of **Basic EMT Skills and Equipment: Techniques and Pitfalls** is that it be used as a working textbook. It is designed to lay flat so that the learner can easily refer to it while actually practicing the skills and techniques.

Basic EMT Skills and Equipment: Techniques and Pitfalls was written to assist all prehospital providers to develop and retain the essential skills required to properly care for an ill or traumatized patient. Careful attention paid to skills development early in the prehospital provider's education, along with continued practice of said skills, serves to increase the likelihood of the development of excellence in all prehospital providers.

Pamela B. doCarmo

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No textbook is ever completed without assistance; this text is no exception. I would like to thank the following individuals and organizations for assisting with the arduous task of completing **Basic EMT Skills and Equipment: Techniques and Pitfalls:**

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Pamela doCarmo

CONTENTS

Chapter 1

Patient Examination

Upon completion of the chapter, you should be able to:

1. Conduct a primary survey.
2. Establish the responsiveness (level of consciousness) of a patient.
3. Demonstrate how to take a carotid, radial, and distal (pedal/foot) pulse and determine its rate, rhythm, and character.
4. Determine respiratory presence, rate, and character.
5. Measure blood pressure using the auscultation, palpation, and flush methods.
6. Determine skin color and temperature.
7. Determine pupillary status.
8. Determine capillary refill status.
9. Perform a complete secondary survey.
10. Gather information concerning the current medical/trauma episode as well as the past medical history of a patient.
11. Record and communicate the information gathered during the examination process to appropriate personnel.

There are four elements to patient examination:

1. Primary survey
2. Vital signs
3. Secondary survey
4. Patient history

These four elements give the EMT information upon which to base an assessment, possible diagnosis, and decision as to transport method. The flow chart on page 32 shows the sequence of these elements in a patient examination.

PROCEDURES FOR CONDUCTING PRIMARY SURVEY

The purpose of the primary survey is to detect life-threatening conditions that demand immediate action on the part of the EMT. Three potential life-threatening conditions should be monitored:

1. Ventilation	Is the airway open and are there adequate ventilations?
2. Circulation	Is there a palpable pulse indicating adequate pumping action of the heart?
3. Hemorrhage	Is there evidence of severe external hemorrhage?

The primary survey should be conducted on all patients and should be completed as quickly as possible, often within 30 seconds.

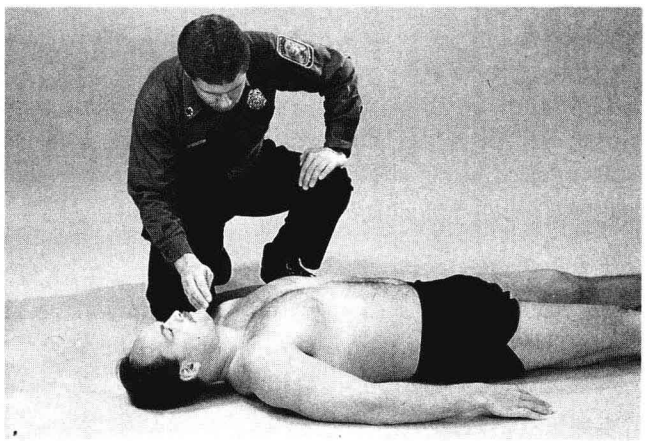
PRIMARY SURVEY

The steps used to complete a primary survey are as follows:

1. **Observe mechanism of injury.**
   Quickly observe the mechanism of injury along with the positioning of the patient. If a cervical spine injury is suspected, the method of establishing responsiveness and opening the airway changes (Figure 1-1).

▲ **FIGURE 1-1**

2. **Establish unresponsiveness**
   A. No cervical spine injury suspected
      1) Gently tap the patient on the shoulder and ask, ''Are you okay?'' If patient is conscious and responds to questions, breathing and circulation are evident (Figure 1-2, *A*).



▲ **FIGURE 1-2 A**

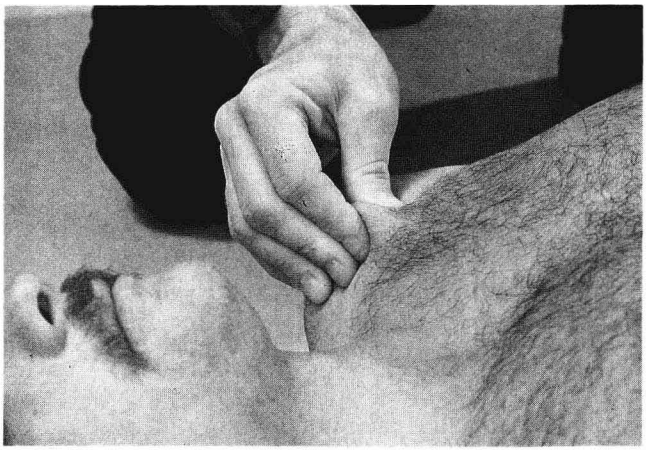
2) If the patient does not respond to voice stimuli, shout loudly, "Are you okay?" or pinch the muscle above the clavicle. If the patient is an infant, he should cry at loud noises or when pinched (Figure 1-2, *B*).

B. Cervical spine injury suspected

1) Gently touch the patient on the shoulder with your hand and ask, "Are you okay?" Be extremely careful not to move the patient's head or neck. If the patient is conscious and responds to questions, breathing and circulation are evident.

2) If the patient does not respond to voice stimuli, shout loudly, "Are you okay?" or pinch the muscle above the clavicle, being careful not to move the patient's head or neck. If the patient is an infant, he should cry at loud noises or when pinched.

NOTE: At this point regardless of the mechanism of injury one EMT should stabilize the neck to prevent any movement. (See Chapter 9, pp. 210–216.)



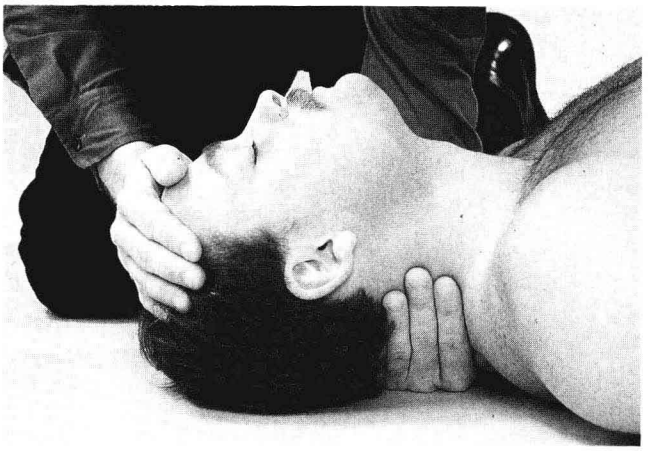
▲ **FIGURE 1-2 B**

If only one EMT is present, he should proceed to open the airway (See step 3 below) as this is the major care priority. However, extreme care should be taken not to move the head and/or neck while opening the airway. As soon as a second EMT is available, stabilization of the head and neck, either by the manual method or cervical collar placement, should be completed.

3. **Open the airway.**

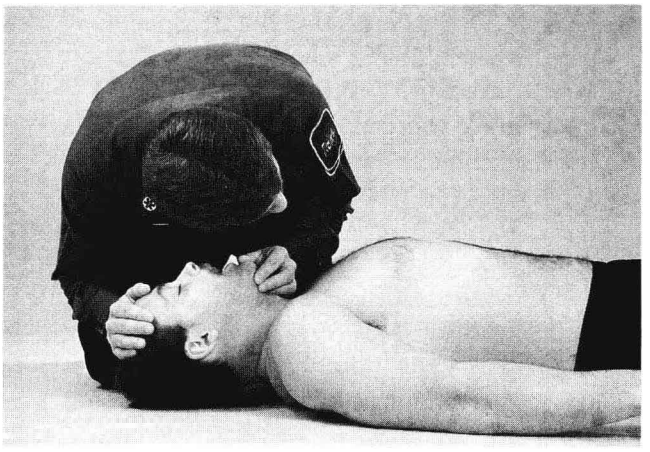
A. No cervical spine injury suspected
Hyperextend the neck by placing one hand on the patient's forehead and the other under their neck (Figure 1-3). (See Chapter 2, pp. 39-40 for a further explanation of this procedure.)

B. Cervical spine injury suspected
Open the airway using the alternate methods of head tilt, chin lift, or jaw thrust. (See Chapter 2, pp. 39-41 for a further explanation of these procedures.)



▲ **FIGURE 1-3**

4. **Determine ventilations.**
Once the airway is open, look, listen, and feel for air exchange (Figure 1-4).
Look—Turn head and watch to see chest rise and fall. This may be difficult if patient is wearing heavy clothing.
Listen—Bend over and place your ear over patient's mouth and nose. Normal and shallow breathing is almost noiseless. Partially obstructed breathing is easy to determine as it is noisy.
Feel—Place your hand (palm up) or your cheek near the patient's mouth and nose and feel for air movement



▲ **FIGURE 1-4**

Alternative: For the *male* patient, place your hand at the level of the diaphragm and feel for chest expansion. For the *female* patient, place your hand at the level of the clavicles.

NOTE: Like ventilations, you must control severe hemorrhage at this time. (See Chapter 5 for methods to be used.)

NOTE: If breathing is not present, quickly ventilate the patient two times, watching for adequate chest expansion. If breathing is present, but labored, the American College of Surgeons, in its Advanced Trauma Life Support program, recommends that you:

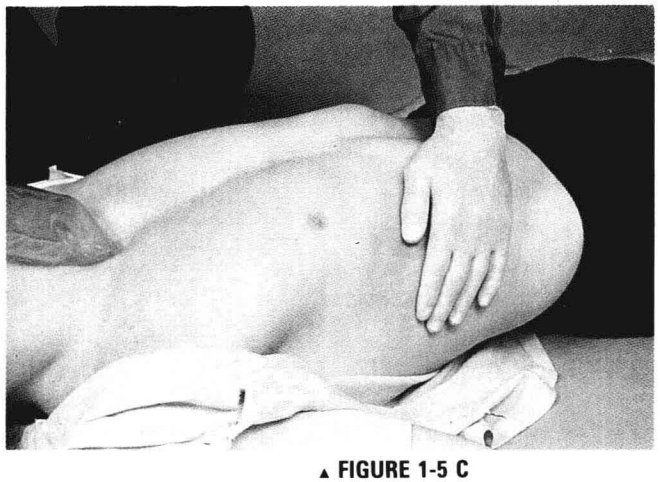
Check for major chest injuries
Immediately open the clothing in the chest area (anterior portion is most important, but the posterior must also be considered) and inspect for major chest trauma that can compromise ventilations (Figure 1-5, *A*):

▲ **FIGURE 1-5 A**

A. Open (sucking) chest wounds (pneumothorax) including impaled objects (Figure 1-5, *B*). **Seal at once.** If left unsealed ventilations will be compromised rapidly. (See page 160.)

▲ **FIGURE 1-5 B**

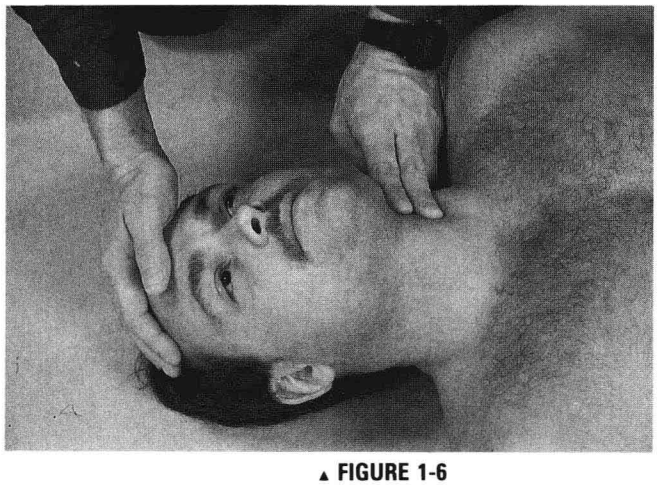
B. Flail chest—paradoxical chest movements—one portion of the chest rises opposite the rest of the chest. **Stabilize at once.** If left unstable, ventilations will be compromised rapidly (Figure 1-5, *C*). (See page 164.)
Place patient on oxygen delivered by face mask. (See page 98 for further explanation.)



▲ **FIGURE 1-5 C**

5. **Check for pulse.**
Monitor the carotid pulse. Locate the ''Adam's apple'' of the patient, and place your index and middle fingers on the midline of it. Slide your fingers into the groove of the neck on the side closest to you. With the pads of these two fingers you should feel a pulsation or thump. Do not exert too much pressure or you will occlude the pulse (Figure 1-6).

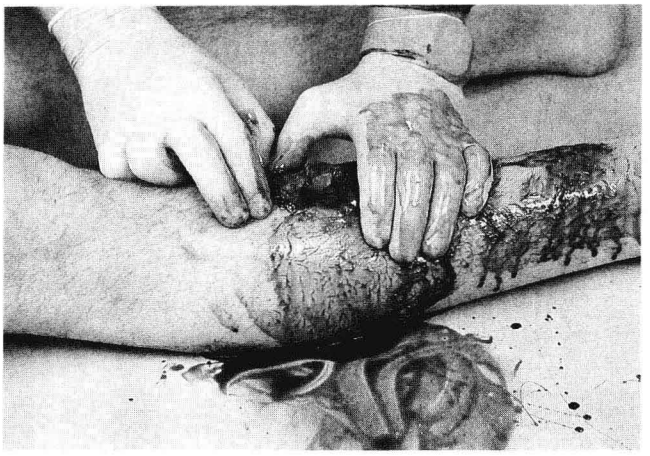
NOTE: Do not evaluate the pulse at this time; simply determine its presence.



▲ **FIGURE 1-6**

6. **Check for severe hemorrhage.**
   Quickly scan the length of the patient's body looking for open wounds from which large amounts of blood are spurting or flowing. Look for evidence of pools of blood around the patient. The patient may have been bleeding slowly for some time and may have lost a great deal of blood prior to your arrival (Figure 1-7).

   NOTE: Like ventilations, you must control severe hemorrhage at this time. (See Chapter 5 for methods to be used.)



▲ **FIGURE 1-7**

VITAL SIGNS

Monitoring of the vital signs provides the EMT with information about the relative status of the patient's physiology. Eight vital signs can be monitored:

1. Pulse
2. Ventilations
3. Blood pressure
4. Body temperature
5. Skin color
6. Pupil reaction
7. Level of consciousness
8. Capillary refill

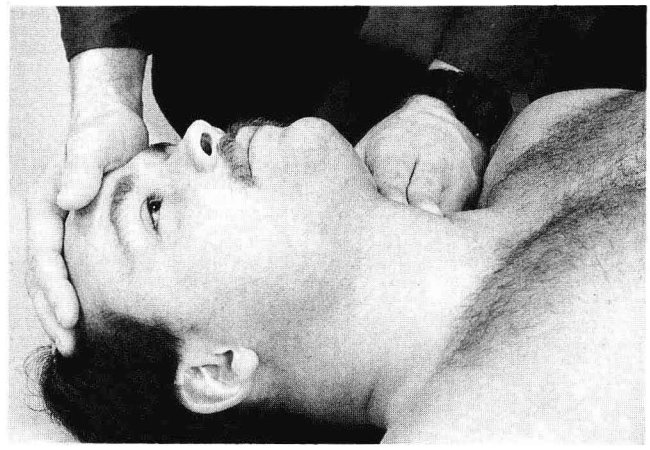
Vital signs generally are monitored after the primary survey. It is important to explain each process to the patient while you are doing it, as this helps to relax and reassure him.

PROCEDURES FOR ASSESSING VITAL SIGNS

Pulse

The carotid pulse is the most reliable indication of heart activity. The femoral and radial pulses follow in usefulness. The brachial, dorsalis pedis, and posterior tibial pulses also can be helpful reference points. To assess the pulse:

1. **Locate the pulse.**
   Carotid—In the groove between the trachea and large neck muscles across from the ''Adam's apple'' (larynx) (Figure 1-8, *A*).



▲ **FIGURE 1-8 A**

Femoral—In the groin where the leg and trunk join. About halfway between synthesis pubis and crest of the pelvis (Figure 1-8, *B*).

▲ **FIGURE 1-8 B**

Radial—Anterior lateral portion of the wrist at the base of the thumb (Figure 1-8, *C*).

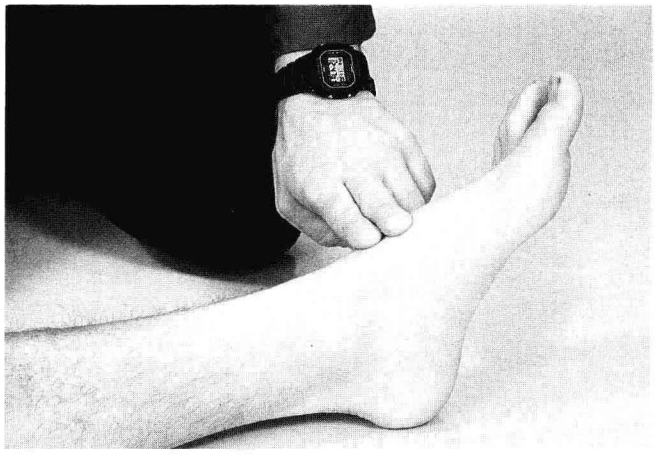
▲ **FIGURE 1-8 C**

Brachial—Antecubital fossa just medial and superior to the elbow center (Figure 1-8, *D*).

▲ **FIGURE 1-8 D**

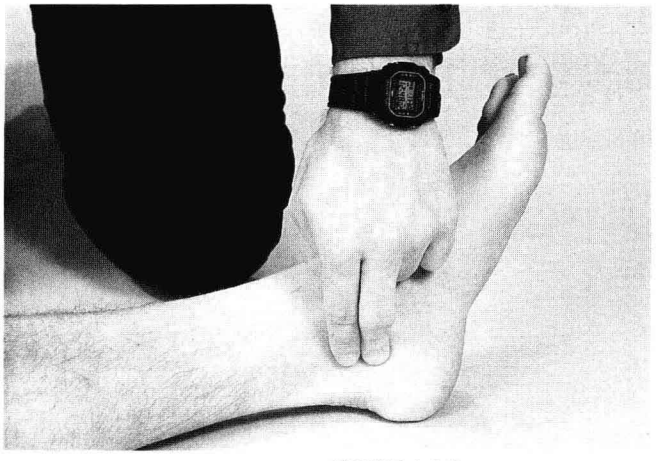
Dorsalis pedis—Superior aspect of the foot, midway between the instep and base of the big toe along the groove formed by the tendons of the big toe and second toe (Figure 1-8, *E*).

NOTE: Twenty percent of the population do not have a palpable dorsalis pedis pulse.



▲ **FIGURE 1-8 E**

Posterior tibial—Medial aspect of the ankle, posterior to the medial malleolus along the groove formed by the ankle and Achilles tendon (Figure 1-8, *F*).



▲ **FIGURE 1-8 F**