

SKILL 10

Adult One-Rescuer CPR

Performance Objective

Given an unconscious adolescent or adult patient, the candidate should begin assessment of the need for CPR and proceed as indicated upon identifying cardiac arrest. The candidate shall perform the procedure for adult CPR in 5 minutes or less.

Equipment

The following equipment is required to perform this skill:

- Appropriate body substance isolation/personal protective equipment

Equipment that may be helpful:

- Oropharyngeal airways (various sizes)
- Nasopharyngeal airways (various sizes)
- Pocket mask with
 - One-way valve
 - Oxygen connecting port
- Bag-mask device
- Oxygen cylinder and regulator
- Automated external defibrillator
- Suction device
- Pulse oximeter
- End-tidal carbon dioxide meter

Indications

- Cardiac arrest in adolescent (ie, displaying secondary sexual characteristics) and adult patients
- Severe bradycardia

Contraindications

- Obvious signs of death
- Valid, verifiable Do Not Resuscitate order

Complications

- Fractured ribs or sternum
- Lacerated liver from fracture of the xiphoid process

Procedures

Step 1 Ensure body substance isolation before beginning procedures.

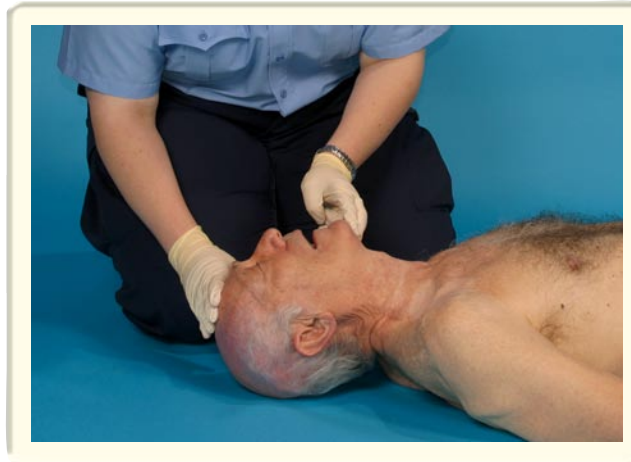
Prior to beginning patient care, appropriate body substance isolation procedures should be employed.

Step 2 Assess level of consciousness.

Grasp the patient's shoulders and gently shake. Firm, nonviolent action may be required to awaken a deeply sleeping or impaired patient. Shout "Are you OK?" or a similar question. If known, use the patient's name. It should take less than 10 seconds to arouse the patient. The patient can be assessed in any position; however, to assess the airway and, more important, to begin chest compressions, the patient should be positioned supine with a hard surface beneath the back.

Step 3 Open airway.

Kneel beside the patient's shoulders and open the airway using the most appropriate method. Begin with the jaw-thrust maneuver until you are sure no cervical spine injury exists. Patients with stiff or large necks may also require a jaw thrust. Once a neck injury has been ruled out, the use of the head tilt–chin lift maneuver is recommended.



In the Field

The Lone Rescuer: Call for Help or Begin CPR?

As a professional rescuer working as a part of a fully equipped arriving EMS or First Response unit, there is no need to call for help. However, when encountering a patient while you're off duty or when you arrive alone, it is essential to call for help as soon as appropriate. The decision is based on the speed of the patient's collapse. Sudden collapse is most often the result of ventricular fibrillation. In these cases it is important to call for help immediately, because the patient's survival is dependent on early defibrillation. Leave the patient, call for help/defibrillation, and return for further assessment and care. In cases where the cause of collapse is hypoxia or asphyxia, ventilations are essential. Begin CPR and perform five cycles (2 minutes) of chest compressions and ventilations before calling for help.

Step 4 Assessment: Determine breathlessness.

While maintaining the open airway, place your ear approximately 1 inch above the patient's mouth. Face the patient's chest and look for chest rise.

This is known as the *look, listen, and feel* procedure: *Look* for chest rise, *listen* for air exchange, and *feel* for air against your cheek. If any of these are found, the patient is breathing and should be assessed for adequacy of ventilations and other concerns. A breathing patient is usually placed in the recovery position if no trauma is suspected. It should take less than 10 seconds to determine breathlessness.

If the victim is breathing, place him or her in the recovery position and continue further assessment.

**Step 5** Begin effective ventilations.

Properly position a pocket mask or other barrier device over the patient's face. Deliver two slow breaths, each over 1 full second, causing chest rise. Allow complete deflation of the chest between breaths. It is important to watch the patient's chest throughout the ventilation procedure.

**In the Field****Mouth-to-Mouth Ventilations**

Although professional rescuers should possess the skills necessary to perform mouth-to-mouth resuscitation, it is not recommended. Instead, professional responders should use mouth-to-mask ventilations or other barrier devices when available.

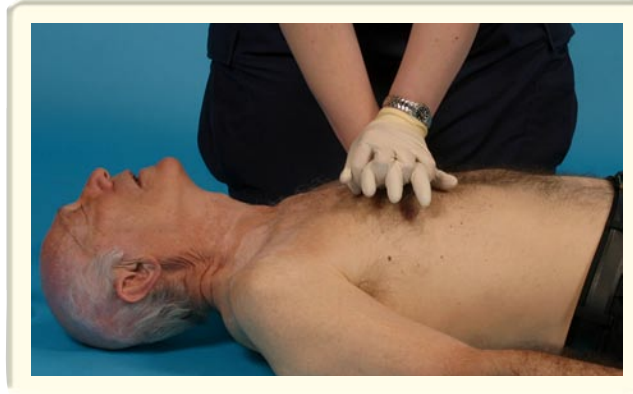
Step 6 Assessment: Determine pulselessness.

While maintaining an open airway, move your hand under the patient's chin down along the neck and feel for a carotid pulse. It should take less than 10 seconds to assess circulation. If after 10 seconds no definite pulse is felt, prepare to deliver chest compressions. It is very important not to focus on finding a pulse. Delaying the start of compressions can be fatal to the patient.

If a pulse is present but the victim is still not breathing, provide rescue breathing, one breath every 5 to 6 seconds. Recheck the victim's pulse about every 2 minutes.

**Step 7** Use appropriate hand position for compressions.

Place the heel of one hand over the lower half of the patient's sternum in the center of the chest, between the nipples. Place the heel of the other hand on top of the first.

**Step 8** Begin chest compressions.

Compress the chest vertically 1.5 to 2 inches, keeping your elbows locked. The compressions should be smooth and even, equally up and down in a fluid motion. The end of the upstroke should allow the chest to return to the relaxed position without removing your hands from the chest. It is often helpful to count out a mnemonic to keep the rhythm.



In the Field

Chest Compressions

Remember to “push hard and push fast.” It is very important to the patient that the chest compressions be delivered with absolute effectiveness. Studies of both in-hospital and out-of-hospital compressions have found that 40% of delivered chest compressions are of insufficient depth to develop adequate blood flow. Close attention to the delivery of chest compressions will correct this devastating oversight.

Step 9 ▶ Performs steps 1 to 8 in proper sequence.

It is essential that these steps be performed in the proper sequence. Failure to do so may result in chest compressions being performed on an inadequately perfusing patient, or ventilations on an inadequately breathing patient. Both are embarrassing.

Step 10 ▶ Perform five cycles of 30 compressions and two ventilations at a rate of 100/min (5 compressions in 3 to 4 seconds).

Chest compressions are delivered at a rate of 100/min. After each set of 30 compressions, stop, open the airway, and deliver two breaths exactly as described in Step 5. It is essential to relocate the proper hand position on the patient's chest each time chest compressions begin. Continue this sequence of 30 compressions to two ventilations for five cycles, and then stop and reassess the patient for perfusion.

Step 11 ▶ Assessment: Determine pulselessness.

Check the pulse as described in Step 6, lasting less than 10 seconds.

Step 12 ▶ Continue CPR.

If the patient is still pulseless, resume chest compressions. Relocate the proper hand placement and continue the compression/ventilation ratio of 30:2. Continue to check for signs of perfusion every 5 minutes.

If the patient's pulse returns, the probability that respirations will also return is initially low. Ventilations may need to continue for some time. If respirations do return to an adequate rate and no signs of trauma are found, place the patient in the recovery position and continue to monitor pulse and respirations.

CPR should be continued as long as any chance of survival exists. In advanced life support (ALS) systems, with electrocardiographic monitoring, defibrillation, and ALS capabilities, all resuscitative efforts should be performed at the scene. It should be understood that competent ALS care administered by paramedics in the field provides a greater chance of successful resuscitation than care of the patient transported to the hospital. Studies have shown that there is no chance that a hospital emergency department will be successful in reviving a patient that paramedics could not.

It is also important to accept death. In ALS systems, patients who have been adequately managed but remain in cardiac arrest should not be transported. These patients need resuscitative efforts stopped. However, before deciding to halt efforts, you must be prepared to inform the patient's family that the patient has died. This may be the most difficult step, but it is essential that paramedics learn how to deliver devastating news to a patient's family.