

CARDIOPULMONARY RESUSCITATION: CURRENT GUIDELINES

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It is critical for health care providers to have the skills and composure required to administer cardiopulmonary resuscitation (CPR) when necessary. Unfortunately, it is easy to postpone updating one's CPR certification when confronted with the demands of leading a practice. New guidelines for CPR have been in effect since 2000. This clinical update provides a brief overview of the new guidelines, some suggestions for incorporating CPR training into the clinician's practice, and clarification for some common legal misconceptions that doctors may have pertaining to administering CPR.

CPR Guidelines

The current protocols are documented in *Guidelines 2000 for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care: International Consensus on Science*.¹ Anyone who was last trained before the year 2000 will note a few procedural modifications in the new CPR guidelines; they are discussed, in part, below. The most important issue, however, is the way that the changes were made. Highlighting the emphasis on evidence-based practice, the 2000 guidelines were developed from scientific evidence gleaned from peer reviewed journal articles and consensus meetings of experts.² This evidence-based approach provides the rationale for the changes, some of which may seem counter intuitive if it were not for the evidence provided in a number of studies published in the past few years.

Fundamental to the 2000 CPR guidelines are the following axioms. Victims of cardiovascular failure have the best chance for survival when early warning signs are recognized, the emergency medical system (EMS) is activated by calling 911, CPR is rapidly initiated, defibrillation of the heart is conducted as soon as possible, airway management is

properly performed and appropriate medications are provided.³ In order to insure that patients receive the best care possible, the Chain of Survival concept is used. The Chain of Survival for adult victims (>8 years of age) includes:

1. Early access to the EMS
2. Early CPR
3. Early defibrillation
4. Early advanced cardiac life support

A major change in adult CPR rescue for 2000 is the elimination of a carotid pulse check by the lay rescuer. This step is replaced with directions to the lay rescuer to evaluate for "signs of circulation": normal breathing, coughing or movement in response to rescue breaths.² The change may seem shocking, however, several studies show that lay rescuers, as well as many health care providers, take too much time to evaluate for a pulse and are often wrong in their assessment.⁴ Rescuers trained at the health care provider level of training continue to check for the presence of a carotid pulse as the sign of circulation.

The rate of compressions during CPR has been standardized to 100 compressions per minute for victims of all ages. Every time compressions are stopped, it takes a number of compressions to establish circulation of blood again. Since many rescuers give compressions slower than the old target ranges, a standardized compression rate of 100 will help insure that patients of all ages receive adequate artificial circulation.⁵ Because most lay rescuers are often intimidated by the prospect of accurately locating the xyphoid process, hand placement for lay rescuers has been simplified to the placement of the heel of the hand on the sternum between the nipples.

Based on the fact that it takes multiple compressions to re-establish blood flow, adult CPR compression-to-breath ration is now 15 compressions and 2 breaths for both one-person and two-person rescue. Data from research studies show that circulating the blood by external chest compressions prior to defibrillation using an automatic external defibrillator (AED) resulted in no significant difference in survival rates between patients who were given breaths and chest compressions compared to those who did not receive breaths.⁶

Early defibrillation is a key link in the Chain of Survival. Figure 1 depicts an AED set up on a model. Because defibrillation of the heart using an AED results in dramatically higher rates of survival, widespread training in the use of AED has been implemented. Survival rates of 49%, twice those associated using extremely effective CPR alone, are

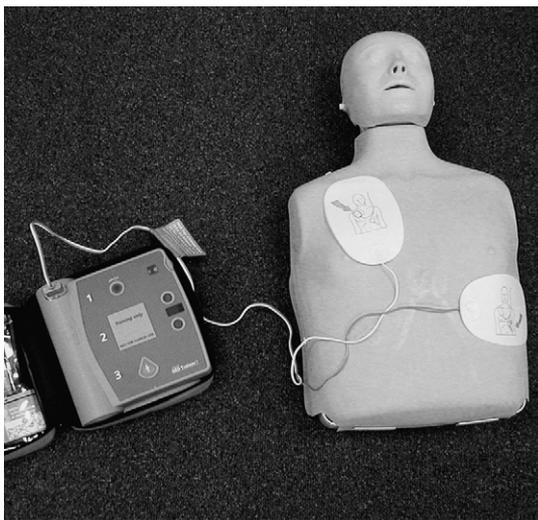


Figure 1. AED set up on a CPR training manikin.

reported with the effective implementation of publicly accessible AED programs.⁷ Health care providers, CPR trainers and responders in public places should be trained in the use of AED. As such, there has been widespread promotion of publicly accessible AED units in places where large numbers of people congregate, such as at airports.⁷ More information on CPR, AEDs and heart disease can be found at the American Heart Association's website (www.americanheart.org).

CPR Training Aids

It is recommended that CPR protocols be reviewed by doctors of chiropractic and their office staff on a routine basis. The algorithm and checklist included in this update are designed to be used as training aids. These tools are made available to assist in practicing CPR or for use in training office staff. It is important to note that these aids do not take the place of attending an official CPR course and maintaining current CPR certification; they are merely reminders of CPR protocols.

Appendix A presents a checklist that can be used when practicing adult CPR. It is designed to be paired with the clinical decision algorithm (App B). For adult rescue, it is important to maintain an adequate depth and rate of chest compressions; this is most easily accomplished by using the lower part of the body to generate the force needed for effective CPR (Fig 2).

Legal Issues

If you are a doctor and are sued for providing emergency rescue, the way in which your case is handled depends upon whether the act in question occurred while you had a pre-existing obligation to care for the patient that was rescued. In many cases, this is defined as whether you were considered to be on duty or off duty, regardless of whether you were paid or not.⁸

Having a pre-existing obligation to care for a patient means that you are serving in an official capacity as a health care provider (eg, at your office, as a team doctor, in a health care facility). Whether you are being paid for service is not relevant. When on duty, you are obligated to help people in need, including provision of emergency care. In this environment, malpractice, negligence and abandonment are serious issues that may come into play. If you render emergency care while maintaining a pre-existing

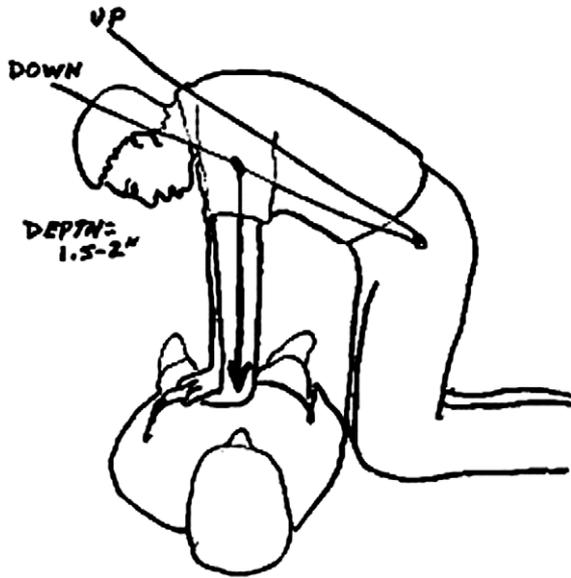


Figure 2. Illustration of proper CPR chest compression technique.

obligation to the patient, then it is expected that you will perform emergency care at a level of competence that meets reasonable standards of practice. If you are sued for an act of negligence or malpractice, your malpractice insurance carrier may defend you and expect that you performed to a reasonable level of professional care.

If you do not have a pre-existing obligation to care for the patient, then you are acting in good faith as a citizen who is helping another person in that person's best interest. In this situation, the Good Samaritan law effective in your state provides certain immunity for health care providers. The first

Good Samaritan Law was enacted in California in 1959 and now it is present in some form in all states, although the wording varies slightly from state to state.⁹ Practitioners should become familiar with their own state's law (usually found in the health and safety code) regarding this matter. Some states, Wisconsin for example,¹⁰ specifically mention chiropractors as being included in the Good Samaritan law of the jurisdiction.

Good Samaritan laws were put into place to protect licensed health care providers who provide emergency care in good faith in an off duty situation.⁸ "Good faith" traditionally means that you provide the quality of care that would be expected of a reasonable person in similar circumstances.¹¹ These deeds are rendered to a person in need, when no fiduciary or legal obligation exists to provide aid and no reward is expected from the person performing this service.¹² Such services can include surveying the scene, protecting a patient, activating the EMS, notifying other health care providers of the situation, or providing care.¹² In some states these laws also cover services when you are on duty at charity events or athletic events because you are not expecting anything in return.^{8,10} Good Samaritan laws offer a level of immunity when you provide care in good faith and without a pre-existing obligation to the patient, but they often will not protect you if you are grossly negligent in your care or if you abandon the patient.¹³ Provisions of most state Good Samaritan laws are listed in Figure 3.

Good Samaritan laws were so named because the concept is similar to the parable told in Luke in

- There is no legal obligation placed on the health care provider to respond to any emergency when they are off duty.¹⁴
- The situation is truly an emergency, meaning that there is potential for loss of life or limb.⁸ Non-emergencies are not protected, such as providing manipulation.
- If the health care provider does respond to the emergency, law grants some degree of immunity from a malpractice suit.¹⁴
- In order to qualify for immunity, the health care provider is expected to act in good faith and must not be grossly negligent or reckless in providing the emergency care.¹⁴
- The care is given without expectation of payment or reward.¹⁴
- The health care provider has no preexisting duty to care for the patient, meaning that the provider is not in an on duty situation, which may include volunteering at charity or public events.⁸

Figure 3. Provisions of Good Samaritan laws.

a living will, or a proxy.¹¹ Regardless of its form, the wishes of the patient are to be respected. DNR laws vary from state to state. Usually, it is a legal document signed by the patient and their attending physician. It is to be presented to emergency providers when resuscitation measures seem necessary. A verbal request from the patient or a relative is not considered sufficient advanced directive to serve as a DNR order. If there is no documentation, most sources suggest that appropriate care should be provided.¹⁵ A sample DNR is shown in Figure 4.

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CONCLUSIONS

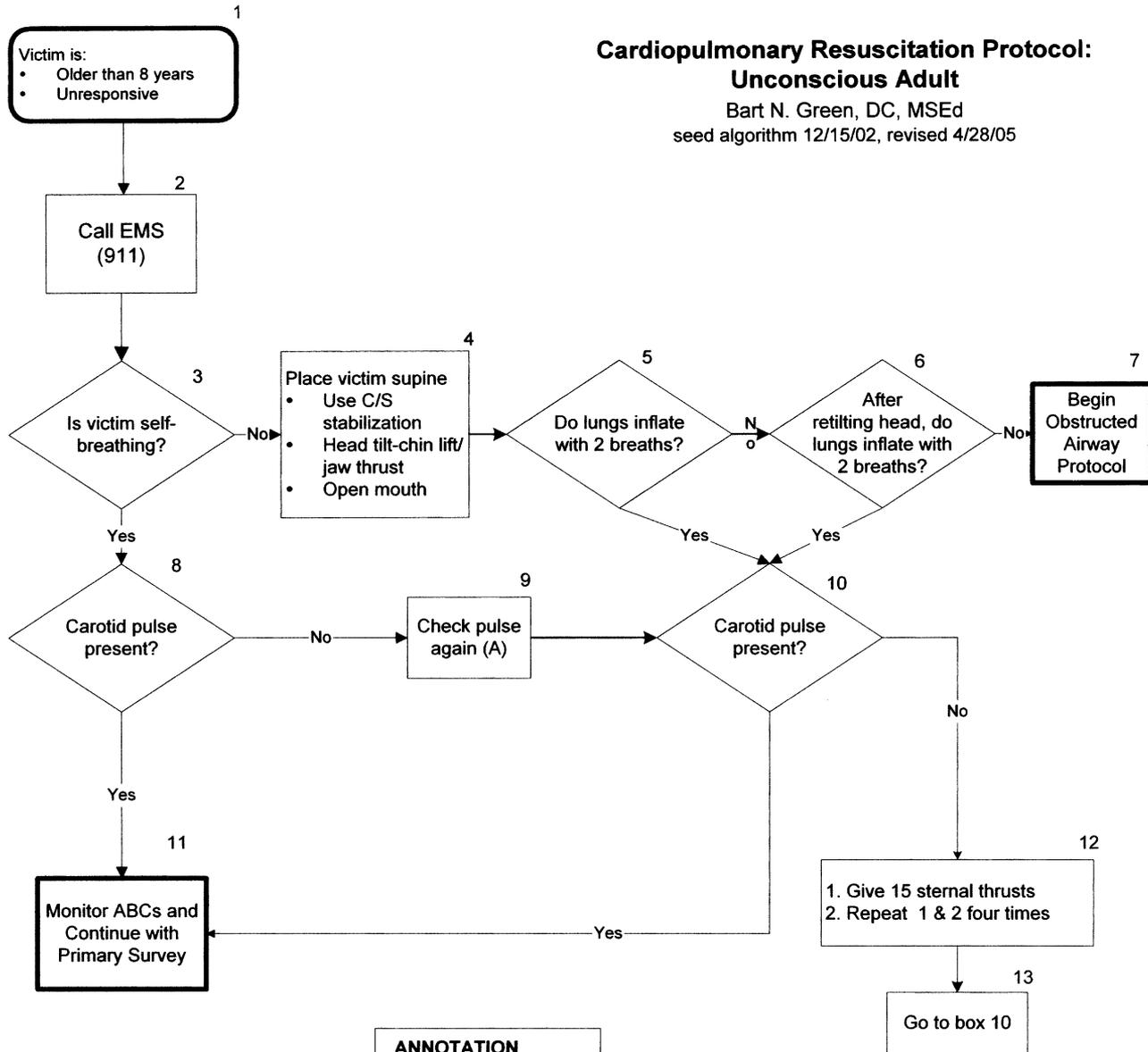
Current practices for CPR are documented in *Guidelines 2000 for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care: International Consensus on Science*. Doctors should ensure that they are trained at the level of health care provider and not only as a lay rescuer. Doctors can improve office staff readiness to respond to an emergency by practicing CPR protocols using some of the training aids in this article.

- After determining unresponsiveness, activate EMS (call 911) and retrieve AED if available.
- Place patient supine.
- Begin preparing AED (if available) and begin heart rhythm AED analysis as soon as possible. The AED “voice” or digital display will provide directions for if or when CPR is necessary once it begins evaluating the patient.
- Position the airway. Look, listen and feel for breathing.
- If not breathing, give 2 ventilations (use a protective barrier).
- Check for the presence of a carotid pulse and observe for signs of circulation (breathing, coughing or movement).
- Expose patient’s sternum.
- Kneel at patient’s side with your knees touching the patient’s arm.
- Palpate up lateral rib margin to xyphoid process.
- Palpate 2 fingers’ widths above xyphoid process onto center of sternum.
- Place heel of one hand directly on the sternal point.
- Reinforce contact hand with other hand and interlace fingers.
- Keep fingers off of the chest wall as you do compressions!
- Position body perpendicular to chest.
- Keep your elbows locked.
- Deliver 15 smooth compressions anterior-posterior to sternum at a depth of 1.5-2 in and at a rate of 100 compressions per minute.
- Be sure that the downstroke and upstroke are even.
- Do not lift hands off chest between thrusts.
- Use lower body (hips, abdominal muscles) to generate force.
- After 15 compressions, reposition the airway.
- Give 2 ventilations.
- Repeat chest 15 thrust-2 ventilation cycle for a total of 4 cycles.
- Reposition the airway.
- Check for carotid pulse or other signs of circulation.
- If no pulse or signs of circulation, continue CPR.
- If pulse is present but the patient is not breathing, deliver rescue ventilations without chest compressions at a rate of 1 breath every 5 seconds.
- If pulse is present and the patient is breathing, roll the patient onto his or her side and monitor breathing and circulation until the EMS arrives.

Appendix A. CPR training checklist for single rescuer for an adult victim.

Cardiopulmonary Resuscitation Protocol: Unconscious Adult

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seed algorithm 12/15/02, revised 4/28/05



ANNOTATION
(A) Almost all patients who can breathe on their own will have a pulse. Be sure that you are accurately palpating the carotid artery and that a pulse is absent bilaterally before you start CPR.

Appendix B. CPR training algorithm.