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Cardiopulmonary Resuscitation (CPR)

Cardiac arrest (sudden stopping of the pumping function of the heart) is an important cause of sudden death. **Cardiopulmonary resuscitation (CPR)**, which involves performing **chest compressions** and **rescue breathing** (see below), is a temporary procedure that can be used to maintain some blood flow to the brain, heart, and other vital organs until trained medical personnel are available to provide more advanced treatment. Studies have found that CPR is most effective when started as soon as possible after cardiac arrest (ie, within minutes of the arrest) and when trained medical personnel arrive within 8 to 12 minutes of the arrest. Cardiopulmonary resuscitation should be performed only by persons trained in the technique because specific CPR recommendations vary depending on the patient's age and the cause of arrest. If performed incorrectly, CPR may be ineffective or harmful. Because most cardiac arrests occur outside the hospital, it is important for laypersons to be trained in CPR. The January 19, 2005, issue of *JAMA* contains 2 articles evaluating CPR performed by trained personnel in both in-hospital and out-of-hospital settings.

MAJOR COMPONENTS OF CPR

- Activation of the local **emergency medical service (EMS)** system. In most areas of the United States and Canada this is done by dialing 9-1-1. Because CPR is only a temporary measure, it is always important to know how to activate your local EMS and to do so as soon as a cardiac arrest occurs.
- **Chest compressions** are performed by applying downward pressure to the chest wall with the hands positioned in a specific way over the **sternum** (breast bone). When performed correctly, these compressions cause blood to be pumped from the heart to other vital organs.
- **Rescue breaths** (mouth-to-mouth breathing) provide oxygen to the lungs when the individual is not breathing. Rescue breaths are alternated with chest compressions at a specific ratio, depending on the patient's age.



ASSOCIATED COMPONENTS

- The **Heimlich maneuver** is used for patients who are unable to breathe as a result of choking, which may lead to cardiac arrest. The Heimlich maneuver is therefore taught during most CPR classes and, like CPR, this technique is performed differently depending on the patient's age and size.
- **Automatic external defibrillators (AEDs)** are computerized devices that can be used to detect and treat **ventricular fibrillation**, an irregular heart rhythm that is an important cause of sudden cardiac death. Automatic external defibrillators provide both visual and voice instructions and are used by some EMS personnel and by lay rescuers. These devices are now located in many public places, including airports, and have been found to improve survival for patients with ventricular fibrillation when used early. These devices can only be used on patients older than 8 years. Most CPR classes now include instruction on the proper use of AEDs.

INFORM YOURSELF

To find this and previous *JAMA* Patient Pages, go to the Patient Page link on *JAMA*'s Web site at www.jama.com. A Patient Page on CPR was published in the April 7, 1999, issue.

FOR MORE INFORMATION

Learn how to perform CPR. For information regarding classes in your area, please contact the organizations below.

- American Heart Association
877/AHA-4CPR
www.americanheart.org
- American Red Cross
202/303-4498
www.redcross.org
- American College of Emergency Physicians
800/798-1822
www.acep.org

Sources: American Heart Association, American Red Cross

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