CPR Guidelines – Quick Tips

Introduction

Sudden cardiac arrest (SCA) is an unexpected loss of heart function, breathing and consciousness. When SCA occurs, blood stops flowing to the brain, heart and the rest of the body. SCA happens without warning and requires immediate emergency treatment. According to the American Heart Association (AHA), SCA affects more than 1000 non-hospital patients each day in the United States and only 10 percent of these individuals survive. With fast, appropriate medical care, survival is possible. When bystanders provide cardiopulmonary resuscitation (CPR) and use an automated external defibrillator (AED) before emergency personnel arrive, approximately 40 percent of victims survive. Unfortunately, only one-third (32 percent) of SCA victims receive bystander CPR and just two percent are treated with an AED by bystanders.

Cardiopulmonary Resuscitation (CPR)

CPR is a lifesaving procedure performed when someone's breathing or heartbeat has stopped, as in cases of SCA, electric shock or drowning. CPR is a combination of chest compressions, which help keep the person's blood circulating, and rescue breathing, which provides oxygen to the person's lungs. Time is of the essence when an unconscious person is not breathing. Permanent brain damage can begin after only four minutes without oxygen, and death can occur as soon as four to six minutes later.

The following is the Adult Basic Life Support (BLS) Sequence for Healthcare Providers from the *2015 AHA Guidelines for CPR and Emergency Cardiovascular Care (ECC)*:

1. Ensure scene safety.
2. Check for response.
3. Shout for nearby help/activate the resuscitation team; can activate the resuscitation team at this time or after checking breathing and pulse.
4. Check for no breathing or only gasping and check pulse (ideally simultaneously). Activation and retrieval of the AED/emergency equipment by either the lone healthcare provider or by the second person sent by the rescuer must occur no later than immediately after the check for no normal breathing and no pulse identifies cardiac arrest.
5. Immediately begin CPR, and use the AED/defibrillator when available. *CPR consists of cycles of 30 chest compressions and two breaths.*
6. When the second rescuer arrives, provide two-person CPR and use AED/defibrillator.

Hands-Only CPR

While the AHA's BLS guidelines for healthcare providers call for the implementation

of conventional CPR (30 chest compressions to two breaths), they do recognize the role that hands-only CPR, sometimes referred to as cardio cerebral resuscitation (CCR), can play in saving lives. In 2008 the AHA released a statement that said, "Bystanders who witness the sudden collapse of an adult should dial 911 and provide high-quality chest compressions by pushing hard and fast in the middle of the victim's chest."

The survival statistics associated with CCR are quite impressive. The AHA reported in their *2015 Hands-Only™ CPR Fact Sheet* that "hands-only CPR has been shown to be as effective as conventional CPR for cardiac arrest at home, at work or in public. It can double or even triple a victim's chance of survival." Several studies, in fact, have shown CCR to be superior to the conventional CPR.

Some health professionals believe that the success of the CCR can be attributed to the uninterrupted chest compressions providing a continuous supply of oxygenated blood to the brain. The other huge upside to CCR is that, for the majority of the population, there's less reluctance to render aid when mouth-to-mouth contact is removed from the equation. The key to surviving SCA is receiving aid as soon as possible, and a simplified procedure like CCR gives more bystanders the confidence and comfort level to get involved quickly.

The AHA continues to recognize the lifesaving impact that CCR can provide. Their 2015 BLS Sequences for both untrained lay rescuers and trained lay rescuers call out the use of CCR. For the trained lay rescuer, rescue breaths are still an option as their recommendation states, "All lay rescuers should, at a minimum, provide chest compressions for victims of cardiac arrest. In addition, if the trained lay rescuer is able to perform rescue breaths, he or she should add rescue breaths in a ratio of 30 compressions to two breaths."

Whether it's CPR or CCR, the AHA recommends a compression rate of between 100 to 120 compressions per minute with each chest compression being at least 2 inches but no greater than 2.4 inches in depth. The high end caps on both of these ratios were added to the 2015 AHA guidelines. Previously, the AHA called out "at least 100 compressions per minute" and compression depths of "at least 2 inches."

Chain of Survival

The AHA's Chain of Survival is a sequential process for providing treatment to victims of SCA outside of a hospital setting. More people can survive SCA if the following steps occur in rapid succession:

- Cardiac arrest is immediately recognized and the emergency response system is activated
- Early cardiopulmonary resuscitation(CPR) is started with an emphasis on chest compression
- Rapid defibrillation occurs
- Effective advanced life support is begun
- Integrated post-cardiac arrest care is provided

Quick execution of each step is critical because the chances of survival decrease 7 to 10 percent with each passing minute.

Good Samaritan Laws

Most states have enacted Good Samaritan Laws to encourage people to help others in emergency situations. These laws give legal protection to people who provide emergency care to ill or injured persons. They require that the Good Samaritan use common sense and a reasonable level of skill not to exceed the scope of the individual's training in emergency situations. For more specific information, review your state's Good Samaritan Law.

Frequently Asked Questions

Q: Is sudden cardiac arrest the same as a heart attack?

A: No. SCA is not the same as a heart attack. A heart attack occurs if blood flow to part of the heart muscle is blocked. During a heart attack, the heart usually doesn't suddenly stop beating. SCA is when the heart malfunctions and suddenly stops beating. However, sudden cardiac arrest may happen after or during recovery from a heart attack.

Q: What is an AED?

A: An AED is an automatic external defibrillator, a portable, user-friendly electronic device that automatically diagnoses potentially life-threatening heart rhythms. If the AED detects a problem that may respond positively to an electric shock, it permits a shock to be delivered to help restore a normal heart rhythm.

Sources

2015 American Heart Association Guidelines Update for CPR and ECC

National Institute of Health – National Heart, Lung and Blood Institute – Sudden Cardiac Arrest

National Institute of Health – U.S. National Library of Medicine

Mayo Clinic – Diseases and Conditions – Sudden Cardiac Arrest

Heart Disease and Stroke Statistics-2012 Update: A Report From the American Heart Association, Circulation. 2012: 125(1):188-197.

Sudden Cardiac Arrest Foundation

Occupational Safety and Health Administration 29 Code of Federal Regulations 1910.151 Medical Services and First Aid Standard

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