

Improving CPR: A Critical Step in the Chain of Survival

Cardiopulmonary resuscitation

Cardiopulmonary resuscitation (CPR) is the method of providing oxygen and blood circulation through the delivery of rescue breathing and chest compressions to victims in cardiac arrest. Cardiac arrest is most often caused by an abnormal heart rhythm called ventricular fibrillation (VF) whereby the heart loses ability to pump blood and distribute oxygen through the blood. Cardiac arrest can also occur after the onset of a heart attack, as a result of electrocution or near-drowning.

According to the Sudden Cardiac Arrest Association (SCAA), sudden cardiac arrest is a leading cause of death in the United States, claiming nearly 300,000 lives each year. Victims showing signs of cardiac arrest will be unconscious, unresponsive, not breathing normally and not moving. Lack of oxygen can impact the victim's entire circulatory system, causing permanent brain damage or death, in less than eight minutes.¹

The American Heart Association (AHA) estimates that CPR, if provided immediately after sudden cardiac arrest occurs, can double or triple a person's chance of survival by helping to maintain vital blood flow to the heart and brain.² In addition to CPR, a victim in VF cardiac arrest needs defibrillation, delivery of a shock to the heart to eliminate the abnormal VF heart rhythm and allow the normal rhythm to resume. CPR has been shown to increase the amount of time that an electric shock from a defibrillator can be effective.

Delivering Quality CPR

When CPR is performed correctly it has the greatest potential to save a life. The American Heart Association guidelines are updated every five years to help improve training and performance of CPR, which in turn will improve survival rates. Updated 2010 AHA Guidelines for CPR and Emergency Cardiovascular Care (ECC) are currently planned for publication in October 2010.

Research has demonstrated that data on CPR performance, as well as feedback to rescuers, can be critically important in achieving successful outcomes during resuscitation.³

¹ Sudden Cardiac Arrest Association Education Materials,
<http://associationdatabase.com/aws/SCAA/pt/sp/edmaterials>

² Sudden Cardiac Arrest Association CPR Fact Sheet,
http://associationdatabase.com/aws/SCAA/asset_manager/get_file/6059/fact_sheet-cardiopulmonary_resuscitation.pdf

³ Edelson, Dana, et al. (2008) Archives of Internal Medicine "Improving In-Hospital Cardiac Arrest Process and Outcomes using Performance Debriefing"

Increasing CPR Awareness and Improving Performance

CPR saves lives everyday. However, a recent study in the *New England Journal of Medicine* found that only about 18 percent of sudden cardiac arrest victims survive after receiving CPR. If effective CPR is not provided immediately, a sudden cardiac arrest victim's chances of survival fall 7 to 10 percent for every minute of delay until a defibrillator shock is delivered.⁴ Additionally, few attempts at resuscitation are successful if CPR and defibrillation are not provided within minutes of collapse.

According to the *Journal of the American Medical Association*, CPR performed both outside and in the hospital setting often does not meet or adhere to standard guidelines.^{5,6} However, research shows that the quality of CPR directly impacts the victim's chance of survival.⁷ Increased awareness and education about effective CPR and the tools available to help improve CPR skill performance and training are critical to increasing survival rates.

CPR Improvement Working Group

The CPR Improvement Working Group, which is comprised of Laerdal Medical, Philips Healthcare and ZOLL Medical Corporation, was formed in June 2008 with a mission to work to expand the use of CPR feedback by the community, emergency services and healthcare providers and to improve skill performance during the administration of CPR.

The CPR Improvement Working Group is conducting an attitudinal survey concerning the performance by medical practitioners of CPR compared to perceptions of how CPR is performed. The survey is intended to foster CPR quality improvement through increased understanding of attitudes on CPR performance and the impact of those attitudes on CPR performance. In addition, the survey aims to determine the level of awareness among practitioners concerning CPR protocols to provide a broader analysis of whether CPR is performed correctly on a global basis. The survey respondents include medical practitioners in the U.S., as well as those from the UK, France and Germany.

⁴ American Heart Association CPR Facts and Statistics,
<http://www.americanheart.org/presenter.jhtml?identifier=3034352>

⁵ Abella et al. (2005), JAMA, "Quality of Cardiopulmonary Resuscitation During In-Hospital Cardiac Arrest"

⁶ Wik et al. (2005), JAMA, "Quality of Cardiopulmonary Resuscitation During Out-of-Hospital Cardiac Arrest"

⁷ Ko et al. (2005), Resuscitation, "Evaluating the Quality of Prehospital Cardiopulmonary Resuscitation by Reviewing Automated External Defibrillator Records and Survival for Out-of-Hospital Witnessed Arrests"