

Accepted practices for heart resuscitation

BRUCE BROILLET AND CHRISTIAN NICKERSON

Litigation sometimes arises around the question of whether proper resuscitative measures were taken when someone was found unresponsive. Various legal issues can be involved in such cases. The purpose of this article is not to explore the legal issues but, rather, to provide some background on the science and accepted practices when dealing with such a situation.

Oftentimes, the person who is found unresponsive is suffering from a cardiac arrhythmia. An arrhythmia occurs when the electrical system of the heart that produces a rhythmic beat called “normal sinus rhythm” becomes abnormal or irregular. Rather than firing electrical impulses to the heart muscle in an organized fashion, it begins to send random, disorganized impulses. If one were to see the heart when it is in arrhythmia, it might look like a quivering bag of worms and, therefore, provides no pumping function at all.

The brain is the most sensitive organ in the body and brain damage or death can occur if deprived of oxygen for too long. If the heart is not pumping, immediate action should be taken. The accepted practices for dealing with such a situation are commonly known as the “chain of survival.”

This “chain of survival” is designed to bridge the gap

between the time the victim is discovered and the time emergency personnel arrive. Each link in the chain is critical to the survival of a victim suffering an arrhythmia. The links include calling 911, starting CPR and using an AED.

One might compare the heart to an electric water pump. If the pump loses electricity and stops pumping, one might be able to work the pump manually with a crank turning it into a mechanical water pump while waiting until someone can repair the electrical problem. Similarly, chest compressions at 100- 120 per minute (CPR) rhythmically squeeze the heart so as to create an artificial heartbeat mechanically, which keeps blood flowing until the heart can be shocked electrically back into a normal sinus rhythm.

The American Heart Association, the American Red Cross, and the American College of Sports Medicine (ACSM) provide accepted practices for dealing with these situations. For example, the American Heart Association procedure holds that if an individual is unresponsive, unconscious, and not exhibiting normal breathing, then the following actions must be taken:

- (1) Call 911 immediately;
- (2) Summon the automated external defibrillator (AED) to



be brought to the victim immediately;

(3) Initiate CPR immediately;

(4) Continue CPR until the paramedics arrive; and

(5) Once the AED arrives, apply the AED.

Accepted practices continued

An AED is a portable electronic device that automatically identifies shockable cardiac rhythms and provides for a shock to convert them to a normal rhythm if indicated. This includes the abnormal rhythms of ventricular tachycardia and ventricular fibrillation. Both of these rhythms can be readily treated with the application of an electrical shock to change the arrhythmia back into a normal rhythm in an appropriate candidate. The electric shock “converts” the heart back to a normal sinus rhythm, assuming that the rhythm is identified by the AED as shockable and the cardioversion is done in a timely manner. One of the functions of the AED is to analyze the heart rhythm and to provide oral instructions to the user on whether to shock the heart or to continue compressions. The effectiveness of this lifesaving therapy and the need to apply it without delay is the reason why AEDs are now placed in

many public locations. As to effectiveness, public access AED (PAD) programs were shown to be successful. A ten year study reported that 69% of those who received shocks survived to hospital discharge. *The Los Angeles public access defibrillator (PAD) program: Ten years after; Marc Eckstein, M.D., Resuscitation, Volume 83, Issue 11, November 2012, Pages 1411-1412.*

People can become certified in CPR/AED by taking a course. The certifications are good for two years, then must be renewed if the person wishes to remain certified. The course trains on CPR and AED, but drilling on these protocols is recommended because skills drop off significantly within the two-year certification period.

When working on one of these cases, one might consult The American Heart Association (AHA) Heartsaver Manual for First Aid CPR and AED, The

American Red Cross Instructor's Manual for First Aid/CPR/AED, and The American College of Sports Medicine (ACSM) Guidelines for Exercise Testing and Prescription. One or more of these or other manuals are often used in training courses which lead to a certification. Moreover, many facilities use one or more of these manuals to develop their own emergency procedures manual.

This article provides a basic overview of CPR/AED and dealing with arrhythmias. A lawyer handling one of these cases would delve into the science and procedures for dealing with arrhythmias. There is a large body of literature on this subject and, of course, experts can help lawyers identify the nuances that apply to a particular case.

Bruce Broillet and **Christian Nickerson** are partners at *Greene Broillet & Wheeler LLP.*