

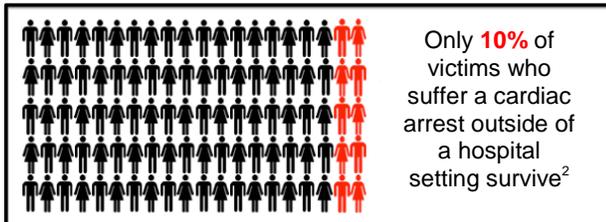
# FACTS

## A Race Against the Clock Out-of-Hospital Cardiac Arrest

### OVERVIEW

Cardiac arrest occurs when the heart's electrical system abruptly malfunctions and the heart suddenly stops beating normally. It is often confused with a heart attack, which typically happens when blocked arteries prevent blood from reaching the heart's muscles. There are almost 424,000 EMS-assessed out-of-hospital cardiac arrests (OHCA) each year in the United States – and most of them are fatal.<sup>2</sup> The term OHCA is used to distinguish between those that happen outside of a hospital setting and those that occur in a hospital setting around medical professionals.

There is hope for cardiac arrest victims, but time is the enemy. To survive cardiac arrest, they must receive immediate cardiopulmonary resuscitation (CPR) to increase the blood flow to the heart and brain, along with an electrical shock from a defibrillator to stop the abnormal heart rhythm. For every minute without life-saving CPR and defibrillation, chances of survival decrease 7%-10%.<sup>3</sup>



Cardiac arrest is widely misunderstood. In a recent public opinion survey, about 45% of respondents did not know that cardiac arrest is a leading cause of cardiovascular death, and approximately 94% said that raising awareness about it is important.<sup>3</sup> Research can help us better understand cardiac arrest's causes, and increased public awareness, CPR training and access to automated external defibrillators (AEDs) can save tens of thousands of lives each year.

### WHAT IS CARDIAC ARREST?

In addition to pumping about 2,000 gallons of blood each day, the human heart has a complex electrical system that regulates and synchronizes the beating

of the heart. When this system malfunctions, the heart can be sent into a dangerously erratic rhythm. Unlike the heart attack victim who may exhibit early warning symptoms, such as chest pain or shortness of breath, cardiac arrest strikes without warning. One minute a person may feel fine, and the next be unconscious and close to death.

### CAUSES AND RISK FACTORS

The causes of cardiac arrest are not fully understood, but coronary heart disease is a factor in approximately 70% of cases.<sup>5</sup> Other common risk factors include:

- Personal or family history of cardiac arrest
- Abnormal heart rhythms
- Congenital heart defects
- Congestive heart failure
- Illegal drug use, such as cocaine or amphetamines
- Heart infection

### WHO SUFFERS CARDIAC ARREST?

Cardiac arrest cuts a wide swath throughout the U.S. population. Over 1,000 people have an out-of-hospital cardiac arrest each day - more than the total number of Members in the U.S. House of Representatives.<sup>1</sup> Although overall deaths from heart disease have declined over the past 30 years, the mortality rate from cardiac arrest has not.<sup>6</sup>

Cardiac arrest usually occurs in adults and is a leading cause of cardiac-related death.<sup>5</sup> However, children are not without risk. Each year, there are an estimated 10,200 cases of out-of-hospital cardiac arrest in children nationwide. 35% are caused by an abnormal heart rhythm that can be treated by an AED.<sup>1</sup> Student athletes who suffer cardiac arrest often have an underlying heart disease.<sup>1</sup>

### SURVIVING CARDIAC ARREST

Treatment of cardiac arrest is a race against the clock. The combination of early, immediate CPR and defibrillation can more than double a victim's chance of survival.

The American Heart Association recommends implementing the **Chain of Survival** to rescue cardiac arrest victims:

- Immediate recognition of cardiac arrest and activation of the emergency response system
- Early CPR with an emphasis on chest compressions
- Rapid defibrillation if indicated
- Effective advanced life support
- Integrated post- cardiac arrest care

## TRAINING CURRENT AND FUTURE LIVESAVERS

CPR is critical to the survival of victims of cardiac arrest. Individuals with CPR training are more likely to deliver the lifesaving intervention to cardiac arrest victims.<sup>7</sup> Furthermore, those with training perform higher quality CPR to victims of cardiac arrest and increase survival rates. Unfortunately, not enough people are able to deliver effective CPR.

Because 96% of children ages 14-17 attend a public or private school,<sup>8</sup> CPR training in high schools can teach a substantial portion of the population how to deliver this lifesaving technique and help increase the likelihood that individuals suffering a cardiac arrest will receive high quality CPR. Training students in CPR will fill schools, as well as entire communities, with lifesavers. Additionally, emergency response dispatchers can play a vital role in assisting bystanders in delivering high quality CPR while waiting for emergency personnel to arrive.

## GREATER ACCESS TO AEDS

The automated external defibrillator (AED) is a simple-to-use portable device that is used to shock the heart of a person suffering a cardiac arrest to return the heart to a normal rhythm. AEDs can be found today in a variety of public settings – from schools to airports. Used by both trained and lay emergency responders, the AED is attached to the victim and delivers an electric shock when it detects a dangerous heart rhythm. The devices provide audible step-by-step instructions to the user and independently determine if a shock is needed, making them very easy for almost anyone to use.<sup>9</sup>

Communities with AED programs, which include comprehensive CPR and AED training, have achieved survival rates of 40% or higher for cardiac arrest victims.<sup>3</sup> Lay responders play a crucial role in achieving high survival rates, and more AEDs and CPR training for these individuals are needed to provide this life-saving treatment. But despite widespread public support for increasing federal funding for cardiac arrest research, education and treatment, such funding has been cut.

## THE ASSOCIATION ADVOCATES

The American Heart Association advocates for a comprehensive approach to addressing out-of-hospital cardiac arrest, including:

- Greater research into its underlying causes;
- Improved data collection on out-of-hospital cardiac arrest; how it affects different populations; and the effectiveness of treatment methods.
- Promoting the use of recognized emergency medical dispatch protocols and appropriate quality improvement programs among 911 dispatch agencies to assure that bystanders promptly receive effective CPR coaching and support for efforts to train dispatch personnel to provide pre-arrival medical instructions.
- Supporting legislation and policies that encourage bystander CPR, including requiring all students to be trained in CPR and AED prior to graduating from high school;
- Championing public policy initiatives that promote the development of Medical Emergency Response Plans (MERPS) which includes placing AEDs in public places where cardiac arrest is likely to occur,
- Advocating for funding the *Rural and Community Access to Emergency Device Program* at the FY 2005 level of \$9 million annually, so that more lives can be saved each year;
- Extending Good Samaritan law coverage to all AED users and program facilitators;
- Increasing public awareness of out-of-hospital cardiac arrest and its causes through activities such as CPR and AED Awareness Week each June.<sup>1</sup>

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