

Results of definitive study are in: lives are saved when defibrillators are placed in public spaces

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Heart experts at Johns Hopkins and elsewhere have evidence that at least 522 lives can be saved annually in the United States and Canada by the widespread placement of automated external defibrillators, the paddle-fitted, electrical devices used to shock and revive people whose hearts have suddenly stopped beating.

Their latest findings support broad deployment of battery-powered defibrillators, known as AEDs for short, in public spaces where large gatherings occur, such as senior care facilities, hospitals, sports stadiums, community centers, shopping malls, airports, and the lobbies of large hotels and office buildings.

The team's study results, to be presented Nov. 5 at the American Heart Association's annual Scientific Sessions in Orlando, Fla , are among the first conclusions to emerge from a landmark series of studies, known as the Resuscitation Outcomes Consortium, designed to reveal the best life-saving techniques for cardiac emergencies.

Every year, experts say, more than 300,000 Americans of all ages die from sudden cardiac death. A good many of them are seniors.

In the latest work, researchers found - in real-life, emergency situations - that use of the laptop-size devices by random bystanders more than doubled survival rates among victims felled by a sudden heart stoppage

due to a heart attack or errant heart rhythm. Each device, which costs, on average, more than \$2,000, is equipped with a digital instruction screen that provides simple, step-by-step directions.

“Our results were emphatically clear,” says principal investigator, Myron “Mike” L. Weisfeldt, M.D., a cardiologist at The Johns Hopkins University School of Medicine. “Good Samaritans, when given access to automated defibrillators in potentially fatal emergencies, save lives.

“This is a serious matter of public health policy and similar to previous discussions about placing fire extinguishers near building exits, wearing seat belts while driving, or manufacturing cars with airbags,” says Weisfeldt, the William Osler Professor of Medicine at Hopkins and past president of the American Heart Association (AHA).

Previous research has shown that time is critical in saving the majority of people from sudden cardiac death. Care must be provided as rapidly as possible, he says, within five minutes of the heart attack, and must employ the physical chest compressions that are part of cardiopulmonary resuscitation (CPR), and, if needed, a defibrillator.

Currently, Weisfeldt says, AEDs are used mostly by paramedics and other emergency medical workers who have additional training in CPR. But often, he notes, bystanders first on the scene of an emergency are available to provide life-saving aid before ambulances can arrive.

As part of the study, conducted in 11 major cities in the United States and Canada from December 2005 through November 2006, researchers closely monitored the circumstances surrounding nearly 10,000 incidents of cardiac arrest called into 911 emergency telephone lines. Pulled from each medical file were details about use of CPR and a defibrillator.

Overall results showed that 7 percent of patients returned home after a

hospital stay. One hundred and forty-nine received a shock from an AED used by a bystander. This amounted to a survival rate of 36 percent among these patients.

Among the bystanders who rushed to help, some were nearby police (23 percent), or health care workers (42 percent). Locations varied from sports stadiums to indoor lobbies and seniors' housing complexes.

If results from the original study population of 20 million are extrapolated to the general population of the United States and Canada (roughly 360 million), an estimated 522 lives are saved.

“This research is the closest thing to the real-world experience of life-threatening, sudden cardiac death that we have,” says Weisfeldt. He plans to educate Maryland state officials on the benefits of increased public access to AEDs. “Government, community and business leaders need to carefully consider increased access to automated external defibrillators when making healthy public policy.”

The state of Maryland made the devices mandatory on-site equipment, in 2006, for all public sports games.

At The Johns Hopkins Hospital, Weisfeldt notes, the surprise death of a colleague in 2003 propelled hospital staff to place 23 AEDs in heavily trafficked spaces and corridors. Across town at the University's Homewood campus, more than 100 of the devices have been placed.

The study, set to continue through 2010, was funded by the U.S. National Heart and Lung and Blood Institute, a member of the National Institutes of Health.

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