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FIRST RESULTS OF IN-HOME AUTOMATIC EXTERNAL DEFIBRILLATORS USE AMONG LOWER-RISK POST MI PATIENTS ANNOUNCED

Chicago, Il – Every two to three minutes, someone in the United States experiences a sudden cardiac arrest (SCA). These usually occur in the home. Rescuing these patients in the home presents logistical problems for emergency medical services (EMS) systems that are routinely challenged to reach patients in a timely manner with potentially life-saving care.

The Home Automated External Defibrillator Trial (HAT) presented today at the American College of Cardiology's 57th Annual Scientific Session sought to determine whether access to an automated external defibrillator (AED) can improve survival rates in patients at relatively low risk of SCA by providing immediate, home-based defibrillation. ACC.08 is the premier cardiovascular medical meeting, bringing together cardiologists and cardiovascular specialists to further breakthroughs in cardiovascular medicine. The HAT study presentation at ACC.08 will be accompanied by a simultaneously publication in the online version of the *New England Journal of Medicine*.

Previous studies that explore success rates of AED examined patient outcomes with defibrillation in public places, such as airports, airplanes, casinos and the like, where there was timely response and intervention to SCAs. While they reported AED successes overall, there is little impact on the general public because more than 70 percent of cases occur in the home.

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Most SCAs are believed to be due to an irregularity in the normal beat of the heart caused by ventricular fibrillation (an uncoordinated distribution of electrical impulses in the pumping chambers of the heart). Ventricular fibrillation leads to a disruption of muscle contraction (or pumping), which stops blood circulation. While high-risk patients for ventricular fibrillation are often identified, they are relatively few and best treated with an implantable cardioverter defibrillator (ICD). It is predicting who is most at risk of ventricular fibrillation among the general, low risk population that has proved to be difficult.

The purpose of the HAT study was to test whether or not providing home access to an AED can improve survival in patients with a modest risk of SCA, such as those surviving an anterior myocardial infarction, who do not have significant heart failure or heart dysfunction, patients for whom ICD therapy has not been deemed necessary.

Participants in the HAT study were chosen for their moderate risk of cardiac arrest and they, their spouses/companions were instructed in the proper steps in case of SCA – call EMS and how to perform cardiopulmonary resuscitation (CPR), as was the control group. A total of 7001 patients were enrolled in the HAT study, each of which had a spouse or home companion willing and able to perform CPR and use an AED. These patients were randomized between control therapy, comprising a call to EMS and performing CPR by the home spouse/companion or to the use of an AED first, followed by calling EMS and performing CPR.

The primary endpoint was all-cause mortality, with a goal of reducing mortality by 20 percent presuming that the annual mortality rate in the control arm of the study was 4.0 percent. Secondary outcomes include survival from SCA in the home and survival based upon actual AED use and actual CPR use in the control arm in the home when ventricular fibrillation is treated.

After an average of just over three years of follow-up, survival rates between the two groups did not differ. That is, about the same number of participants in the group with the home AED died from sudden cardiac death as those who only had an EMS called and whose spouse/companion had received CPR training. The researchers report that there are several reasons why the study did not show increased survival among the group that had in-home AEDs; for example, the rate of SCA occurring at home was much less than expected and only one-half of the SCAs that occurred at home were witnessed by a spouse/companion. Also, modern drug therapy after a myocardial infarction dramatically decreased the death rates (half of predicted) making it unlikely to prove the trial's hypothesis. And perhaps, equally important, the control arm received training on why and how to call emergency medical services for help and how to perform CPR. For those few that actually used the AED for ventricular fibrillation in the home, the long-term survival rate in the home was 28.6%, compared to the 2-6% rates that have been expected.

The study was supported by the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health. “We are looking at ways to really improve survival in patients who have survived a heart attack,” said Gust H. Bardy, MD, The Seattle Institute for Cardiac Research and lead author of the study. “The HAT study gives us important insights into the challenges and opportunities related to at-home care for these patients, even if they are not considered to be traditionally high-risk.”

Dr. Bardy will present “Results of the Home Automatic External Defibrillator Trial (HAT)” *in the Late-Breaking Clinical Trials II session on Tuesday, April 01, 2008, 10:00 a.m. - 11:30 a.m., McCormick Place, North Hall B1.*

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The American College of Cardiology (www.acc.org) represents the majority of board certified cardiovascular physicians in the United States. Its mission is to advocate for quality cardiovascular care through education, research, promotion, development and application of standards and guidelines – and to influence health care policy. ACC.08 is the largest cardiovascular meeting, bringing together cardiologists and cardiovascular specialists to share the newest discoveries in the treatment and prevention, while helping the ACC achieve its mission to address and improve issues in cardiovascular medicine.