National Center for Early Defibrillation

Community Resources to Help Save Lives

AEDs in the Home: A Statement from the National Center for Early Defibrillation

Co-Sponsor of the Discussion
"Improving Survival from Sudden Cardiac Arrest:
Is it Time for Home Defibrillators?"

National Press Club
Washington, D.C.
January 30, 2002

The meeting

The National Center for Early Defibrillation, a nonprofit, vendor-neutral organization based at the University of Pittsburgh, is pleased to co-sponsor the discussion, "Improving Survival from Sudden Cardiac Arrest: Is it Time for Home Defibrillators?". We believe that the concept of placing automated external defibrillators (AEDs) in the home is a promising strategy for saving the lives of victims of sudden cardiac arrest (SCA) and we applaud the sponsor of this meeting, Philips Medical Systems and our fellow co-sponsor, the American Red Cross for bringing this important public health issue before the media and, in turn, the public.

The context

Sudden cardiac arrest is the leading cause of death in the United States, affecting an estimated 250,000 victims each year.[1] Recent figures from the Centers for Disease Control suggest that the incidence of this deadly condition may be vastly higher, affecting as many as 450,000 victims annually.[2] Even at the lower estimate, the annual incidence of sudden cardiac arrest is staggering and far exceeds the annual incidence of house fires, prostate cancer, breast cancer and automobile accidents combined.[3]

What makes SCA different from many other causes of death is that for most SCA cases we have the cure. Scientific research has confirmed that the single most important determinant of survival from SCA is rapid defibrillation. If we have the cure, then, why do only seven percent[4] of victims survive? The answer, regrettably, is that most victims do not have timely access to defibrillation. Defibrillators can only save lives if they are used within minutes of collapse. So the challenge is not to find a cure, but rather to find strategies that facilitate rapid delivery of that cure.

During the past two decades, a number of strategies for reducing time from collapse to defibrillation have been implemented, including equipping emergency medical services (EMS) personnel and public safety first responders, such as police officers and firefighters with defibrillators. Another strategy, called public access defibrillation (PAD), involves placement of AEDs for use by targeted responders and the general public in public locations with higher concentrations of at-risk adults. This strategy is the subject of a multi-center clinical trial funded by the National Institutes of Health and based at the University of Washington.

The concept

While these strategies are being studied and refined, there is increasing interest in an additional strategy: placing AEDs in the home. Since SCA occurs most often in the home[5,6,7,8], "home defibrillation" is a strategy that warrants vigorous exploration. But there are many unanswered questions.

Should AEDs be placed in the homes of high-risk individuals, such as those who have had a heart attack (myocardial infarction)? Should AEDs be placed in the homes of SCA survivors for whom implantable cardioverter defibrillator (ICD) therapy is not indicated? If about a third of SCA victims have no previous history of heart disease (i.e., SCA is the first indication of a heart problem), how can these high-risk individuals be identified and targeted for home AED placement?

Is the time coming when it will no longer be necessary to have a prescription in order to acquire an AED? Should AEDs be placed in at least one home in every neighborhood, modeling the "neighborhood watch" strategy proposed in a recent medical editorial?[9] Should AEDs be considered a standard home safety device, every much as vital as smoke detectors and fire extinguishers? Should families conduct periodic AED drills, just as they should conduct periodic fire drills?

And if AEDs are placed in home settings, will they be used effectively? Will they be used at all? Will family members feel psychologically comfortable enough to use AEDs on loved ones in highly charged emotional situations? Will they remember how to use the devices? Will they be able to find the AED in the moment of need? Will the AED have been properly maintained so that it works? Will AED use in the home delay EMS access because responders are distracted from calling 9-1-1? If family members often are reluctant to provide cardiopulmonary resuscitation (CPR), is there any reason to think they will be more likely to use AEDs? Will there be long-term psychological consequences for those who use (or attempt to use) AEDs to help loved ones?

What about the cost of AEDs for home placement? Will they be affordable? Will they be reimbursable through insurance? Will the cost of AEDs present financial barriers for some families, precluding their access to this measure of home safety preparedness?

The research

The idea of home defibrillation and its lifesaving potential began to appear in the medical literature nearly 20 years ago.[10,11,12,13] An early study investigating the placement of

defibrillators in the homes of SCA survivors met with discouraging results, and the authors reported only a small potential benefit.[14] Now that devices have become simpler and more user-friendly, new studies[15] may generate more encouraging results. Still, factors such as cost, retention and psychological barriers may diminish the potential effectiveness of the home defibrillation strategy.

Whether it is time for over-the-counter defibrillators that can be used in the home, (and time to view the issue from a consumer model, rather than a medical model),[16] or whether it is best to await further scientific evidence supporting more widespread dissemination[17] remains a matter of debate.

It is within the context of this analysis that we offer a position on home use of AEDs.

The position of the National Center for Early Defibrillation on home defibrillation

We at the National Center for Early Defibrillation strongly support active investigation of strategies for reducing the time from collapse to defibrillation for victims of sudden cardiac arrest, including home use of AEDs. Since sudden cardiac arrest occurs most often in the home and since present strategies for reaching these victims in a timely manner often are inadequate due to myriad logistical obstacles, we support thoughtful exploration of the promising strategy of home defibrillation.

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[3] U.S. Statistical Abstracts of the United States, 1998, Table 138; www.americanheart.org; www.cancer.org;
[4] Callaway CW. Improving neurologic outcomes after out-of-hospital cardiac arrest. Prehosp Emerg Care 1997 (Jan-Mar)1(1):45-57.
[5] Cobb LA, Fahrenbruch CE, Walsh TR. Influence of cardiopulmonary resuscitation prior to defibrillation in patients with out-of-hospital ventricular fibrillation. JAMA. 1998 Apr 7;281(13):1220-2. (57% in home)
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[7] Frank RL, Rausch MA, Menegazzi JJ, Rickens M. The locations of non-residential out-of-hospital cardiac arrests in the City of Pittsburgh over a three-year period: implications for automated external defibrillator placement. Prehosp Emerg Care 2001 (Jul-Sep);5(3):247-51. (59% in home)
[8] Malcom GE, Coule PL, Thompson TM. The location and frequency of out-of-hospital cardiac arrest in Georgia (abstract). PEC 6(1) Jan-Mar 2002:145. (67% in home)
[9] Zipes, DP. Saving time saves lives (editorial). Circulation 2001;104:2506-2508.
[10] Hallstrom A, Eisenberg M, Bergner L. The potential of automatic defibrillators in the home for management of cardiac arrest. Med Care 1984 Dec;22(12):1083-7.
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[15] Personal communication, Mickey Eisenberg on the Home AED Trial underway in King County, Washington.
[16] Eisenberg MS. Is it time for over-the-counter defibrillators? (editorial). JAMA 2000 (Sep 20);284(11).
[17] Brown J, Kellermann AL. The shocking truth about automated external defibrillators. JAMA 2000 (Sep 20);284 (11):1435-8.