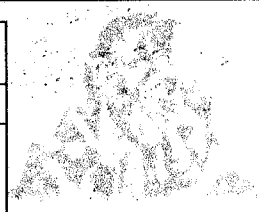

Airport AED study finds high survival rate from VF cardiac arrest

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A study[1] recently published in the *New England Journal of Medicine* found that 10 of 18 (56%) of persons who were witnessed to suffer a sudden cardiac arrest and were in ventricular fibrillation (VF) at three Chicago airports were alive and neurologically intact one year later. Although the number of subjects is too small to allow any definitive conclusions, the result is striking because it contrasts so sharply with the 5 - 25% survival rates reported in most community-based studies.

Over a two-year period (6/1999 - 5/2001), investigators deployed 70 automated external defibrillators (AEDs) throughout O'Hare, Midway and Meigs Field Airports in Chicago and trained about 3,000 airport personnel in CPR and AED use. The defibrillators were installed to be no more than a brisk 90 second walk apart. The prospective, observational study found there were 25 non-traumatic arrests at the three airports; in four cases, non-study defibrillators (from airplanes and EMS) were used. Among study defibrillator uses, there were 18 cases of witnessed ventricular fibrillation. Eleven of these patients were resuscitated and were discharged from the hospital in good condition; 10 were still alive and neurologically intact at one year.

The study found several interesting findings about the responders and initial care. In 12 of the 18 VF cases, responders were able to deliver a shock within five minutes of retrieving the AED. Among these 12, survival to hospital discharge was 75% as compared to only 33% when this interval was more than five minutes. Unfortunately the investigators were not able to determine the interval from time of collapse to time of first shock, but this finding is consistent with other studies that found lower survival associated with longer collapse-to-shock intervals [2].

A perhaps somewhat refreshing finding is that "Good Samaritans" (i.e., persons with no duty to act) provided defibrillation to all but two of the 18 VF victims. Further, three of the AED operators for patients who survived had no medical training and had not been trained to use an AED. Three physicians

without AED training also provided defibrillation to subjects who survived. It is also important to note that all but one victim received basic cardiopulmonary resuscitation by bystanders prior to defibrillation.

An informal cost-benefit analysis found a very acceptable cost of $7,000 per life saved. This compares favorably with other accepted public health interventions.

This study demonstrates public deployment of automated external defibrillators in a specific setting can lead to higher survival rates from ventricular fibrillation than previously found in most communities. While the small number of subjects limits the conclusions one can draw, the results presented are consistent with those in two other programs of bystander use of AEDs [2,3]. It is essential to appreciate that all these studies comprise populations different from the community at large and are likely a healthier cohort. Yet they do serve to consistently endorse the message: **Immediate bystander action saves lives.**

The investigators of this study are to be commended for implementing a well-designed program that has made the Chain of Survival concept a living reality in three Chicago airports. We encourage all our readers to carefully review this article and to emulate this program in high volume venues in your community, being sure to carefully document and report your findings like Caffrey and colleagues have done.

[1] *Caffrey SL, Willoughby PJ, Pepe PE, Becker LA. Public use of automated external defibrillators. N Engl J Med 2002;347:1242-7.*

[2] *Valenzuela TD, Roe DJ, Nichol G, Clark LL, Spaite DW, Hardman RG. Outcomes of rapid defibrillation by security officers after cardiac arrest in casinos. J Engl J Med 2000;343:1206-6.*

[3] *Page RL, Joglar TA, Kuwal RC, et al. Use of automated external defibrillators by a U.S. airline. N Engl J Med 2000:343:1210-6.*