Medical Xpress

Use of AEDs in hospitals for cardiac arrest not linked with improved survival

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While automated external defibrillators improve survival for out-of-hospital cardiac arrest, an analysis of data indicates their use for cardiac arrest in a hospital does not result in an improved rate of survival, according to a study in the November 17 issue of *JAMA*. The study is being released early online because it will be presented at the American Heart Association's annual meeting.

Use of automated external defibrillators (AEDs) has been proposed as a strategy to reduce times to defibrillation and improve survival from cardiac arrests that occur in the hospital setting, according to background information in the article. However, current evidence to support the use of AEDs in hospitals has been mixed and limited to single-center studies. Also, these devices may be less effective or potentially harmful when used in hospitals where only 1 in 5 hospitalized patients have initial cardiac arrest rhythms that respond to defibrillation. "Before the widespread dissemination of AEDs in hospitals, it therefore becomes critical to demonstrate that AED use improves survival," the authors write.

Using data from the National Registry of Cardiopulmonary Resuscitation, Paul S. Chan, M.D., M.Sc., of Saint Luke's Mid America Heart Institute, Kansas City, and colleagues evaluated the association of AED use and survival after an in-hospital cardiac arrest. The study included 11,695 hospitalized patients with cardiac arrests between January 1, 2000 and August 26, 2008, at 204 U.S. hospitals following the introduction of AEDs on general hospital wards. Of these patients, 2,079

(17.8 percent) had shockable rhythms, such as ventricular fibrillation or pulseless ventricular tachycardia (rapid heart rhythm), and 9,616 (82.2 percent) had nonshockable rhythms, such as asystole or pulseless electrical activity. AEDs were used to assess initial rhythm in 4,515 patients (38.6 percent).

Overall, 2,117 patients (18.1 percent) survived to hospital discharge. Within the entire study population, the rate of survival to hospital discharge was 16.3 percent among patients in whom AEDs were used and 19.3 percent among patients in whom AEDs were not used. After multivariable adjustment for hospital site and clinical characteristics, AED use was associated with a 15 percent lower rate of survival.

The association between AED use and survival to discharge differed by the initial cardiac arrest rhythm. Among the 9,616 cardiac arrests due to nonshockable rhythms, AED use was associated with a 26 percent lower in-hospital survival (10.4 percent for AED use; 15.4 percent for no AED use). In contrast, for the 2,079 cardiac arrests due to shockable rhythms, there was no association between AED use and in-hospital survival (38.4 percent for AED use; 39.8 percent for no AED use).

"Our results may appear surprising because AEDs have been shown to improve survival for witnessed out-of-hospital cardiac arrests in public locations. However, our results may differ substantially from those investigations due to differences in the initial cardiac arrest rhythm," the authors write.

The researchers note that despite lack of data on the potential benefit of AEDs in the hospital setting, hospitals have increasingly adopted the use of AEDs in patient areas in response to local and national efforts to improve defibrillation time and resuscitation survival. "Between 2003 and 2008, more than 50,000 AED units were sold to U.S. hospitals, and marketing reports project annual sales growth of 9 percent to 12 percent

over the next 5 years. … In light of our data, national organizations and hospitals may need to reconsider the use of AEDs in general hospital ward units or develop different strategies for using them."

More information: *JAMA*. 2010;304[19]:2129-2136.

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