

For hospital patients, defibrillation delays mean lower survival

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30 percent of patients receive life-saving defibrillation more than two minutes after cardiac arrest

An estimated 750,000 hospitalized patients experience cardiac arrest and undergo CPR annually, and less than 30 percent of those leave the hospital alive.

In a paper published in the Jan. 3 issue of the New England Journal of Medicine, researchers quantified the impact of receiving a life-saving electrical shock (defibrillation) among hospitalized patients experiencing a form of cardiac arrest known as ventricular arrhythmia. They found that the chances of survival for hospitalized patients improve dramatically if defibrillation is administered within the expert-recommended two minutes following a cardiac arrest.

Analyzing data from the National Registry of Cardiopulmonary Resuscitation, the authors concluded that 30 percent of patients with cardiac arrest due to ventricular arrhythmia received life-saving defibrillation more than two minutes after initial recognition of their cardiac arrest, a delay that exceeds guidelines-based recommendations. The delayed defibrillation was linked to a significantly lower probability of survival to hospital discharge — 22 percent vs. 39 percent when defibrillation wasn't delayed—and a 26 percent lower likelihood among survivors of being discharged without major neurological impairment.

The findings also revealed certain hospital characteristics were associated with delayed defibrillation, including small hospital size

(fewer than 250 beds); occurrence of cardiac arrest in hospitalized patients whose heart rhythm was not being constantly monitored in specialized units; and occurrence of cardiac arrest after-hours (i.e., nights and weekends).

“While several prior studies have shown an association between defibrillation time and survival, these were relatively small studies that typically included patients whose arrest rhythms would not have benefited from defibrillation” said lead study author Paul S. Chan, M.D, a cardiologist and researcher from Saint Luke’s Mid America Heart Institute. Dr. Chan was previously with the University of Michigan where he initiated the study with University of Michigan cardiologist Brahmajee Nallamothu, M.D., M.P.H., the new paper’s senior author.

The study used a larger, more statistically significant registry of nearly 7,000 patients and focused exclusively on appropriate patients with ventricular arrhythmia. “We found that delayed defibrillation was common, and that rapid defibrillation was associated with sizable survival gains in these high-risk patients,” said Dr. Chan. “However, the real work has yet to be done in this field. We now have to develop systems of care within the hospital to improve defibrillation times nationally.”

“These findings represent a real opportunity to improve patient care,” said Dr. Nallamothu. “We need to understand how delayed defibrillation, which was more common after-hours and in unmonitored settings, relates to the immediate availability of medical personnel or equipment, as well as potential delays in recognition of ventricular arrhythmia.”

Source: University of Michigan Health System

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