A Validated Prediction Tool for Initial Survivors of In-Hospital Cardiac Arrest

The following is a synopsis of "A Validated Prediction Tool for Initial Survivors of In-Hospital Cardiac Arrest," published online ahead of print in the *Archives of Internal Medicine.*
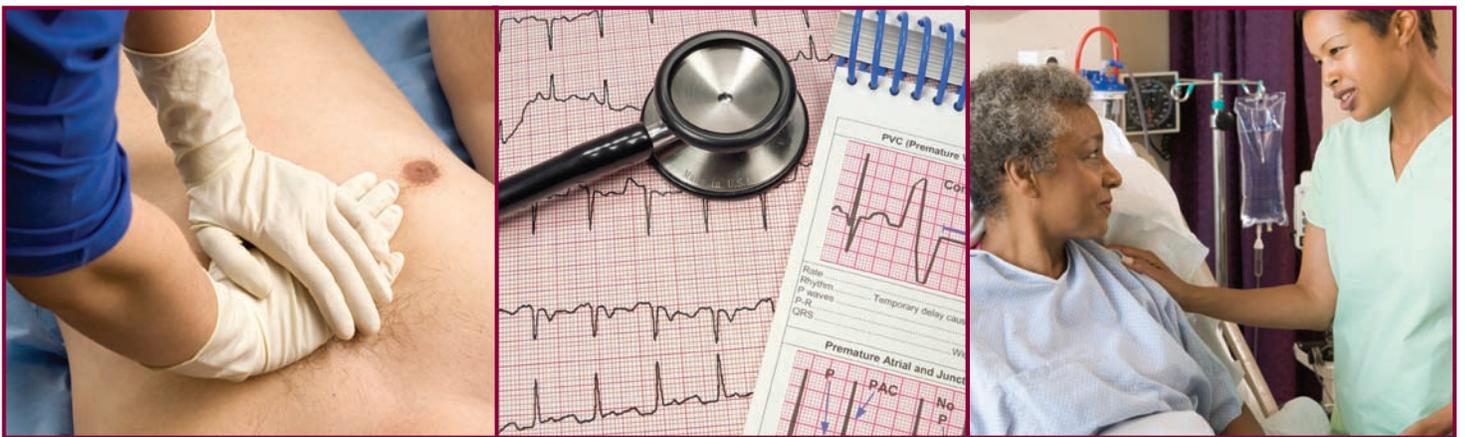
What is already known on this topic?

About 200,000 people in the United States experience in-hospital cardiac arrest each year. Despite extensive efforts to treat patients who experience these events, survival rates for in-hospital cardiac arrest remain low. Over the past 20 years, researchers have developed several risk models to predict health outcomes for patients who experience in-hospital cardiac arrest. However, these models have had limited application for the clinical setting for several reasons, such as inclusion of patients with in-hospital cardiac arrest who did not survive resuscitation; absence of information on patients' neurological status, an important consideration alongside overall survival; difficulty of use during medical emergencies; and overall lack of validity.

What is added by this document?

The authors of this article developed a valid and clinically useful risk prediction tool—the Cardiac Arrest Survival Postresuscitation In-hospital (CASPRI) score—to predict neurological outcomes for patients who are successfully resuscitated after an in-hospital cardiac arrest. The tool aids practitioners in accurately estimating the likelihood of a patient's survival to hospital discharge without severe neurological deficits after an in-hospital cardiac arrest, providing vital information for physicians, patients, and families.

The tool includes patient factors from before and during the in-hospital cardiac arrest. The following variables predicted favorable neurological survival:

▶ Younger age.
▶ Location in a monitored hospital unit.
▶ Normal neurological status prior to cardiac arrest.
▶ Lack of comorbidities prior to cardiac arrest (e.g., kidney disease).
▶ Shorter resuscitation time.
▶ Absence of mechanical ventilation.
▶ Initial cardiac arrest rhythm of ventricular fibrillation or pulseless ventricular tachycardia with a defibrillation time of two minutes or less.

Initial cardiac arrest rhythm, duration of resuscitation, and neurological status prior to cardiac arrest had the most predictive ability.

What are the applications for these findings?

Practitioners can use the CASPRI score to predict survival with favorable neurological status for a patient resuscitated after an in-hospital cardiac arrest. This evidence-based tool provides physicians with a reliable, valid way to predict patient outcomes and therefore allows patients and their families to make more informed decisions about treatments that align with patients' preferences and values.

The CASPRI tool can predict a wide range of favorable neurological survival rates. Specifically, patients in the top 10% had a 70.7% likelihood of favorable survival compared to patients in the bottom 10%, who had a 2.8% chance of this outcome.

What are the implications for public health practice?

In an era emphasizing individualized care, the CASPRI, a simple-to-use, validated tool, offers a way to more accurately estimate the likelihood of favorable neurological survival following an in-hospital cardiac arrest. This tool addresses a critical unmet need for better prognosis after cardiac arrest and also could provide vital information and enhance communication among physicians, patients, and their families regarding treatment, rehabilitation, and long-term care.

Resources

American Heart Association
Symptoms & Emergency Treatment of Cardiac Arrest
www.heart.org/HEARTORG/Conditions/More/CardiacArrest/Symptoms-Emergency-Treatment-of-Cardiac-Arrest_UCM_307911_Article.jsp

Centers for Disease Control and Prevention
CARES: Cardiac Arrest Registry to Enhance Survival
www.cdc.gov/dhdsp/cares.htm

JAMA
Improving Outcomes Following In-Hospital Cardiac Arrest: Life After Death
http://jama.jamanetwork.com/article.aspx?articleid=1151536

Citation

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

National Center for Chronic Disease Prevention and Health Promotion
Division for Heart Disease and Stroke Prevention

For more information please contact Centers for Disease Control and Prevention
1600 Clifton Road NE, Atlanta, GA 30333
Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov **Web:** www.cdc.gov