

VIEWPOINT

Strategies to Improve Survival From Cardiac Arrest

A Report From the Institute of Medicine

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Maximizing survival and minimizing disability are fundamental goals of patient care, but a new Institute of Medicine (IOM) report released this month, "Strategies to Improve Cardiac Arrest Survival: A Time to Act," suggests that the United States is falling short in efforts to improve outcomes from cardiac arrest during the next decade.¹

It is estimated that approximately 600 000 people each year in the United States experience a cardiac arrest,² and survival rates for arrests that occur in community settings are less than 6%.² Survival rates for in-hospital cardiac arrests are higher but remain low at 24%.³ Cardiac arrest predominantly affects older persons but can also occur among people of all ages, and significant disparities in incidence and survival rates exist for minority and disadvantaged populations.⁴ Survival rates vary between communities and hospitals, with one study finding survival rates for cardiac arrests from ventricular fibrillation ranging from 7.7% to 39.9% across 10 North American sites.⁵ Yet overall survival rates have remained fairly stagnant.

Despite these statistics, cardiac arrest is not a futile situation: it is a treatable event. Most survivors of cardiac arrest are not neurologically devastated but have long-term health-related quality of life.⁶ If advances achieved within some US communities could be implemented nationally, the rate of favorably functional survival from cardiac arrest could substantially improve. For example, in 2014, King County, Washington, reported survival rates of 62% for witnessed out-of-hospital cardiac arrest with an initial rhythm of ventricular fibrillation,⁷ whereas for many other communities, survival rates remain lower for the same types of patients.

Despite its large public health footprint, cardiac arrest does not resonate with the public and policy makers the same way as other conditions, such as stroke or cancer. Many complex social, political, and practical considerations have contributed to an environment in which death from cardiac arrest appears to have become an accepted norm. For example, comprehensive, national data on cardiac arrest incidence and outcomes do not exist, which makes it difficult to generalize findings from existing data, to provide firm estimates and extrapolations for educating the public and policy makers, and to measure emergency medical service (EMS) and health care system performance on cardiac arrest care quality. However, specific strategies are available to improve health outcomes from cardiac arrest.

"A Time to Act"¹ presents a comprehensive systems-level framework for advancing coordinated and collaborative efforts in resuscitation science and practice. This new framework consists of 5 central stakeholder groups that are all focused on the highest goal of improving survival outcome: the public, EMS response organiza-

tions, health care organizations, researchers, and policy/advocacy/political group alignments. These groups must take 6 steps, each representing fundamental key actions: comprehensive national surveillance and reporting; broad community engagement; discovery to advance new treatments and treatment approaches; training and education; local translation of research into practice; and continuous quality improvement.

Leadership, along with transparency and accountability, serve as cornerstones for the guiding principles that must be established for the nation to now advance. The report advances 8 evidence-based recommendations.

Robust cardiac arrest data collection and dissemination. National surveillance data on cardiac arrest incidence and outcomes are not available. The currently available databases are limited in scope and lack interoperability. It is not possible to improve outcomes without high-quality data. Multiple organizations and groups are required to create a national cardiac arrest registry, including the Centers for Disease Control and Prevention (CDC), Centers for Medicare & Medicaid Services, and state and municipal health departments. These agencies need to work together to remedy this critical gap in comprehensive measurement of cardiac arrest in the United States. The CDC should establish a cardiac arrest surveillance system for the nation, including data on in-hospital and out-of-hospital cardiac arrest in pediatric and adult populations. The data should be uniform, publicly available, and transparent. States and municipal organizations need to mandate reporting of cardiac arrest and ensure that data are available to the public. Hospital and insurance billing codes should be updated to reflect state-of-the-art cardiac arrest-related procedures and services.

Improvement of public response. Effective treatment of cardiac arrest demands an immediate response from laypersons to recognize cardiac arrest, call 911, initiate cardiopulmonary resuscitation (CPR), and use an automated external defibrillator (AED). Bystander CPR and bystander use of an AED significantly improve favorable functional survival from cardiac arrest.⁸ The public is one of the most critical components to the system-wide response to cardiac arrest. Despite this, the majority of individuals who sustain cardiac arrest do not receive bystander CPR or bystander-initiated defibrillation.⁸ An extremely low and insufficient percentage of the US public are trained in the basic skills of CPR and AED use. State and local departments of health and education and leading organizations in community health response should partner with professional organizations, public advocacy groups, community and neighborhood organizations, school systems, and local employers to promote public awareness of the signs, symptoms, and treatment of cardiac arrest. These efforts require public training in CPR and in AED use

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comprehensively across the life span, creating a culture of action that prepares and motivates bystanders to respond immediately and effectively after witnessing a cardiac arrest.

Enhancement of the capabilities of EMS nationwide. Cardiac arrest is one of the limited disease states in which the actions of the EMS responders have enormous effect on survival. Several EMS and hospital initiatives (such as high-performance CPR, dispatcher-encouraged CPR, and performance improvement-based inpatient resuscitation) are associated with higher survival rates in some communities, offering promising strategies that should be widely adopted and disseminated.⁵ Standardized training and performance evaluation measures would promote a more rapid and uniform adoption and assessment of the quality of cardiac arrest care on a national scale. As the umbrella agency covering EMS, the National Highway Traffic Safety Administration should become the primary organization to coordinate with other federal agencies and representatives from private industry, states, first responders, EMS systems, and nonprofit organizations to promote uniformly high-quality EMS cardiac arrest care across the nation.

Updated national accreditation standards. The Joint Commission should act in collaboration with the American Red Cross, the American Heart Association, hospital systems, and patient advocacy groups to develop and implement an accreditation standard for health care facilities specific to cardiac arrest care.

Continuous quality improvement. The existing quality improvement programs need to focus on cardiac arrest outcomes and process measures. Health care systems, EMS systems, and hospitals should adopt formal, continuous quality improvement programs for cardiac arrest response. These programs must lay out responsibility, authority, and accountability for specific cardiac arrest measures within each organization.

Increase research funding for work in resuscitation science. The research infrastructure in resuscitation science is currently inadequate. Cardiac arrest research has significant potential to accelerate discovery and develop effective new interventions, but the current available funding to cardiac arrest researchers is low and

incommensurate with the magnitude of the public health effects of sudden death.⁹ The National Institutes of Health, the American Heart Association, and the US Department of Veterans Affairs should lead a collaborative effort with other federal agencies and private industry to build a research infrastructure that will support and accelerate innovative work on the causal mechanisms of onset, pathophysiology, treatment, and outcomes of cardiac arrest.

Speed the adoption of existing effective cardiac arrest therapies. The National Institutes of Health should lead a collaborative effort with the US Department of Veterans Affairs, the Agency for Healthcare Research and Quality, and the Patient-Centered Outcomes Research Institute to prioritize health services research related to the identification, evaluation, and adoption of best practices; the use of innovative technologies (eg, mobile and social media strategies to increase bystander CPR or AED use); and the development of new implementation strategies for cardiac arrest treatments.

Establish a new National Cardiac Arrest Collaborative. To accomplish these tasks, the nation needs an organization to strengthen the relationship between stakeholder organizations and advocate for these recommendations. The American Heart Association and the American Red Cross should act in collaboration with the US Department of Health and Human Services and other federal agencies, national and international resuscitation councils, professional organizations, private industry, and patient advocates. Collectively, these organizations should establish a National Cardiac Arrest Collaborative to unify the cardiac arrest field, identify common goals, exchange information about new research findings, and build momentum to improve rates of survival from cardiac arrest with good neurologic and functional outcomes.

The IOM report "Strategies to Improve Cardiac Arrest Survival: A Time to Act" emphasizes that, "A national responsibility exists to significantly improve the likelihood of survival and favorable neurologic outcomes following a cardiac arrest." Implementation of the framework and recommendations from this report will help advance coordinated and collaborative efforts in resuscitation and serve to improve patient outcomes from cardiac arrest.

ARTICLE INFORMATION

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