

# Cardiac survival rates around six percent for those occurring outside of a hospital

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Cardiac arrest strikes almost 600,000 people each year, killing the vast majority of those individuals, says a new report from the Institute of Medicine. Every year in the U.S., approximately 395,000 cases of cardiac arrest occur outside of a hospital setting, in which less than 6 percent survive. Approximately 200,000 cardiac arrests occur each year in hospitals, and 24 percent of those patients survive. Estimates suggest that cardiac arrest is the third leading cause of death in the U.S. behind cancer and heart disease.

Following a [cardiac arrest](#), each minute without treatment decreases the likelihood of surviving without disability, and survival rates depend greatly on where the cardiac arrest occurs, said the committee that carried out the study and wrote the report. In addition, there are wide variations in survival rates among communities and hospitals across the U.S. The committee recommended a series of strategies and actions to improve survival and quality of life following cardiac arrest.

"Cardiac arrest survival rates are unacceptably low," said Robert Graham, chair of the study committee and director of the national program office for Aligning Forces for Quality at George Washington University, Washington, D.C. "Although breakthroughs in understanding and treating cardiac arrest are promising, the ability to deliver timely interventions and high-quality care is inconsistent. Cardiac arrest treatment is a community issue, requiring a wide range of people to be prepared to act, including bystanders, family members, first responders, emergency medical personnel, and health care providers."

Although the terms are often used interchangeably, cardiac arrest is different and medically distinct from a heart attack. A heart attack occurs when blood flow to an area of the heart is blocked by a narrowed or completely obstructed coronary artery, resulting in damage of heart muscle. Heart attack symptoms may include pain, dizziness, and shortness of breath, among others. Cardiac arrest results from a disturbance in the electrical activity of the heart that causes it to stop beating. The electrical disturbance can occur suddenly due to a heart attack, severe imbalance of electrolytes, or an inherited genetic mutation that predisposes to electric abnormalities. Symptoms include an almost instantaneous loss of consciousness. The treatment goal for a cardiac arrest is to facilitate the return of circulation and restore the electric rhythm, while for a [heart attack](#), it is to reopen blocked arteries and restore blood flow.

Wide disparities in cardiac arrest outcomes have been documented—many due to variations in patient demographics and health status, geographic characteristics, and system-level factors affecting the quality and availability of care, such as rates of CPR knowledge among bystanders. For example, the committee found that more than 8 out of 10 cardiac arrests occur in a home setting, and 46 percent of in-home cardiac arrests are witnessed by another person. In addition, one study found that survival rates of cardiac arrests that occurred outside the hospital ranged from 7.7 percent to 39.9 percent across 10 North American sites. Risk-adjusted [survival rates](#) for cardiac arrests that occur in the hospital also vary 10.3 percent between bottom- and top-decile hospitals.

Effective treatment for cardiac arrest demands an immediate response from an individual to recognize cardiac arrest, call 911, start CPR, and use an automated external defibrillator (AED), the committee said. Decreasing the time between cardiac arrest onset and the first chest compression is critical. The likelihood of surviving decreases by 10

percent with every passing minute between collapse and return of spontaneous circulation, although new research offers hope in extending this time.

Although evidence indicates that bystander CPR and AED use can significantly improve survival and outcomes from cardiac arrest, each year less than 3 percent of the U.S. population receives CPR training, leaving many bystanders unprepared to respond to cardiac arrest. Furthermore, EMS systems vary in capacities and resources to respond to complex medical needs, such as cardiac arrests. National EMS-system oversight contributes to fragmentation and lack of coordination and planning in response to cardiac arrest, but some communities have demonstrated that focused leadership and accountability can overcome these barriers, the committee said. Educating and training EMS providers to administer "high-performance CPR"—which emphasizes team-related factors such as communication and collaboration to attain high-quality CPR—and provide dispatcher-assisted CPR can help increase the likelihood of positive outcomes.

To improve survival and quality of life following cardiac arrest, the committee recommended several actions:

- Establish a national registry of cardiac arrest to monitor performance, identify problems, and track progress.
- Educate and train the public on how to recognize cardiac arrest, contact emergency responders, administer CPR, and use AEDs, as well as facilitate state and local education departments to include CPR and AED training as middle- and high-school graduation requirements.
- Enhance performance of EMS systems with emphasis on dispatcher-assisted CPR and high-performance CPR.
- Develop strategies to improve systems of care within hospital settings, including setting national accreditation standards related

to cardiac arrest for hospitals and health care systems.

- Adopt continuous quality improvement programs for cardiac arrest to promote accountability, encourage training and continued competency, and facilitate performance comparisons within hospitals and EMS and [health care](#) systems.
- Expand research in cardiac arrest resuscitation and promote innovative technologies and treatments.
- Create a national cardiac arrest collaborative to unify the field and identify common goals.

"There are complex challenges and barriers to successfully treat cardiac arrests, both in communities and hospitals," said Victor Dzau, president of the Institute of Medicine. "However, if existing and developing capabilities are leveraged, the system of cardiac arrest response can be strengthened throughout the U.S."

**More information:** [www.nap.edu/catalog/21723/stra ... rvival-a-time-to-act](http://www.nap.edu/catalog/21723/stra...rvival-a-time-to-act)

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