HeartRescue Global

Policy Brief

4

Acute Cardiac Systems of Care – Challenges & Solutions

HeartRescue Global

RTI INTERNATIONAL

ACKNOWLEDGEMENTS

This analysis was produced by RTI International in partnership with the Medtronic Foundation. For over 50 years, RTI has been committed to improving the human condition by turning knowledge into practice. The Medtronic Foundation focuses on expanding access to quality health care among underserved populations worldwide, as well as supporting health initiatives in communities where Medtronic employees live and give.

BACKGROUND

- Out-of-hospital cardiac arrest (OHCA) and ST-segment elevation myocardial infarction (STEMI) are acute cardiac emergencies that are large scale public health problems, with wide variations in patient survival rates across countries and between communities within countries.
- Survival decreases by approximately 10% for every minute after someone collapses due to cardiac arrest, so the time interval from OHCA to application of key interventions largely predicts the chance of survival and long-term patient outcomes.
- Effective family, community, emergency medical services (EMS), and hospital-based interventions exist for both OHCA and STEMI, but they are too often incompletely implemented and measured due to lack of an acute cardiac system of care.

If the patient is in cardiac arrest, the life-saving interventions include:

- Early recognition and actions by family members or bystanders including recognition of the emergency, immediate cardiopulmonary resuscitation (CPR), and calling an emergency response telephone number
- Emergency medical dispatcher-assisted CPR
- Early defibrillation with an automated external defibrillator (AED)
- Timely and high-quality emergency medical services (EMS) care provided by well-trained and well-equipped staff
- Superior hospital care

BACKGROUND CONTINUED

If the patient has a STEMI, the critical interventions include:

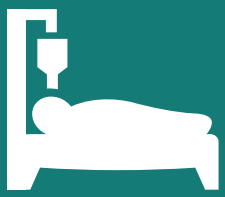
- Early recognition of the signs and symptoms of STEMI by the patient, family members, or bystanders and immediately calling an emergency response telephone number
- Rapid EMS response and rapid electrocardiogram by EMS to confirm STEMI
- Rapid transport to a hospital equipped for reperfusion
- Percutaneous coronary intervention (PCI) is the preferred modality for reperfusion and blood clot dissolving drugs can also be used[1]

Poorly coordinated community, EMS, and hospital care, and health system fragmentation are major barriers to saving lives.

WHAT IS AN ACUTE CARDIAC SYSTEM OF CARE?

- A system of care is an organization that, "through ownership or formal agreements, vertically and horizontally aligns health care facilities, programs or services in order to offer a coordinated continuum of health care to a defined geographic population."
- Specifically, an acute cardiac system of care includes several components, including: the public, emergency dispatch centers, EMS, local hospitals, tertiary care hospitals, and public health agencies.
- Coordination between these components requires strong local leadership, informed families and bystanders, highly trained emergency responders, skilled hospital providers, effective information technology systems, continuous quality improvement efforts, and a culture of commitment and excellence.
- For example, the American Heart Association (AHA) recommends implementing cardiac resuscitation systems of care with interconnected community, EMS, and hospital efforts to measure and improve the process of care and patient outcomes for OHCA.[2]

LIST OF COMMON ACUTE CARDIAC SYSTEM OF CARE PROBLEMS

 **Community**	The public's lack of awareness about the signs and symptoms of OHCA and STEMI, and the need to act quickly to call an emergency response telephone number and perform CPR if necessary. Limitations on local and state government funding for acute cardiac systems of care. Lack of data on bystander CPR. Public fears about helping others suffering from acute cardiac emergencies, including legal liability and fears about contracting communicable diseases.
 **Emergency Medical Dispatcher (EMD)**	Poor training on how to manage acute cardiac calls. Deficiency in feedback data on process and patient outcomes. Failure to fully integrate the dispatchers into the EMS response system.
 **EMS**	Inadequate funding and staff to implement and sustain acute cardiac systems of care. Insufficient quality improvement programs for acute cardiac systems of care. Inadequate collaborations with hospitals and emergency dispatchers for simulations of acute cardiac emergency response.
 **Hospital**	Uncoordinated care between EMS and hospitals. Poorly coordinated in-hospital response when cardiac emergency patients arrive. Lack of feedback on processes and outcomes to emergency dispatchers and EMS staff. Lack of predetermined inter-hospital referral and transport protocols and agreements.
 **System Level**	Inadequate system-wide leadership. Lack of system-wide data collection and feedback.

CHALLENGES & SOLUTIONS FOR ACUTE CARDIAC SYSTEM OF CARE IMPLEMENTATION

Fragmentation is the largest and most common challenge for implementing acute cardiac systems of care.

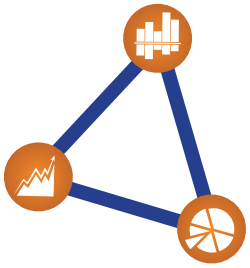
- The different components of the system (the public, emergency dispatch centers, EMS, local hospitals, tertiary care hospitals, and public health agencies) often operate independently and often do not communicate well with each other.
- Because acute cardiac emergencies can happen anywhere in a community and at any time of the day, planning and preparation need to be far reaching and detailed, and the different components need to work closely together.

Poor integration of the different acute cardiac system of care components is common and detrimental to patients.

- Each component needs to understand its role and the roles of the other components and how they can work together.
- Ideally, representatives of the different components will meet together and simulate emergency acute cardiac responses
- The community's role is to promote public awareness among families, schools, and businesses of how to quickly recognize and respond to OCHA and STEMI, including quickly calling emergency response telephone numbers and carefully following instruction from emergency telephone dispatchers
- EMS providers need to both deliver high quality care and also communicate well with both emergency dispatch centers and hospitals.
- Hospitals must communicate well with EMS providers and the different acute cardiac care departments within hospitals (emergency, cardiology, critical care) must function well together to avoid delays in care and to improve patient outcomes.

CHALLENGES & SOLUTIONS FOR ACUTE CARDIAC SYSTEM OF CARE IMPLEMENTATION

EMS and hospital acute cardiac providers should all **collect data** on the care they provide and **receive process and outcome feedback data** to promote improvement. When there is a positive patient outcome they should be notified and recognized for their excellence. When there is a need for improvement in care they should receive non-punitive feedback on their performance to help them improve for the next acute cardiac event.

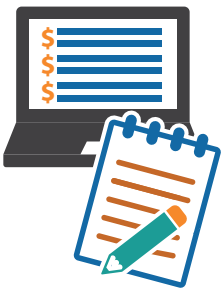


Overcoming fragmentation requires intentional planning and teamwork. **Data collection and data feedback** should also link across the different components of the acute cardiac system of care to guide provider training and system-wide quality improvement. The data collection system should link different acute cardiac care system components and different geographies, and set benchmarks for performance goals.

Another common cause of system fragmentation is **competitive forces** between entities involved in a community's cardiac system of care. Often political and economic interests lead to poor communication between agencies and hospitals and result in disparate efforts within EMS and hospital systems, which can interfere with the patient's best interest. For example, when patients have cardiac emergencies, they do not care which side of a specific geographic boundary they are on, or what their medical insurance status is, nor should the system that is working to save their lives.

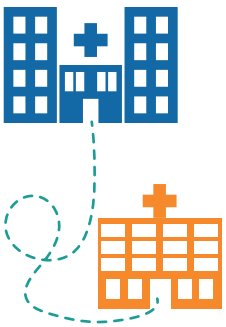
Accountability for the cardiac system of care is of prime importance. There should be a lead agency (e.g., public health, EMS agency, or hospital) which takes responsibility for maintaining the continuous quality improvement structure and acts as a liaison between different components of the system. The lead entity assumes responsibility for assuring the best care is delivered in a timely manner and outcomes are continuously measured and benchmarked against historic outcomes and other similar systems.

CHALLENGES & SOLUTIONS FOR ACUTE CARDIAC SYSTEM OF CARE IMPLEMENTATION



Financial sustainability of an acute cardiac system of care is important to assure uninterrupted and high quality care.

Limited funding and staff result in delays in response to acute cardiac emergencies, insufficient training for providers, and lack of effective data collection and quality improvement efforts. Objections to the use of limited resources can be challenged by showing system data to policy makers and demonstrating the large burden of disease and opportunities for improving patient outcomes for acute cardiac emergencies with an enhanced system of care approach.



Inter-hospital referral and transport is a prime example of pre-planning for the acute cardiac care system. When an acute cardiac patient arrives at a hospital that is not equipped to provide the necessary emergency care, the patient should be rapidly transported to a different hospital that has the necessary expertise. This must happen swiftly and in a coordinated manner between the referring and receiving hospitals, since delays negatively impact patient outcomes.

REFERENCES

[1]O'Gara PT, Kushner FG, Ascheim DD, Casey DE Jr, Chung MK, de Lemos JA, Ettinger SM, Fang JC, Fesmire FM, Franklin BA, Granger CB, Krumholz HM, Linderbaum JA, Morrow DA, Newby LK, Ornato JP, Ou N, Radford MJ, Tamis-Holland JE, Tommaso CL, Tracy CM, Woo YJ, Zhao DX. 2013 ACCF/AHA guideline for the management of ST-elevation myocardial infarction: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. Circulation. 2013;127

[2]Nichol G, Aufderheide TP, Eigel B, Neumar RW, Lurie KG, Bufalino VJ, et al. Regional systems of care for out-of-hospital cardiac arrest: A policy statement from the American Heart Association. Circulation. 2010;121(5):709-29.

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