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## HeartRescue Global

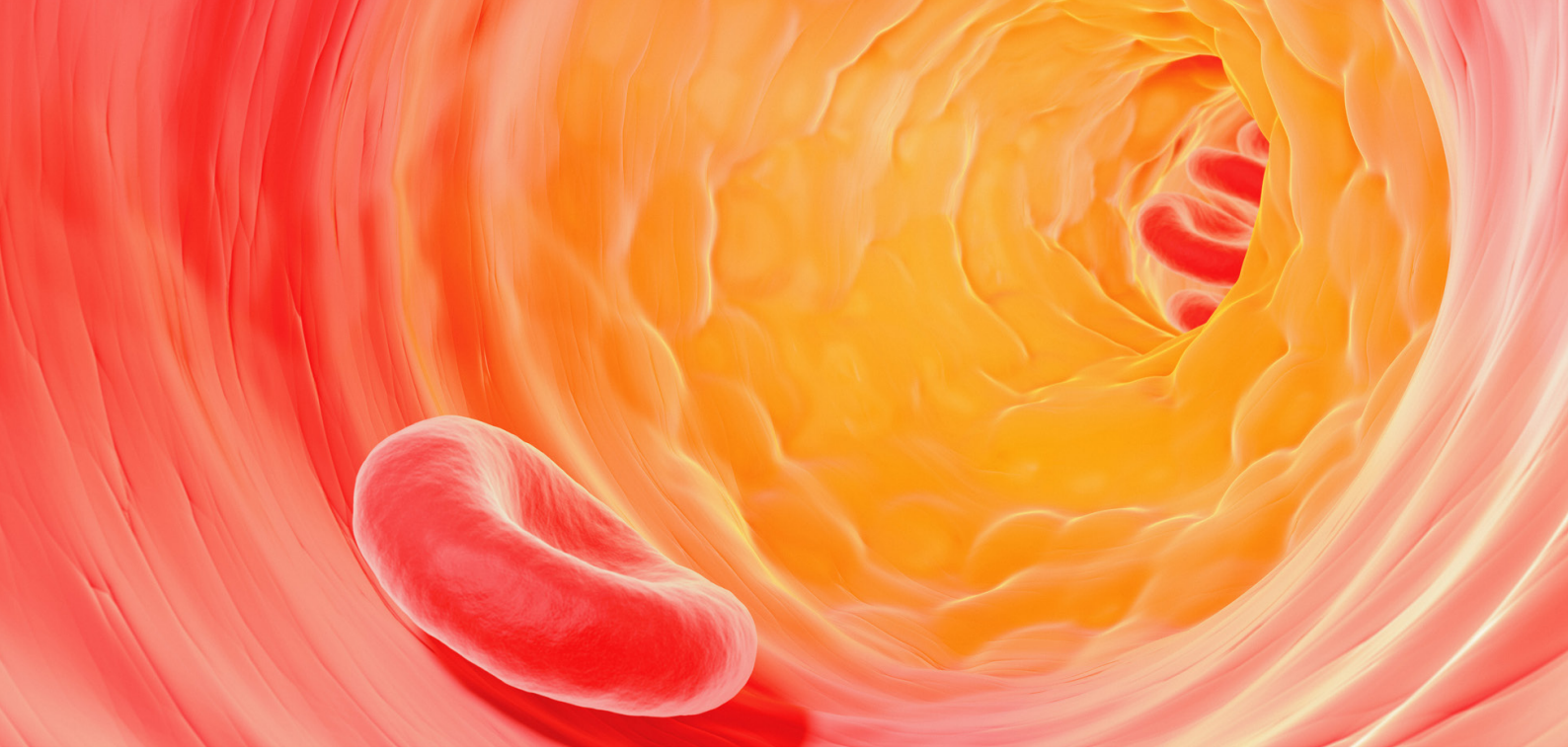
### Policy Brief

Challenges for Integrating Data Systems Across Community, EMS, and Hospital Settings of Care



## 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.



ST-segment elevation myocardial infarction (STEMI) and out-of-hospital cardiac arrest (OHCA) are life-threatening acute cardiovascular disease (CVD) emergencies that require rapid intervention across community, emergency medical services (EMS), and hospital settings of care to save lives. Data systems should be in place to collect data about the application of evidence-based care in all three settings of care and how fast that care was provided, given the very time-sensitive nature of these medical emergencies. These data systems will also be used to assess the performance of the entire system of care, identify barriers to improving care, and track improvements.



However, these three settings of care usually have differences in their supervising government agencies, internal lines of authority, levels of budget resources, staffing, and methods for collecting, storing, and managing data. Consequently, it is often difficult to integrate the differences among data systems so that information on a patient's care across the community, EMS, and hospital care settings can be combined into one integrated database. Developing solutions to these challenges, as discussed in this policy brief, is important for feedback, evaluation, and planning and testing interventions to improve access and quality of care.



Additionally, it can be challenging to collect data and measure performance accurately in a health care system where the patient moves quickly from one setting of care to another. For acute CVD emergencies there are many potential caregivers—family members, bystanders, emergency dispatchers, paramedics, and hospital staff—and what each one does and how fast they do it can affect the ultimate outcome. Collecting accurate data on the care provided by each of these different caregivers is often difficult, and integrating the data across all of the caregivers also presents challenges. Moreover, the data must be reported back to caregivers in a timely way, so that the data are useful to caregivers for improving treatment of patients.



If a health care system does not have a robust and continuous data collection and feedback mechanism, it has no way to measure performance or track improvements in care.<sup>1</sup> Everyone needs to recognize that you cannot improve what you do not measure. Providing reliable, accurate, and timely data and feedback to caregivers and health care system managers is essential to improve the quality of care for patients suffering from STEMI and OHCA.



## EVALUATING PERFORMANCE FOR QUALITY IMPROVEMENT

A well-integrated quality improvement program should include multiple key steps for evaluating performance, including:

- Identifying quality of care performance indicators and benchmarks or targets at all points of care, and in all settings of care
- Collecting data on the performance indicators from all caregivers and organizations involved in providing care, and ensuring that the data are actionable for improving treatments and patient outcomes
- Educating and training community members, EMS, and hospital staff on how to test new health care interventions regarding how to access care in a timely and effective manner, and to collect data on performance indicators that will more accurately assess the success or failure of those interventions
- Making process improvements in patient care and access to care based on lessons learned from the performance indicator data

Examples of important quality of care and performance indicators are shown in **Table 1**. An example of the cycle of quality of care improvement and data collection is shown in **Figure 1**.

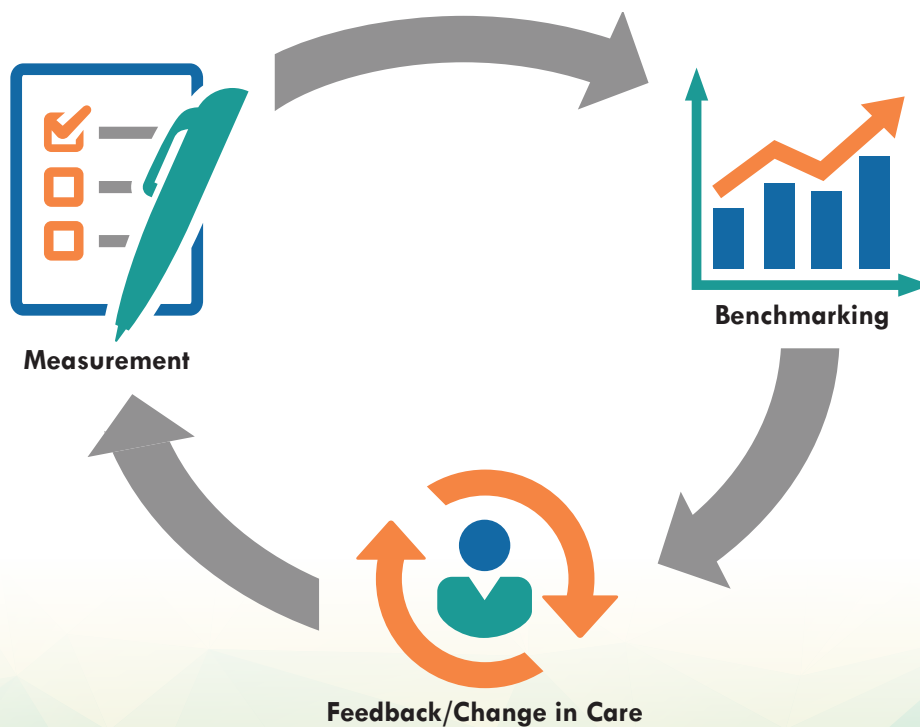
An example of an acute CVD database that integrates data across the community, EMS, and hospital settings of care is the Cardiac Arrest Registry to Enhance Survival (CARES). More information about this registry is available at <https://mycares.net>.

**Table 1. Examples of Quality of Care Performance Indicators<sup>2,3</sup>**

Acute CVD Events	Process Indicators	Outcome Indicators
<b>STEMI</b>	<ul style="list-style-type: none"> <li>• 12-lead ECG performed by EMS or ED staff within 10 minutes of hospital arrival</li> <li>• Patient received either PCI within 60 minutes of hospital arrival or blood-clot dissolving drugs within 30 minutes of hospital arrival</li> </ul>	Patient survival with a good neurologic outcome
<b>OHCA</b>	<ul style="list-style-type: none"> <li>• Less than 10 minutes between pick-up of the call to the emergency telephone number and the arrival of paramedics at the patient's side 90% of the time</li> </ul>	Patient survival with a good neurologic outcome

Note: CVD=cardiovascular disease; ECG=electrocardiogram; ED=emergency department; EMS=emergency medical services; OHCA=out-of-hospital cardiac arrest; PCI=percutaneous coronary intervention; STEMI= ST-segment elevation myocardial infarction

**Figure 1. Cycle of Quality of Care and Data Collection**





# BARRIERS AND SOLUTIONS TO INTEGRATING HEALTH CARE DATA SYSTEMS

The central role of data collection and feedback to caregivers for improving access and quality of acute CVD care is evident. However, developing a high-functioning, integrated data system presents multiple challenges and barriers in each setting of care and for the overall health care system. Although the details of these barriers may differ between nations, cultures and communities, they usually fall into three broad categories:



**Health system-level barriers**



**Community and emergency dispatcher-level barriers**



**EMS and hospital-level barriers**

These barriers represent opportunities for policy action, caregiver education and training, and data systems improvement. **Table 2** reviews these three types of barriers in more detail and presents some potential solutions to address them.

**Table 2. Common Barriers and Potential Solutions for Integrating Health Care Data Systems**



### Health System Level

### Community and Emergency Dispatcher Level

### EMS and Hospital Level

#### Common Barriers

#### Potential Solutions

Determining the lead government agency to collect and manage data from the different settings of care (community, EMS, hospital)

Consult key government and health care system stakeholders

Funding issues for initial data system development and for ongoing maintenance

Increase public and private funding and community support for high-quality data systems

Establishing a location for health care data storage and addressing data security issues

Empower the lead government agency to specify appropriate data storage locations and data security requirements

Understanding local laws and policies regarding patient health information

Consult key government and health system stakeholders

Determining how the health care data will be linked across the different settings of care and analyzed

Conduct interviews and focus group discussions with caregivers and policymakers to better understand the best methods for data linkage and analysis; benchmark against methods used in other communities or other countries

Establishing data reporting procedures and methods for using data to improve access and quality of care

Conduct interviews and focus group discussions with caregivers and policymakers to better understand the best methods for data reporting and for using data to improve access and quality of care; benchmark against methods used in other communities or other countries

#### Common Barriers

#### Potential Solutions

Collecting accurate data about the specific time of the onset of STEMI symptoms from the recall of patients and family members

Benchmark patient and family member data collection methods using international best practices

Ensuring that AED data from community interventions are included in the data system

Develop protocols for EMS staff to ensure that data from AEDs administered in the community are collected and integrated into the acute CVD data system

Collecting data from the emergency dispatchers

Developing data transfer mechanisms from the emergency dispatcher system into the acute CVD data system

Standardizing and adopting protocols and best practices for data collection

Benchmark using international best practices

#### Common Barriers

#### Potential Solutions

Achieving interagency and interhospital cooperation and coordinating the communications between all organizations involved

Consult key governmental and health system stakeholders

Collecting data from the different settings of care that are collected in different formats and on different schedules, and then stored in different locations

Benchmark using international best practices

Determining how performance measures will be evaluated and how the information will be used to drive improvements

Consult similar communities or regions that have successfully integrated their data systems

Obtaining caregivers' buy-in in each setting of care to implement change if the data indicate that changes are needed to improve quality of care

Conduct interviews and focus group discussions with caregivers and policymakers to better understand and address barriers to implementing change

Standardizing and adopting protocols and best practices for data collection

Benchmark using international best practices



# REFERENCES

<sup>1</sup>Sollecito W. and J. Johnson. (2013). Continuous Quality Improvement in Health Care. Fourth Edition. Burlington, Massachusetts: Jones & Bartlett Learning.

<sup>2</sup>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

<sup>3</sup>Global Resuscitation Alliance. (2018). Acting on the Call: Improving Survival for Out-of-Hospital Cardiac Arrest. Stavager, Norway: Global Resuscitation Alliance.

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