HeartRescue Global

Policy Brief

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Improving Acute Cardiac Care Training for Emergency Medical Services (EMS) Providers

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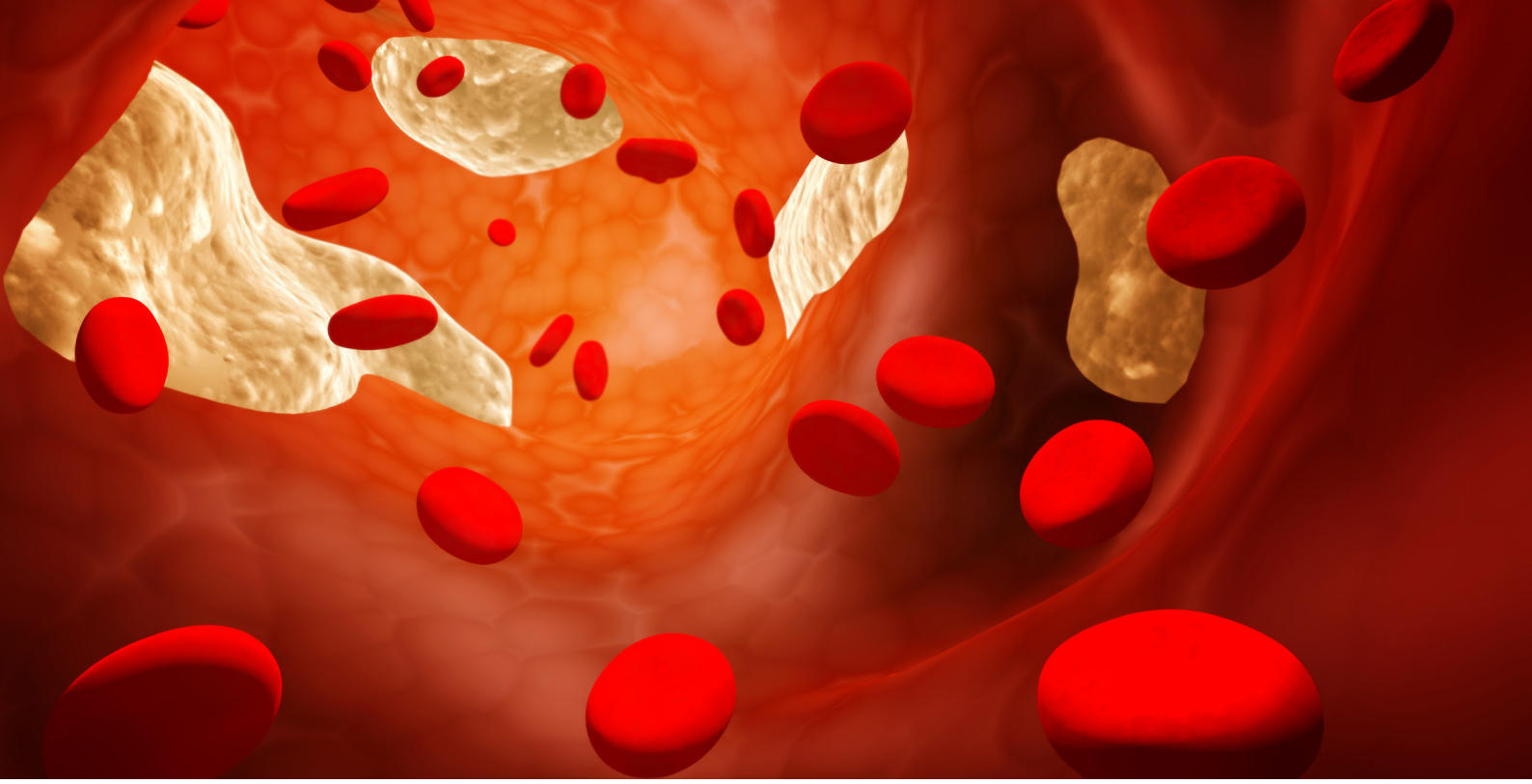

Acute cardiovascular disease (CVD) includes ST-elevation myocardial infarction (STEMI) and out-of-hospital cardiac arrest (OHCA), two types of what are commonly called "heart attacks." Globally, many victims of STEMI and OHCA die unnecessarily because of a lack of access to high-quality emergency medical services (EMS) care provided in a timely manner. There are also wide variations in patient survival rates across countries and between communities within countries.

In many countries, limited capabilities and wide variations in performance of both EMS providers and the prehospital systems of care in which they work contribute to the low levels of survival for patients with acute CVD. To address these critical prehospital determinants of patient survival for STEMI and OHCA, it is important to define the optimal methods of delivering EMS provider education, training, and ongoing quality improvement.

Additionally, all EMS providers need to receive appropriate and targeted training to achieve the desired prehospital care performance results and improved patient survival. EMS provider performance needs to be continuously measured, evaluated, and benchmarked to identify areas needing improvement.

EMS PREHOSPITAL CARE PROVIDERS

EMS providers for prehospital care may vary across countries, but typically these key staff include:

- Emergency medical dispatchers (EMDs) who receive emergency telephone calls from designated emergency phone numbers—such as 120 in China, 108 in India, 192 in Brazil, and 911 in the United States—and then dispatch the appropriate EMS provider and vehicles to respond to the emergency
- Emergency medical technicians (EMTs)
- Paramedics
- Nurses
- Doctors

KEY ELEMENTS OF PREHOSPITAL EMS CARE

High-quality and reliably accessible prehospital EMS care is the principal element for getting STEMI and OHCA patients "to the right place, in the right time." When someone suffers a STEMI event, the expression "time is muscle" applies, because every hour of delay in time to diagnosis and treatment causes damage to the heart muscle and loss of heart function. Time to care is even more urgent when an OHCA event occurs, because the time between life and death can be a matter of minutes.

Consequently, EMS providers are the critical, time-sensitive element for successful STEMI and OHCA care. They must respond very rapidly to STEMI and OHCA patients, be skillful and proficient in delivering state-of-the-art prehospital acute cardiac care, and ensure that the patient is transported to an appropriate hospital equipped for acute cardiac care.

EMS PROVIDER TRAINING FOR STEMI AND OHCA

Evidence-based instructional design is vital to improve EMS provider training and ultimately to advance acute cardiac care performance and improve patient outcomes. The quality of prehospital EMS care depends on EMS providers integrating, retaining, and applying the intellectual, behavioral, and psychomotor skills essential to perform acute cardiac care successfully. Training guided by core educational principles—such as scenario-based, hands-on practice, with feedback and debriefing—is a best practice for EMS provider training.

Other best practices include:

- Because Basic Life Support (BLS) skills decay rapidly after initial training,[1] all EMS providers should receive brief (5 to 10 minutes per session), hands-on BLS skills practice every few months to maintain their psychomotor skill proficiency.
- BLS skills training should include prehospital EMS care for acute CVD and other emergencies to ensure that the patient has adequate circulation of blood, a clear airway, and is breathing.
- EMS systems and their communities should budget for and dedicate the necessary time to continuously train their prehospital EMS providers.

ESSENTIAL ELEMENTS OF EMS CARE FOR STEMI

The following are essential elements of EMS training for STEMI care:

- Obtain an ECG on all patients with symptoms suggestive of STEMI, such as chest pain, shortness of breath, neck/arm pain, shoulder pain, and sweating. The goal is rapid, prehospital, EMS 12-lead ECG acquisition and interpretation by a physician through field transmission, through telehealth when accessible and permitted, or on hospital arrival.
- Notify a STEMI-receiving hospital that EMS is en route with a STEMI patient.
- Notify a physician capable of activating a reperfusion plan at the STEMI-receiving hospital regarding the STEMI patient's symptom onset, ECG findings, and a reperfusion checklist.
- Administer aspirin (162 to 325 mg chewed) to chest pain patients suspected of having STEMI, unless contraindicated.
- Establish a predetermined STEMI patient transfer plan, including the preferred transport modality and a back-up modality, to ensure the patient arrives as quickly as possible at a hospital equipped to provide reperfusion treatment.
- This includes preferably opening the blocked artery with percutaneous coronary intervention (PCI), or giving thrombolytic medications to dissolve the blood clot blocking the artery.[2]
- After arrival at the hospital, transport the STEMI patient directly to a cardiac catheterization laboratory for PCI when available, without delays for reevaluation in the hospital's emergency department.[2]

ESSENTIAL ELEMENTS OF EMS CARE FOR OHCA

The following are some essential elements of EMS training for OHCA care:

- Immediate initiation of high-performance cardiopulmonary resuscitation (CPR) and early defibrillation for OHCA patients.
- High-performance CPR performed according to guidelines markedly increases the chances of successful resuscitation and survival from cardiac arrest. Best practices include minimizing pauses in chest compressions, providing adequate compression depth and compression rate, and full chest recoil.[3]
- CPR instructors should focus on the quality of CPR performed during training and use feedback to EMS providers to improve future performance. Proficiency in resuscitation requires precise assessment of CPR skills and feedback to help EMS providers improve subsequent performance.
- CPR quality monitoring technology—such as metronomes and accelerometer-based devices to help guide CPR rate, depth, chest recoil, and minimize pauses—can help assess CPR performance and provide feedback to EMS providers both after an event and in real-time.
- If resuscitation is successful on scene, notify the hospital that EMS is en route with a post-OHCA patient.

EMERGENCY MEDICAL DISPATCHER TRAINING

EMDs need to be trained to recognize potential STEMI and OHCA symptoms when receiving emergency calls.

EMDs also need to be trained to rapidly contact and dispatch the appropriate EMS providers and vehicle.

EMDs may also need to instruct the callers over the telephone how to perform CPR and how to use an automated external defibrillator (AED), if one is available.

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