

Coordinated system helps heart attack patients get treatment faster

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Coordinating care among emergency medical services (EMS) and hospital systems significantly reduced the time to transfer heart attack patients to hospitals providing emergency coronary angioplasty, according to research reported in *Circulation: Cardiovascular Quality and Outcomes*, an American Heart Association journal.

Researchers examined "door-in-door-out" times at North Carolina hospitals among 436 patients experiencing ST-elevation [myocardial infarction](#) (STEMI) — the deadliest form of [heart attack](#) when the blood supply is blocked to a large area of the heart.

STEMI patients generally need [coronary angioplasty](#), or percutaneous coronary intervention (PCI), to open blocked coronary arteries. PCI within 90 minutes of first medical contact can improve outcomes and is recommended by [American Heart Association](#)/American College of Cardiology guidelines.

The researchers compared how long it took to transfer patients from smaller facilities without the ability to perform emergency PCI to hospitals with such capabilities, before and after a statewide patient transfer program was instituted.

The study showed median door-in-door-out times decreased from 97 minutes before the program began to 58 minutes one year after the program was implemented.

[Emergency medical services](#) (EMS), emergency departments and hospitals were all involved in the process and each helped reduce transfer times. However, care protocols implemented by EMS had the greatest impact — a median time improvement from 138 minutes before to 44 minutes after.

"The work being done to coordinate what happens in hospitals and ambulances can make a big difference in getting people quicker treatment and saving more lives," said Seth Glickman, M.D., M.B.A., the study's lead researcher and assistant professor of emergency medicine at the University of North Carolina in Chapel Hill. "But with that said, more work is still needed to expand the integrated systems across the country and to further reduce time to treatment."

Every year in the United States, almost 250,000 patients suffer a STEMI. But only 25 percent of the country's hospitals are PCI-capable, meaning they have the facilities to perform emergency coronary angioplasty. During that surgical procedure, a balloon-tipped tube is threaded through an artery to the heart. The balloon is then inflated to widen the artery and restore blood flow.

For the study, researchers used data from the Reperfusion of Acute Myocardial Infarction in North Carolina Emergency Departments (RACE) program — the only initiative aiming to optimize STEMI coordinated care procedures across an entire state.

Researchers surveyed 55 North Carolina hospitals without PCI capabilities, recording which of eight processes to improve efficiency were adopted as part of the statewide care coordination program. These improved processes included:

- Administering an electrocardiogram (EKG) in the ambulance.

- Training paramedics to recognize STEMI patients based on EKG results.
- Having a single phone number to notify PCI-capable hospitals of an imminent patient transfer to their facility.
- Having established protocols for treating and transferring STEMI patients.

Researchers determined associations between the number of timesaving processes adopted and how quickly patients were treated and transferred. Pre-hospital, emergency department and hospital processes were all independently associated with shorter door-in-door-out time for STEMI patients requiring transfer.

In 2007, the American Heart Association launched Mission: Lifeline to help develop integrated systems of care for STEMI patients across the nation. The association's guidelines recommend each community should develop a STEMI system of care that follows standards at least as stringent as those developed for Mission: Lifeline.

About 450 hospitals are part of Mission: Lifeline, designated as either "STEMI-referring" (those not PCI-capable) or "STEMI-receiving" facilities. In addition, more than 560 STEMI systems are registered with Mission: Lifeline, representing coverage of more than 57 percent of the U.S. population.

"This study provides further evidence of the importance of coordinated systems of care for quickly and appropriately treating [heart attack patients](#)," said Gray Ellrodt, M.D., vice-chair of the American Heart Association's Mission: Lifeline steering committee and chairman of the Department of Medicine at Berkshire Medical Center in Pittsfield,

Mass.

"Of particular note is the important role of the EMS system — their fast recognition and response to STEMI patients is crucial. It's one of the main reasons we urge anyone who thinks they may be having a heart attack to call 9-1-1 immediately, because getting them into the system of care quickly through EMS can literally mean the difference between life and death."

Provided by American Heart Association

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