

Coordinated emergency response speeds care to heart attack patients

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An ambitious, coordinated emergency response effort modeled after a program that began at Duke Medicine to speed up heart attack care has now been applied to more than 23,000 patients in regions across the United States – and it appears to have saved lives.

Duke Medicine and other North Carolina leaders joined the American Heart Association in leading the broad-reaching national demonstration project, which was called Mission: Lifeline STEMI ACCELERATOR. The project is an outgrowth of a smaller effort that began at Duke 12 years ago, and later rolled out across North Carolina. That program is a successful statewide initiative called RACE (Regional Approach to Cardiac Emergencies), which has been used as a national model for improving care of [heart attack](#) patients regionally.

This STEMI ACCELERATOR study represents the largest-ever regional effort to improve the care of heart attack patients treated by 484 hospitals and 1,258 EMS agencies. The project covered 16 cities—including New York, Atlanta, Tampa and Houston—representing roughly 10 percent of the U.S population.

"The key to success in these types of efforts is getting all these groups working in a coordinated way to provide care quickly," said Christopher Granger, M.D., director of the coronary care unit at Duke University Medical Center and senior author of a study about the Mission: Lifeline effort. The findings were presented at a late-breaking session of the AHA's Scientific Sessions 2014 meeting in Chicago (Abstract

2014-LBCT-20751-AHA) by Matthew Sherwood, M.D., MHS, from the Duke research team.

"One of our mantras has been 'If you don't measure it, you can't improve it,'" said James Jollis, M.D., an adjunct professor at Duke who now practices at Rex Hospital in Raleigh, and is a co-leader of the Mission: Lifeline project. "So we have worked to help determine how long it takes for a person who is having a heart attack in the community to get definitive care. In the past, this has not been measured. From the baseline established with this study, we saw improvement in overall time measurements, and substantial improvements in some regions to meeting guideline goals."

The initiative sponsored by AHA and Duke targeted a form of heart attack called ST segment elevation myocardial infarction (STEMI), which occurs when a blood vessel supplying the heart suddenly blocks, resulting in chest pain, heart muscle damage, and possibly shock, cardiac arrest and death.

If the blocked artery can be rapidly opened with coronary stents, normal blood flow returns and the heart damage can be minimized. Current national guidelines call for opening the blocked artery within 90 minutes of first medical contact.

Nearly half of patients are not treated within this goal time, largely due to the considerable coordination required among the thousands of loosely connected or competing hospitals systems, emergency medical agencies, and physician groups in local communities.

Working with leadership teams of health care professionals across the United States, the Mission: Lifeline intervention established standard treatment protocols, a centralized data system, and ongoing measurement and feedback to rapidly diagnose and treat [heart attack patients](#). The

effort aimed to build upon the regional model developed in North Carolina and raise the standard of care in a sustained fashion.

In the first 18 months of the project, modest and statistically significant improvements in treatment times were achieved for the entire intervention. The percentage of patients who were treated within 90 minutes of first medical contact increased to 59 percent from 54 percent, with some regions showing improvement of more than 15 percent.

The work also confirmed the importance of collaboration between paramedics and interventional cardiologists. With in-the-field diagnosis and activation of hospital catheterization laboratories prior to hospital arrival, less time was time spent waiting in the [emergency department](#) for the catheterization team to be available.

Shorter emergency department times appeared to improve survival. The mortality rate for patients who received care in the emergency department within 30 minutes or less was 3.6 percent. Mortality rose to 7 percent for patients with a 30-45 minute wait, and was 10.8 percent for those with delays in the emergency department of more than 45 minutes.

Provided by Duke University

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