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Most Heart Attack Hospital Transfers Delayed, Increasing Death Rates

By Duke Medicine News and Communications

Only one in 10 patients who experience a major heart attack are transferred to another hospital to get necessary treatment within the recommended 30 minutes.

Failure to transfer these patients to a hospital that could clear their heart blockage in a timely fashion increased their death rate compared to patients who were moved within a half hour, according to a new study published in the Journal of the American Medical Association by researchers at the Duke Clinical Research Institute.

The study is the first to show a significantly higher mortality risk associated with the time patients spend in a hospital before they are transferred to another hospital able to perform a percutaneous coronary intervention (PCI) to open blocked coronary arteries.

PCI is the preferred treatment for many heart attack patients, yet approximately 75 percent of hospitals in the U.S. currently do not have around-the-clock PCI capability.

"Door-in-door-out time is a new performance measure that assesses the timeliness of care patients receive at the first hospital and the recommended time frame is less than 30 minutes," said Tracy Y. Wang, MD, the study's lead author and assistant professor of medicine at Duke.

"Until now, little had been known about this critical step in the care of these patients in need of urgent treatment. We were surprised to learn that so much valuable time is being lost."

The research team analyzed a large national database of hospitals and patients known as the National Cardiovascular Data Registry (NCDR) Acute Coronary Treatment and Intervention Outcomes Network Registry-Get With the Guidelines (ACTION Registry-GWTG).

The study included 14,821 patients experiencing ST segment elevation myocardial infarction who were transferred into 298 hospitals for PCI between January 2007 and March 2010. Door-in-door-out time was defined as the duration of time between arrival and discharge at the referral hospital.

Wang said there has been an improvement in "door-in-door-out" time, but found that only 11 percent of patients left the referral hospital within the recommended 30 minutes. In fact, more than one-third of patients waited more than 90 minutes.

"This is important because we know that patient outcomes significantly improve the sooner the blocked artery is opened, and practice guidelines recommend that percutaneous coronary intervention be administered within 90 minutes of a heart attack's onset," Wang said.

"That is impossible if patients remain at the first hospital awaiting transfer to a hospital able to perform the procedure."

"The majority of these waiting patients may be eligible for alternative treatment, such as fibrinolysis, a 'clot-busting' medication used to open up blocked arteries, which can be delivered at the referral hospital," Wang said. "Although PCI is the preferred treatment, if we know we cannot get a patient to PCI within 90 minutes, fibrinolysis should be considered in some of these patients."

Researchers observed a 5.5 percent mortality rate among transferred heart attack patients overall. Mortality was significantly higher among patients with "door-in-door-out" times that exceeded 30 minutes at 5.9 percent. Patients who waited less than 30 minutes experienced a 2.7 percent mortality rate.

Wang said the study results underscore the importance of quality improvement programs, such as the American Heart Association's "Mission: Lifeline," and optimizing regional and state-wide networks for heart attack response, like North Carolina's RACE program (reperfusion of acute myocardial infarction in North Carolina emergency departments).

"Our results show that there is still room for improvement and these programs have successfully improved outcomes for patients by relying on efficient communication and coordination of care between referral and receiving hospitals, as well as emergency

transport services," Wang said.

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