

Paramedics can play a key role in speedy care for heart attack patients

21 March 2012

Health care practitioners have long understood the importance of "door to balloon" time for heart attack patients—the faster they can get the patient from the door of the hospital to a catheterization lab to open a clogged artery, the better the patient will do.

But a University of Cincinnati (UC) emergency medicine researcher says it's also important to study the "medical contact to balloon" time, acknowledging the role that emergency medical services (EMS) responders play in speeding patient care.

In a paper published online in the journal *Academic Emergency Medicine*, assistant professor Jason McMullan, MD, found that EMS responders can play a significant role in reducing medical contact to balloon (MCTB) time by activating helicopter emergency medical services (HEMS) earlier in the patient care process.

The research focused on patients with a ST-elevation myocardial infarction (STEMI), a type of heart attack caused by a sudden, total blockage of a coronary artery. The American Heart Association and American College of Cardiologists have set a goal of 90 minutes to open the artery by stent in a catheterization lab (known as percutaneous coronary intervention, or PCI).

"There's a saying doctors have when taking care of a heart attack patient: time is muscle," says McMullan. "This is because doctors race to open a clogged vessel in the heart to minimize permanent damage. The quicker you can open the clogged vessel, the more muscle you can save."

Small hospitals without PCI capabilities frequently use HEMS, such as UC Health Air Care & Mobile Care, to rush heart attack victims to larger hospitals for advanced treatment. But in a study published last year, McMullan and researchers found that hospital-activated HEMS transfer does

not guarantee treatment within the 90-minute goal.

In this study, researchers from UC's Department of Emergency Medicine and UC Health Air Care found that if paramedics call for Air Care to meet them either at the smaller hospital or in the field, the time to get advanced care could be sped up by 48 minutes.

In multicenter retrospective chart review, the team studied cases of STEMI patients transferred by Air Care from local hospitals to PCI centers (hospital-initiated). They then modeled the potential medical contact to balloon times for two scenarios: if the EMS crews had requested HEMS transport directly from the scene to a PCI-capable hospital or if the EMS crew had the helicopter meet them at the local non-PCI hospital.

In the reviewed cases, the actual MCTB median time for 36 hospital-initiated transfers was 160 minutes, whereas the median MCTB time for the scene response scenario was estimated at 112 minutes. The median MCTB time for the hospital rendezvous scenario was estimated as 113 minutes.

"Both of the modeled strategies with EMS crews could result in meaningful time savings for patient care," says McMullan, "but neither strategy was superior, meaning individual communities can determine which method is best based on their unique needs and capabilities."

While the goal is to have every patient reach advanced care within 90 minutes, McMullan says researchers will continue to study multiple ways to reach the recommended time, including further study on the best transfer procedures and the benefits of giving STEMI patients fibrinolytics therapy at non-PCI hospitals before transfer.

"There is still a lot that smaller hospitals can do for [heart attack](#) victims," says McMullan, "and these

hospitals will always be a strong link in the chain of care. But, if a person will need to be transferred for ultimate care, EMS activation of helicopter EMS can significantly speed up the process."

Provided by University of Cincinnati Academic Health Center

APA citation: Paramedics can play a key role in speedy care for heart attack patients (2012, March 21) retrieved 16 May 2021 from <https://medicalxpress.com/news/2012-03-paramedics-key-role-speedy-heart.html>

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