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CONTACT: Amanda Jekowsky, ajekowsk@acc.org 202-731-3069

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IF YOU HAVE CHEST PAIN OR ANY OTHER SIGN OF A HEART ATTACK – CALL AN AMBULANCE!

Patients Diagnosed with a Pre-hospital ECG Get Lifesaving Care in Half the Time

New Orleans, LA – For anyone with a suspected ST-elevation myocardial infarction (STEMI) – a particularly serious form of heart attack that requires immediate medical care to open the culprit blocked coronary artery – calling an ambulance, as opposed to arriving at the hospital by other means, can fast-track access to life-saving care. In fact, patients who have an electrocardiogram (ECG) in the ambulance en-route to the hospital receive first-line care in half the time, yet nearly half of patients elect not to take an ambulance and among those who do, many do not get an ECG, according to research presented today at the American College of Cardiology's 60th Annual Scientific Session. ACC.11 is the premier cardiovascular medical meeting, bringing together cardiologists and cardiovascular specialists to further advances in cardiovascular medicine.

Unlike previous studies of STEMI patients, this data pool collected thorough details of all patients evaluated in the emergency department (ED) for a suspected heart attack, not just those with confirmed STEMI.

“Getting an ECG by first responders greatly improves the speed of effective care at the hospital,” said James M. McCabe, M.D., University of California, San Francisco, Calif. and lead investigator of the study. “What’s really striking is that patients who took an ambulance were generally sicker than those who did not, and despite the fact that these patients needed more intensive care upon arriving at the hospital, they were still able to get through the emergency department to the catheterization lab more than twice as fast as people who didn’t take an ambulance and didn’t get a pre-hospital ECG.”

Of the 360 patients in this study – all with suspected STEMI – 44 percent did not take an ambulance to the hospital for their heart attack. Even after adjusting for demographic factors, traditional cardiovascular risk factors, severity of illness and extent of electrocardiographic changes (e.g., how “positive” the diagnostic ECG

test was), merely not presenting to the ED by ambulance and therefore not getting a pre-hospital ECG lengthens the total time in the ED before getting referred to the catheterization lab by 62 percent ($p < 0.001$).

As researchers expected, the procedural time necessary to open the blocked artery did not vary based on how the patient arrived at the hospital; however, the improved efficiency of managing patients in the ED largely due to getting a pre-hospital ECG, reduced door-to-balloon time (D2B) by more than a quarter ($p = 0.004$).

D2B times are an important metric for evaluating the care received by patients with heart attacks and are a part of the national quality measures by which hospitals are judged. In fact, a patient's likelihood of dying more than doubles (3 to 7.5 percent) if D2B times increase from 90 to 150 minutes. Previous studies have also shown that for every 30 minute delay, the chances a patient will die within one year of the heart attack increases by 7.5 percent.

For patients who took an ambulance to the hospital, only 57 percent had an ECG. Altogether, 68 percent of patients referred for a possible STEMI did not receive a pre-hospital ECG, either because they elected not to take an ambulance or because they did not get one in the ambulance, which is concerning to the researchers.

Although many patients do not receive an early ECG because they do not take an ambulance, for those who do, McCabe suspects the numbers are partly explained by vague presenting symptoms when paramedics arrive. He reports that among patients who had complaints that are typical of heart attack – chest pain, shortness of breath, or chest pressure – a majority (79 percent) got an ECG in the ambulance. In addition, barriers in communication with non-English speakers may also play a role.

Ambulance personnel in San Francisco, where the study was conducted from 2008 to 2010, could not activate the on-call cardiology team and do not yet have the technology to forward the ECGs electronically to the receiving hospital – procedures that are gaining acceptance at other medical centers that care for heart attack patients. Instead, cardiology teams rely on the emergency physicians to review the pre-hospital ECG immediately.

“Despite these quality controls, and in some cases redundancies in our processing of patients, we are still seeing marked improvements in door-to-balloon times,” McCabe said. “It reinforces the importance of dialing 9-1-1 when a heart attack is suspected.”

As a next step, San Francisco will be implementing city-wide remote transmission of ECGs, and McCabe and his team plan to study the effect to determine whether this technology might result in even more efficient transfer of STEMI patients to the cath lab.

Dr. McCabe will be available to the media on Saturday, April 2 at 1:00 p.m. CDT in Room 338/339. Dr. McCabe will present “Ambulance Use or Its Lack - Impact on the Triage of Patients with ST-Elevation Myocardial Infarctions by Emergency Physicians” on Monday, April 4 at 9:30 a.m. CDT in Hall F of the Ernest N. Morial Convention Center.

The American College of Cardiology (www.cardiosource.org) represents the majority of board certified cardiovascular care professionals through education, research, promotion, development and application of

standards and guidelines – and to influence health care policy. ACC.11 is the largest cardiovascular meeting, bringing together cardiologists and cardiovascular specialists to share the newest discoveries in treatment and prevention, while helping the ACC achieve its mission to address and improve issues in cardiovascular medicine.

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