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A Non-Profit Cooperative to Improve Health Care and Reduce Members' Costs

*Presented at the 2012 ACEP Research Forum in Denver, Colorado
Published in Annals of Emergency Medicine, October 2012*

Impact of Pre-hospital 12 lead ECG Transmission and Hospital Notification on Door-to-Balloon Time in ST Elevation Myocardial Infarction (STEMI) in Various Hospital Settings

August 2011

Introduction: Door-to-balloon (D2B) times in the treatment of acute myocardial infarction (AMI) are influenced by various factors, such as patients' mode of presentation to an Emergency Department (ED), time to first ECG, as well as time to team activation and patient transport to the catheterization suite.

Hypothesis: Notwithstanding the type of hospital, pre-hospital notification of STEMI's via transmitted 12-leads by paramedics reduces D2B times of hospitals

Methods: A retrospective review was conducted from January 2009 to December 2010 on ambulance transport records for patients treated for chest pain who's ECGs revealed STEMI as interpreted by the treating paramedics. In collaboration with four (4) hospitals, we performed a retrospective review of the D2B times of STEMI patients that had a pre-hospital 12 lead transmitted by paramedics to the ED compared to the STEMI patients that were either walk-ins or arrived by Basic Life Support (BLS) alone without notifications. The medical records from the collaborating hospitals were reviewed and D2B times extracted and analyzed.

Results: 384 ambulance records of STEMI patients were reviewed. 12 patients (3%) did not undergo cardiac catheterization and therefore were excluded from the study. Of the remaining 372 patients, 154 (40%) arrived with paramedics and had pre-hospital notification by transmitted 12-leads. 218 (57%) were either walk-ins or arrived by BLS alone and did not have any pre-hospital notification of their arrival. The type of each hospital as well as their respective data and D2B times data are as follows:

Hospital (A) is an urban teaching facility. 60 patients were included in the study. 14 had pre-hospital notifications and 46 did not. D2B in the notification group was 53 min vs. 65 min in the non-notification group. This difference is statistically significant ($P<0.01$). **Hospital (B)** is a suburban teaching facility. 155 patients were included in the study. 88 had pre-hospital notifications and 67 did not. D2B in the notification group was 70 min vs. 87 min in the non-notification group. This difference is statistically significant ($P<0.01$). **Hospital (C)** is a suburban community hospital. 50 patients were included in the study. 22 had pre-hospital notifications and 28 did not. D2B in the notification group was 61.5 min vs. 87 min in the non-notification group. This difference is statistically significant ($P<0.01$). **Hospital (D)** is a suburban community hospital. 107 patients were included in the study. 30 had pre-hospital notifications and 77 did not. D2B in the notification group was 70 min vs. 87.5 min in the non-notification group. This difference is statistically significant ($P<0.01$). The average time for door-to-balloon for all 4 hospitals in the pre-hospital notification category was 67.5 minutes with a median time of 68 minutes vs. the average time in the non-notification category of 81.6 minutes with a median time of 80 minutes with an average reduction of 14.1 min. This difference is statistically significant ($P<0.01$)

Conclusions: Pre-hospital notification of acute MI by transmitted 12-lead ECG significantly reduces hospital's D2B times for those patients undergoing emergent cardiac catheterization.