

Paramedic activated cath lab meets EMS arrival-to-intervention guidelines in STEMI patients at community hospital with low false-positive activation rate

Background: Recent ACC/AHA STEMI guidelines state "STEMI patients presenting to a hospital with PCI capability should be treated with primary PCI within 90 minutes of first medical contact." To address this Houston Northwest Medical Center developed a STEMI protocol in 2006 with Cypress Creek EMS, its primary paramedic service, initially to decrease hospital door-to-intervention (DTI) times. System evaluation post implementation indicated that EMS arrival-to-intervention (ETI) times better reflect overall combined performance. ETI is defined as time of EMS arrival on scene to reperfusion treatment. The purpose of this study is to see if a paramedic activated cath lab for STEMI patients met guideline recommendations while maintaining a low false-positive activation rate.

Methods: The initial protocol planning team determined greatest DTI reduction could be achieved through transfer of authority for cath lab activation to field paramedics. After obtaining a 12-lead ECG, paramedics notify the emergency department of a possible STEMI and the cath lab team is activated. Upon arrival, the emergency department physician obtains the ECG for interpretation and upon STEMI confirmation, the patient bypasses the emergency department and is transported directly to the cath lab. Data for protocol development was collected from a historical control group using retrospective chart review. Since protocol initiation in June 2006, ETI data is collected prospectively.

Results: Between June 2006 and December 2007, 113 patients were transported utilizing the STEMI protocol. Mean hospital DTI time decreased from 121 minutes (control group) to 53 minutes, $p < 0.01$, two-tailed t-Test. Mean ETI time is 87 minutes for the same study period; Historical ETI data was not collected. 15 (13.3%) false-positive activations have occurred. Mortality rate comparison did not meet statistical significance - 5.4% historical, 5.3% protocol.

Conclusions: A paramedic activated cath lab for STEMI decreased DTI and ETI times to meet current guidelines. STEMI diagnostic accuracy was maintained with a low false-positive activation rate. Mortality data is insufficient for statistical significance.