

## Why Is Reperfusion Therapy Withheld in Eligible ED Patients with STEMI?

Tricomi AJ, Magid DJ, Rumsfeld JS, et al. Missed opportunities for reperfusion therapy for ST-segment elevation myocardial infarction: results of the Emergency Department Quality in Myocardial Infarction (EDQMI) study. *Am Heart J* 2008;155:471–7.

### Study Overview

**Objective.** To determine why eligible patients with ST-segment elevation myocardial infarction (STEMI) do not receive fibrinolysis or primary percutaneous coronary intervention (PCI).

**Design.** Retrospective cohort study.

**Setting and participants.** 2215 consecutive patients presenting with acute myocardial infarction to 5 emergency departments (EDs) in Colorado and California between 2000 and 2002 were screened for eligibility. Patients with ischemic symptoms within < 12 hours of presentation, 1-mm ST-segment elevation in 2 contiguous leads or new left bundle branch block (LBBB) on electrocardiogram (ECG), and no contraindications to guideline-based reperfusion therapy were included.

**Main outcome measures.** Factors associated with the failure to provide reperfusion therapy in eligible patients, determined by review of ED medical records and ECGs and categorized as 1 of the following: (1) failure to identify ST-segment elevation on the ECG performed in the ED, (2) failure to identify new or presumed new LBBB as inclusion criterion for therapy, (3) documentation of a reason for withholding reperfusion that was not concordant with guideline recommendations, or (4) failure to document any rationale for withholding reperfusion.

**Main results.** Of 460 eligible patients, 102 (22%) did not receive reperfusion therapy. In cases where reperfusion was not provided, ST-segment elevation was not identified in 34% ( $n = 35$ ), LBBB was not considered as an indication in 13% ( $n = 13$ ), there was documentation of a reason for withholding therapy not supported by guidelines in 34% ( $n = 35$ ), and there was no documentation of reasons for withholding reperfusion in 19% ( $n = 19$ ). Patient factors associated with failure to receive reperfusion therapy included older age, peripheral vascular disease, and absence of chest pain. Patients seen by both residents and attending physicians were more likely to receive treatment than those seen by an attending alone.

**Conclusion.** Education of ED staff to improve ECG interpretation and knowledge of evidence-based guidelines for

patients eligible for reperfusion therapy could potentially improve STEMI outcomes.

### Commentary

With the creation of the D2B Alliance, a network of hospitals, physician leaders, and strategic partners committed to the challenge of lowering door-to-balloon times, the identification and rapid treatment of STEMI has become a national initiative. The present study analyzes a common problem in STEMI management—the initial step of identifying STEMI in the ED. Based on their findings, Tricomi et al suggest that improved ECG interpretation and knowledge of evidence-based guidelines for eligible STEMI patients would enhance delivery of reperfusion therapy.

The study has several limitations. First, the study is a retrospective review of medical records and possible bias is introduced by missing data and undocumented guideline-based contraindications to therapy. If there were a number of undocumented contraindications for therapy, the number of eligible treatment candidates and untreated patients would be overestimated. No detailed provider interviews were conducted, and therefore it is not possible to assess their rationale for patient care or other aspects of care (eg, cardiologist involvement) that could have led to failure to provide reperfusion. Outcomes of patients who failed to receive reperfusion were not assessed; therefore, it is difficult to say whether patient care was affected. Additionally, generalizability of these results is limited, as patients in this study presented between 2000 and 2002. Since this time, there have been numerous articles on improving door-to-balloon time and recognition of STEMI.

### Applications for Clinical Practice

This study describes reasons why STEMI patients may not receive reperfusion therapy from an ED perspective and highlights the importance of recognizing STEMI and new LBBB and subsequent quick activation of either primary PCI or fibrinolysis. Educating ED physicians to recognize STEMI is important, but building organized systems to empower ED physicians to act quickly so that patients can be promptly and appropriately treated should also be a priority.

—Review by Robert L. Huang, MD, MPH

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