Clinical Policy: Emergency Department Management of Patients Needing Reperfusion Therapy for Acute ST-Segment Elevation Myocardial Infarction

From the American College of Emergency Physicians Clinical Policies Subcommittee (Writing Committee) on Reperfusion Therapy for Acute ST-Segment Elevation Myocardial Infarction:
Susan B. Promes, MD, MBA (Subcommittee Chair)
Jonathan M. Glauser, MD, MBA
Michael D. Smith, MD, MBA
Sam S. Torbati, MD
Michael D. Brown, MD, MSc (Committee Chair)

Approved by the ACEP Board of Directors June 28, 2017

Endorsed by the Emergency Nurses Association August 22, 2017

0196-0644/$-see front matter

https://doi.org/10.1016/j.annemergmed.2017.09.035

[Ann Emerg Med. 2017;70:724-739.]

ABSTRACT

Ischemic heart disease is the leading cause of death in the world. More than half a million patients present to emergency departments across the United States each year with ST-segment elevation myocardial infarctions.[1] Timely reperfusion is critical to saving myocardium at risk. Multiple studies have been conducted that demonstrate that improved care processes are linked to improved survival in patients having an acute myocardial infarction. This clinical policy from the American College of Emergency Physicians addresses key issues in reperfusion for patients with acute ST-segment elevation myocardial infarction. A writing subcommittee conducted a systematic review of the literature to derive evidence-based recommendations to answer the following clinical questions: (1) In adult patients having an ST-segment elevation myocardial infarction, are there patients for whom treatment with fibrinolytic therapy decreases the incidence of major adverse cardiac events when percutaneous coronary intervention is delayed? (2) In adult patients having an ST-segment elevation myocardial infarction, does transfer to a percutaneous coronary intervention center decrease the incidence of major adverse cardiac events? (3) In adult patients undergoing reperfusion therapy, should opioids be avoided to prevent adverse outcomes? Evidence was graded and recommendations were made based on the strength of the available data.

INTRODUCTION

Although timely percutaneous coronary intervention (PCI) has become the standard treatment for ST-segment elevation myocardial infarction (STEMI), the fact remains that only a minority of hospitals in the United States are capable of performing this intervention on site, and even fewer can provide 24-hour access to the intervention. When a patient presents with STEMI, national guidelines recommend a first medical-contact-to-device time of less than 90 minutes for individuals presenting to a PCI-capable site and less than 120 minutes from first medical-contact-to-device time for those who need to be transferred to a PCI-capable hospital.[2] Although very few patients are treated solely with fibrinolytic therapy without an angiographic assessment of their coronary arteries, the time-dependent nature of getting the patient to a PCI center requires knowledge of how delays affect clinical outcomes.

Systems have been developed for rapid out-of-hospital triage to PCI-capable centers and for rapid interhospital transfer from a noncapable PCI facility to one that can perform the intervention. What are the sources of these delays? What are the indications for fibrinolytic therapy in the age of PCI? These questions are critical for emergency physicians who practice in rural and remote locations without immediate access to PCI centers. Aside from the immediate outcomes for reperfusion and death, data on long-term functional outcomes are critical to determine the impact these interventions ultimately have on patient lives. Finally, the role of pain relief—in particular, opioid use—is discussed in light of newer research that raises some concern over long-term outcomes in chest pain patients treated with opioids.

This clinical policy addresses 3 issues that are relevant to practicing emergency physicians. The first 2 questions address whether there is a benefit to giving fibrinolytic therapy to STEMI patients when PCI will be delayed and whether transfer to a PCI-capable facility for the STEMI patient decreases the incidence of major adverse cardiac events (MACE). The clinical heterogeneity among the research studies investigating these topics make interpretation of the results challenging. For example, there is no standard definition of MACE. MACE may include such endpoints as death, revascularization, stroke, and congestive heart failure, but not all studies use the same endpoints. Definitions for MACE will be identified in the policy as appropriate for clarity. In addition, there is no uniformity on timing metrics. The final critical question examines the safety of opioid use in this population.

This is a revision of the 2006 American College of Emergency Physicians (ACEP) clinical policy on reperfusion therapy in emergency department (ED) patients with suspected acute myocardial infarction (MI).[3]

METHODOLOGY

This clinical policy is based on a systematic review with critical analysis of the medical literature meeting the inclusion criteria. Searches of MEDLINE, MEDLINE InProcess, Cochrane, EMBASE, and Scopus databases were performed. All searches were limited to human studies published in English. Specific key words/phrases, years used in the searches, dates of searches, and study selection are identified under each critical question. In addition, relevant articles from the bibliographies of included studies and more recent articles identified by committee members and reviewers were included.

This policy is a product of the ACEP clinical policy development process, including internal and external review, and is based on the existing literature; when literature was not available, consensus of Clinical Policies Committee members was used and noted as such in the