

*Mission: Lifeline™ is the American Heart Association's national initiative to advance the systems of care for patients with ST-segment elevation myocardial infarction (STEMI) and all AMI patients.*

*Mission: Lifeline has developed recommendations for certification of STEMI Referral/ Non-PCI Centers, STEMI Receiving Centers/PCI Hospitals, EMS, and STEMI Systems.*

### **Mission: Lifeline Recommendations for Criteria for STEMI Systems of Care**

#### **Non-PCI Hospital/ STEMI Referral Center**

- 1) Appropriate protocols and standing orders should be in place for the identification of STEMI. At a minimum, these protocols should be present in the Intensive Care Unit/Coronary Care Unit and Emergency Department (ED)
- 2) Each ED should maintain a standardized reperfusion STEMI care pathway that designates primary PCI as the preferred reperfusion strategy if transfer of patients to a primary PCI hospital/STEMI-Receiving Center can be achieved within times consistent with ACC/AHA guidelines.
- 3) Each ED should maintain a standardized reperfusion STEMI care pathway that designates fibrinolysis in the ED (for eligible patients) when the system cannot achieve times consistent with ACC/AHA guidelines for primary PCI.
- 4) If reperfusion strategy is for primary PCI transfer, a streamlined, standardized protocol for rapid transfer and transport to a STEMI-Receiving Center should be operational.
- 5) If reperfusion strategy is for primary PCI transfer, all patients should be transported to the most appropriate STEMI-Receiving Center where the expected first door-to-balloon (first device used) time should be within 90 minutes (considering ground versus air transport, weather, traffic).
- 6) The STEMI Referral Center should have an ongoing quality improvement process, including data measurement and feedback, for the STEMI population and collect and submit Mission: Lifeline required data elements (using the Mission: Lifeline Bridging form\*).
- 7) A program should be in place to track and improve treatment (acutely and at discharge) with ACC/AHA guideline based Class I therapies.
- 8) A multidisciplinary STEMI team, including EMS, should review hospital specific STEMI data on a quarterly basis.
  - a) Door-to-first ECG time (goal <10 minutes)
  - b) Proportion of STEMI-eligible patients receiving any reperfusion (PCI or fibrinolysis) therapy.
  - c) STEMI Referral Center ED door-to-balloon (first device used) time for patients transferred to PCI center
    - i) STEMI Referral Center ED door to ED discharges
    - ii) STEMI Referral Center ED door-to-balloon (first device used) time within 90 minutes (including transport time)

*\* The Mission: Lifeline Bridging Form is being developed for the use of STEMI Referral Hospitals and will focus on abbreviated STEMI emergency treatment, process times, and discharge data.*

#### **Primary PCI Hospital/ STEMI-Receiving Center**

- 1) Protocols for triage, diagnosis and Cardiac Catheterization Laboratory activation should be established within the primary PCI hospital/STEMI-Receiving Center. A single activation phone call should alert the STEMI team. Criteria for EMS activation of the Cardiac Catheterization Laboratory should be established in conjunction with EMS offices.
- 2) The STEMI-Receiving Center should be available 24 hours/7 days a week to perform primary PCI.
- 3) The Cardiac Catheterization Laboratory staff including interventional cardiologist should arrive within 30 minutes of activation call.
- 4) There should be universal acceptance of STEMI patients (no diversion). There should be a plan for triage & treatment for simultaneous presentation of STEMI patients.
- 5) Interventional cardiologists should meet ACC/AHA criteria for competence. Interventional cardiologists should perform at least 11 primary PCI procedures per year and 75 total PCI procedures per year.
- 6) The STEMI-Receiving Center should meet ACC/AHA criteria for volume and perform a minimum of 36 primary PCI procedures and 200 total PCI procedures annually.
- 7) The STEMI-Receiving Center should participate in the Mission: Lifeline-approved data collection tool, ACTION Registry – GWTG.
- 8) A program should be in place to track and improve treatment (acutely & at discharge) with ACC/AHA guideline based Class I therapies.
- 9) There should be a recognized STEMI-Receiving Center liaison/system coordinator to the system and a recognized physician champion.
- 10) There should be monthly multidisciplinary team meetings to evaluate outcomes and quality improvement data. Operational issues should be reviewed, problems identified, and solutions implemented. The following measurements should be evaluated on an ongoing basis:
  - a) Door-to-balloon (first device used) time, non-transfer within 90 minutes
  - b) STEMI Referral Hospital ED door-to-balloon (first device used) time, transfer within 90 minutes
  - c) First Medical contact to balloon inflation (first device used) non-transfer within 90 minutes
  - d) First Medical contact to balloon inflation (first device used) transfer
  - e) Proportion of eligible patients receiving reperfusion therapy

- f) Proportion of eligible patients administered guideline-based Class I therapies
- g) Proportion of patients with field diagnosis of STEMI and activation of the Cardiac Catheterization Laboratory for intended primary PCI that
  - i) do not undergo acute catheterization because of misdiagnosis
  - ii) undergo acute catheterization and found to have no elevation in cardiac biomarkers and no revascularization in the first 24 hours
- h) In hospital mortality

### **EMS**

- 1) Each EMS system should maintain a standardized algorithm for evaluation and treatment of patients with symptoms suggestive of myocardial ischemia that should include acquisition of a 12-lead ECG and appropriate communication of the ECG findings (via direct paramedic interpretation/voice communication, automated computer algorithm interpretation, wireless transmission and physician interpretation, or any combination of these three strategies) to the receiving hospital.
- 2) Each EMS system should maintain a standardized reperfusion STEMI care pathway that designates primary PCI as the preferred reperfusion strategy if initiated within 90 minutes of first medical contact or fibrinolytic therapy in eligible patients when primary PCI within 90 minutes is not possible.
- 3) Prearranged EMS destination protocols for STEMI patients should include:
  - a) Bypassing non-PCI hospitals/STEMI Referral Centers and going directly to primary PCI hospitals/STEMI-Receiving Centers for patients with anticipated short transport interval (e.g. <30 minutes in urban/suburban settings, so as to achieve primary PCI within 90 minutes)
  - b) Emergency transfer by EMS or other agencies to a STEMI-Receiving Center of patients with STEMI who transport themselves to a STEMI Referral Center.
  - c) Air transport if possible (or default to ground transport ) to STEMI-Receiving Center or stabilization in STEMI Referral Center for patients with anticipated long transport time and/or either fibrinolytic ineligible and/or in cardiogenic shock
  - d) Administration of fibrinolytic therapy prehospital or in a STEMI Referral Center for fibrinolytic eligible patients with anticipated time to primary PCI exceeding 90 minutes
  - e) Emergency transfer to a STEMI-Receiving Center of patients who develop STEMI while in hospital at STEMI Referral Center (non-PCI hospital).
- 4) When taken directly to a STEMI-Receiving Center, all STEMI patients should be transported to the most appropriate facility as determined by Mission: Lifeline hospital criteria, with a system goal of first medical contact to balloon inflation (initial device used) within 90 minutes.
- 5) EMS medical director or designate should monitor care related to EMS patients with STEMI by meeting at least quarterly with prehospital providers, emergency physicians, interventional cardiologists, nursing staff, receiving hospital representatives, and other appropriate individuals (i.e. STEMI Survivor).
- 6) The following measurements should be evaluated on an ongoing basis:
  - a) Symptom onset to 911 call
  - b) Time 911 call is first received by primary public safety answering point to vehicle arrival at hospital door
  - c) Time from first medical contact to balloon inflation (first device used).
  - d) Time from prehospital ECG to balloon inflation (first device used).
  - e) Proportion of patients with non-traumatic chest pain > 35 years treated by EMS for whom 12-lead ECGs were obtained
  - f) Proportion of patients with STEMI treated by EMS for whom 12-lead ECGs were obtained
  - g) Proportion of patients with field diagnosis of STEMI and activation of the Cardiac Catheterization Laboratory for intended primary PCI that
    - i) do not undergo acute catheterization because of misdiagnosis
    - ii) undergo acute catheterization and found to have no elevation in cardiac biomarkers and no revascularization in the first 24 hours
  - h) Proportion of patients with EMS treated ventricular fibrillation (VF) who are taken to the Cardiac Catheterization Laboratory
  - i) Survival to hospital discharge of all STEMI patients and of patients with VF (EMS and STEMI-Receiving Center to monitor jointly)

### **STEMI Systems of Care**

**(All five must be present in order to be certified)**

- 1) The System should be registered with Mission: Lifeline.
- 2) There should be on-going multidisciplinary team meetings that include EMS, non-PCI hospitals/STEMI Referral Centers, and PCI hospitals/STEMI-Receiving Centers to evaluate outcomes and quality improvement data. Operational issues should be reviewed, problems identified, and solutions implemented.
- 3) Each STEMI System should include a process for pre-hospital identification and activation, destination protocols to STEMI Receiving Centers, and transfer for patients who arrive at STEMI Referral Centers and are primary PCI candidates, and/or are fibrinolytic ineligible and/or in cardiogenic shock.
- 4) Each system should have a recognized system coordinator, physician champion, and EMS medical director.
- 5) Each system component (EMS, STEMI Referral Centers and STEMI-Receiving Centers) should meet the appropriate criteria listed above.