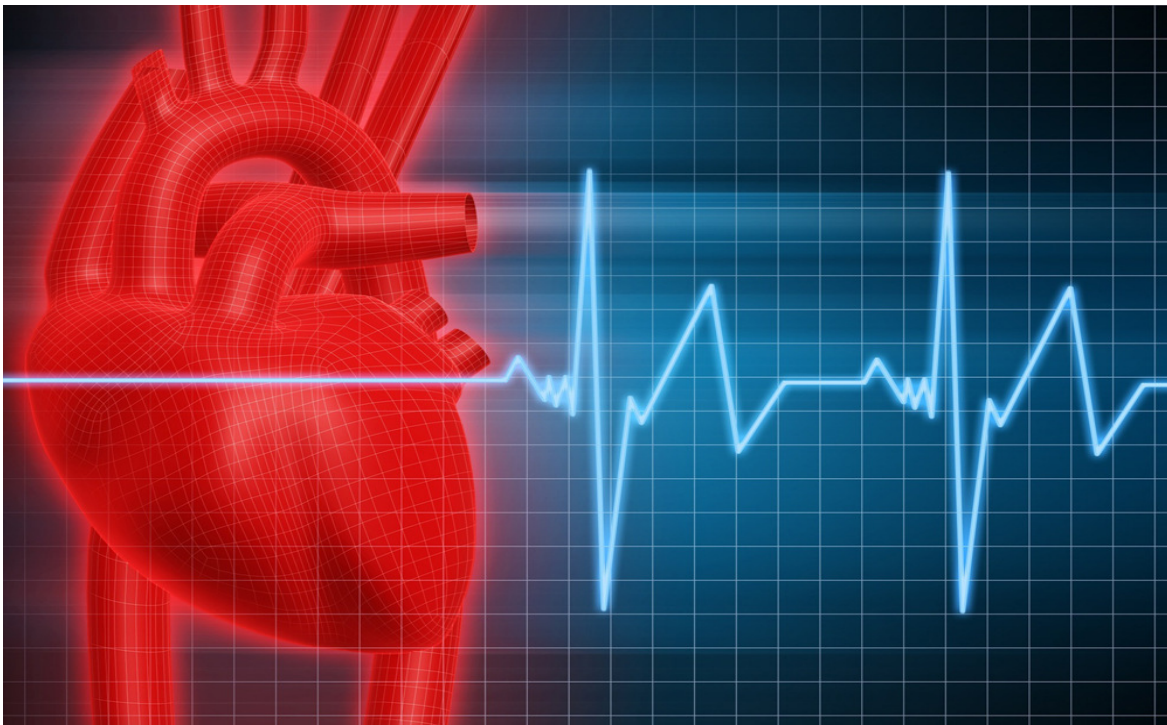


Region IV STEMI Plan



April 2011

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The Region IV STEMI Committee was formed following the Mission Lifeline Forum on May 22, 2010. The Mission for our committee is to improve the STEMI System of Care in Region IV and to decrease mortality and morbidity. This effort is being duplicated across the state in each of the five EMS regions of the Maryland Institute for Emergency Medical Services Systems.

The Region IV STEMI Committee will need to address a large geographic region with only one Cardiac Intervention Center (CIC) in the region. The inclusive system approach must address patients that are transported by EMS, as well as patients that walk into a non-CIC capable hospital. The key elements of the “Hub and Spoke” Interfacility Transfer will be followed to meet the goals of *Mission: Lifeline* along with the *Maryland Medical Protocols for Pre-Hospital Providers*.

I. Plan Goals

It is the goal of all Region IV EMS jurisdictions and hospitals to:

- A. Assess the current status of STEMI care in the region, including the availability of resources within and adjacent to the region.
- B. Develop a regional/local plan for optimizing outcomes of STEMI patients consistent with the Maryland Medical Protocols for EMS Providers and COMAR Title 30.
- C. Deliver STEMI patients to the closest designated Cardiac Intervention Center (CIC) as quickly as possible.
- D. The time the 911 call is received until the patient undergoes primary percutaneous coronary intervention (pPCI) (911 to Balloon time) is less than 90 minutes in 75% of the cases.
- E. Review the process, data, and outcome for every STEMI patient who is cared for under the purview of this plan.
- F. Monitor the STEMI operational plan, process parameters, and patient outcome so the plan and process may be modified to improve patient outcome.

II. Regional STEMI Plan Overview

- A. A Region IV STEMI Committee comprised of the regional leaders in EMS, Emergency Medicine, and Cardiology have developed a plan for a Regional STEMI System that meets the goals set forth in the previous section. The components, to some degree, have separate and individual identities and functions; however there should be an understanding, a desire, and willingness to work together in a unified effort to reach the end result.

- B. Systems require oversight of project concept, overall responsibility, developmental aspects, implementation, and evaluation of continuing activities. The Maryland Institute for Emergency Medical Services Systems has the responsibility for coordinating pre-hospital EMS activities throughout the State of Maryland.
- C. The Regional STEMI System involves the organization of already existing resources into a program providing comprehensive care for STEMI patients through all phases of their management from the moment of onset through rehabilitation. The two basic patient management components of this system are the pre-hospital providers and individual hospital organizations.
- D. The system function involves the establishment and implementation of the protocols and STEMI triage criteria included in this Plan. Based upon need, modifications and additions may be developed by the Region IV STEMI Committee.
- E. Hospitals participating in this system and receiving STEMI system patients will have organized response systems, including:
 - 1. equipment and facilities
 - 2. trained and committed personnel
 - 3. organized management protocols
- F. The Emergency Department plays a critical role in STEMI management. Rapid availability of a cardiologist and the ability to perform interventional cardiology care are pivotal services in determining the survival and recovery of STEMI patients. Emergency Medicine and Cardiology leadership of hospital STEMI programs is therefore essential in order for hospitals to participate in the STEMI System. This leadership role must be clearly defined within the Hospital STEMI Plan along with specific appropriate authority to carry out that leadership role. Evidence of continuing leadership should be demonstrated through emergency physician and cardiologist participation in the Regional STEMI System activities and through the individual hospital QI programs.

III. Region IV STEMI Committee

- A. The Region IV STEMI Committee will be responsible for the implementation of this plan. Committee membership will be comprised of representatives from the following groups:
 - 1. CIC Hospitals:
 - a. Cath team members
 - b. Emergency Physicians
 - c. Cardiologists
 - d. Hospital Administration
 - e. Emergency and/or STEMI Nursing

2. Non-CIC Hospitals:
 - a. Emergency Physicians
 - b. Cardiologists
 - c. Hospital Administrators
 - d. Emergency Nurses

3. Pre-Hospital Jurisdictions:
 - a. Pre-hospital EMS Providers
 - b. EMS Service Leadership

4. Other Representation:
 - a. Regional and Jurisdictional EMS Medical Directors
 - b. MIEMSS Regional Administrators

- B. The duties of the Region IV STEMI Committee include the review of the overall function of the STEMI program including hospital and pre-hospital activities. This review will evaluate the adequacy of these various activities and aid in the development of system function reports and recommendations regarding the hospital or pre-hospital components or functions, including responsibilities, standards, and activities. If recommendations directly involve pre-hospital aspects of the STEMI program they will be referred to the Office of the State EMS Medical Director for review and comment.

IV. Regional STEMI System: Components and Organization

A. Pre-hospital Component

1. EMS Units are an integral part of the Regional STEMI System. All EMT Basics, Intermediates and Paramedics need to have a basic knowledge and awareness of the Regional STEMI System elements and system function. This specifically refers to the activation criteria (identification of a STEMI) and communications procedures. On-line and off-line medical control physicians within the Region will also need to be aware of the Regional STEMI System elements and system function.

B. Hospital Component

1. Each CIC must have an Emergency Physician and Cardiologist responsible for oversight of the STEMI Program. This responsibility includes:
 - a. Working with administration to maintain the resources necessary to be a recognized CIC.
 - b. Establishing and maintaining basic STEMI treatment plans / clinical pathways for the hospital.

- c. Oversight responsibility for the Hospital STEMI QI Program and participation in Regional STEMI System administrative and QI activities as per the Regional STEMI Plan, including data collection and reporting.
 - d. Submit data to the Region IV STEMI QI Subcommittee.
 - e. Maintain compliance with MIEMSS and MHCC standards for primary PCI and CIC designation.
2. Non-CIC Hospitals:

In certain instances when STEMI patients may present to a hospital without PCI capability and cannot be transferred to a PCI center for intervention within 90 minutes of first medical contact, they should be treated with fibrinolytic therapy within 30 minutes of hospital presentation, unless contraindicated.

Each non-CIC hospital must:

- a. Establish and maintain basic STEMI treatment plans / clinical pathways to evaluate the appropriateness of thrombolytic therapy versus patient transfer to a Primary PCI Center.
- b. Establish and maintain transfer agreements with CIC in accordance with the 90 minute 911 to Balloon time goal for a minimum of 75% of all cases.
- c. Develop and establish rapid interfacility transport agreements to include air and land transport capabilities.
- d. Submit data including, but not limited to, door to needle and interfacility transfer times to the Region IV STEMI QI Subcommittee.

C. Communications Component

- 1. Communications are critical to the function of the STEMI System. Communications provide:
 - a. essential knowledge of the overall status of pre-hospital STEMI activities and hospital resource availability on a continuous basis
 - b. access to system organization and function protocols whenever such information is requested by pre-hospital personnel or hospital based personnel
 - c. a link between the field and CIC and non-CIC for the rapid exchange of information including 12 lead ECG findings resulting in efficient pre-hospital care provision and hospital preparation for STEMI patient arrival
 - d. collection of uniform System-wide data for QI activities from CIC and non-CIC hospitals.
- 2. Providing all of these functions to the entire System on a continuous basis requires a central communications facility with constant communications capabilities to all pre-hospital units and participating hospitals, plus the ability to immediately and directly link the pre-hospital providers to both CIC and Non-CIC hospitals.

D. Data / Quality Improvement Component

1. This component is essential for function of the Regional STEMI System. There is a need to evaluate the system function to determine continuing effectiveness in the management of STEMI. The Region IV STEMI QI Subcommittee will be established with the goal of reviewing regional STEMI program activities for appropriateness, quality, and quantity of activities. This component should examine overall STEMI emergencies, care and outcomes, and provide information for use in determining and developing STEMI teaching programs, as well as information for use in potential STEMI research studies. The QI Subcommittee will develop and maintain a STEMI QI Dataset intended to fulfill the goals of this component as defined by the subcommittee. This dataset shall include, but not be limited to, data components from:
 - a. CAD
 - b. Pre-hospital patient care reports
 - c. CIC EMS feedback reports
 - d. Non-CIC data.

2. The STEMI QI Subcommittee will document continuing function and allow the implementation of improvements to the Regional STEMI System. This program will be Region-wide, with the individual EMS jurisdictions and hospitals performing their own QI evaluations and reporting to the Region IV STEMI QI Subcommittee. The appropriateness, quality and quantity of all activities in the system must be continuously monitored in the areas of pre-hospital care, medical care of the patients in the hospitals and overall system function. The following basic QI processes should be considered by each individual entity:
 - a. Assignment of a QI manager to oversee the organizational process and coordinate all STEMI system QI activities.
 - b. Development of a written QI program to evaluate STEMI patient care.
 - c. Establishment of a QI data collection method
 - d. Completion of QI evaluations by the individual system participants. Cases to be evaluated include specific automatic criteria such as major complications and death, as well as those cases which are requested for review by those involved in the care of the patient.
 - e. Determination of the presence (or absence) of QI issues through the data evaluation process.
 - f. Provide for the appropriate feedback mechanism to EMS for STEMI cases initiated in the pre-hospital EMS setting for QA.
 - g. Development and implementation of corrective action plans
 - h. Re-evaluation of the efficacy of the corrective action plan.

V. Patient Transportation

STEMI patients shall be transported to the closest designated Cardiac Intervention Center by ground as long as the transport time is not more than 30 minutes greater than transport to the nearest emergency department.¹

Adverse weather, heavy traffic, and medevac availability may impact the ability to deliver a STEMI patient directly to a designated Cardiac Intervention Center. Consider air (medevac) transportation if the patient will arrive at the designated Cardiac Intervention Center quicker than by ground transportation.² If air transportation to a designated Cardiac Intervention Center is unavailable, the STEMI patient shall be transported to the nearest emergency department.

The emergency department of a non-CIC hospital receiving the STEMI patient bears the responsibility of securing appropriate transportation to a Cardiac Intervention Center. The emergency department may make use of commercial medevac, Maryland State Police medevac, commercial ground ALS ambulance, or jurisdictional ALS ambulance in accordance with Board of Nursing regulations, COMAR, and established inter-facility transport agreements. The method of transportation shall be based on the patient's needs and the mode that will most rapidly deliver the patient to the center.

It should be kept in mind that the goal of attaining a 911-to-balloon time of less than 90 minutes means delivery to a Cardiac Intervention Center, not a community emergency department.

¹ Maryland Medical Protocols for EMS Providers p. 65.

² Maryland Medical Protocols for EMS Providers p. 198-1

Region IV Cardiac Intervention Centers

Peninsula Regional Medical Center

Region IV Non-Cardiac Intervention Centers

Union Hospital of Cecil county

Chester River Medical Center

Memorial Hospital at Easton

Dorchester General Hospital

Atlantic General Hospital

Edward G. McCready Memorial Hospital (McCready Foundation, Inc.)

Out of State Hospitals (awaiting development of Memorandum of Understanding)

Christiana Hospital, Newark, DE

Kent General Hospital, Dover, DE