



## Emergency Medical Services Division

# STEMI SYSTEM OF CARE POLICY

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### Revision Log

|            |   |
|------------|---|
| 04/25/2012 | Initial draft finalized by STEMI Working Group  |
| 05/01/2012 | Reformatted into final draft  |
| 05/07/2012 | Amend “Designation, A.1.” to include cardiac surgery service; amend Page 4 to insert provision for “Interim Designation”; and amend “Concept of Operations of STEMI System of Care, A.1.” to reiterate avoidance of delay in treatment and transport to obtain 12-lead ECG. |
| 05/10/2012 | Policy approved by EMCAB  |
| 06/26/2012 | Policy approved by Board of Supervisors   |
| 05/09/2013 | Revisions approved by EMCAB: additions of Appendix E and F; clarification to use Action Registry in lieu of a home-grown database, per STEMI Workgroup agreement; and revise SRC performance standards  |
| 08/06/2013 | Amend Page 8 to remove discouragement of obtaining 12-lead in the field if care is delayed; (this change reflects a previous change to paramedic protocol implemented earlier in the year); revision needed for consistency between policies.                               |

## **PURPOSE**

This policy defines the requirements for designation as a STEMI Receiving Center (SRC) in Kern County and establishes the concept of operations of the STEMI System of Care.

## **AUTHORITY**

- A. Health and Safety Code, Division 2.5, Sections 1797.67, 1797.88, 1797.220, 1798, 1798.170

## **DEFINITIONS**

- A. "Percutaneous Coronary Intervention" (PCI): A broad group of percutaneous techniques used for the diagnosis and treatment of patients with STEMI.
- B. "EMS Division" or "County": the Kern County Public Health Services Department, Emergency Medical Services Division.
- C. "EMS System": a specially organized arrangement that provides for the personnel, facilities, and equipment for the effective and coordinated delivery in an EMS area of medical care services under emergency conditions.
- D. "STEMI": An acute myocardial infarction that generates a specific type of ST-segment elevation on a 12-lead ECG.
- E. "STEMI Patient": an apparently wounded, injured, sick, invalid, convalescent, or other incapacitated person in need of medical observation, intervention, or treatment during transportation found to meet STEMI criteria and requires STEMI Receiving Center Services.
- F. "STEMI System of Care": an integrated prehospital and hospital program that is intended to direct patients with field identified ST Segment Elevation Myocardial Infarction directly to hospitals with specialized capabilities to promptly treat these patients.
- G. "STEMI Alert": A report that notifies a STEMI Receiving Center as early as possible that a patient has a specific computer-interpreted cardiac rhythm either from a STEMI Referral Hospital or a prehospital paramedic with 12-lead ECG indicating a STEMI, allowing the SRC to initiate the internal procedures to provide appropriate and rapid treatment interventions.
- H. "STEMI Receiving Center" (SRC): a licensed general acute care hospital which has been formally designated as a SRC by COUNTY.
- I. "STEMI Referral Hospital" (SRH): An acute care hospital in the County that is not designated as a STEMI Receiving Center.
- J. "STEMI Receiving Center Services": the customary and appropriate hospital and physician services provided by a designated STEMI Receiving Center to STEMI patients.
- K. "STEMI Receiving Center Standards": the standards and operational practices applicable to STEMI Receiving Centers set forth in this policy to maintain SRC designation.
- L. "STEMI Information System": the computer information system maintained by each STEMI Receiving Center which captures the presentation, diagnostic, treatment and outcome data sets required by COUNTY.

- M. "STEMI QI Committee": the multi-disciplinary peer-review committee, composed of representatives as specified in this policy, which audits the STEMI System of Care, makes recommendations for system improvements, and functions in an advisory capacity to the EMS Division.

## DESIGNATION

- A. Hospitals seeking formal designation as SRC shall meet the following requirements:
1. Possess current California licensure as an acute care hospital providing Basic Emergency Medical Services, and possess a special permit for cardiac surgery service, including catheterization laboratory pursuant to the provisions of Title 22, Division 5, Chapter 1, Article 5 of the California Code of Regulations.
  2. Possess a current designation and valid contract with the County as a Paramedic Base Hospital, as part of the EMS System.
  3. Obtain and maintain accreditation as a "Heart Attack Receiving Center" from the American Heart Association, Mission: Lifeline program. Or, the hospital may establish and maintain accreditation as a Chest Pain Center from the Society of Cardiovascular Patient Care.
  4. Possess a transfer agreement between applicant SRC hospital and each SRH in the County whereby applicant SRC agrees to immediately and rapidly accept the transfer of a STEMI Patient from the transferring SRH upon notification of STEMI ALERT and request by the SRH-affiliated physician.
  5. Execute an agreement between SRC and the County of Kern to formally designate the hospital as a SRC.
- B. Any designated SRC hospital which is unable to meet the following requirements shall be subject to termination or un-designation as SRC:
1. Inability to maintain Designation criteria, listed in A., above, or
  2. Failure to meet the SRC Performance Standards, listed below and as may be amended from time to time, or
  3. Failure to comply with any policy, procedure, or regulation mandated by the Local, State, or Federal Government.

If the EMS Division finds a SRC to be deficient in meeting the above criteria, the EMS Division will give the SRC written notice, return receipt requested, setting forth with reasonable specificity the nature of the apparent deficiency. Within ten (10) calendar days of receipt of such notice, the SRC must deliver to the EMS Division, in writing, a plan to cure the deficiency, or a statement of reasons why it disagrees with the EMS Division's notice. The SRC shall cure the deficiency within thirty (30) calendar days of receipt of notice of violation. If the Hospital fails to cure the deficiency within the allowed period or disputes the validity of the alleged deficiency, the issue will be brought to the Emergency Medical Care Advisory Board (EMCAB) for adjudication. EMCAB may make a recommendation to the EMS Division for resolving the issue.

## INTERIM DESIGNATION

The ability for a hospital to obtain accreditation requires that the hospital receive STEMI Patients. Under this Policy, a hospital cannot attain SRC Designation unless it has been previously accredited. Consequently, upon implementation of this Policy, it will be impossible for a hospital to attain accreditation and eventual full SRC Designation unless a mechanism is included that provides the opportunity to attain accreditation.

A hospital meeting all of the Designation criteria listed in Section A., above except No. 3 (*accreditation as a "Heart Attack Receiving Center" from the American Heart Association, Mission: Lifeline program or from the Society of Cardiovascular Patient Care*) may be granted an SRC designation on an interim basis. The interim designation shall allow the hospital to receive STEMI Patients by ambulance. The interim designation time period shall be specified in the SRC agreement with the County of Kern, and the time period shall not exceed 18 months.

Interim Designation allows a hospital lacking accreditation to participate as an SRC Designated facility. All performance standards are applicable to a hospital with Interim Designation, and the application process for Interim Designation shall be the same as the application process for SRC Designation.

## APPLICATION PROCESS FOR SRC DESIGNATION

- A. The following milestones outline the application process for a hospital to become designated as a STEMI Receiving Center.
  1. Review list of requirements and checklist of documents, found at *Appendix B - STEMI Receiving Center Designation Criteria Application and Evaluation Tool*, which must be compiled and submitted with the application.
  2. Submit letter of application to the EMS Division. The letter will contain:
    - a. Specify intent to obtain SRC designation;
    - b. Identify the names and contact information, including email addresses for the key STEMI personnel: the STEMI Medical Director, RN Program Manager, and Administrative contact;
    - c. Identify the anticipated target date for SRC designation; and
    - d. List of supporting documents being submitted with the letter to fulfill the designation requirements.
  3. Compile and submit to the EMS Division all information and documents requested in *Appendix B, Column 2, "objective measurement"* of the *STEMI Receiving Center Designation Criteria Application and Evaluation Tool*.
  4. All application materials will be reviewed for completeness. Additional information will be requested, if needed. Upon determination that the application is complete, the applicant and EMS Division will work towards execution of the designation agreement.
  5. STEMI Center Designation agreement will be presented to the Board of Supervisors for approval and formal designation.

## SRC PERFORMANCE STANDARDS

Hospitals obtaining SRC designation meet a high standard of cardiac care. Successful attainment of “Heart Attack Receiving Center” accreditation from the American Heart Association, Mission: Lifeline program or accreditation as a Chest Pain Center by Society of Cardiovascular Patient Care ensures that the clinical processes, equipment, and personnel are in place to provide a higher standard of care than that available at a non-designated facility. The performance standards listed below are intended to reflect the accreditation requirements and to ensure that each designated SRC continually strives to meet each of these standards.

- A. SRC designated hospitals shall be in continuous compliance with the following general standards:
1. HOSPITAL shall provide for the triage and treatment of simultaneously presenting STEMI patients regardless of ICU/CCU or ED overload status.
  2. HOSPITAL shall provide STEMI Receiving Center Services to any STEMI Patient that comes to the emergency department, regardless of the STEMI Patient’s ability to pay physician fees and/or hospital costs. For the purpose of this Agreement, the phrase “comes to the emergency department” shall have the same meaning as set forth in the Emergency Medical Treatment and Active Labor Act (42 U.S.C § 1395dd) and the regulations promulgated thereunder (EMTALA).
  3. HOSPITAL shall notify the EMS Division within twenty-four (24) hours of any failure to meet STEMI Designation Policy performance standards. Hospital will identify its action to correct the deficiency.
  4. HOSPITAL shall maintain a designated telephone number (Hotline) to facilitate rapid interfacility transfer and access to SRC physician for consultation with SRH physicians and other providers regarding care and transfer of STEMI Patients.
  5. HOSPITAL shall accept all STEMI patients from SRH facilities, within the County, upon notification of “STEMI ALERT” and request by the transferring physician.
  6. HOSPITAL shall actively and cooperatively participate in the “STEMI QI Committee,” and such other related committees that may, from time to time, be named and organized by the EMS Division related to the STEMI System of Care.
  7. HOSPITAL shall maintain a STEMI Information System and submit the data elements to the ACTION Registry-GWTG™, at time intervals established by GWTG to produce Mission Lifeline reports in addition to processing of quarterly performance reports from Action Registry-GWTG. Each SRC shall submit data elements to GWTG that achieves compliance with the Premier level data and reporting standard. HOSPITAL shall collect, maintain, and report any additional data points adopted by the STEMI QI Committee.
- B. SRC designated hospitals shall be in continuous compliance with the following service standards:
1. Maintain intra-aortic balloon pump capability with necessary staff at all times.
  2. Possess a California permit for cardiovascular surgery, *or* have a written plan for emergency transport to a facility with cardiovascular surgery available within 1 hour of transfer. If the facility does not have a cardiovascular surgery permit, a transfer agreement with the cardiovascular surgery facility shall be in full effect.
  3. Provide continuous availability of PCI resources at all times.

- C. SRC designated hospitals shall be in continuous compliance with the following personnel standards:
1. SRC Medical Director - The SRC shall designate a medical director for the STEMI program who shall be a physician certified by the American Board of Internal Medicine (ABIM) with current ABIM sub-specialty certification in Cardiovascular Disease and Interventional Cardiology, who will ensure compliance with these SRC standards and perform ongoing Quality Improvement (QI) as part of the hospital and system QI Program.
  2. SRC Program Manager - The SRC shall designate a program manager for the STEMI program who shall be a registered nurse with experience in Emergency Medicine or Cardiovascular Care, who shall assist the SRC Medical Director to ensure compliance with these SRC standards and the QI program.
  3. Cardiovascular Lab Coordinator - The SRC shall have a Cardiovascular Lab Coordinator who shall assist the SRC Medical Director and the SRC Program Manager to ensure compliance with these SRC Standards and the QI Program.
  4. Physician Consultants - The SRC shall maintain a daily roster of the following on-call physicians who must be available within 30 minutes when a STEMI patient presents to the hospital or notification of "STEMI Alert" is received from pre-hospital personnel via radio or telephone communications, whichever occurs first:
  5. Interventional Cardiologists – Specialty trained physicians with privileges for SRC and credentialed by the hospital in accordance with the American College of Cardiology/American Heart Association national standards.
    - i. The SRC will submit a list of Cardiologists with active SRC privileges to the EMS Division by February 1 of each year.
  6. Other personnel who must be promptly available and present in the SRC within 30 minutes of the activation of the SRC's internal STEMI/PCI system including:
    - i. Appropriate cardiac catheterization nursing and support personnel.
    - ii. RN or CV perfusionist trained in intra-aortic balloon pump management.
- D. SRC designated hospitals shall comply with the clinical performance standards:
1. ACC/AHA guidelines for activity levels of facilities and practitioners for both primary PCI and total PCI events are adopted herein and may require periodic updating to meet changing accreditation standards. The intent of establishing these standards is to ensure that the SRC is able to attain and maintain accreditation by AHA/Mission Lifeline, which is an indicator of competency and high performance.
    - i. Cardiac Catheterization Laboratory Standards
    - ii. SRC shall perform a minimum of 36 primary PCI procedures and 200 total PCI procedures annually.
  2. Interventional Cardiologist Standards

- i. Ideally, each Interventional Cardiologist should perform a minimum of 11 primary (i.e., emergency) PCI procedures and 75 total (emergency plus elective) PCI procedures per year.
    - ii. If a medical Practitioner does not perform 75 cases a year, a peer review process shall be in place to mentor the practitioner.
    - iii. Hospitals are not precluded from establishing more stringent standards.
    - iv. The STEMI QI Committee shall assess system performance, identify strengths and weaknesses, and make recommendations for improvements and standards.
  3. Performance (timeliness) and outcome measures will be assessed initially in the accreditation process, and will be monitored closely on an ongoing basis by the SRC and the EMS Division through the STEMI QI Committee.
  4. The SRC shall develop internal operational policies and procedures which includes the following activities/areas:
    - i. Cardiac interventionist activation
    - ii. Cardiac catheterization lab team activation
    - iii. STEMI contingency plans for personnel and equipment
    - iv. Coronary angiography
    - v. PCI and use of fibrinolytics
    - vi. Inter-facility transfer policies/protocols for STEMI
    - vii. Transfer agreements for cardiac surgery, as appropriate
    - viii. STEMI patient triage
- E. SRC designated hospitals shall participate in performance improvement program for EMS Patients including:
  1. An SRC shall provide the following representatives to participate in the countywide EMS Division STEMI QI Committee:
    - i. The SRC Medical Director
    - ii. The SRC Program Manager
    - iii. One QI staff member
  2. The countywide STEMI QI Committee will hold regular multidisciplinary meetings that include representatives from each STEMI Receiving Center (SRC), each STEMI Referral Hospital (SRH), prehospital providers, and representatives from the EMS Division.
  3. An SRC shall implement a written internal SRC QI plan/program with an internal review process that includes:



- i. Door-to Balloon times
    - ii. Death rate (within 30 days, related to procedure regardless of mechanism)
    - iii. Emergency CABG rate (result of procedure failure or complication)
    - iv. Vascular complications (access site, transfusion, coronary perforation or operative intervention required)
    - v. Cerebrovascular accident rate (peri-procedure)
    - vi. Sentinel event, system and organization issue review and resolution processes
  - 4. An SRC shall participate in prehospital STEMI-related educational activities as may be required by the EMS Division
- F. SRC designated hospitals shall be in continuous compliance with the following data collection, submission, and analysis standards:
- 1. An SRC shall participate in data collection as defined in Appendix A: *Mandatory Data Elements for STEMI Receiving Centers*. Data element requirements are subject to change at Division's discretion.
  - 2. Data shall be used for quality improvement purposes by the STEMI QI Committee, and data submitted by SRC and SRH facilities is considered to confidential under the provisions of Evidence Code Section 1157.7.
  - 3. The Division may publically report aggregated data about the STEMI system which is derived from any of the individual data elements.

## CONCEPT OF OPERATIONS OF THE STEMI SYSTEM OF CARE

### A. Pre-Hospital: Ambulance/Paramedic Responsibilities

- 1. 12-Lead ECG: Upon an assessment finding of possible cardiac origin, paramedic shall conduct a 12-Lead ECG, if ambulance is so equipped.
- 2. Machine Read: 12-Lead ECG monitor will display a finding. Paramedic will use the finding provided by the monitor to determine if the patient is positive for STEMI.
- 3. STEMI Alert Early Notification: Upon receiving a positive STEMI finding on the 12-Lead ECG monitor, paramedic shall immediately contact the destination hospital and issue a "STEMI ALERT". Paramedic will send the 12-Lead report to the E.D., if equipment is capable.
- 4. Destination: parameters for STEMI patient
  - i. Positive STEMI read on ECG monitor goes to closest, most appropriate SRC
  - ii. If anticipated transport time is greater than 30 minutes to SRC, and another hospital is closer, patient shall be transported to closest hospital

4. Paramedic shall follow appropriate treatment protocol during transport

## B. Hospital Relationships and Coordination

### 1. Transfer Agreements/Requirements

- i. Rapid Transfer – SRC Automatic Acceptance of STEMI Patient from Transferring Hospital
- ii. Each STEMI Receiving Center (SRC) agrees to accept all “STEMI ALERT” patients from any Non-PCI Hospital (SRH) located within Kern County, so long as SRC’s E.D. is on “OPEN” status.

### 2. Specific Language to initiate rapid transfer

- i. The term, “STEMI ALERT” will be used by paramedics as well as STEMI Referring Hospital (SRH) staff in order to notify the SRC of an incoming STEMI patient. “STEMI ALERT” shall be understood by all hospital staff as well as ambulance dispatchers to mean an emergent cardiac event is in progress with rapid treatment and transport necessary.

### 3. Standardized treatment protocol for non-STEMI hospitals

- i. The first duty of the Cardiac Audit Committee shall be to develop a treatment procedure/protocol for the Non-PCI hospitals (SRH) within the County.
- ii. Once developed and implemented, the STEMI System of Care will operate as a cohesive and comprehensive organization to consistently address the needs of the STEMI Patient, regardless of the point of entry into the system.

## C. Community STEMI Education

1. Awareness - It is imperative that each SRC and SRH recognize the need for community awareness as we work together to improve heart health in Kern County.
2. Actions to take - Each SRC and SRH must be active participants in and working together to promote public awareness activities, i.e. public service announcements, print ads, community events, task forces and classes. Education should focus on the “Chain of Survival” for a heart attack and sudden cardiac arrest, and include:
  - i. Recognition of a cardiac emergency
  - ii. Calling “911” immediately because “time is muscle” and “EMS brings the emergency room to the patient”
  - iii. Initiation of CPR through use of appropriate chest compressions
  - iv. Use of an automated external defibrillator (AED)
3. Other community education themes might include:
  - i. Heart disease is the leading cause of death

- ii. Heart disease is preventable. People can reduce their chance of developing heart disease by controlling risk factors such as obesity, high blood pressure, and high cholesterol.
  - iii. Signs and symptoms of heart attack
  - iv. Risk factors for heart disease
  - v. Time-sensitive window for EMS/treatment response
4. Public Reporting of Performance Data - A large part of public awareness begins with data reporting. Pertinent aggregated STEMI System data showing the performance of the STEMI System of Care shall be posted publically. The following aggregated performance measurements will be publically released, and additional reports may published upon recommendation of the STEMI QI Committee.
- i. Symptom onset time to EMS Call Time
  - ii. EMS Scene time to First 12-Lead ECG Time
  - iii. EMS First 12-Lead time to E.D. arrival time
  - iv. E.D. arrival time to Cath Lab Activation time
  - v. Cath Lab Activation time to Cath Lab Arrival Time
  - vi. E.D. Door to Balloon Time

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## **Appendix A - Mandatory Data Elements for STEMI Receiving Centers**

HOSPITAL shall maintain a STEMI Information System and submit the data elements to the ACTION Registry-GWTG™, at time intervals established by GWTG to produce Mission Lifeline reports in addition to quarterly reports from Action Registry-GWTG. Each SRC shall submit data elements to GWTG that achieves compliance with the Premier level data and reporting standard. HOSPITAL shall, collect maintain, and report any additional data points adopted by the STEMI QI Committee.

**APPENDIX B - STEMI Receiving Center Designation Criteria Application and Evaluation Tool**

| Column 1   | Column 2   | Column 3        | Column 4  |
|--|--|-----------------|---|
| STEMI Designation Contract Standard  | Objective Measurement  | Meets Standards | Comments  |
| <b>HOSPITAL SERVICES</b>   |  |                 |   |
| Current license to provide Basic Emergency Services in Kern County               | Copy of License  | Y N             | Required for designation  |
| Current Certification to operate as a Paramedic Base Station in Kern County      |  | Y N             | Required for designation  |
| Cardiac Catheterization Laboratory Services                                      | Copy of License. Number Cardiac Catheterization Labs ___ on License  | Y N             | Required for designation  |
| Intra-aortic balloon pump capability with staffing available to operate 24/7/365 | Intra-aortic balloon pump capability # patients: _____<br>Staffing policies/protocols supporting operations  | Y N             | Required for designation  |
| Inter-facility TRANSFER GUIDELINES or COOPERATIVE ARRANGEMENTS                   | Description of current cooperative practice or copy of supporting policies, procedures or guidelines. List all hospitals collaborating with and for what type services | Y N             | Required for designation<br>List of facilities and description of cooperative arrangements (SRC's and Non STEMI centers) for CV surgery and PCI interventions within STEMI time frame standards |
| California permit for cardiovascular surgery                                     | CA permit number and effective and expiration dates.<br>Number of Operating Suites on License  | Y N             | <b>Desired not required</b><br>ACC/AHA Guideline conformance for centers without back up CV surgery will be evaluated in consideration of waiver by EMS medical director                        |
| If no cardiac surgery capability, must have:<br>Plan for emergency transfer      | Plan, Policy, Procedure with estimated travel  | Y N             | Required for designation. Hospitals without surgical services:<br>Written guidelines or description of  |

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|   | time   |     | current processes for rapid transfer of patients requiring additional care. Including elective or emergency cardiac surgery or PCI. |
| Plan to transfer within 1 hour  | Supporting policies and procedures   | Y N | Required if no CV Surgery   |
| Written transfer guidelines for service   | Transfer policies and procedures   | Y N | Required if no CV Surgery   |
| Continuous availability of PCI resources 24 hours a day 7 days a week 365 days a year.  | On-Call Schedules for 3 months. On-Call Policy/Procedure                                 | Y N | Required for designation  |
| <b>HOSPITAL PERSONNEL</b>   |  |     |   |
| <p>SRC PROGRAM MEDICAL DIRECTOR Responsibilities:</p> <ol style="list-style-type: none"> <li>1. Oversight of STEMI program patient Care</li> <li>2. Coordinating staff and services</li> <li>3. Authority and accountability for quality /performance improvement</li> <li>4. Participates in protocol development</li> <li>5. Establishes and monitors quality control, including Mortality and Morbidity</li> <li>6. Voting Member Cardiac Audit Committee</li> </ol> | <p>Copy of Current Board Certification</p> <p>Copy of Job Description</p>                | Y N | Required for designation  |
| <p>SRC RN PROGRAM MANAGER Responsibilities:</p> <ol style="list-style-type: none"> <li>1. Supports SRC Medical Director Functions</li> <li>2. Acts as EMS-STEMI Program Liaison</li> <li>3. Assures EMS-Facility STEMI data sharing</li> <li>4. Manages EMS-Facility STEMI QI activities</li> <li>5. Authority and accountability for QI/PI</li> <li>6. Facilitates timely feedback to the field providers</li> <li>7. Voting member Cardiac Audit Committee</li> </ol> | <p>Copy of RN License</p> <p>Copy of Job Description</p> <p>Copy of Policy/Procedure</p> | Y N | Required for designation  |

|   |   |   |   |  |
|---|---|---|---|--|
| SRC CCL MANAGER/COORDINATOR   | Copy of RN License if not reporting directly to program manager<br><br>Copy of Job Description  | Y | N | Required for designation   |
| Physician Consultants:<br>1. Interventional Cardiologist<br><br>2. CV Surgeon | On-Call schedules x 3 months<br><br>Current Board Certification in Cardiovascular Disease<br><br>On-Call Schedules x 3 months                       | Y | N | Required for designation   |
| <b>CLINICAL CAPABILITIES</b>  |   |   |   |  |
| Clinical Volume Performance:  | Hospital volume of STEMI interventionalists procedures showing total case volume for all PCI cases and primary PCI Cases for the previous 12 months | Y | N | Required for designation<br><br>ACC/AHA Recommendations:<br><br>36 Primary PCI / 200 PCI Total Cases   |
| Physician Volume:   | Roster of on-call physicians and documentation showing primary and total PCI volume, per physician for previous 12 months                           | Y | N | Required for designation<br><br>ACC/AHA Recommendations:<br><br>11 Primary PCI / 75 PCI Cases<br><br>This requirement may be met based on activity at more than one hospital |
| Process Performance:  | Door to balloon inflation times for previous 12 months  | Y | N | Required for designation<br>ACC/AHA Recommendations:<br>Door to balloon inflation times <90 minutes (75% compliance)   |
| <b>POLICIES AND PROCEDURES</b>  |   |   |   |  |

|   |   |   |   |  |
|---|---|---|---|--|
| Interventional Cardiologist Activation                                      | Policy/Procedure  | Y | N | Required for designation   |
| Cardiac catheterization laboratory team activation                          | Policy/Procedure  | Y | N | Required for designation   |
| STEMI contingency plans<br>1. Personnel<br>2. Cath Lab facility & equipment | Pertinent policy & procedures to minimize disruption  | Y | N | Required for designation<br>Expectation of NO DIVERSION  |
| Coronary angiography  | Policy, Procedure, and/or Guidelines  | Y | N | Required for designation   |
| PCI and use of fibrinolytics  | Policy, Procedure, and/or Guidelines  | Y | N | Required for designation<br>Process by which fibrinolytic therapy and PCI can be delivered rapidly to meet the following goals:<br>Fibrinolytics within 30 minutes of ED and Door-to-balloon time within 90 minutes of ED arrival. |
| Interfacility transfer for STEMI policies or protocols                      | Policy, Procedure, and/or Guidelines  | Y | N | Required for designation   |
| <b>PERFORMANCE IMPROVEMENT</b>  |   |   |   |  |
| Systematic Internal Review Program  | Review protocol/program description to deal with:<br><br>Door-to Balloon times<br><br>Deaths<br><br>Emergency CABG<br><br>Vascular complications<br><br>Sentinel event<br><br>System issues<br><br>Organizational issue | Y | N | Policy and procedure or program description only required for initial designation<br>Ongoing expectation   |
| Systematic Prehospital Review   | Written quality   | Y | N | QI plan or policy only required for initial  |



|   |   |        |  |
|---|---|--------|--|
| Program   | improvement plan or program description for EMS-transported STEMI patients supporting:<br>Timely prehospital feedback,<br>Prehospital provider education,<br>Cooperative STEMI QI data management |        | designation<br>Ongoing expectation<br><br>Data Collection and Management based on STEMI EMS data elements          |
|   |   |        |  |
| Mechanism to participate in timely outcome field feedback of STEMI patients | Participation in Field QI process   | Y    N | EMS to act as point agency to facilitate communication of outcome information for field QI.<br>Ongoing expectation |
| Prehospital STEMI related educational activities                            | Commitment to STEMI Prehospital Education Plan for prehospital education activities   | Y    N | Plan required for initial designation<br>Ongoing expectation   |
| <b>DATA COLLECTION, SUBMISSION AND ANALYSIS</b>                             |   |        |  |
| Participation in Kern County EMS data collection                            | Document agreeing to provide data elements deemed mandatory by Kern County EMS  | Y    N | Name and contact information of responsible personnel required for designation                                     |
|   |   |        |  |

## APPENDIX C - STEMI QI Committee Purpose and Structure

### PURPOSE

Care of the STEMI patient requires a system approach to ensure optimal care. To assist the EMS Division in its quest to achieve best care possible, the STEMI QI Committee shall assess, monitor, and facilitate the Quality Improvement (QI) process for the Kern County STEMI Centers.

### AUTHORITY

Health and Safety Code Division 2.5  
California Evidence Code, Section 1157.7  
California Civil Code, Part 2.6, Section 56

### DEFINITION

“STEMI QI Committee” means the multi-disciplinary peer-review committee, composed of representatives from the STEMI Receiving Centers, STEMI Referral Hospitals, Prehospital care providers, and other professionals designated by the EMS Division, which audits the STEMI Care System, makes recommendations for system improvements, and functions in an advisory capacity on other STEMI Care System issues.

### COMMITTEE MEMBERSHIP

#### 1. Membership Composition

- a. SRC Members:
  - i. SRC Medical Director
  - ii. SRC E. D. Physician
  - iii. SRC Program Manager
  - iv. QI Staff Member
  
- b. SRH Members:
  - i. E.D. Physician
  - ii. E.D. Nurse
  - iii. QI Staff Member
  
- c. Prehospital Members:
  - i. Operations Manager
  - ii. Provider Medical Director
  - iii. Field Supervisor
  - iv. Field Paramedic
  
- d. EMS Members:

- i. Director
- ii. EMS Medical Director
- iii. EMS Coordinator
- iv. Public Health Epidemiologist

2. Confidentiality

To the extent Evidence Code Section 1157.7 is applicable, closed meetings will occur when business addressed by 1157.7 is being transacted. The Committee's 1157.7 business, records and minutes shall be considered confidential and all members are prohibited from any unauthorized disclosures.

At each meeting members and attendees will sign a statement of confidentiality as a condition of participation.

3. Schedule/Location

The STEMI QI Committee shall meet quarterly on the last Wednesday of the month at 1800 Mount Vernon Ave. Time and Conference room to be determined.

4. Case Review Instructions

Each meeting participants will present the results of the monthly data submitted by each SRC. Each SRCs data will be discussed and evaluated in a structured process focusing on outcomes. The committee will work together to identify root causes of problems, intervene to reduce or eliminate those causes, and take steps to correct the process and recognize excellence in performance and delivery of patient care.

In addition, on a rotating basis, each SRC will present case reviews to the committee. These reviews should highlight difficult, challenging or exceptional cases that might provide valuable information to the other members of the committee.

5. PowerPoint format

All presentations are to be formatted in PowerPoint and sent to the EMS Coordinator assigned to the committee one (1) week prior to the quarterly meeting. Any audio or video files should accompany the PowerPoint.

6. Recommendations for System Improvement

The Committee will develop recommendations for improvement of the STEMI system. Recommendations will be presented at the EMS System Collaborative meeting and to the EMS Medical Director.

## APPENDIX D - STEMI QI Committee Bylaws

### 1. NAME

This Committee shall be referred to as the "STEMI QI Committee", hereinafter referred to as the "COMMITTEE".

### 2. IMPLEMENTATION AUTHORITY

- a. The COMMITTEE is established by the County of Kern, Emergency Medical Services Division (DIVISION) Medical Director as an advisory committee to the DIVISION. The DIVISION is responsible to receive hospital and service provider input and direction specific to STEMI patient emergency medical care in the County.
- b. The COMMITTEE is created pursuant to the requirements of California Evidence Code, Section 1157.7 and California Code of Regulations, Title 22, Division 9, Prehospital Emergency Medical Services, Chapter 12, EMS System Quality Improvement.

### 3. STATEMENT OF PURPOSE

- a. To promote region-wide standardization of STEMI care.
- b. To monitor, evaluate and report on quality of training, care and transportation, including compliance with laws, regulations, policies and procedures and recommend revisions and/or corrective action as necessary.
- c. To make recommendations specific to EMS provider, hospital and DIVISION data collection and dissemination.

### 4. DUTIES

- a. Participate with DIVISION in monitoring, collecting data on, and evaluating STEMI patient identification, treatment and transport from the EMS providers and hospitals within the DIVISION'S jurisdiction.
- b. Re-evaluate, expand upon, and revise as needed, locally developed indicators used by the COMMITTEE for STEMI patient quality improvement.
- c. All patient care records and other confidential materials will be returned to the provider agency at the end of each meeting.

### 5. MEMBERSHIP

Voting Membership will include the following representatives from the DIVISION'S region:

- a. One Cardiac Catheterization Laboratory Physician Medical Director from each SRC.
- b. One Program Manager from each SRC.
- c. One Emergency Department Physician representative from each SRH.
- d. One Emergency Department RN from each SRH.
- e. One Operations Manager from each prehospital agency.
- f. One Medical Director or Field Supervisor from each prehospital agency

Non-Voting membership will include representatives of the DIVISION.

Each member shall have a clinical person alternative available to assume the member's responsibility in their absence, but this is not a proxy vote in a member's absence. There is only one vote per voting member attending the meeting. Cardiac Catheterization Laboratory alternates may be another physician, a Registered Nurse(RN), a Registered Cardiovascular Invasive Specialist (RCIS), or program manager.

6. OFFICERS

- a. The COMMITTEE shall elect a Chair and Vice-Chair.

7. TERMS

- a. Officers shall be elected by the COMMITTEE for yearly terms commencing July 1 through June 30<sup>th</sup>.
- b. If the Chair's office is vacated prior to the term's end, the Vice-Chair will assume the duties for the remainder of the term and a new Vice-Chair will be elected.
- c. If the Vice-Chair's office is vacated prior to term's end, a replacement will be elected.
- d. Members shall serve at the will of the COMMITTEE, or until removed, resigned or replaced.
- e. Members who are unable to attend a regularly scheduled meeting should notify the DIVISION of their absence prior to the meeting and should send an alternate in their place.

8. MEETINGS, VOTING, QUORUM

- a. Meetings shall be held no less than four (4) times in a calendar year. Meeting dates and times to be set or modified as agreed to by the COMMITTEE.
- b. Special meetings may be called by the DIVISION Medical Director or Chair as appropriate or upon written request of a majority of COMMITTEE members.
- c. A quorum to conduct business shall consist of five eligible voting members.
- d. The Chair will preside over meetings and participate with the DIVISION in the preparation of the agenda.
- e. Meetings will be conducted in a fair and professional manner.
- f. The COMMITTEE shall operate under commonly accepted procedures and Chair shall conduct of meetings in a fair and productive manner.
- g. Votes shall be recorded as:
  - a. In Favor
  - b. Opposed
  - c. Abstain
- h. The DIVISION will be responsible for preparing the agenda and taking and maintaining the minutes.
- i. Attendance by teleconference or videoconference is acceptable so long as communications are adequate to conduct the business of the Committee.

9. AMENDMENT OF BYLAWS

- a. Any rule or procedure of the COMMITTEE may be enacted, amended, repealed or suspended by a majority vote of the voting membership.

10. CONFLICT OF INTEREST

- a. Members and officers shall disclose any direct personal or pecuniary (momentary) interest in any subject or conversation before the COMMITTEE and will abstain from voting on any motion relative to that subject.

11. CONFIDENTIALITY

- a. To the extent Evidence Code Section 1157.7 is applicable, closed meetings will occur when business addressed by 1157.7 is being transacted. The COMMITTEE'S 1157.7 business, records, and minutes shall be considered confidential and all members are prohibited from any unauthorized disclosures.
- b. Members and attendees will sign a statement of confidentiality as a condition of participation.

12. EFFECTIVE DATE

- a. These Bylaws shall be effective upon approval by the COMMITTEE.

APPROVED \_\_\_\_\_ DATE \_\_\_\_\_

APPENDIX E  
SUGGESTED THROMBOLYTIC ASSESSMENT WORKSHEET / CHECKLIST

This section is to establish the standard for treatment of STEMI patients that present at STEMI Referral Hospitals. It is expected that this standard of care will be implemented at all hospitals in the County that have not been designated as a STEMI Receiving Center.

STEMI patients presenting without reasonable chance of emergency primary PCI at a STEMI Receiving Center **within 90 minutes of presentation** should undergo thrombolysis **within 30 minutes unless contraindicated** (based on AHA/ACC Class I evidence)

**In general, short symptom duration, age <75, large infarcts, anterior ST elevation, large reciprocal changes and clear ECG evidence of STEMI indicate patients who may derive the greatest benefit from early administration of thrombolytics if transport time (from now to balloon up /PCI) exceeds 1 hour.**

**I. Consider thrombolytics as the preferred therapy if all the following are true:**

- Y / N \*\*Transportation time is likely more than 1 hour\*\*?**

(Usually the case if air transport is not immediately available)

- Y / N** Symptoms started less than **3 hours** ago?
- Y / N** Clear ST elevation in 2 or more contiguous leads >1mm **or** new LBBB?
- Y / N** Patient has no absolute contraindications to thrombolytics? (listed below)
- Y / N** Patient stable w/o signs of cardiogenic shock? (for shock, PCI is preferred)

**II. Absolute contraindications: Avoid thrombolytics if any answer is “yes”**

- Y / N** Has the patient ever had an intracranial hemorrhage?
- Y / N** Does the patient have a known cerebral vascular lesion (i.e. AVM)?
- Y / N** Is the patient suffering from primary or metastatic brain cancer?
- Y / N** Has patient had an ischemic stroke **within 3 months** but not within 3 hrs?
- Y / N** Do you think the patient is having an aortic dissection?
- Y / N** Is the patient currently having active bleeding? (excluding menses)
- Y / N** Has patient had significant closed head or facial trauma within 3 months?

**III. Relative contraindications: Benefit of PCI may be > thrombolytics, particularly if multiple factors are present. Reasonably assess combined factors.**

- A questionable dx of STEMI (ECG findings not clear or not diagnostic)?
- History of chronic severe, poorly controlled hypertension?
- Severe hypertension on presentation (SBP >180 or DBP >110)?
- History of stroke over (3) months ago or ? intracranial pathology (not ICH or CA)?
- Recent, vigorous CPR for > 10 minutes or major surgery within 3 weeks?
- Internal bleeding within 2-4 weeks but not currently?
- Non-compressible vascular punctures / Pregnancy?
- Prior multiple cardiac stents or known hx of severe CAD?
- Age over 80? (age alone is NOT a contraindication to thrombolytics)

**IV. If patient clearly fits criteria for thrombolytic therapy, proceed immediately!** If you are not sure, prepare for thrombolysis while waiting to talk to MD. Continue to work on transport options. Stable post-lytic patients may not need air transport.

**V. TNK (Tenecteplase) Tissue Plasminogen Activator instructions and dosing**

**Remember, Time = Muscle! Door to needle goal <30 minutes!**

TNK is weight based. TNK is *a single bolus* injection only.

| <u>Patient's Weight</u> | <u>TNK dose</u> | <u>TNK Volume</u> |
|-------------------------|-----------------|-------------------|
| a. < 60 Kg              | 30 mg           | 6 ml              |
| b. 60-70 Kg             | 35 mg           | 7 ml              |
| c. 70-80 Kg             | 40 mg           | 8 ml              |
| d. 80-90 Kg             | 45 mg           | 9 ml              |
| e. >90 Kg               | 50 mg           | 10 ml             |

**VI. Preparation**

1. Patient should have an IV of N saline.
2. Remove "shield assembly" from 10cc syringe. *Note:* do not discard.
3. Withdraw 10 ml of sterile water from (provided) vial using "red hub" device.
4. Gently inject sterile water into TNK vial onto TNK powder.



5. Gently swirl contents; *do not shake or agitate*. Concentration is 5 mg/ml. It should be colorless to clear - pale yellow.
6. When the decision to give TNK is made, **Heparin should be administered before or concurrently** with TNK.

#### **VII. Administration**

1. Withdraw appropriate patient dose from TNK mixture.
2. Stand "shield assembly" vertical on countertop (green cap down) and recap red hub
3. Remove entire shield assembly including red hub.
4. TNK is ready to inject as a bolus through a needleless hub into a saline solution IV line.
5. Inject TNK as bolus over 5 seconds.
6. Discard remaining TNK if physician concurs.

Remember to give Heparin in addition to TNK!

## APPENDIX F

### BYPASSING A STEMI REFERRAL CENTER (non-PCI hospital)

#### I. Bypassing a STEMI Referral Center (non-PCI hospital)

A. In an effort to assure that the STEMI patient is transported to the most appropriate facility, bypassing a non-STEMI (Non-PCI) facility, when 30 minutes or greater outside of metropolitan Bakersfield, is acceptable as long as the following criteria are met:

- Patient is displaying signs and symptoms of a cardiac related event
- Patient is **NOT** displaying signs and symptoms of an **Aortic Dissection** (i.e. Acute tearing, ripping, or shearing sensation to chest or back radiating to the neck and/or down back).
- A 12 Lead ECG has been completed with a reading of “Acute MI” or “Left Bundle Branch Block”
- The following questions have been answered with at least one (1) **YES** response:
  1. Yes/No            Systolic blood pressure is greater than 180 mm Hg
  2. Yes/No            Diastolic blood pressure greater than 110 mm Hg
  3. Yes/No            Right vs. left arm systolic blood pressure difference is greater than 15mm Hg
  4. Yes/No            History of structural central nervous system disease
  5. Yes/No            Significant closed head/facial trauma within the previous three months
  6. Yes/No            Major trauma, surgery (including laser eye surgery), GI/GU bleed (within six weeks)
  7. Yes/No            Bleeding or clotting problem or taking blood thinners
  8. Yes/No            CPR greater than 10 minutes
  9. Yes/No            Pregnant female
  10. Yes/No            Serious systemic disease (e.g., advanced/terminal cancer, severe liver or kidney disease)
  11. Yes/No            Pulmonary edema (rales greater than halfway up)
  12. Yes/No            Systemic hypoperfusion (cool, clammy)
- Base contact has been made with a STEMI Receiving Center confirming that the patient falls out of the thrombolytic therapy protocol and the base hospital physician concurs with the decision to bypass.