



Emergency Medical Services Division Policies – Procedures – Protocols

STEMI System of Care (4003.00)

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”: Any patient with an acute myocardial infarction that generates ST-segment elevation on a 12-lead ECG of greater than 1mm in 2 contiguous leads and/or prehospital 12-lead computer interpretation of ***Acute MI*** / STEMI.
- E. “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.
- F. EMS “STEMI Alert”: A prehospital activation that notifies a STEMI Receiving Center, as early as possible (goal \leq 10 minutes from FMC), of a patient with a SRH STEMI Alert allows the SRC to activate the internal STEMI processes. to provide appropriate and rapid treatment interventions.
- G. “STEMI Receiving Center” (SRC): An acute care hospital designated by the Local EMS Agency that is capable of appropriately treating a patient having a STEMI with PCI and other interventional cardiology procedures to restore circulation to a blocked artery.

- H. "STEMI Referral Hospital" (SRH): An acute care hospital in the County that is not designated as a STEMI Receiving Center contacts the SRC for STEMI Alert by calling the SRC hotlines and implements rapid initial interventions and rapid door-in/door-out transfer to the SRC.
- I. "STEMI QI Committee": the multi-disciplinary peer-review committee, composed of representatives as specified in this policy, which monitors and analyzes the STEMI System of Care metrics, makes recommendations for STEMI system for process, performance, and quality 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. Maintains current *accreditation with an EMS approved body*. Accept the Kern County STEMI System of Care Memorandum of Understanding for STEMI transfers whereby SRC agrees to immediately and rapidly accept the transfer of a STEMI Patient from the transferring SRH/SRC upon notification of STEMI ALERT and request by the SRH/SRC-affiliated physician.
 - 4. 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 a deficiency notice and plan of action and/or termination of designation. Inability to maintain Designation criteria, listed in A., above, or
 - 1. Failure to meet the SRC Performance Standards, listed below and as may be amended from time to time, or
 - 2. Failure to comply with any Local, State, or Federal Government policy, procedure, or regulation of the STEMI System of Care.

If EMS Division finds a SRC to be deficient in meeting the above criteria, EMS will give the SRC written notice, 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 EMS, in writing, a plan to cure the deficiency, or a statement of reasons why it disagrees with the EMS Division's notice. If the Hospital fails to cure the deficiency within 30 days a second written notice will be sent by EMS advising the hospital that failure to cure the deficiency will result in suspension of designation. If deficiency is not cured within the following 30 days hospital will receive a third and final letter suspending designation pending correction of the deficiency. If the hospital disputes the validity of the alleged deficiency, hospital will receive a temporary suspension of their designation and the issue will be brought to the Emergency Medical Care Advisory Board (EMCAB) for adjudication.

INTERIM DESIGNATION

A hospital meeting all of the Designation criteria listed in Section A., above except No. 3 (*accreditation as approved by EMS*) 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 seeking accreditation to participate as an SRC Designated facility. All performance standards are applicable to a hospital with Interim Designation, and the SRC 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:
 - i. Specify intent to obtain SRC designation;
 - ii. Identify the names and contact information, including email addresses for the key STEMI personnel: the STEMI Medical Director, RN Program Manager, and Administrative contact;
 - iii. Identify the anticipated target date for SRC designation; and
 - iv. 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. The SRC 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 an agreement with the nationally recognized STEMI database registry approved by EMS, and agrees to allow for the release of all STEMI data directly from said database registry to EMS for the purpose of oversight and to produce System reports. HOSPITAL shall collect, maintain, and report any additional data points adopted by the STEMI QI Committee and/or mandated by EMS.
- B. SRC designated hospitals shall be in continuous compliance with the following service standards:
 1. Maintain intra-aortic balloon pump and Impella 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 collaborate with the SRC Medical Director to oversee and 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. Interventional Cardiologists (IC) – 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 shall maintain a daily roster of STEMI on-call physicians who must be present within 30 minutes or less when a STEMI patient presents to the hospital or notification of “STEMI Alert” is received from pre-hospital personnel via radio or telephone communications or SRH ED physician, whichever occurs first.
 - ii. The on-call physician can take call only at one facility at a time unless has a backup cardiologist and/or team that can immediately step in if simultaneous activations occur at both locations.
Any group or back up cardiologist must be available at a single phone number.
 5. 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. The SRC attains and maintains specialty accreditation by an EMS approved accrediting body, which is an indicator of competency and high performance.
 - i. Cardiac Catheterization Laboratory Standards per Title 22
 2. 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.
 3. 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 If not available at SRC
 - 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 EMS. In order to maintain STEMI designation, all SRC facilities must attend a minimum of 75% of all committee meetings. 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
 - 3. 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 publicly report aggregated data about the STEMI system which is derived from any of the individual data elements.

EMS DIVISION Performance Standards

A. KC EMS will:

1. Facilitate collaborative leadership and consensus among all stakeholders of the KC STEMI System of Care
2. Provide minutes and sign-in sheets for all meetings within 2 weeks of next meeting
3. Participate in CPC accreditation activities with each SRC
4. Initiate and maintain transfer agreements among all Kern County System of Care hospitals

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.
 - i. 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 ***Suspected Acute MI***.
 - ii. The ECG should be repeated frequently during prolonged transports for patients with ongoing chest pain but no STEMI finding on initial 12-lead to assess for evolving STEMI
2. 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". The goal for STEMI Alert activation is 10 minutes or less. Paramedic will send the 12-Lead report to the E.D., if equipment is capable.
3. 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 60 minutes to SRC, and another hospital is closer, patient shall be transported to closest hospital

4. Paramedic shall follow appropriate treatment protocols during transport

B. Hospital Relationships and Coordination

1. Transfer Agreements/Requirements

- i. Rapid Transfer – SRC Automatic Acceptance of STEMI Patient from Transferring Hospital per the KC STEMI System of Care inter-facility memorandum of agreement.

2. Each STEMI Receiving Center (SRC) agrees to accept all “STEMI ALERT” patients from any Non-PCI Hospital (SRH) located within Kern County. 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. SRC and SRH will collaborate in the development, implementation, and monitoring of treatment procedure/protocols for the Non-PCI hospitals (SRH) within the County.
- ii. The STEMI System of Care will operate as a cohesive and comprehensive organization to consistently address the needs of the STEMI Patient by implementing best practice standards, 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 Early Heart Attack Care (EHAC) and 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 hands-only CPR through use of appropriate chest compressions
 - iv. Use of an automated external defibrillator (AED)

3. Other community education themes might include:
 - i. Hands-only CPR training including Side-walk CPR Day and Pulse Point awareness
 - ii. Risk factors for cardiovascular disease
 - iii. Symptoms and signs of acute coronary syndrome (ACS)
 - iv. Early warning or prodromal symptoms
 - v. Less common or atypical heart attack presentations
 - vi. Importance of calling 911
 - vii. Female ACS presentations
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 publicly. The following aggregated performance measurements will be publicly released, and additional reports may be published upon recommendation of the STEMI QI Committee.
 - i. Symptom onset time to EMS Call Time
 - ii. EMS first medical contact (FMC) time to First 12-Lead ECG Time
 - iii. EMS First 12-Lead time to contact SRC
 - iv. E.D. arrival time
 - v. E.D. arrival time to Cath Lab Activation time
 - vi. Cath Lab Activation time to Cath Lab Arrival Time
 - vii. E.D. Door to PCI /Balloon Time
 - viii. First Medical Contact to PCI/balloon time
 - ix. SRH door-in to door-out time
 - x. SRH door-in time to PCI time
 - xi. Door to needle time

Appendix A - Mandatory Data Elements for STEMI Receiving Centers

HOSPITAL shall maintain a STEMI Database and submit all data elements to the EMS approved national registry, at established time intervals and agrees to allow for the release of all STEMI data directly from said registry to EMS for the purpose of oversight, in order to produce reports. Each SRC shall submit data elements 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 or mandated by EMS.

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
HOSPITAL SERVICES			
Current license to provide Basic Emergency Services in Kern County	Copy of License	Y N	Required for designation & renewal
Current Certification to operate as a Paramedic Base Station in Kern County		Y N	Required for designation & renewal
Cardiac Catheterization Laboratory Services & Required Services	Copy of License. Number Cardiac Catheterization Labs ___ on License	Y N	Required for designation & renewal
Intra-aortic balloon pump capability with staffing available to operate 24/7/365	Intra-aortic balloon pump capability # patients: ___ 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 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.	Y N	Desired not required ACC/AHA Guideline conformance for centers without back up CV surgery will

	Number of Operating Suites on License		be evaluated in consideration of waiver by EMS medical director Required for designation & renewal
If no cardiac surgery capability, must have: Plan for emergency transfer	Plan, Policy, Procedure with estimated travel time	Y N	Required for designation. Hospitals without surgical services: Written guidelines or description of current processes for rapid transfer of patients requiring additional care. Including elective or emergency cardiac surgery or PCI. Required for designation & renewal
Plan to transfer within 1 hour	Supporting policies and procedures	Y N	Required if no CV Surgery Required for designation & renewal
Written transfer guidelines for service	Transfer policies and procedures	Y N	Required if no CV Surgery Required for designation & renewal
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 & Renewal
HOSPITAL PERSONNEL			
SRC PROGRAM MEDICAL DIRECTOR Responsibilities: 1. Oversight of STEMI program patient Care 2. Coordinating staff and services 3. Authority and accountability for quality /performance improvement 4. Participates in protocol development 5. Establishes and monitors quality control, including Mortality and Morbidity	Copy of Current Board Certification Copy of Job Description	Y N	Required for designation & Renewal

6. Voting Member Cardiac Audit Committee			
SRC RN PROGRAM MANAGER Responsibilities: 1. Supports SRC Medical Director Functions 2. Acts as EMS-STEMI Program Liaison 3. Assures EMS-Facility STEMI data sharing 4. Manages EMS-Facility STEMI QI activities 5. Authority and accountability for QI/PI 6. Facilitates timely feedback to the field providers 7. Voting member Cardiac Audit Committee	Copy of RN License Copy of Job Description Copy of Policy/Procedure	Y N	Required for designation
SRC CCL MANAGER/COORDINATOR	Copy of RN License if not reporting directly to program manager Copy of Job Description	Y N	Required for designation & Renewal
Physician Consultants: 1. Interventional Cardiologist 2. CV Surgeon	On-Call schedules x 3 months Current Board Certification in Cardiovascular Disease On-Call Schedules x 3 months	Y N	Required for designation & Renewal
CLINICAL CAPABILITIES			
Clinical Volume Performance:	Hospital volume of STEMI	Y N	Required for designation

	interventionalists procedures showing total case volume for all PCI cases and primary PCI Cases for the previous 12 months		ACC/AHA Recommendations: 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 ACC/AHA Recommendations: 11 Primary PCI / 75 PCI Cases 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 ACC/AHA Recommendations: Door to balloon inflation times <90 minutes (75% compliance)
POLICIES AND PROCEDURES			
Interventional Cardiologist Activation	Policy/Procedure	Y N	Required for designation & Renewal
Cardiac catheterization laboratory team activation	Policy/Procedure	Y N	Required for designation
STEMI contingency plans 1. Personnel 2. Cath Lab facility & equipment	Pertinent policy & procedures to minimize disruption	Y N	Required for designation 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 Process by which fibrinolytic therapy and PCI can be delivered rapidly to meet the following goals: 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
PERFORMANCE IMPROVEMENT			

Systematic Internal Review Program consistent with accreditation KC STEMI System of Care performance improvement program	Review protocol/program description to deal with: Door-to Balloon times Deaths Emergency CABG Vascular complications Sentinel event System issues Organizational issue	Y N	Policy and procedure or program description only required for initial designation Ongoing expectation
Systematic Prehospital Review Program	Written quality improvement plan or program description for EMS-transported STEMI patients supporting: Timely prehospital feedback, Prehospital provider education, Cooperative STEMI QI data management	Y N	QI plan or policy as required by EMS 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. Ongoing expectation
Prehospital STEMI related educational activities	Commitment to STEMI	Y N	Plan required for initial designation Ongoing expectation

	Prehospital Education Plan for prehospital education activities		
DATA COLLECTION, SUBMISSION AND	ANALYSIS		
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 KC STEMI System of Care 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 EMS, STEMI Receiving Centers, STEMI Referral Hospitals, Prehospital care providers, which monitors 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. Director
 - iii. SRC Program Manager

- b. SRH Members:
 - i. E.D. Medical Director
 - ii. E.D. Director
 - 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 third Thursday of the month at 1800 Mount Vernon Ave. Time and Conference room to be determined.
4. Case Review Instructions
Each meeting participants will present and discuss all re-triage of STEMI patients between SRC's. 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.

On a rotating basis, each hospital and ambulance provider 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. All re-triage of STEMI patients between SRC's will be reviewed by the Committee.
5. Recommendations for System Improvement

The Committee will develop and implement recommendations for an annual PI project based on data analysis and case reviews. Recommendations will be presented at the EMS System Collaborative meeting.

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 decrease morbidity and mortality of the STEMI population
- b. To promote region-wide standardization of evidence-based STEMI care.

4. DUTIES

- a. Participate with EMS 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. Evaluate, expand upon, and revise as needed, locally developed indicators used by the COMMITTEE for STEMI patient quality improvement.

5. MEMBERSHIP

Voting Membership will include the following representatives from the EMS Program’s region:

- a. One Physician Medical Director from each SRC.
- b. One Program Manager from each SRC.
- c. One Emergency Department Medical Director representative from each SRH.
- d. One Emergency Department Director 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 to serve for a 2-year period.

7. TERMS

- a. Officers shall be elected by the COMMITTEE for yearly terms commencing July 1 through June 30th.
- 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 EMS 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. A quorum to conduct a vote requires five eligible voting members with representation from each SRC
- e. The Chair will preside over meetings and participate with the DIVISION in the preparation of the agenda.
- f. Meetings will be conducted in a fair and professional manner.
- g. The COMMITTEE shall operate under commonly accepted procedures and Chair shall conduct of meetings in a fair and productive manner.
- h. Votes shall be recorded as:
 - a. In Favor
 - b. Opposed
 - c. Abstain
- i. The DIVISION will be responsible for preparing the agenda.

- j. 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 reaching an SRC for emergency primary PCI within 60 minutes of First Medical Contact** should be directed to the nearest SRH to 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 to the SRC exceeds 60 minutes.

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 the patient clearly fits criteria for thrombolytic therapy and the transport time to a SRC is expected to be greater than 60 minutes, proceed to the nearest SRH immediately!** The goal for door-in to door-out from the SRH is 30 minutes or less if thrombolytics will not be administered. 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.

Patient's Weight	TNK dose	TNK Volume
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 Normal 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 (Non-PCI hospital)

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

A. Bypassing an SRH is recommended if the patient is stable and the expected transport time to the SRC is 60 minutes or less, 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".
- 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.

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.
2/13/2020	Multiple changes made to bring policy up to date with local and state mandates. Changes include expanding direct transport to PCI to 60 minutes from 45 minutes.