



SUBJECT: **ST-ELEVATION MYOCARDIAL INFARCTION (STEMI) RECEIVING CENTER (SRC) STANDARDS** REFERENCE NO. 320

PURPOSE: To establish minimum standards for the designation of a ST-Elevation Myocardial Infarction Receiving Center (SRC) to ensure that patients transported by the 9-1-1 system in Los Angeles County who exhibit ST-elevation myocardial infarction (STEMI) and/or non-traumatic out-of-hospital cardiac arrest (OHCA), are transported to a hospital appropriate to their needs.

AUTHORITY: California Code of Regulations (CCR), Title 22, Division 9, Chapter 6.2

DEFINITIONS:

Board Certified (BC): Successful completion of the evaluation process through one of the Member Boards of the American Board of Medical Specialists (ABMS) or American Osteopathic Association (AOA) including an examination designed to assess the knowledge, skills, and experience necessary to provide quality patient care in a particular specialty.

Board Eligible (BE): Successful completion of a residency training program with progression to board certification based on the timeframe as specified by the ABMS or AOA for a specific specialty.

Interventional Cardiologist: Physician who has completed a residency in internal medicine, or fellowship in cardiology and/or interventional cardiology, and is BC or BE, and has privileges to perform percutaneous interventions.

Out-of-Hospital Non-traumatic Cardiac Arrest (OHCA): Sudden, sometimes temporary cessation of function of the heart not due to a traumatic cause.

Percutaneous Coronary Intervention (PCI): A procedure used to open or widen a narrowed or blocked coronary artery to restore blood flow supplying the heart.

Promptly Available: Able to be physically present in the emergency department (ED) within a period of time that is medically prudent and appropriate to the patient's clinical condition; and further, should not have a measurable harmful effect on the course of the patient management or outcome. Hospital guidelines shall be established that address response time for on-call physicians, usually 30 minutes or less.


Qualified Specialist: A physician licensed in the State of California who has become BC or BE in the corresponding specialty by American Board of Medical Specialties (ABMS) or American Osteopathic Association (AOA).

Return of Spontaneous Circulation (ROSC): Following cardiopulmonary arrest, ROSC is the restoration of a spontaneous perfusing rhythm. Signs include: palpable pulse, breathing (more than an occasional gasp), a measurable blood pressure and/or a sudden rise in capnography to a normal/high reading.

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APPROVED: 
Director, EMS Agency


Medical Director, EMS Agency

SRC Medical Director: A physician licensed in the State of California and Board Certified in Interventional Cardiology, privileged by the hospital and active in performing PCI.

SRC Program Manager: A Registered Nurse currently licensed to practice in the State of California and appointed by the hospital to monitor, coordinate and evaluate the SRC Program.

ST- Elevation Myocardial Infarction (STEMI): A myocardial infarction that generates ST-segment elevation on a 12-lead ECG.

STEMI Receiving Center (SRC): A licensed general acute care facility that meets the minimum hospital STEMI care requirements pursuant to CCR Section 100270.124 and is able to perform PCI, manage cardiac arrest and post-resuscitation care, and is designated as a SRC by the Los Angeles County EMS Agency.

STEMI Referral Facility (SRF): A non-PCI capable hospital that transfers a STEMI patient requiring emergency cardiac intervention to a designated SRC.

Targeted Temperature Management (TTM): Maintaining body temperature at a target between 32 and 37.5 degrees Celsius in a person for a specific duration of time for the purpose of preserving neurological function post cardiac arrest.

POLICY:

I. SRC Designation / Re-Designation

- A. SRC initial designation and re-designation is granted for up to three years based on maintenance of these standards and after a satisfactory review and approval by the EMS Agency.
- B. The EMS Agency reserves the right to perform a scheduled on-site survey or request additional data at any time.
- C. The SRC shall immediately provide written notice to the Medical Director of the EMS Agency if unable to adhere to any of the provisions set forth in these SRC Standards.
- D. The SRC shall provide a 90-day, written notice to the EMS Agency Medical Director of intent to withdraw from the SRC program.
- E. The SRC shall notify the EMS Agency, in writing, of any change in status of the SRC Medical Director, SRC Program Manager, or data entry personnel by submitting Reference No. 621.2, Notification of Personnel Change Form.
- F. Prior to designation, the SRC shall meet the performance measures, for a minimum of six months, listed in Ref. No. 320.3 and ensure quality improvement processes are in place. Performance measures shall be consistently achieved to maintain SRC designation.

II. General Hospital Requirements

- A. Licensed by the State of California Department of Public Health (CDPH) as a General Acute Care Hospital, and:

1. Have a special permit for Basic or Comprehensive Emergency Medical Service
 2. Accredited by a Centers for Medicare and Medicaid Services (CMS) recognized Hospital Accreditation Organization
 3. Have a special permit to provide cardiac catheterization laboratory (cath lab) and cardiovascular surgery services pursuant to the provisions of Title 22, Division 5, California Code of Regulations.
- B. Appoint a SRC Medical Director and SRC Program Manager who shall be responsible for meeting the SRC Program requirements and allocate non-clinical time such that they can meet the requirements of the SRC standards.
- C. Have a fully executed Specialty Care Center SRC Designation Agreement with the EMS Agency.
- D. Have the capability to receive transmitted 12-Lead ECG from EMS providers through a process that is agnostic to monitor type and optimizes efficiency, and includes the following:
1. An alert when hospital receives ECG transmission
 2. A process to ensure that firewalls do not block the transmission and distribution of the transmitted ECGs.
- E. Establish a Memorandum of Understanding (Ref. No. 320.2 MOU IFT for Acute STEMI) for the timely transfer of STEMI patients for emergent PCI from the regional SRFs to the SRC.
- III. SRC Leadership Requirements
- A. SRC Medical Director
1. Responsibilities:
 - a. Medical oversight and ongoing performance of the STEMI and OHCA quality improvement (QI) programs
 - b. Participate in the hospital Cardiology Committee or equivalent and other committees associated with STEMI, cardiac arrest, and post-resuscitation care
 - c. Collaborate with the SRC Program Manager to ensure adherence to these Standards
 - d. Liaison with hospital administration, SRC Program Manager, medical and clinical staff across the STEMI and OHCA patient's continuums of care
 - e. Attend 100% of the EMS Agency's SRC QI Meetings onsite or via video conference. Fifty percent (50%) of meetings may be attended by an alternate interventional cardiologist from the same SRC.

B. SRC Program Manager

1. Qualifications:

- a. Currently assigned in the cath lab (if duties are shared with another RN(s), one RN must be assigned to the cath lab)
- b. Knowledgeable in critical care and interventional cardiac procedures
- c. Able to facilitate internal hospital policy and procedure development and implementation

2. Responsibilities:

- a. Collaborate with the ED Medical and Clinical Directors regarding STEMI, cardiac arrest, and post-resuscitation care
- b. Collaborate with the SRC Medical Director to ensure adherence to these Standards
- c. Maintain and monitor STEMI and OHCA QI programs
- d. Participate in the hospital Cardiology Committee or equivalent and other committees associated with STEMI, cardiac arrest, and post-resuscitation care
- e. Ensure hospital policies are consistent with these Standards
- f. Liaison with hospital administration, SRC Medical Director, medical and clinical staff across the STEMI and OHCA patient's continuums of care
- g. Liaison with prehospital cardiac monitor vendors and EMS Provider Agencies to ensure successful ECG transmission
- h. Attend 100% of the EMS Agency's SRC QI Meetings on site or via video conference. Fifty percent (50%) of meetings may be attended by an alternate cath lab RN from the same SRC.
- i. Ensure processes are in place to identify and track patients transported to the SRC by EMS providers, including patients transferred from other acute care hospitals
- j. Provide oversight of accurate and timely data collection and submission
- k. Develop relationships and collaborate with the surrounding SRFs to meet specified time metrics
- l. Ensures SRC diversion is consistent with EMS policies and processes are in place to minimize the need for diversion

IV. SRC Program Physician Participants

- A. Hospital shall maintain a cardiac catheterization team and cardiothoracic surgery on-call panel 24 hours per day/7 days per week/365 days per year.
- B. All physicians attending in the ED shall be BC or BE in Emergency Medicine.
- C. Interventional Cardiologists performing emergent percutaneous interventions must:
 - 1. Maintain current board certification or, board eligibility, in interventional cardiology with privileges in PCI procedures, and be credentialed by the hospital;
 - OR
 - 2. Maintain current board certification in internal medicine or cardiovascular disease with privileges in PCI procedures and be credentialed by the hospital.
- D. On-call interventionalists may only be on-call for **one** facility at a time.
- E. Surgeons performing coronary artery bypass grafting (CABG), must maintain current BC, or is BE in Cardiovascular/Cardiothoracic surgery with specific privileges in CABG and be credentialed by the hospital.
- F. On-call physicians should be promptly available, not to exceed 30 minutes, for a cath lab activation.

V. SRC Program Plan

The hospital shall develop and maintain a SRC Program Plan pertaining to the care of the STEMI and/or OHCA patient. The plan shall be reviewed annually and approved by the appropriate committee(s) every three years. The SRC Program should include, at minimum, the following:

- A. Job descriptions and organization structure clarifying the relationship between the SRC Medical Director, SRC Program Manager and the cardiac catheterization team
- B. Cath lab activation guidelines with the ability to track the activation and/or cancelation
- C. Procedures for triage, diagnosis and cardiac catheterization team activation following EMS notification of impending arrival of a STEMI/OHCA patient, which shall include, at minimum, the following:
 - 1. A process for immediate notification of the emergency physician and/or interventional cardiologist upon EMS notification of a STEMI patient transport
 - 2. A protocol for physician review of patient data, including ECG if available, to determine if activation from the field is appropriate

3. A single call activation system to directly activate the cardiac catheterization team
 4. A process for the triage and treatment of simultaneously arriving STEMI/OHCA patients
 5. Post resuscitation care, including initiation of TTM
 6. A process for direct feedback to the transporting paramedics on the patient's presumed diagnosis and ED disposition
- D. A process to administer fibrinolytics, move other cath lab patients, or transfer a STEMI patient to another SRC when there is a mechanical issue in the cath lab, or the hospital is on internal disaster
- E. Mechanisms to ensure SRC diversion is consistent with EMS policies and processes are in place to minimize the need for diversion
- F. A process to collaborate with EMS providers and 12-Lead ECG vendors to integrate electronic prehospital patient care (ePCR) records into the hospital electronic medical record
- G. SRC Program Manager shall ensure review and recommend revisions to the SRC Program Plan, policies and procedures to maintain compliance with SRC Standards.
- VI. Data Collection and Submission Requirements
- A. Ensure adequate data entry personnel, collaborate with ED personnel to ensure capture and entry of patients meeting inclusion criteria into the Los Angeles County EMS Agency STEMI Receiving Center Database on an ongoing basis. Back-up data entry personnel should be identified and trained in the event primary data personnel is unable to meet the data entry requirements.
- B. Participate in the data collection process established by the EMS Agency.
- C. Maintain an Emergency Department (ED) Log to capture patients who are transported to the ED due to SRC designation.
- D. Submit data to the EMS Agency, within 45 days of patient's discharge, which shall include all patients who meet data inclusion criteria and all applicable data elements listed in Ref. No. 648, STEMI Receiving Center Data Dictionary.
- E. Submit SRC quarterly data within four weeks from the end of the quarter (For example: 1st quarter's data is due April 30th).
- F. Maintain a minimum 90% compliance for:
1. Capture of patients meeting the data inclusion criteria
 2. Data field completion

3. Data field accuracy

4. Timely data entry

VII. Quality Improvement (QI)

A. SRC Program must include a comprehensive-multidisciplinary SRC QI Meeting.

1. Meeting participation should include the SRC Medical Director, SRC Program Manager, EMS providers and educators, interventional cardiologists, ED physicians, ED and cath lab personnel, other associated healthcare providers, as well as other healthcare specialties including neurology, thoracic surgery or TTM specialists when applicable.

2. Meeting to be held quarterly, at a minimum.

3. Meeting minutes and roster must be maintained for each meeting and available for review.

4. SRCs that are also a Base Hospital are encouraged to provide periodic SRC Base Hospital education with the collaboration of the SRC Program Manager.

B. Pertinent aspects of care should be tracked and trended with the identification of areas requiring improvement and the action(s) necessary to improve care.

C. The SRC QI program shall:

1. Track and trend performance measures as per Ref. No. 320.3, SRC Performance Measures

2. Review the care and outcome on, but not limited to, the following patients:

a. In-hospital STEMI deaths

b. Coronary angiography complicated by intra-procedure or post-procedure bleeding requiring transfusion

c. Coronary angiography complicated by intra-procedural or post-procedural stroke

d. Any quality of care issues and delays

e. All patients with OHCA with sustained ROSC – to include whether TTM and PCI were performed when indicated

3. Collaborate with SRF(s) to evaluate care of transfer patients, to include:

a. Door-in to door-out time (DIDO) at SRF (Goal <30 minutes)

b. Proportion of 9-1-1 IFTs for STEMI who went for emergency coronary angiogram (goal $\geq 90\%$)

c. Use of 9-1-1 for non-STEMI transfers

- d. Quality of care issues and delays
- 4. Address other issues, processes or personnel trends identified from hospital specific data (i.e., increase in fallouts over time, proportion of patients transported to the cath lab found not to have a STEMI).
- 5. SRC shall have a mechanism to provide feedback to EMS Providers and SRFs (i.e., encrypted/secure e-mail). The feedback shall be provided within one (1) week of patient arrival at the SRC. Feedback shall include, but be not limited to, the following:
 - a. Date of service, sequence number, provider unit, patient age and gender, whether the patient received coronary angiogram and/or PCI, and positive feedback when a job was well done.
 - b. Rationale for not performing angiogram, which may be in the following three categories:
 - i. Patient factor (e.g., patient refusal, contraindication to angiogram)
 - ii. ECG quality (e.g., poor quality field ECG which led to misinterpretation)
 - iii. Non-ischemic ST elevation (e.g., early repolarization, bundle branch blocks, hyperkalemia)
 - iv. Any quality-of-care concerns

XI. Public Education

SRC shall participate in the annual Los Angeles County EMS Agency sponsored Side-Walk CPR public education programs or annually provide a minimum of one public education class on CPR. Sign-in rosters need to be maintained. Classes may be in collaboration with other health care providers/organizations.

CROSS REFERENCE

Prehospital Care Manual

Ref. No. 320.1, **Target Temperature Management Guidelines**
Ref. No. 320.2, **Interfacility Transfer Memorandum of Understanding for Acute STEMI**
Ref. No. 320.3, **SRC Performance Measures**
Ref. No. 321.2, **Notification of Personnel Change Form**
Ref. No. 502, **Patient Destination**
Ref. No. 503, **Guidelines for Hospitals Requesting Diversion of ALS Patients**
Ref. No. 513, **S-T Elevation Myocardial Infarction (STEMI) Patient Destination**
Ref. No. 513.1, **Interfacility Transfer of Patients with STEMI**
Ref. No. 516, **Cardiac Arrest Patient Destination**
Ref. No. 624, **STEMI Receiving Center QI Committee**
Ref. No. 1303, **Medical Control Guideline: Algorithm for Cath Lab Activation**
Ref. No. 1308, **Medical Control Guideline: Cardiac Monitoring / 12-Lead ECG**

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2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care

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The input of the Hospital Association of Southern California's (HASC) Emergency Health Services Committee and the Cardiac Technical Advisory Group (TAG) was essential in the initial development of these standards. The TAG was composed of a cardiologist from the American Heart Association; Emergency Department physicians from teaching and community hospitals; an EMS Commissioner; nurse managers from emergency departments and catheterization labs; members of the Association of Prehospital Care Coordinators; a Paramedic Nurse Educator; and the Emergency Medical Services (EMS) Agency. Additional contributions were made by the Medical Council of the EMS Agency, the Commission, the American Heart Association and the Los Angeles County Medical Association.