STEMI SYSTEM RECEIVING CENTER STANDARDS AND DESIGNATION

Purpose: To define the criteria for designation as a STEMI Receiving Center in San Mateo County.


Definitions:
ST Segment Elevation Myocardial Infarction (STEMI): A type of myocardial infarction, acute in nature, generating an ST segment elevation on the 12-lead EKG.

STEMI Receiving Center (SRC): A licensed general acute care hospital with a special permit for a cardiac catheterization laboratory from the California Department of Public Health (CDPH) and designated as a SRC by San Mateo County EMS Agency (SMC-EMSA)

STEMI Referral Hospital (SRH): A licensed general acute care hospital in San Mateo County (SMC) that is not designated as a SRC.

Percutaneous Coronary Intervention (PCI): A broad group of techniques used for the diagnosis and treatment of patients with STEMI.

STEMI Team: A group of hospital staff including physicians, nurses, and other hospital personnel from the emergency department and cardiology involved in the care of STEMI patients.

Policy: A STEMI Receiving Center (SRC), approved and designated by San Mateo County EMS Agency (SMC-EMSA) shall meet the following requirements:

1. Hospital License Requirements for a SRC
   a. Licensed general acute care hospital recognized by SMC-EMSA as a receiving facility.
   b. Holds a special permit for a Cardiac Catheterization Laboratory from the California State Department of Health Services (DHS)
   c. Holds a special permit issued by DHS for Cardiovascular Surgery Service or has established current transfer agreements with a hospital or hospitals holding such a special permit.
   d. Enters into a written agreement with SMC for designation.

APPROVED:

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2. **Hospital Capabilities**
   a. Cardiac Catheterization Laboratory available 24 hours per day / 7 days per week.
   b. An Intra-Aortic Balloon Pump shall be available on site 24 hours per day / 7 days per week with a person capable of operating this equipment.
   c. Ability to receive electronic 12-lead EKG transmission from the EMS system

3. **Personnel**
   a. SRC Medical Director:
      i. 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 QI Program.
      ii. The SRC Medical Director must be a credentialed member of the medical staff with PCI privileges.
   b. SRC Program Manager:
      i. The SRC shall designate a program manager for the STEMI program who shall have 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.
   c. Cardiovascular Lab Coordinator:
      i. 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.
   d. Physician Consultants:
      i. The SRC shall maintain a daily roster of on-call Interventional Cardiologists with privileges for PCI and credentialed by the hospital in accordance with the American College of Cardiology/American Heart Association national standards. This requirement may be waived by SMC-EMSA for physicians with SRC primary privileges if all of the following are met:
         1. Board certified by the ABIM with subspecialty certification in cardiovascular disease;
         2. Demonstrated lifetime minimum of 500 PCI procedures and 11 primary or 75 PCI Annually.
      ii. These physicians must respond immediately upon notification and be available within 30 minutes of when a STEMI patient presents to the hospital.
      iii. The SRC will submit a list of Cardiologists with active PCI privileges to the EMS Agency annually.

4. **Clinical Process Performance Standard**
   a. The overall goal of the STEMI Care System in San Mateo County is to minimize the interval between first medical contact to coronary artery reperfusion.
   b. SRCs will adopt evidence-based strategies to reduce time to reperfusion.
   c. An on-going internal quality improvement process, including data measurements and feedback from STEMI patients and SRHs.
5. **Policies**

   Internal policies and procedures shall be developed for the following:
   
   a. **STEMI Alert:** Through a “one call” process, the interventional cardiologist and cardiac catheterization lab team will be immediately contacted upon notification by prehospital personnel that they are transporting a patient on whom a 12-lead ECG that has been interpreted as an “Acute MI Suspected” or “Meets ST Elevation MI Criteria.”
   
   b. Interventional cardiologist and cardiac catheterization laboratory staff will be required to respond immediately upon notification and have a response time standard of 20-30 minutes.
   
   c. Emergency medicine physicians will have the authority to activate the cardiac catheterization laboratory staff.
   
   d. Allow the automatic acceptance of any STEMI patient from a San Mateo County Hospital upon notification by the transferring physician.
   
   e. That an interventional cardiologist assumes care of the patient from the time the patient arrives at the SRC.
   
   f. To accept all patients meeting STEMI patient triage criteria or upon transfer notification from a STEMI Referral Hospital, except when on an internal disaster, and provide a plan for triage and treatment of simultaneously presenting STEMI patients, regardless of ICU/CCU or ED status.
   
   g. Criteria for patients to receive emergent angiography or emergent fibrinolysis based on physician decisions for individual patients.
   
   h. Any SRC that has been activated from the field is to ensure that the transporting paramedic can be placed in radio contact with the Base Station physician prior to ED arrival if requested.

6. **Data Collection**

   a. Data listed in data dictionary posted on SMC-EMSA website shall be collected on an ongoing basis and provided to the SMC-EMSA (www.smchealth.org/ems/policyprocedures/facilities).
   
   b. Data will be entered into an EMS-approved instrument and submitted monthly, by no later than the 15th of the following month.
   
   c. In consultation with the STEMI CQI Committee, EMS will update the data dictionary and/or identify another process to expedite data submission and reduce duplication.

7. **Quality Improvement**

   a. The Quality Improvement program will include a process to review all cases of STEMI patients taken to the catheterization laboratory at the end of the procedure and provide immediate feedback to the staff in the emergency department and the catheterization laboratory – prior to the end of that shift. Additionally, formal feedback utilizing the standardized format designated by the SMC-EMSA will be provided to any prehospital agency or SRH that participated in the care of a “STEMI Activation” patient, within 72 hours (see Appendix B).
b. An SRC QI program shall be established, maintained, and conducted to review performance and outcome data for STEMI patients.

c. The SRC will actively participate in the SMC-EMSA STEMI QI Program. This will require regular meeting attendance by the SRC Medical Director or designee, who will be a staff interventional cardiologist, and the SRC Program Manager.

Procedure:

8. Designation
   a. An SRC may be designated following satisfactory review of written documentation and a site survey, when deemed necessary, by the SMC-EMSA.
      i. Application: Eligible hospitals shall submit a written letter of intent and request for SRC approval to the SMC-EMSA, as well as complete a formal application documenting the compliance of the hospital with SMC-EMSA SRC Standards.
      ii. Approval: SRC approval or denial shall be made in writing by the SMC-EMSA to the requesting hospital within a reasonable time (30 days) after receipt of the request for approval, application completion and submission of all required documentation.

9. Redesignation
   a. SMC-EMSA may suspend or revoke the approval of a SRC at any time for failure to comply with any applicable policies, procedures, or regulations.
   b. An SRC may be re-designated following a satisfactory SMC-EMSA review in accordance to current standards and the term of the written agreement.
   c. SRCs shall receive notification of evaluation from SMC-EMSA.
   d. SRCs shall respond in writing regarding program compliance.
   e. On-site SRC visits for evaluative purposes may occur.
   f. SRCs shall notify the SMC-EMSA by telephone, followed by a letter or email within 48 hours, of changes in program compliance or performance.

10. Discontinuation
    a. The SRC shall submit a written 90 calendar day notice to SMC-EMSA prior to the discontinuation of SRC services.
Appendix A - STEMI Receiving Center Data Elements

All cases will include:

1. Date/time of onset
2. Receiving Center (SRC) identification
3. (SRC) Medical Record Number assigned to patient
4. Name Patient
5. Patient date of birth
6. Age of patient on day of arrival *
7. Gender of patient *
8. Race (not required by EMS, what is currently in PCI)
9. Ethnicity (not required by EMS, what is currently in PCI)
10. Patient’s city of residence (not required by EMS, what is currently in PCI)
11. Patient’s zip code of residence (not required by EMS, what is currently in PCI)
12. Risk Factors (not required by EMS, what is currently in PCI)
13. Arrival by ambulance (Y/N)
14. Date of discharge from hospital
15. Status at discharge: (Alive, Dead)
16. Treatment location where patient died

(* in the case of patient admitting from a STEMI Referral Hospital, the SRH will collect these elements.)

Cases will then be defined as either a Category 1, 2 or 3 as follows:

CATEGORY 1
For all patients arriving at a STEMI Receiving Center (SRC) by air or ground ambulance as a Field to SRC Transport

1. ePCR case number if patient arrived by ambulance
2. Date/Time of dispatch (from PCR)
3. Date/Time on-scene – time treating paramedics arrived on scene (from PCR)
4. Date/Time first ECG was performed in the field (from PCR)
5. Area of injury as printed on machine interpretation of prehospital ECG (not required by EMS, what is currently in PCI)
6. Emergency department MD or cardiologist interpretation of prehospital ECG (Y/N)
7. Time reviewed
8. Reading for first systolic/diastolic blood pressure performed in field
9. Aspirin given in field (Y/N)
10. Nitro given in field (Y/N)
11. Date/Time of transport from scene to hospital begins (from PCR)
12. Documentation of patient death (Y/N)
13. Date/Time if patient died
14. Treatment location where patient died, Field, ED, Cath, Floor (not required by EMS, what is currently in PCI)
15. Date/Time of arrival to emergency department (from hospital patient care record)
16. Date/Time first ECG was done by SRC
17. Date/Time of first ECG confirming a STEMI done by SRC
18. ECG interpretation by emergency department MD or cardiologist
19. Date/Time of SRC’s “one call” to interventional cardiologist and cardiovascular team (STEMI alert triggered)
20. Date/Time of interventional cardiologist arrival at SRC
21. Date/Time of cardiovascular team (CVL) arrival at SRC
22. Determination of whether the patient is a candidate for reperfusion
23. Date/Time patient transported from emergency department to cath lab
24. Date/Time of arrival to cath lab
25. Date/Time of first stick
26. Date/Time of revascularization
27. Interventional Cardiologist’s name
28. If STEMI alert canceled (Y/N), when was it canceled (date/time)?
29. Reason for canceling STEMI alert
30. Non-system reason for PCI delay (PCI Pick List, free text)
31. Reason patient didn’t receive reperfusion PCI (Pick List)
32. Were thrombolytics administered? (Y/N) (not required by EMS, what is currently in PCI). If yes, thrombolytics were administered, what was the date/time/reason? (not required by EMS, what is currently in PCI)
33. Was there an IRA/Culprit Lesion? (Currently collecting but not required by EMS, what is currently in PCI)
34. At end of procedure, was TIMI 3 flow restored in IRA (Y/N)
35. RAM Score for Patient from NCDR
36. Complications: (already being collected but not required by EMS, do we want what is currently in PCI)
37. Was there a periprocedure stroke? (not required by EMS, what is currently in PCI)
38. Was there a vascular complication (pseudo-aneurysm, hemorrhage requiring transfusion or operation)? (not required by EMS, what is currently in PCI)
39. Intra and Post-Procedure Events within 72 hours of STEMI treatment
40. Was a CABG performed? If yes, then date/time (currently collecting but not required by EMS, what is currently in PCI)
41. Discharge Medications (Pick List from PCI)
42. Date of discharge from hospital
43. Status at discharge (Alive, Dead)
44. Comments
**CATEGORY 2**
For all patients arriving at a STEMI Receiving Center (SRC) as an “Arrival by Other Than Ambulance” (i.e.; private vehicle, walk-in, etc.)

1. Date/Time of arrival to emergency department (from hospital patient care record)
2. Mode of arrival at SRC
3. Date/Time first ECG was done by SRC
4. Date/Time of first ECG confirming a STEMI done by SRC
5. ECG interpretation by emergency department MD or cardiologist
6. Comments

(All data elements from Category 1 (see prior page) to reflect care provided at SRC)

**CATEGORY 3**
For all patients arriving at a STEMI Receiving Center as a STEMI Referral Hospital (SRH) Transfer

1. Name of SRH hospital
2. SRH medical record number
3. Date/Time of arrival to Emergency Department at SRH
4. Mode of arrival at SRH
5. Date/Time first ECG was done by SRH
6. Date/Time of first ECG confirming a STEMI done by SRH
7. Were thrombolytic's administered?
8. Was patient transported to SRC? If No, reason
9. Date/Time of SRH’s first call for transport ambulance
10. Date/Time of SRH’s first call to STEMI Receiving Center
11. Date/Time of ambulance arrival to referring hospital
12. Date/Time of patient departure from SRH to STEMI Receiving Center (SRC)
13. Date/Time of ambulance arrival at SRC
14. All data elements from Category 1 (see prior page) to reflect care provided at SRC

(* additional data will have been collected by the STEMI Referral Hospital)
San Mateo County EMS Agency  
STEMI Feedback Form (EMS Field Providers & SRHs)

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<tr>
<th>Case Summary:</th>
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*Include pt. demographics, and any relevant case info in summary*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Time</th>
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<tbody>
<tr>
<td>1. EMS dispatch</td>
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<tr>
<td>2. EMS at scene</td>
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<td>3. EMS w/ patient</td>
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<td>4. EMS departs scene</td>
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<td>5. CODE STEMI Alert activated</td>
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<td>6. ED arrival</td>
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<td>7. ED 1&lt;sup&gt;st&lt;/sup&gt; ECG</td>
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<tr>
<td>8. ISTAT ED Troponin-I</td>
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<td>9. Interventional cardiology at bedside</td>
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