

DEPARTMENT OF HEALTH & SOCIAL SERVICES

Public Health Division

GERALD HUBER
Director

BRYN MUMMA, MD, MAS
EMS Agency Medical Director

EMERGENCY SERVICES BUREAU
355 Tuolumne Street,
Suite 2400, MS 20-240
Vallejo, CA 94590



SOLANO
COUNTY

TED SELBY
EMS Agency Administrator

(707) 784-8155
www.solanocounty.com

POLICY MEMORANDUM 6609

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REVIEWED/APPROVED BY:

 MD, MAS

BRYN MUMMA, MD, MAS, EMS AGENCY MEDICAL DIRECTOR


TED SELBY, EMS AGENCY ADMINISTRATOR

SUBJECT: S-T SEGMENT ELEVATION MYOCARDIAL INFARCTION (STEMI)

AUTHORITY:

California Health and Safety Code Sections 1797.220

PURPOSE:

This policy is intended to provide paramedics guidance on the treatment and transport of patients suffering from a ST Segment Elevation Myocardial Infarction (STEMI). The purpose of this policy is to decrease morbidity and mortality through patient education and public recognition of cardiac problems, a systemic approach by Emergency Medical Services (EMS), and a coordinated effort by local hospitals to intervene with Percutaneous Coronary Intervention.

I. DEFINITIONS

- A. Acute Coronary Syndrome (ACS) – This is an umbrella term used to cover any group of clinical symptoms compatible with acute myocardial ischemia.
- B. Percutaneous Coronary Intervention (PCI) – Otherwise known as angioplasty. This is the use of a small flexible balloon catheter to open a blockage in a coronary artery.
- C. Reperfusion – The reestablishment of blood flow to cardiac tissue after suffering from a coronary artery occlusion.

- D. STEMI Receiving Center (SRC) – A hospital designated by the 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.
- E. STEMI Referral Facility (SRF) – A hospital that refers patients with a STEMI to a SRC for advanced therapeutic intervention such as, but not limited to, PCI.
- F. Thrombolytic – A medication to dissolve blood clots in the body.

II. FIELD CARE OF STEMI PATIENTS

- A. Paramedics are to evaluate patients and provide treatment according to protocol.
- B. Paramedics will complete a 12 Lead EKG as soon as possible.
- C. If the 12 Lead EKG reading indicates STEMI or suspected STEMI, the paramedic will follow Protocol C-14.
- D. For unstable patients, contact base hospital physician and consider transport to the closest facility.

III. STEMI PATIENT TRANSPORT DESTINATION

- A. If the field 12 Lead EKG indicates STEMI or suspected STEMI, the paramedic will use Protocol C-14 to make a hospital destination decision.
- B. Paramedics will leave the 12 Lead EKG electrodes on the patient's chest, arms, and legs so the hospital can quickly obtain their own 12 Lead EKG.
- C. Based on geographic location, the paramedic will transport the patient to a designated SRC that will be reached in the shortest length of time.
- D. Solano County EMS will identify in and out-of-county SRCs authorized to receive STEMI patients from Solano County.
- E. Patients suffering from cardiac arrest with Return of Spontaneous Circulation (ROSC) will be transported to the closest SRC for the appropriate clinical therapy.

IV. SRC DESIGNATION REQUIREMENTS

The requirements for a hospital to become a SRC are as follows:

- A. Complete a Solano County EMS Agency SRC application and pay the appropriate annual fee as set forth in Policy 3000, EMS Fees.
- B. Meet the current SRC criteria of the American College of Cardiology and the American Heart Association (AHA).

- C. Appoint co-medical directors consisting of the following:
1. An emergency medicine physician **AND**
 2. An interventional cardiologist **OR** a physician who has completed a fellowship in interventional cardiology and preparing to take the board exam **OR** a physician who meets the following criteria:
 - a. Completed post graduate training prior to July 1, 2002; and
 - b. Has seven to ten years of primary operator experience in therapeutic PCI; and
 - c. Has current hospital staff privileges in at least one hospital for the last five years; and
 - d. Has completed at least 150 therapeutic cardiac catheterizations in the past two years.
- D. Appoint a SRC Program Manager or SRC Program Coordinator.
- E. Undergo a pass/fail SRC site survey by a committee consisting of, but not limited to, the following:
1. Solano County EMS Agency Medical Director;
 2. Solano County EMS Agency Administrator;
 3. Solano County EMS Agency Quality Assurance Representative; and
 4. A subject matter expert with experience in designation and oversight of SRCs in California.
- The SRC Site Visit and Evaluation Tool will be provided upon request or upon receipt of the Solano County SRC Designation Application. The cost of the survey will be paid for by the applicant facility.
- F. Agree to submit data to the following registries:
1. National Cardiac Data Registry (NCDR);
 2. CathPCI;
 3. ACTION;
 4. Cardiac Arrest Registry to Enhance Survival (CARES).
- G. Provide Solano County EMS Agency with formatted data as set forth in Attachment A.
- H. Agree to receive any patient designated as a STEMI patient from the field and provide the appropriate level of care based on the patient's condition.

V. STEMI QUALITY IMPROVEMENT

- A. For STEMI Quality Improvement (QI), Advanced Life Support (ALS) Field Providers must:
1. Upon request, submit to the EMS Agency all Patient Care Reports (PCR) and 12 Lead EKGs for patients who had a STEMI activation for the previous month.
 2. Upon request, submit a list of all patients treated with ALS Protocol C-14 for the previous month.
 3. Appoint a QI Representative to attend the Solano County EMS Quarterly STEMI Committee Meeting.
 4. Comply with all policies and protocols concerning STEMIs.
 5. Provide Paramedics with two hours of annual training on ACS care, 12 Lead EKG, and associated policies and protocols.
 - a. This training will be verified as a part of the Paramedic Reccreditation process.
- B. For STEMI QI, SRFs must:
1. Provide data to the EMS agency on the number of patients treated in their Emergency Department (ED) for STEMI, the mode of arrival, and whether the patient was treated with thrombolytics or transferred to a SRC for PCI.
 2. Submit data to the CARES Registry.
 3. Appoint a QI Representative to attend the Solano County EMS Quarterly STEMI Committee Meeting.
 4. Adopt a plan to treat STEMI patients with either thrombolytics or transfer to a SRC for PCI.
- C. For STEMI QI, County Designated SRCs must:
1. Appoint a QI Representative to attend the Solano County EMS Quarterly STEMI Committee Meeting and attend all meetings.
 2. By the 10th of each month, submit the Solano County EMS STEMI report to the EMS Agency. Data elements are to include, but not limited to:
 - a. Time STEMI alert called;
 - b. ED EKG and time;
 - c. ED arrival date and time;
 - d. Interventions performed with dates and times;
 - e. Summary of cardiac catheter findings.

3. Provide to the EMS Agency formatted quarterly data including, but not limited to:
 - a. Number of STEMI patients;
 - b. Number of confirmed STEMIs;
 - c. Number of interventions and type;
 - d. Door-to-intervention (median) by type (in minutes);
 - e. Percentile of door-to-intervention.
 - i. 90 minutes or less for PCI.
 - ii. 30 minutes or less for thrombolytics.
 4. Provide to the EMS Agency formatted annual data including, but not limited to:
 - a. EMS Data Report;
 - b. NCDR Data Elements and report from CathPCI, ACTION, and CARES Registries;
 - c. Primary total PCI volume/year for each cardiologist treating EMS transported STEMI patients;
 - d. Total time and number of cardiac catheterizations and episodes per year that the catheterization lab was unable to perform.
- D. Solano County SRCs and SRFs are to be prepared to discuss the following at the Quarterly STEMI Committee Meeting:
1. Data on system performance for the entire system;
 2. Cases that failed to meet door-to-balloon time of 90 minutes, that did not follow protocols, and other outlying cases;
 3. EMS performance on STEMI cases to identify opportunities for improvement and to recognize outstanding performance.

Attachment A – STEMI Data Format

Participation in American College of Cardiology National Cardiovascular Data Registry (NCDR®)	<p>NCDR® Aggregate Data to be reported: Quarterly (raw) with adjusted data from NCDR® when available to include all primary PCI interventions (EMS and non-EMS)</p> <ul style="list-style-type: none"> • Number of patients with primary PCI intervention • Median door-to-intervention interval (minutes) <p>Percentage and numerator/denominator of patient counts for the following:</p> <ul style="list-style-type: none"> • STEMI Mortality • PCI Mortality • Procedural Success • Vascular Complications • ASA upon arrival within 24 hours • Beta-blockers upon arrival within 24 hours • ASA on discharge • Beta-Blockers on discharge • ACE Inhibitors or ARM in patients with Ejection Fraction <40% on discharge. 	<p>Data shall be submitted within 3 months of completion of calendar quarter.</p> <p>(Data elements may evolve over time.)</p>
Participation in Solano County EMS Data Collection	<p>EMS Data Elements:</p> <ul style="list-style-type: none"> • STEMI Alert called by EMS (Yes/No/Unknown) • ED ECG STEMI (Yes/No/Unknown) • ED Arrival Time and Date • Intervention Done (PCI, thrombolysis, or no intervention) • Intervention Time and Date • STEMI patient transfers to another STEMI Receiving Center and reason for transfer 	<p>Data shall be submitted within 10 days of date of patient arrival.</p> <p>(Data elements may evolve over time.)</p>
Quarterly STEMI QI Committee Data Reports	<p>EMS Data Report to include:</p> <ul style="list-style-type: none"> • Number of STEMI Alerts • Number of confirmed STEMI (of those with alert) • Number of Interventions and Type (PCI or thrombolysis) • Door-to-Intervention Interval (median) by type (in minutes) • Percentile of Door-to-Intervention 90 minutes or less (PCI), 30 minutes or less (thrombolysis) – (numerator and denominator of both categories) • Number of times and reason cath lab was unavailable, (e.g. another patient on table, cardiologist unavailable, cath lab staff unavailable, or equipment failure.) • Number of times a STEMI Patient had to be transferred from one STEMI Receiving Facility to another 	<p>Data shall be submitted within 3 months of completion of calendar quarter.</p> <p>(Reports may evolve based on QI findings and data element change.)</p>
Annual STEMI QI Report	<p>Annual STEMI QI Report</p> <ul style="list-style-type: none"> • EMS Data Report • NCDR Data Elements • Cardiologist Primary and Total PCI volume/year for those treating EMS-transported patients • Total time and number of episodes per year that catheterization lab not able to function. 	<p>Data shall be submitted within 3 months of completion of calendar year.</p>