

**STEMI Plan prepared for the
California Emergency Medical Services Authority
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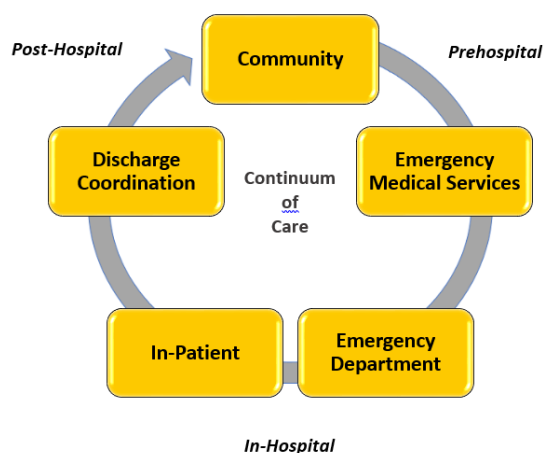
STEMI Critical Care System

Heart disease is the leading cause of death and long-term disability in the U.S. Every year in the U.S. approximately 735,000 people have a heart attack. Of these, 525,000 are first time events and 210,000 are subsequent events¹. Approximately 610,000 people die from heart disease each year. Coronary Heart Disease (CHD) is the most common cause with approximately 370,000 deaths each year². In 2017 in California, there were 62,797 deaths from all heart disease, a rate of 141.9/100,000 population³. Heart attack, also known as Myocardial Infarction (MI), is a life-changing event that places heavy burden on patients, family, and caregivers, physically, emotionally, and financially. When a patient suffers an MI, particularly an ST Elevation MI (STEMI), timely intervention is critical to reduce mortality, morbidity, and disability as well as improve survival quality of life.

In July 2019, the California Emergency Medical Services Authority (EMSA) implemented new regulations, 3, CCR Title 22 7.1, outlining local EMS Agency's requirements for a STEMI Critical Care System. The broad objective for a California STEMI Critical Care System is to improve the care of patients suffering from a life-threatening acute heart attack. The new regulations are designed to provide a consistent application of standardized care throughout the state.

In 2010, San Luis Obispo County EMS Agency (SLOEMSA) developed and implemented a STEMI Critical Care System. The SLO County STEMI system links prehospital and hospital care to deliver treatment to STEMI patients who potentially require immediate medical or surgical intervention.

STEMI Continuum of Care



Rapid coronary artery reperfusion is the foundation of treatment for acute ST-Elevation myocardial infarction (STEMI) to improve survival. Despite two decades of evidence and seven years since best

¹ <https://www.cdc.gov/heartdisease/facts.htm>

² <https://www.cdc.gov/heartdisease/facts.htm>

³ <https://www.heart.org/-/media/files/about-us/policy-research/fact-sheets/quality-systems-of-care/quality-systems-of-care-california.pdf?la>

practice guidelines were introduced, 30-50% of patients fail to have these guidelines applied to their care. Considering the number of Percutaneous Coronary Intervention (PCI)-capable hospitals increased by almost 50%, and that 90% of Americans live within 60 minutes of a PCI-capable facility, inadequate access cannot entirely explain these systematic failures. The challenge lies within a highly fragmented health system comprising of approximately 4,750 acute care hospitals and more than 15,000 emergency medical services (EMS) agencies in the United States. The challenge is further exacerbated by structural barriers that hinder coordination between EMS providers and hospitals. Such fragmentation has hindered the development of coordinated treatment plans along and throughout the continuum of care⁴.

Improved adherence to the American College of Cardiology and American Heart Association (ACC/AHA) heart failure guidelines translates to improved clinical outcomes in real world heart failure patients. Data shows that with each 10% improvement in ACC/AHA guideline-recommended care there was an associated 13% lower odds of 24-month mortality⁵. STEMI systems of care improve care and support for cardiac patients throughout their health care journey from Prehospital care to In-Hospital care through Post-Hospital care. This collaboration and standardization across the continuum of care is paramount to improve outcomes.

The continuum of care is important to caregivers and patients alike. It leads to an improvement of patient satisfaction levels, reduces costs, and improves health. Keeping up the continuum of care is especially important for patient populations such as those who are more dependent on health services. These patient populations include the elderly, those suffering from complex medical conditions, mentally vulnerable patients and patients with chronic diseases. This suggests that continuum of care is particularly beneficial to the cardiac patient population, including STEMI, and that STEMI systems of care depend on robust collaboration to ensure that the continuum of care is optimally exercised.

Goals Within the Continuum of Care

The San Luis Obispo STEMI continuum of care can be broken down and evaluated at three levels:

1. **Prehospital**

Includes the community and Emergency Medical Services in the development of a prehospital system that provides rapid identification and transport of suspected STEMI patients to the most appropriate facility.

2. **In-Hospital**

Includes the Emergency Department and In-Patient admissions of the hospital in the development of a regional hospital system that provides optimum cardiac treatment for every STEMI.

⁴ <https://ahajournals.org/doi/full/10.1161/circulationaha.115.019474>

⁵ https://www.ehdc.org/sites/default/files/resources/files/transitions%20of%20care_Pina_10.17.17.pdf

3. **Post-Hospital**

Includes the discharge coordination of patients as well as community efforts to ensure resources are available and accessible to patients. The goal is to improve post-discharge care while providing education and facilitation of home support systems.

Within each level of the continuum of care, there are identified goals designed to build safety into the STEMI system of care, ensuring that patients receive the safest and most reliable care across the continuum.

1. **Prehospital**

Primary Prevention
 Early Identification and Rapid Response
 Treatment and Transport
[Education and Outreach](#)
[Performance Improvement](#)
[Data Management](#)

2. **In-Hospital**

Hospital Services
 Hospital Personnel
 Clinical Capabilities
[Education and Outreach](#)
[Performance Improvement](#)
[Data Management](#)

3. **Post-Hospital**

Post Discharge Care
 Secondary and Tertiary Prevention
 Resources and Referrals
[Education and Outreach](#)
[Performance Improvement](#)
[Data management](#)

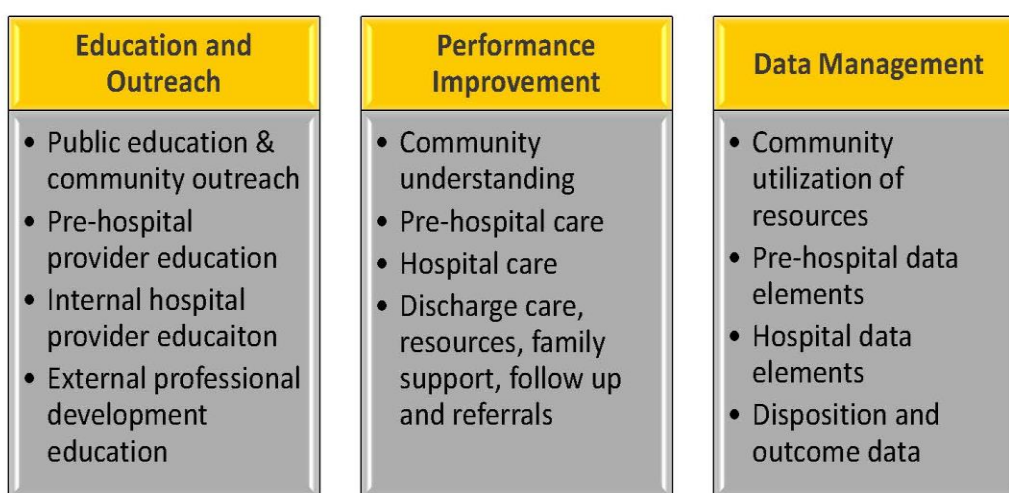
Three Areas of Collaboration: A Team Approach

Recognizing that patient outcomes are greatly dependent on the quality of care within each level of care on the continuum, it is critical for San Luis Obispo County providers to work in a collaborative team approach wherever possible. Common themes span across the Prehospital, In-Hospital and Post-Hospital levels that identify opportunities to maximize SLOEMSA's team approach to care of the cardiac patient.

- Community education where EMS and other healthcare professionals promote and support an integrated system of care. Interprofessional and interdisciplinary education systems prepare care providers to work collaboratively together as a team. When combined with

community education and outreach efforts, the patients have an active role in their personal health and well-being.

- Performance Improvement invariably involves work across multiple systems and disciplines within a practice. Within the healthcare practice continuum, this is particularly applicable as patients have various formal and informal care providers throughout their course of illness and into their discharge disposition.
- Good data can help identify, verify and proactively address issues, measure progress and capitalize on opportunities. When data is gathered, tracked, and analyzed in a credible way over time, it becomes possible to measure progress and success. Policies, procedures, services, and interventions can then be evaluated, modified, and improved.



A team approach from a truly integrated healthcare system will go beyond education, outreach, performance improvement and data management/sharing. SLOEMSA's aim is to create a seamless system which requires EMS professionals and community partners to commit to the same shared objectives and find ways to achieve them together. This team approach from a people-centered EMS system takes advantages of the strengths and resources brought by each organization and provider to protect the health and wellness of individuals and communities.

Stakeholders

San Luis Obispo County EMS Agency (SLOEMSA)

San Luis Obispo (SLO) County is located along California's central coast, about halfway between Los Angeles and San Francisco. Encompassing an area of 3,616 sq. miles, SLO County has a mix of urban communities and large sparsely populated rural areas. The County's population of 282,887 (2016) is concentrated along the U.S. Hwy 101 and California State Hwy 1 corridors including the communities of Nipomo, Arroyo Grande, Pismo Beach, San Luis Obispo, Morro Bay, Los Osos, Atascadero, and Paso Robles. In addition to permanent residents, SLO County has an increasing number of visitors drawn

to the County's numerous outdoor and cultural activities⁶. As a result of the population concentration, most of the County's emergency services, including advanced life support (ALS) fire and ambulance, are located primarily in the communities listed above. The rural, less populated areas are covered by Cal Fire resources containing mostly basic life support (BLS) personnel equipped with automatic external defibrillators. This utilization of resources ensures everyone in SLO County receives timely emergency response when needed.

SLOEMSA is comprised of an EMS Administrator, EMS Medical Director (part-time contracted), three (3) EMS Coordinators, and one (1) Administrative Assistant. Although one EMS Coordinator is designated as the STEMI staff liaison, all staff members have input in the STEMI Critical Care System. We work closely with stakeholders, including representatives from the designated STEMI Receiving Center, (SRC), STEMI Referral Hospitals (SRH), and public and private EMS provider agencies. It is through the work that is managed collectively as a group that the STEMI System of care exhibits optimal performance.

San Luis Obispo County STEMI Receiving Center and STEMI Referral Hospitals

SLO County has a total of five prehospital receiving hospitals. Four of these hospitals are within SLO County and one hospital is physically located just outside of SLO County in Santa Barbara County (Santa Maria). One hospital in SLO County, French Hospital Medical Center (FHMC), is a SLOEMSA designated STEMI Receiving Center. The remaining three hospitals in SLO County are designated STEMI Referral Hospitals. Marian Medical Center (MMC) in Santa Maria is designated as a STEMI Receiving Center by the Santa Barbara County EMS Agency. STEMI patients in the southern part of SLO County may be transported to MMC as the closest STEMI Receiving Center.

The California State Regulations define a STEMI Receiving Center (SRC) as a "licensed general acute care facility that meets the minimum hospital STEMI care requirements pursuant to Section 100270.124 and is able to perform Percutaneous Coronary Intervention (PCI)."

SLOEMSA has a written agreement with FHMC designating it as a STEMI receiving center. To be considered for STEMI receiving center designation, FHMC must hold current Chest Pain Certification by The Joint Commission and complete a SLOEMSA STEMI Center Designation Application packet. The application packet contains an evaluation tool that SLOEMSA uses to ensure the facility meets the requirements to receive STEMI Center Designation. STEMI Centers must also maintain compliance with SLOEMSA designation criteria outlined in Policy #400, *STEMI Receiving Center Designation*.

The California State Regulations define a STEMI Referring Hospital (SRH) as a "licensed general acute care facility that meets the minimum hospital STEMI care requirements pursuant to Section 100270.125."

SLO County currently has three (3) hospitals operating as SRH's: Twin Cities Community Hospital (TCCH), Sierra Vista Regional Medical Center (SVRMC), and Arroyo Grande Community Hospital (AGCH). These facilities have been meeting the requirements outlined in §100270.125 including interfacility transfer agreements with the two SRC's. With the implementation of the new STEMI regulations, Title 22 Division 9 Chapter 7.1, SLOEMSA is developing written agreements for all the County's SRH's.

⁶ http://www.sloevc.org/files/SLO%20County%20Tourism%20Report_2008%20%28v_2%29.pdf

SLO County Pre-hospital Providers

The County of San Luis Obispo is comprised of a mix of public and private EMS Advanced Life Support (ALS) providers and Basic Life Support (BLS) First Responders. A combination of ground, air and specialty Critical Care Transport (CCT) are all offered within the county. The community can access emergency transport services via public providers through the 9-1-1 system.

Once on scene, the first responder and ambulance transport crews coordinate their efforts to rapidly identify, treat and transport STEMI patients to an SRC. A critical component in the continuum of care is the transfer of 12-Lead ECG findings. Providers electronically transmit 12-Lead ECGs to the receiving hospital and when needed, prehospital providers can contact the SRC for medical direction or consultation. Field crews notify the SRC of the incoming patient with a “STEMI Alert” radio report in order to allow hospital staff to prepare for expeditious triage and treatment upon patient arrival. Prehospital providers work closely with the SRC staff to ensure that all pertinent information is relayed for a seamless transition within the continuum of care.

SLOEMSA has a policy in place to describe the process in which 12-Lead ECG transmission takes place. Policy document #152 *STEMI Triage and Destination* serves as an advanced life support skill guideline for obtaining, utilizing, and transmitting 12-Lead ECG’s and determining patient destination with suspected STEMI patients.

The ACS /STEMI Patient

SLOEMSA believes that rapid identification, treatment and transport of STEMI patients by emergency medical personnel is a valuable part of optimal care for the victims of cardiac emergencies. Morbidity and mortality rates in STEMI patients have been shown to be directly related to the degree of myocardial damage sustained as a result of vessel occlusion citation⁷. An important determinant of outcomes for the STEMI patient is timely reperfusion of the coronary arteries. Reperfusion of the affected artery can salvage myocardium that would otherwise become necrotic⁸.

A STEMI diagnosis is based on electrocardiographic changes that show evidence of evolving myocardial injury, as well as the presentation of the patient. When there are electrocardiographic changes and the patient presents with pain or symptoms of suspected cardiac origin, the patient goes directly to the cardiac catheterization laboratory for a possible reperfusion treatment. Therefore, STEMI patients benefit the most from rapid coronary reperfusion therapy⁹.

It is imperative that field personnel are well trained and STEMI receiving centers are well prepared for the patient that presents with STEMI. SLOEMSA has several policies in place to assist field providers in the rapid identification of a patient who may be suffering a STEMI. Policy #640 *Adult Cardiac Chest Pain/Acute Coronary Syndrome*; describes signs, symptoms and treatment of chest pain of suspected cardiac origin including possible STEMI patients; Procedure #707 *12-Lead ECG* outlines the indications, documentation and contact guidelines for possible STEMI patients; Policy #152 *STEMI Triage and Destination* is a guideline for EMS personnel to identify and transport patients with acute STEMI who could benefit from the rapid response and specialized services of an SRC.

⁷ <https://www.ahajournals.org/doi/10.1161/JAHA.118.008096>

⁸ <https://www.ahajournals.org/doi/10.1161/JAHA.118.008096>

⁹ https://www.heart.org/idc/groups/heart-public/@wcm/@mwa/documents/downloadable/ucm_487492.pdf

Destination

In STEMI systems of care, STEMI patients should be transported to the closest, most appropriate facility staffed and equipped to perform immediate percutaneous coronary intervention (PCI) to facilitate reperfusion. STEMI destination policies that allow emergency medical services to bypass non-percutaneous coronary intervention-capable facilities are associated with significantly faster treatment times for patients with ST-Elevation MI. Time to treatment in STEMI is a critical determinant of patient outcomes. Reducing delays relies on a robust emergency medical system that can transport a patient directly to a percutaneous coronary intervention-capable hospital, even if it means driving past a closer hospital¹⁰.

In the rare situation that the closest, most appropriate STEMI center is not available to accept a STEMI patient due to an internal disaster or occupied Cath Lab suites, field providers will transport the patient to the next closest, most appropriate SRC or SRH.

SLOEMSA has a policy in place to assist field providers in determining destination for a STEMI patient. Policy document #152 *STEMI Triage and Destination* outlines criteria and destination(s) for suspected STEMI patients in SLO County.

Communication

Studies show that EMS transportation is associated with shorter door-to-balloon time in patients with ST-segment elevation myocardial infarction. In addition to EMS transportation, when prehospital crews make notification of an incoming STEMI patient to the receiving hospital, it is again associated with shorter door-to-balloon time¹¹.

Early notification of an incoming STEMI patient allows appropriate hospital resources to mobilize prior to patient arrival. Due to the time-sensitive nature of reperfusion on outcomes, the diligent practice of STEMI-alerts from the field is a vital element in the continuum of care spectrum as it is meant to effectively and rapidly communicate the need for expeditious treatment upon patient arrival.

SLO County prehospital providers have two ways to make prehospital notification. The first, and most common, means of notification is via UHF radio frequency assigned to each receiving facility. The second means of notification is via a dedicated phone number for each receiving facility. In the case of possible STEMI or sustained return of spontaneous circulation (ROSC) in cardiac arrest patients, field units contact the SRC regardless of the closest receiving facility

SLOEMSA has policies in place to give direction on administering a notification report to receiving hospitals. Policy document #121 *EMS Base Station Report-12 Lead Consult* addresses the minimum acceptable information to be communicated and provides a standardized and consistent approach to pre-hospital notifications.

¹⁰ <https://www.ahajournals.org/doi/full/10.1161/circinterventions.117.005706>

¹¹ [https://www.ajemjournal.com/article/S0735-6757\(16\)30234-0/pdf](https://www.ajemjournal.com/article/S0735-6757(16)30234-0/pdf)

Inter-Facility Transfers

In SLO County approximately one-half of STEMI patients receiving PCI are transferred from one of SLO County's SRH's. These are almost exclusively patients who arrive at an Emergency Department (ED) by means other than ambulance (e.g.: private vehicle, walk-in). Once these patients are diagnosed as STEMI, an emergency inter-facility transfer to the closest SRC is arranged. There are currently agreements between the SLO County SRC and the three SRH's for inter-facility transfers of STEMI patients. With the new State regulations defining SRH's, §100270.125, SLOEMSA is developing written agreements for the County's three SRH's.

Data Collection

Retrospective data collection and analysis lie at the heart of quality improvement. Data aids in understanding how well the systems work, identifying potential areas for improvement, setting measurable goals, and monitoring the effectiveness of change. Robust data systems, with the ability to report clinical indicators and performance measures, are a key tool to accomplish Quality Improvement (QI) activities. The goal is to connect data from across the continuum of care from Prehospital to In-Hospital to Post-Hospital disposition in order to optimally evaluate patient outcomes¹².

The SRC in SLO County is currently using the National Cardiovascular Data Registry (NCDR) to collect and analyze pre-hospital, in-hospital, and post-hospital cardiac data, including STEMI and cardiac arrest patients. NCDR collects all the required data points listed in §100270.126, Data Management, including STEMI patient data elements and STEMI system elements.

STEMI Quality Improvement

Reaching for excellence in any system requires a functional decision-making process among the team of workers and users within that system. Inherent to this process is the need to know how the system is functioning and what to do to fix or improve it. The concept of continuous quality improvement (CQI) particularly in the field of health care relies mainly upon the following fundamental components:

- The availability of reliable and trusted information
- The ability to effectively communicate that information in easy to understand ways
- A standardized approach to reaching decisions and acting on those decisions

It is through SLOEMSA's Continuous Quality Improvement that the gap between performance and expectations narrows. It pushes the standards upward which results in better outcomes. Quality Improvement stresses understanding complex processes, measuring performance using reliable statistical methods, and using that information to build quality into our process.

SLOEMSA has policies in place to ensure continued high quality of patient care in emergency medical services provided in our community. Policy document #100-*Quality Improvement Plan* establishes a system-wide Quality Improvement Program to continuously monitor, review, evaluate and improve the delivery of Prehospital, In-Hospital and Post-Hospital care of all patients, including STEMI. The

¹² <https://ems.ca.gov/wp-content/uploads/sites/71/2017/12/Core-Measure-Report-for-2016-Data.pdf>

program has active members from all system partners and includes prospective, concurrent, and retrospective reviews as well as a feedback system to help close the QI loop.

STEMI Care Committee

As the delivery of cardiac care evolves to become more interconnected, coordinating care between prehospital Providers, Nurses, Physicians, and other disciplines has become increasingly important. In its simplest form, interprofessional collaboration is the practice of approaching patient care from a team-based perspective. When implementing interprofessional collaboration and learning to work together and respecting one another's perspectives in healthcare, multiple disciplines can work more effectively as a team to help improve patient outcomes. In addition, it improves the coordination and communication between healthcare professionals and thus in turn, improves the quality and safety of patient care.

STEMI system of care monitoring and evaluation in SLO County is conducted through the SLOEMSA STEMI Committee. The committee is comprised of EMSA staff, the STEMI Coordinator from the SRC, liaisons from all of the SRH's, a liaison from Marian Hospital SRC (Santa Barbara County), members of the SRC clinical team including cardiologists, and liaisons from the pre-hospital provider agencies (both fire and ambulance). The STEMI Care Committee meets quarterly and is tasked at reviewing performance data, identifying areas in need of improvement, and carrying out and monitoring improvement efforts. For these activities, the committee uses a variety of QI approaches and tools, including Plan, Do, Study, Act (PDSA) cycles, assessments, audits and feedback, benchmarking and best practices research. They provide expertise to address potential quality improvement initiatives within our STEMI system which contributes to the development or revision of STEMI related policies, procedures and treatment protocols.

Education and Outreach

According to the Robert Wood Johnson Foundation (RWJF), enhancing interdisciplinary collaboration and coordination in healthcare is imperative. As the delivery of care becomes more complex across a wide range of settings and the need to coordinate care among multiple providers becomes ever more important, developing well-functioning teams becomes a crucial objective throughout the health care system. Health professionals have traditionally operated in separate spheres. Studies show that if they "breakdown the walls of hierarchical silos" and come together as a team, they will improve the safety and quality of patient care.

Collaboration between professions starts with interdisciplinary education, which can break down those walls. Health professionals must begin working together before they start working. Interdisciplinary education will lead to more effective communication across disciplines and, ultimately, safer, more affordable, and higher quality care.¹³

In San Luis Obispo County, interdisciplinary education takes several forms. One form is through the STEMI Care Committee. By bringing in all the critical stakeholders, continuing education topics on STEMI issues are identified and disseminated to base stations and provider agencies who then provide continuing education on the topics identified.

¹³ <https://www.rwjf.org/en/library/articles-and-news/2010/11/interdisciplinary-collaboration-improves-safety-quality-of-care-.html>

Another form is through individual STEMI case follow-ups. Individual STEMI cases and their outcomes are forwarded to SLOEMSA who then relays them to the provider agencies for review with the crews who treated and transported the patients. This allows the treating paramedics and EMT's to see how important their roll is in the continuum of care in turn helping to "breakdown the walls of hierarchical silos" previously discussed.

In addition to interdisciplinary education, there is a vital component of public education and outreach that contributes to the health and wellness of a community. One of the goals identified in Healthy People 2020 is to increase the quality, availability, and effectiveness of educational and community-based programs designed to prevent disease and injury, improve health, and enhance quality of life.

Cardiac care public education and outreach will contribute to the improvement of health outcomes in the United States and is a component of the SLOEMSA STEMI Critical Care System.¹⁴ FHMC, the SLO County designated SRC, provides several outreach programs. The "Healthy for Life Nutrition" series covers the risk and signs of heart disease and stroke. The course is provided in both English and Spanish in various locations throughout SLO County. FHMC also has designated staff who are certified CPR instructors who teach Spanish Heartsaver CPR community courses throughout the county.

Many of SLO County's EMS provider agencies, led by the county's largest ambulance provider San Luis Ambulance (SLA) conduct regular hands-only CPR demonstrations and participant practice. These demonstrations are held at SLA headquarters, various fire stations throughout the county, and other public venues such as the San Luis Obispo Farmers Market. Early bystander CPR has been shown to increase survival of out-of-hospital cardiac arrest.¹⁵ Our goal is to increase the number of citizens trained in hands-only CPR which will lead to greater increases in cardiac arrest survival.

¹⁴ <https://www.healthypeople.gov/2020/topics-objectives/topic/educational-and-community-based-programs>

¹⁵ <https://newsroom.heart.org/news/compression-only-cpr-increases-survival-of-out-of-hospital-cardiac-arrest>

POLICY #100: CONTINUOUS QUALITY IMPROVEMENT

I. PURPOSE

- A. To establish a system-wide quality improvement program to evaluate the services provided within the County of San Luis Obispo (SLO) Emergency Medical Services (EMS) System.

II. SCOPE

- A. This policy applies to all EMS service providers (henceforth “providers”) and base hospitals within the County of SLO EMS System.

III. DEFINITIONS

- Emergency Medical Services System Continuous Quality Improvement Program (CQI Program) - methods of evaluation that are composed of structure, process, and outcome evaluations which focus on improvement efforts to identify root causes of problems, intervenes to reduce or eliminate these causes, and take steps to correct the process and recognize excellence in performance and delivery of care.

IV. POLICY

- A. The County of SLO EMS Agency (EMS Agency) will:

1. Develop and implement, in cooperation with other EMS system participants, a system-wide written CQI Plan (attachment A), as defined in Title 22, Division 9, Chapter 12. This plan will include indicators, which address, but are not limited to, the following:
 - a. Personnel
 - b. Equipment and Supplies
 - c. Documentation
 - d. Clinical Care and Patient Outcome
 - e. Skills Maintenance/Competency
 - f. Transportation/Facilities
 - g. Public Education and Prevention
 - h. Risk Management
2. Establish and facilitate a system-wide comprehensive quality assessment and improvement program. The program will include, but is not limited to, the following activities:

- a. Regularly scheduled CQI Committee meetings
 - (1) The CQI Committee must be multidisciplinary and include representatives from all levels (ALS and BLS) of field prehospital personnel both public and private, air transport agencies, emergency medical dispatch, base hospitals, Specialty Care Centers, and EMS Agency staff/personnel.
 - (2) The Chair of the Emergency Medical Care Committee (EMCC) will approve a CQI Committee Chairperson. The term of service will be two (2) years.
 - (3) Patient, provider and base hospital confidentiality will be strictly maintained at all times during the CQI process. A Confidentiality agreement will be signed at the beginning of each meeting by all participants.
 - b. Ensures each provider and base hospital complies with reporting and other quality assessment requirements as specified or determined in Title 22 Division 9, Chapter 12, and the EMS Agency CQI Plan.
 - c. Ensures each provider and base hospital submits a CQI plan to the EMS Agency for approval.
 - d. Ensures each provider and base hospital conducts an annual review of their own individual CQI plan and submits any changes to the EMS Agency for approval.
 - e. Review provider and base hospital CQI plans every five years
- B. EMS service providers will:
1. Develop and implement, in cooperation with other EMS system participants, a provider specific written CQI program, as defined in Title 22, Division 9, Chapter 12, and the EMS Agency CQI Plan. Such programs must include indicators, which address, but are not limited to, the following:
 - a. Personnel
 - b. Equipment and Supplies
 - c. Documentation
 - d. Clinical Care and Patient Outcome
 - e. Skills Maintenance/Competency
 - f. Transportation/Facilities
 - g. Public Education and Prevention
 - h. Risk Management

2. Review the provider specific CQI Program annually for appropriateness to the operation of the provider and revise as needed.
 3. Participate in the EMS Agency CQI Program that may include making available mutually agreed upon relevant records for program monitoring and evaluation.
 4. Develop, in cooperation with appropriate personnel/agencies, an action plan for performance improvement when the EMS CQI Program identifies a need for improvement. If the area identified as needing improvement includes system clinical issues, coordination and consultation are required with the provider and the EMS Agency.
 5. Provide the EMS Agency with an annual update, from date of approval and annually thereafter, on the provider CQI Program. The update must include, but not be limited to; a summary of how the provider's CQI Program addressed the program indicators.
- C. Base Hospitals will:
1. Develop and implement, in cooperation with other EMS system participants, a hospital-specific written EMS CQI program, as defined in Tittle 22, Division 9, Chapter 12, and the EMS Agency CQI Plan. Such programs must include indicators which address, but are not limited to, the following:
 - a. Personnel
 - b. Equipment and Supplies
 - c. Documentation
 - d. Clinical Care and Patient Outcome
 - e. Skills Maintenance/Competency
 - f. Transportation/Facilities
 - g. Public Education and Prevention
 - h. Risk Management
 2. Review the hospital-specific EMS CQI Program annually for appropriateness to the operation of the base hospital and revise as needed.
 3. Participate in the EMS Agency CQI Program that may include making available mutually agreed upon relevant records for program monitoring and evaluation.
 4. Develop, in cooperation with appropriate personnel/agencies, an action plan for performance improvement when the EMS CQI Program identifies a need for improvement. If the area identified as needing improvement includes system clinical issues, coordination and consultation are required with the base hospital and the EMS Agency.

5. Provide the EMS Agency with an annual update, from date of approval and annually thereafter, on the base hospital EMS CQI Program. The update must include, but not be limited to; a summary of how the hospital's EMS CQI Program addressed the program indicators.

V. PROCEDURE

A. Review Process

1. The first efforts to resolve conflicts should occur on a peer-to-peer level. If the issue is a timely patient care conflict, the base station physician should be consulted. If the issue remains unresolved at the peer-to-peer level, an Opportunity for Improvement Form/Incident Report Form (Attachment C of the EMS Agency Plan) should be forwarded to the provider's CQI representative. The CQI representative will then determine the need to do any of the following:
 - a. Resolve the issue at the provider level
 - b. Resolve the issue with the other involved provider(s)
 - c. Report system-wide implications to CQI Committee/EMS Medical Director
 - d. Handle inter-county issues
 - e. Identify and report any protocol, policy or emergency medical dispatch issues
 - f. Identify and manage and/or report any equipment issues
2. Opportunity for Improvement Form (Attachment C of the EMS Agency Plan) - any opportunity for improvement or patient care issue should be placed on the "Opportunity for Improvement Form"/Incident Report.
3. All reports and additional contents are considered confidential documents and should not become part of, or referenced in, the PCR or First Responder Report. The Opportunity for Improvement Form/Incident Report must be submitted to the provider CQI representative.
4. Reporting - All appropriate unresolved issues, mandatory requirements or issues with system-wide implications in patient care must be reported to the EMS Agency in a timely manner (Attachment B of the EMS Agency Plan - CQI Flow Chart).
5. CQI Representative - Each provider and base hospital must designate a representative who will receive and review all opportunities for improvement related to their personnel.
 - a. Any individual, provider or base hospital that discovers or becomes aware of an opportunity for improvement will inform the appropriate designated representative who will notify involved personnel after following the above guidelines.
 - b. The designated representative is responsible for the identification and resolution of opportunities for improvement in a timely manner.

- c. The EMS Agency Medical Director shall be notified of any reports within 72 hours of receiving any preliminary report of an opportunity for improvement.
 - d. The designated representative will maintain detailed documentation.
 - e. The designated representative will provide useful feedback to personnel.
6. The designated representative must forward to the EMS Agency, within 72 hours, all opportunities for improvement, which may involve the California Health and Safety Code, Division 2.5, Section 1798.200 and/or Title 22 of the California Code of Regulations. Section 1798.200 states... "Any of the following items will be considered evidence of a threat to public health and safety and may result in denial, suspension, or revocation of a certificate issued under this division or placement on probation of a certificate holder" including:
- a. "Fraud in the procurement of any certificate under this division."
 - b. "Gross negligence."
 - c. "Repeated negligent acts."
 - d. "Incompetence."
 - e. "The commission of any fraudulent, dishonest, or corrupt act which is substantially related to the qualifications, functions and duties of prehospital personnel."
 - f. "Conviction of any crime which is substantially related to the qualifications, functions, and duties of prehospital personnel. The record of conviction or certified copy of the record shall be conclusive evidence of such conviction."
 - g. "Violating or attempting to violate directly or indirectly, or assisting in or abetting the violation of, conspiring to violate, any provision of this division or regulations adopted by the authority pertaining to prehospital personnel."
 - h. "Violating or attempting to violate any federal or state statute or regulation which regulates narcotics, dangerous drugs, or controlled substances."
 - i. "Addiction to the excessive use of, or the misuse of, alcoholic beverages, narcotics, dangerous drugs, or controlled substances."
 - j. "Functioning outside the supervision of medical control in the field care system operating at the local level, except as authorized by any other license or certification."
 - k. "Demonstration of irrational behavior or occurrence of a physical disability to the extent that a reasonable and prudent person would have reasonable cause to believe that the ability to perform the duties normally expected may be impaired."

7. In cases involving paramedics, the EMS Agency Medical Director may temporarily suspend the license in the case of a threat to the public health and safety and forward the case to the California EMS Authority for further action.

B. Counseling and Remediation

1. Counseling and remediation are an important aspect of the quality improvement process and include, but are not limited to:

- a. Recognition, reward and reinforcement
- b. Case review and counseling on specific issues with focused QI review to monitor for recurrence over a specified period of time
- c. Didactic courses
- d. Supervised clinical time with a written outcome summary
- e. Didactic remediation with case scenario
- f. Topic oriented research
- g. Development of in-service or written paper on a specific topic with supervised review
- h. Patient Care Record (PCR) and/or medical dispatch record review with a supervised written summary
- i. Focused quality improvement review of ongoing care, including but not limited to, PCR review, field observation and tape review

2. Recurrence of issues at any level may require increased counseling, monitoring, and/or remediation.

a. A written remediation agreement with the involved individual(s) may include, but not be limited to:

- (1) Identification of the specific opportunity to improve
- (2) Identification of specific written future expectations including the expected time frames for successful completion
- (3) Consequences for failure to comply
- (4) Signature of involved personnel on the written agreement
- (5) Timelines for resolution and conclusion

3. System-wide issues may be referred to the appropriate EMS Agency committee(s) for assistance in resolving the issue.

VI. AUTHORITY

- Title 22 Division 9, Chapter 12
- Health and Safety Code Sections 1797.103, 1797.107, 1797.174 and 1797.176.

- Reference: Health and Safety Code Sections 1797.94, 1797.174, 1797.202, 1797.204, 1797.220, and 1798.

VII. ATTACHMENTS

- A. The County of San Luis Obispo Emergency Medical Services Agency Continuous Quality Improvement Plan
- B. CQI Review Process – Flow Chart
- C. Opportunity For Improvement/Incident Report Form

POLICY #121: EMS BASE STATION REPORT

I. PURPOSE

- A. To provide EMS personnel with a guideline for giving a brief, consistent, and clear report that provides pertinent information to base hospital personnel.

II. SCOPE

- A. This policy applies to all radio and telephone communications between the San Luis Obispo (SLO) EMS personnel, Sierra Vista Regional Medical Center (SVRMC), French Hospital Medical Center (FHMC), Twin Cities Community Hospital (TCCH), Arroyo Grande Community Hospital (AGH), and Marian Medical Center (MMC) providing patient information.

III. DEFINITIONS

The following terms shall initiate communication with a base hospital to better identify the type of patient or patient needs:

- “Notification” – Communication with intended receiving hospital for routine patient care not needing special orders, destination requests or consultation.
- “Alert” – Communication with intended receiving Specialty Care Base Hospital to identify patients meeting “Alert” triage criteria for a Specialty Care Center, i.e. Trauma Step 1 or 2, STEMI, ROSC or Stroke.
- “Medication Request” – When requesting a medication order beyond standing orders from a SLO Base Hospital physician or MICN.
- “Destination Consultation” – Communication with SLO Specialty Care Base Hospital physician or MICN for patients requiring a destination other than the Specialty Care Base Hospital, (i.e. Trauma and STEMI) or in circumstances where the initial intended destination needs to be re-routed to a closer or alternate hospital i.e. unmanageable airway.
- “Physician Consultation” – For circumstances needing SLO Base Hospital physician assistance when patient management is not clear or other unusual situations as determined by EMS personnel.
- “AMA Consultation” – The patient is requesting an AMA per EMS Agency Patient Refusal of Treatment and/or Transport Policy # 203
- “Termination” – Contact with the SLO Base Hospital physician or MICN to terminate resuscitative measures when the patient has not responded to medical therapy per EMS Agency Prehospital Determination of Death/ Do Not Resuscitate (DNR)/End of Life Care Policy # 125
- “MCI Level I” – When a MCI is declared with 3 to 10 patients
- “MCI Level II” – When a MCI is declared with 11 or more patients

POLICY

- A. Common communication format will be used, with both parties utilizing professional communication etiquette, including; identifying who they are and with whom they are speaking with each transmission.
- B. Use acceptable language (plain text) and avoid using "10" codes, etc.
- C. EMS personnel will identify themselves with their identification number and transporting unit number when making contact with a base hospital.
- D. MICNs will confirm the base hospital name and state their identification number when receiving the base station report.
- E. Once contacted, the SLO Base Hospital, if not receiving the patient, must notify the receiving hospital of the incoming patient and provide that hospital with the prehospital care patient information.

IV. PROCEDURE

- A. When initiating a Base Hospital contact include:
 - 1. Type of Base Hospital contact i.e. "Notification", "Medication Request", "Step 1 Trauma Alert", etc.
 - 2. Transport Code
 - 3. Estimated time of arrival (ETA)
- B. "NOTIFICATIONS" - contact the intended Receiving Base Hospital
 - 1. Age, gender
 - 2. Brief description of the chief complaint/mechanism of injury
 - 3. Protocol followed
 - 4. Base Hospital should refrain from further questioning
- C. "ALERTS"- contact the appropriate intended receiving hospital
 - Include the information above and the following information as it pertains to the specific call:
 - a. Vital Signs
 - b. Medications and procedures
 - c. Response to treatments
 - d. Pertinent positives and negatives
 - 1. "STEMI ALERT" - Contact intended receiving STEMI base (FHMC or MMC) for:
 - a. Patients positive for STEMI per EMS Agency Policy STEMI Triage and Destination #152

2. *"TRAUMA ALERT"* – Contact intended receiving Trauma Center (SVRMC or MMC) for:
 - a. Patients meeting Step 1 or 2 of the trauma triage criteria per EMS Agency Trauma Patient Triage and Destination Policy #153
 - b. Additional MIVT information to be included in the radio report
 1. M – Mechanism of injury
 2. I – Injuries identified and/or chief complaint
 3. V – Vital signs and symptoms:
 - (a) Blood pressure – communicate ANY episode of hypotension (BP < 90) that occurs at any time during the call
 - (b) Pulse rate
 - (c) Respiratory rate
 - (d) Glasgow Coma Scale (GCS)
 4. T – Treatments
3. *"STROKE ALERT"* – Contact intended Receiving Base Hospital for:
 - a. Patients meeting Stroke Alert criteria per EMS Agency Policy Suspected Stroke/TIA # 621
 - b. Include additional stroke specific information in the report:
 1. Any *BEFAST* information that was positive:
 - (a) B - Balance (changes or problems from normal)
 - (b) E - Eyes (sudden change in vision or double vision)
 - (c) F - Facial droop
 - (d) A - Arm drift
 - (e) S - Speech abnormalities
 - (f) T - Time last seen normal (not time of symptoms noticed)
- D. *"ROSC"* (Return of Spontaneous Circulation) – Contact nearest STEMI BASE HOSPITAL (FHMC or MMC) for:
 - a. Patients with ROSC per EMS Agency Pulseless Cardiac Arrest (Atraumatic) Policy #641
- E. *"MEDICATION REQUEST"* - contact the SLO Receiving Base Hospital
- F. *"CONSULTATION"* - contact the SLO Receiving Base Hospital except as noted below:
 1. *DESTINATION CONSULTATION* - contact appropriate receiving SLO BASE HOSPITAL or SPECIALITY CARE CENTER
 - a. *TRAUMA DESTINATION CONSULT* - contact the SLO Trauma Center (SVRMC) per Trauma Triage and Destination Policy #153
 1. Use MIVT format.

2. ETA to destination options

b. *12-LEAD CONSULT* - Contact the SLO STEMI Base Hospital (FHMC) per STEMI Triage and Destination Policy #152

G. *PHYSICIAN CONSULTATION* - contact appropriate SLO Base Hospital or Specialty Care Center

H. *"AMA"* - contact the SLO Receiving Base Hospital per AMA Policy #203

I. *"TERMINATION"*- refer to Prehospital Determination of Death/ Do Not Resuscitate (DNR)/End of Life Care Policy #125

a. Adult Atraumatic Arrest of Cardiac Origin - contact the SLO STEMI Base Hospital (FHMC) if the patient has not responded to resuscitative measures

b. Traumatic Arrest - contact the SLO Trauma Center (SVRMC)

c. All other terminations - contact closest receiving SLO base hospital

J. *"MCI Level I and Level II"* - initiate an MCI notification per EMS Agency MCI Policy #210

V. AUTHORITY

A. Health and Safety Code, Division 2.5, Sections 1798 &1798

VI. ATTACHMENTS

A. Base Hospital notification list

POLICY #152: STEMI TRIAGE AND DESTINATION (Telemetry Trial)

I. PURPOSE

- A. To establish guidelines for Emergency Medical Services (EMS) personnel to identify and transport patients with acute ST-segment Elevation Myocardial Infarction (STEMI) who could benefit from the rapid response and specialized services of a STEMI Receiving Center (SRC).

II. SCOPE

- A. This policy applies to adult patients with chest pain or other symptoms indicative of Acute Coronary Syndrome (ACS) with a 12-lead ECG demonstrating elevated ST-segments indicating a specific type of myocardial infarction.

III. DEFINITIONS/GLOSSARY

- Percutaneous Coronary Intervention (PCI): A broad group of percutaneous techniques utilized for the diagnosis and treatment of patients with STEMI.
- Return of Spontaneous Circulation (ROSC): The return of a palpable pulse after cardiac arrest.
- STEMI: An acute myocardial infarction that generates a specific type of ST-segment elevation on a 12-lead ECG.
- "STEMI Alert": A report from EMS personnel that notifies a STEMI Receiving Center as early as possible that a patient has a specific computer-interpreted prehospital 12-lead ECG indicating a STEMI, allowing the SRC to initiate the internal procedures to provide appropriate and rapid treatment interventions.
- "12-Lead Consultation" - Contact SLO County STEMI Receiving Hospital (French Hospital Medical Center) when the patient does not meet a STEMI ALERT Criteria and transmitting the 12-lead ECG would benefit the consultation.
- STEMI Receiving Center (SRC): A facility licensed for cardiac catheterization laboratory and recognized as an SRC by the County of San Luis Obispo Emergency Medical Services Agency (EMS Agency).
- STEMI Referral Hospital (SRH): An acute care hospital in The County of San Luis Obispo (SLO) that is not designated as a STEMI Receiving Center.
- SLO STEMI Receiving Center (SLO SRC) - refers to the STEMI Receiving Center in San Luis Obispo County (French Hospital Medical Center) to be used for medical direction and or destination decisions.

IV. POLICY

- A. Determine if patient condition meets STEMI Patient Triage Criteria.

- B. "STEMI Alert" notifications - contact the nearest SRC (**French or Marian**) as soon as possible
- C. "12-Lead ECG Consultations" and/or "Destination" consultations - contact the SLO SRC (**French**)

V. PROCEDURE

- A. Determine if patient condition meets STEMI Patient Triage criteria:
 - 1. Patients meeting EMS Agency Protocol Adult Chest Pain #640: or with indications for 12-lead ECG per EMS Agency 12-lead ECG Policy #707 with computerized interpretation of an accurately performed pre-hospital 12-lead ECG indicating *****STEMI***** (or equivalent computerized interpretation).
- B. Destination and Notification
 - 1. Transport to nearest SRC (French or Marian) or as directed by a SLO SRC (French).
 - a. Patients meeting the STEMI Patient Triage Criteria are considered a "STEMI Alert" and must be transported to the nearest SRC.
 - b. Patients with ROSC regardless of 12-lead ECG reading
 - c. The SRC Emergency Department must be notified as early as possible of the incoming "STEMI Alert" and /or ROSC to activate the SRC's internal STEMI/PCI system.
 - 2. An Emergency Department physician at the SLO SRC (**French**) must be consulted to determine patient destination in the following:
 - a. "STEMI Alert":
 - (1) The patient is unstable with a SBP<90mmHg and transport time to the SRC would add more than 30 minutes to the transport time to a STEMI Referral Hospital (SRH).
 - (2) Patient is uncooperative with the procedure and/or expresses a personal preference for destination other than the SRC; see EMS Agency Policy #203: Patient Refusal of Treatment or Transport.
 - b. Questionable 12-Lead ECG
 - c. Patients who, while en-route, develop unmanageable airway or cardiac arrest without ROSC must be transported to the closest hospital, with the transporting provider notifying the intended SRC of the change in destination.
 - d. When a patient is diverted to another hospital the SLO SRC (French) shall notify the receiving hospital and provide information regarding the destination decision.

- C. Contact the nearest SRC as soon as possible with “STEMI Alert” Notification
1. For patients with identified STEMI, destination must be promptly determined after the prehospital 12-lead ECG is completed and read. The SRC must be notified as soon as possible.
 2. The “STEMI Alert” notification must contain the following information:
 - a. Call identified as a “STEMI Alert”.
 - b. ETA to SRC.
 - c. Patient age and gender.
 - d. Confirmation of ECG reading and whether it appears to be free of significant artifact.
 - e. Confirmation that the appropriate treatment protocol is being followed.
 - f. Results of any medications given.
 - g. Additional information if required:
 - (1) Any confusion regarding chief complaint or treatment.
 - (2) Destination decision assistance.
 3. ECG Transmission:
 - a. With a STEMI Alert or ROSC and the equipment is available, the ALS provider shall transmit a 12-lead ECG to a SRC (French or Marian);
 - (1) Notify the SRC that you are capable of 12-lead ECG transmission and that you have transmitted or are about to transmit the 12-lead ECG previously obtained.
 - (2) Include on the transmitted 12-lead ECG the patients’ age and sex required for the ECG monitor to accomplish its interpretation and be used as an identifier for the SRC.
 - (3) Do not include the name of the patient with the transmission of the 12-lead ECG.
 - b. When “Consulting” with a SLO SRC (French) and transmitting the 12-lead ECG would benefit the consultation:
 - (1) Notify the SLO SRC (French) that you are capable of 12-lead ECG transmission and that you have transmitted, or are about to transmit the 12-lead ECG.
 - (2) Include on the transmitted 12-lead ECG the patients’ age and sex required for the ECG monitor to accomplish its interpretation and be used as an identifier for the SRC
 - (3) Do not include the name of the patient with the transmission of the 12-lead ECG.

4. Documentation

- a. Findings of prehospital 12-lead ECGs, the time of the "STEMI Alert," and patient identification must be documented on the 12-lead ECG and the prehospital PCR.
- b. Two copies of the prehospital 12-lead ECG (multiple if performed) must be made, with one delivered to the receiving hospital responsible for the continued care of the patient, and one included with the prehospital PCR.

VI. AUTHORITY

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

POLICY #400: STEMI RECEIVING CENTER DESIGNATION

I. PURPOSE

- A. To define requirements for designation as a STEMI Receiving Center in The County of San Luis Obispo (SLO).

II. SCOPE

- A. This policy applies to all hospitals in the County of SLO seeking designation as a STEMI Receiving Center.

III. DEFINITIONS/GLOSSARY

- Percutaneous Coronary Intervention (PCI): A broad group of percutaneous techniques utilized for the diagnosis and treatment of patients with STEMI.
- STEMI: An acute myocardial infarction that generates a specific type of ST-segment elevation on a 12-lead ECG.
- "STEMI Alert": A report from prehospital personnel that notifies a STEMI Receiving Center as early as possible that a patient has a specific computer-interpreted prehospital 12-lead ECG indicating a STEMI, allowing the SRC to initiate the internal procedures to provide appropriate and rapid treatment interventions.
- STEMI Receiving Center (SRC): A facility licensed for cardiac catheterization laboratory and approved to operate as an SRC by the County of SLO Emergency Medical Services Agency (EMS Agency).
- STEMI Referral Hospital (SRH): An acute care hospital in the County of SLO that is not designated as a STEMI Receiving Center.

IV. POLICY

- A. To be designated as a SRC in the County of SLO, a hospital must meet the following requirements:
1. Possess current California licensure as an acute care facility providing Basic Emergency Medical Services.
 2. Hold current status as a Base Hospital in the County of SLO.
 3. Have the ability to enter into a written agreement with The County of SLO identifying SRC and County roles and responsibilities.
 4. Agree to accept all EMS patients meeting STEMI patient triage criteria and all "STEMI Alert" patients transferred from other County of SLO hospitals (except when on diversion due to a declared hospital in-house internal

disaster), and provide a plan for the triage and treatment of simultaneously presenting STEMI patients regardless of ICU/CCU or ED saturation status.

5. Meet SRC designation requirements as defined in the County of SLO EMS Agency SRC Designation Criteria Application and Evaluation matrix (Attachment A) which includes:
 - a. Hospital Services including:
 - (1) Special permit for cardiac catheterization laboratory pursuant to the provisions of Title 22, Division 5, of the California Code of Regulations.
 - (2) Intra-aortic balloon pump capability with necessary staff available 24 hours a day 7 days a week 365 days a year.
 - (3) California permit for cardiovascular surgery or a written plan for emergency transport to a facility with cardiovascular surgery available with timely (within 1 hour) transfer steps and agreements.
 - (4) Continuous availability of PCI resources 24 hours a day 7 days a week 365 days a year.
 - (5) Dedicated priority "Specialty Care" phone line available 24 hours a day 7 days a week 365 days a year to be used for pre-hospital communication regarding "STEMI Alert" patients and for notifications of "STEMI Alert" transfers from other hospitals.
 - b. Hospital Personnel including:
 - (1) SRC Medical Director who must be board-certified in Internal Medicine with a sub-specialty in cardiovascular disease.
 - (2) SRC Program Manager who must be an RN.
 - (3) Cardiac Catheterization Lab Manager/Coordinator who must be an RN if not directly reporting to the SRC Program Manager.
 - (4) A daily roster of interventional cardiologists who must:
 - (a) Be available and present in the SRC within 30 minutes of the activation of the SRC's internal STEMI/PCI system.
 - (b) Have privileges in PCI.
 - (5) A daily roster of cardiovascular surgeons who must be available and present in the SRC within 30 minutes of documented request, or SRCs without cardiovascular surgery capability must have written transfer guidelines and a plan for emergency transfer within 1 hour if medically necessary.
 - (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:

- (a) Appropriate cardiac catheterization nursing and support personnel.
 - (b) RN or CV Perfusionist trained in intra-aortic balloon pump management.
- c. Clinical Requirements including:
 - (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 period updating:
 - (a) Interventionalist must perform a minimum of 11 primary PCI procedures and 75 PCI procedures per year.
 - (b) SRC must perform a minimum of 36 primary PCI procedures and 200 total PCI procedures annually.
 - (2) Performance (timeliness) and outcome measures will be assessed initially in the survey process, and will be monitored closely on an ongoing basis by the SRC and the EMS Agency through a Performance Improvement Program for EMS Patients (Item 5.e below).
- d. Policies and Procedures including:
 - (1) Cardiac interventionalist activation
 - (2) Cardiac catheterization lab team activation
 - (3) STEMI contingency plans for personnel and equipment
 - (4) Coronary angiography
 - (5) PCI and use of fibrinolytics
 - (6) Inter-facility transfer policies/protocols for STEMI
 - (7) Transfer agreements for cardiac surgery, as appropriate
 - (8) STEMI patient triage
- e. Performance Improvement Program for EMS Patients including:
 - (1) An SRC must provide two representatives to participate in the EMS Agency STEMI Quality Improvement (QI) Committee:
 - (a) A QI representative
 - (b) A cardiologist
 - (2) An SRC will hold routine multidisciplinary meetings that must include representatives from SRHs, County of SLO prehospital providers and the EMS Agency.

- (3) An SRC must implement a written internal SRC QI plan/program with an internal review process that includes:
 - (a) Door-to Balloon times
 - (b) Death rate (within 30 days, related to procedure regardless of mechanism)
 - (c) Compliance
 - (d) Emergency CABG rate (result of procedure failure or complication)
 - (e) Vascular complications (access site, transfusion, coronary perforation or operative intervention required)
 - (f) Cerebrovascular accident rate (peri-procedure)
 - (g) Post-procedure nephrotoxicity (increase in serum creatinine of >0.5)
 - (h) Sentinel event, system and organization issue review and resolution processes
- (4) A SRC must participate in prehospital STEMI-related educational activities as may be required by the EMS Agency
- f. Data Collection, Submission and Analysis including:
 - (1) A SRC must participate in the National Cardiac Data Registry (NCDR).
 - (2) A SRC must participate in EMS Agency data collection as defined in Attachment B: Data Requirements for STEMI Receiving Centers.
- B. A hospital may lose its designation as an SRC for one or more of the following reasons:
 - 1. Inability to meet and maintain SRC Designation Criteria
 - 2. Failure to provide required data
 - 3. Failure to participate in STEMI System QI activities
 - 4. Other criteria as defined and reviewed by the EMS Agency STEMI QI Committee

V. PROCEDURE

- A. To apply for designation as a SRC in the County of SLO, a Base Hospital must pay the initial application fee and submit an application for designation to the EMS Agency.
- B. SRC designation may be awarded to a hospital following a satisfactory review of written documentation, an initial site survey by EMS Agency staff and a cardiologist from out of the area, and designation approval by the EMS Agency.

- C. The SRC designation period will coincide with the period covered in a written agreement between the SRC and the County of San Luis Obispo.

VI. AUTHORITY

- Health and Safety Code, Division 2.5, Sections 1798, 1798.101, 1798.105, 1798.2
- California Code of Regulations, Title 22, Section 100175

VII. ATTACHMENTS

- A. Application and Evaluation Matrix
- B. Data Requirements for STEMI Receiving Center

ADULT CARDIAC CHEST PAIN/ACUTE CORONARY SYNDROME**FOR USE IN ADULT PATIENTS****BLS**

- Universal Protocol #601 Pulse Oximetry
 - O₂ administration per Airway Management Protocol #602
- **Aspirin** 162 mg PO (non-enteric coated) chewable tablets
- May assist with administration of patient's prescribed **Nitroglycerin** with SBP ≥ 100 mmHg

ALS Standing Orders

- Obtain 12-lead ECG early
- **Nitroglycerin** 0.4 mg SL tablet or spray
 - Repeat every 5 min
- **Nitroglycerin Paste** 1 inch (1 Gm) may be considered after initial dose(s) of SL Nitroglycerin
- **HOLD NITROGLYCERIN** and consult base if:
 - SBP is trending towards or drops < 100 mmHg or in the presence of other signs/symptoms of hemodynamic instability
 - Evidence of Right Ventricular Infarction (RVI) – see Notes

MODERATE or SEVERE PAIN

- **Refractory to Nitroglycerin**
 - **Fentanyl** 25-50 mcg SLOW IV (over 1 min), titrated to pain improvement, maintain SBP ≥ 100 mmHg
 - May repeat after 5 min if needed (not to exceed 200 mcg total)

If difficulty obtaining IV

- **Fentanyl** 50-100 mcg IM/IN (use 1 mcg/kg as guideline)
 - May repeat after 15 min if needed (not to exceed 200 mcg total)

Base Hospital Orders Only

- **Nitroglycerin** with
 - Significant decrease in SBP after administration
 - Patients taking erectile dysfunction medications
 - Atrial fibrillation with RVR
 - Evidence of RVI
- Additional **Fentanyl**
 - **Persistent hypotension**
- **Normal Saline** bolus up to 500 mL
- **Push-Dose Epinephrine 10 mcg/mL** 1mL IV/IO every 1-3 min
 - Repeat as needed to maintain SBP >90 mmHg
 - See notes for mixing instructions
- OR**
- **Epinephrine Drip** start at 10 mcg/min IV/IO infusion
 - Consider for extended transport
 - See formulary for mixing instructions
- As needed

Notes

- Acute Coronary Syndrome – a group of conditions resulting from acute myocardial ischemia – including: chest/upper body discomfort, shortness of breath, nausea/vomiting, or diaphoresis
- Evidence for RVI: All inferior STEMI should be evaluated for ST elevation in V4R

- Atrial fibrillation with RVR is atrial fibrillation with a ventricular rate > 100
- Early notification of the SRC with "STEMI Alert" with a 12-lead ECG reading of ***Acute MI Suspected*** or equivalent based on monitor type.
- "STEMI Alerts" consider a secondary IV with NS lock to assist the Cath Lab in tubing changes
- **Mixing Push-Dose Epinephrine 10 mcg/mL (1:100,000): Mix 9 mL of Normal Saline with 1 mL of Cardiac Epinephrine 1:10,000 (0.1 mg/mL), mix well**

12-LEAD ECG	
ADULT	PEDIATRIC (≤34KG)
BLS	
Universal Protocol #601 Pulse Oximetry - O ₂ administration per Airway Management Protocol #602	
ALS Standing Orders	
<ul style="list-style-type: none"> • Used in conjunction with appropriate EMS Protocol, or at paramedic discretion • Obtain early • Serial 12-lead ECGs should be obtained when possible <ul style="list-style-type: none"> ○ If capable transmit 12-lead ECGs that are positive for STEMI to the receiving SRC (French/Marian) per STEMI Triage and Destination Policy #152 	
Base Hospital Orders Only	
As needed	
Notes	
<ul style="list-style-type: none"> • Indications: <ul style="list-style-type: none"> ○ Signs and symptoms suggestive of Acute Coronary Syndrome (ACS) as defined in Chest Pain/ Acute Coronary Syndrome Protocol #640 ○ Atypical symptoms or anginal equivalents such as; shortness of breath, syncope, dizziness, weakness, diaphoresis, nausea/vomiting or altered level of consciousness ○ Cardiac dysrhythmia/respiratory distress/cardiogenic shock ○ Post cardioversion ○ Cardiac arrest patients with return of spontaneous circulation (ROSC) ○ Diabetic patients with shortness of breath • Consider not performing a 12-lead ECG: <ul style="list-style-type: none"> ○ Trauma unless an event of cardiac origin is suspected ○ An uncooperative patient • Documentation <ul style="list-style-type: none"> ○ 12-lead ECG shall be a part of the patient record – either attached or as part of an ePCR ○ A copy of the 12-lead ECG shall be delivered to the personnel at the receiving hospital responsible for continued care of the patient and be included in the patient care record • Contact and transport to STEMI Receiving Center (SRC), French or Marian, when: <ul style="list-style-type: none"> ○ Positive reading for STEMI – “***STEMI***” or equivalent reading ○ STEMI Alerts or ROSC and when capable – transmit the 12-lead ECG to the receiving SRC (French/Marian) per STEMI Triage and Destination Policy #152 ○ 12-Lead Consults - Contact the SLO SRC (French) when transmitting 12-lead ECG for consultations per STEMI Triage Destination Policy #152 	