



Monterey County Emergency Medical Services Agency STEMI Critical Care System Plan

DECEMBER 23, 2019

Table of Contents

Monterey County EMS Agency.....	2
Mission, Vision and Values	2
STEMI Critical Care System	3
Monterey County EMS Agency Organization.....	3
Designated STEMI Receiving Centers	4
Monterey County EMS Agency Policies	4
Communications	5
Data Collection	5
Integration with Neighboring Counties	7
Quality Improvement	7
Education	7
STEMI System Goals	8
Appendix.....	9

Monterey County EMS Agency

The Monterey County EMS Agency is the regulatory agency overseeing the Monterey County EMS System. Monterey County is a very diverse County, serving a population of 437,907 residents¹, with an additional 4.6 million visitors per year.² Monterey County encompasses 3,771 square miles, and includes the longest coastline of any county in California³ as well as the Salinas Valley, the Big Sur coast, and very rural areas in the southern portion of the County. The topography of the County provides many unique challenges to providing Emergency Medical Services throughout the County, including farming accidents, diving accidents, drownings, and hang-gliding accidents, to name just a few. Access to several areas in Monterey County is limited, and fire departments and helicopters are frequently used for search and rescue functions in addition to medical aid.

Mission, Vision and Values

The mission of the Monterey County EMS Agency is to enhance, protect, and improve the health of the people of Monterey County by collaboratively planning, regulating, and optimizing the quality and stability of the emergency medical services system.

EMS Vision:

We envision leading the Monterey County EMS System to ensure best practices-standards of emergency medical care for the people of Monterey County.

EMS Values:

The Monterey County EMS Agency is committed to:

- Valuing the needs of the patient in all that we do.
- Personal, professional, and organizational integrity.
- Consistently treating all people with dignity, respect, honesty, and fairness.
- Working fairly and openly in an environment of trust, transparency, safety, and teamwork.
- Leadership that brings accountability, responsibility, and success to our organization.
- Maintaining a working environment that fosters passion, creativity, and enjoyment.
- Striving to achieve excellence through expertise and continued learning.

¹ <https://datausa.io/profile/geo/monterey-county-ca/>, retrieved December 1, 2019

² <https://www.seemonterey.com/media/fact-sheet/>, retrieved December 1, 2019

³ <https://www.virtuoso.com/articles/virtuoso-global/May-2019/How-to-Explore-the-Real-Monterey-County#.XeSAF5pKiUk>, retrieved December 1, 2019

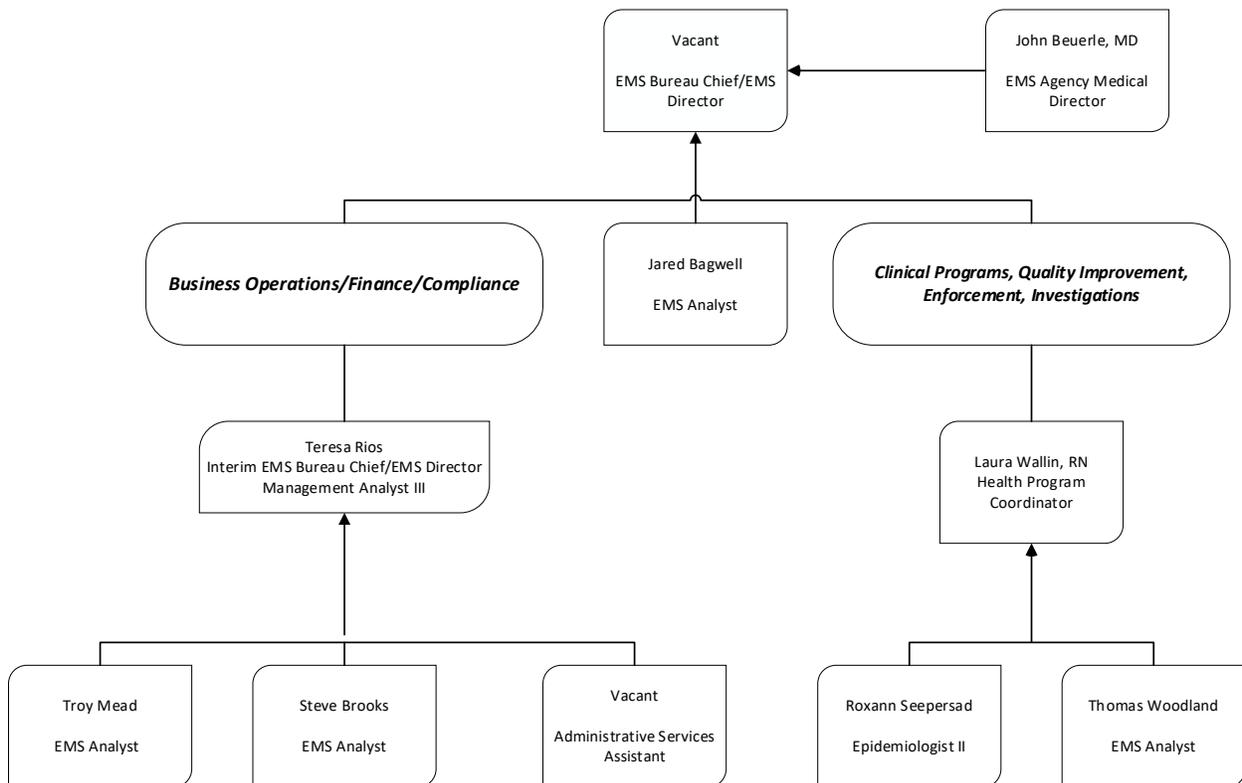
STEMI Critical Care System

On July 1, 2019, all Local EMS Agencies (LEMSAs) that had STEMI Critical Care Systems were required to comply with regulations described in the California Code of Regulations: Title 22, Division 9, Chapter 7.1. Up to this time, there has been no standardization among California counties in their STEMI systems of care. This STEMI Critical Care System Plan complies with the requirements of the STEMI Regulations.

Monterey County has had a STEMI Critical Care System in place with 2 designated STEMI Receiving Centers since 2010. Both hospitals underwent a site review from the Monterey County EMS Agency prior to designation to determine their capabilities. The STEMI System is a subsystem of the overall EMS system. Policies and protocols have been in place for the identification, prehospital treatment, and destination for patients who have been identified in the prehospital environment as suffering from a STEMI. These policies and protocols are regularly reviewed and updated with the assistance of the Monterey County STEMI QI Committee, which is described later in this document.

Monterey County EMS Agency Organization

The Monterey County EMS Agency is made up of an EMS Bureau Chief, EMS Medical Director (part-time, contracted), a Management Analyst, a Health Program Coordinator, four EMS Analysts, one Administrative Services Assistant, and one half-time epidemiologist.



The STEMI Critical Care System is primarily managed by the Health Program Coordinator in close consultation with the EMS Medical Director and the EMS Director. Members are appointed by the EMS Director, in consultation with the EMS Agency Medical Director and staff. The epidemiologist is crucial in the validation and interpretation of the data collected by the Health Program Coordinator.

Designated STEMI Receiving Centers

Monterey County has designated 2 of the 4 hospitals in our system as STEMI Receiving Centers: Community Hospital of the Monterey Peninsula (CHOMP), and Salinas Valley Memorial Hospital (SVMH). SVMH is accredited by The Joint Commission as a Primary Heart Attack Center. CHOMP is accredited by the American College of Cardiology as a Chest Pain Center.

Facility	Contract Term	Agreement Type
Community Hospital of the Monterey Peninsula	March 6, 2014 – March 5, 2024	STEMI Receiving Center Agreement
Salinas Valley Memorial Hospital	January 24, 2014 – January 23, 2024	STEMI Receiving Center Agreement

Monterey County EMS Agency Policies and Protocols

The Monterey County EMS Agency has several policies and protocols in place to direct the treatment and transport destinations for patients identified as suffering from a STEMI:

- Policy 3080: Hospital Communications mandates hospital notification or base contact with a suspected STEMI patient. It also gives a reporting format for such notifications utilizing SBAR (Situation, Background, Assessment, Recommendations/Recap) to ensure that the radio report is complete and concise.
- Policy 5000: Patient Destination, states that specialty care patients (STEMI, Stroke and Trauma) shall be transported to the most accessible designated hospital that provides that specialty care.
- Policy 5150: STEMI Receiving Center states once a hospital is notified that a possible STEMI patient is en route to their facility and an ECG is received from the field and confirmed to be a STEMI, the SRC shall activate their internal STEMI response.
 - Policy 5150 also states, “Monterey County STEMI Receiving Centers shall accept all ambulance transported patients with a suspected STEMI except in situations of internal disaster”. This applies equally to 9-1-1 patients and to patients being transferred from a non-STEMI Receiving hospital.
- Protocol C-3: Chest Pain Suspected Cardiac Origin contains an algorithm for the treatment of suspected ACS patients, including STEMI patients, as well as ECG transmission and destination determination for suspected STEMI patients.
- Protocol C-7: Cardiac Arrest with Return of Spontaneous Pulses directs patients with ROSC to be transported to the closest, most appropriate STEMI Receiving Center.

- Protocol M-3: Routine Medical Care includes indications for performing a 12-Lead ECG, when to transmit the ECG to a STEMI Receiving Center, and the definition of a STEMI on a 12-Lead ECG.

Communications

Monterey County has several redundancies built into the communications systems. Currently, all hospitals and ambulances in Monterey County are equipped with 800 MHz radios, which are tested daily. Monterey County hospitals and ambulances are also equipped with a UHF MEDNET radio. The EMS Agency is working with our radio IT to integrate all ambulance dispatch radio communications into the Countywide NEXGEN radio system. A second phase will be to integrate hospital communications into the NEXGEN system. Hospitals all have a dedicated telephone line for the receipt of base hospital consult requests and hospital notification of incoming patients. Monterey County hospitals and dispatch agencies also utilize ReddiNet to communicate such things as hospital status, MCI's, bed capacity, HAvBED polls, and can send messages to other users on the system. Ambulances transporting suspected STEMI patients are required to contact the STEMI Receiving Center as early as possible in the call to notify them of an incoming STEMI patient. Additionally, the 12-Lead ECG is transmitted to the STEMI Receiving Center and to the cardiologist on call, who makes the determination of whether to activate the STEMI team at the STEMI Receiving Center.

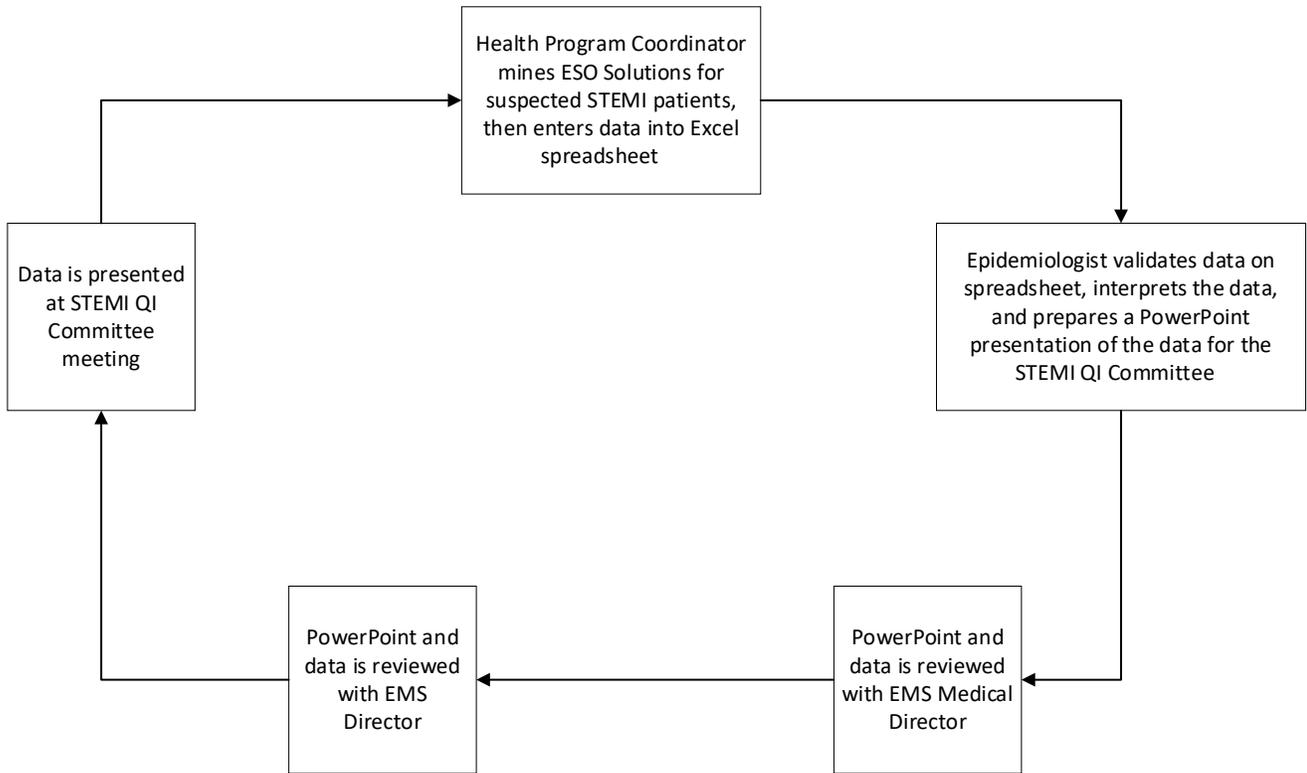
Data Collection

Currently, the STEMI Receiving Centers all submit data to the ACC/NCDR registry. As of the writing of this STEMI Plan, the EMS Agency has not yet subscribed to a STEMI Registry. Data elements prior to July 1, 2019 were agreed upon by the STEMI QI Committee. The EMS Agency utilizes ESO Solutions, the Countywide ePCR database, to identify prehospital suspected STEMI patients and their destinations. The PCRs are mined for data, and the Health Program Coordinator enters the data into a spreadsheet. Once the spreadsheet is completed for each quarter, the spreadsheet is sent to each hospital that received these patients. Hospitals are only sent patient data on patients that were seen at their hospital. The hospital completes the data for each patient and returns it to the EMS Agency. In addition to data on ambulance transported patients, hospitals are asked to provide the number of walk-in STEMI patients they receive, in order to support community education on the use of the 9-1-1 system when experiencing chest pain.

Once that data is received, it is incorporated into one larger spreadsheet by the Health Program Coordinator and passed to the epidemiologist, who cleans and validates the data, and enters it into a PowerPoint presentation. The data and presentation are reviewed with the Medical Director and the EMS Bureau Chief. Once the data/PowerPoint has received approval from the Medical Director and the EMS Bureau Chief, it is ready for presentation to the STEMI QI Committee. The STEMI QI Committee reports to the Continuous Quality Improvement Technical Advisory Group (CQI TAG), which reports on the greater non-confidential issues of

the STEMI QI Committee to the Medical Advisory Committee. Action items may be suggested at any stage of this process by members of any of these committees.

EMS Data Flow:



Currently, the EMS Agency collects and reports to the STEMI QI Committee on the following metrics:

- Number of STEMIs called in the field vs. number of STEMIs confirmed at STEMI Receiving Center
- STEMI cases by age and gender
- Scene time on STEMI calls – all field identified STEMIs
- First Medical Contact (FMC) to ECG
- Aspirin administration documented (Self, Dispatch directed, or given by EMS personnel)
- Field ECG to PCI (E2B Time)
- FMC time to Device
- Door to PCI (D2B) – limited to ambulance transported confirmed STEMI patients
- Survival to Hospital Discharge
- Hospital Outcomes (Expired, Clear Coronaries, Medically Managed, OR, PCI)
- Undertriage (Missed STEMI) – these are reviewed as Case Reviews at the STEMI QI meeting. The STEMI QI Committee has developed a definition of a Missed STEMI patient (the physician at the receiving hospital must have diagnosed the STEMI from the prehospital ECG rather than the first ECG at the hospital), and has identified the few

circumstances where it may be acceptable to not have performed a 12-Lead ECG (e.g., patient in full arrest, patient is a critical trauma patient).

Integration with Neighboring Counties

Neither of the two Stroke Centers in Monterey County have helipads. Because of this, if a patient is over 60 minutes via ground transport to a Stroke Center, EMS crews usually call for a helicopter to fly the patient to the closest airport to the hospitals: Salinas Municipal Airport for those patients in the southern portion of the County (generally from Greenfield south), and to Monterey Regional Airport for patients in Big Sur or south along the coast. Once at the airport, a pre-arranged ambulance is waiting to transport the patient and the flight crew to the nearest Stroke Center.

Patients in the southern portion of Santa Cruz County and in the western portion of San Benito Counties are frequently transported to SVMH or to a Stroke Center in Santa Clara County if it is closer. STEMI Receiving Centers in Monterey are obligated by policy to accept all ambulance transported patients with suspected STEMI except in situations of internal disaster.

Quality Improvement

Monterey County EMS Agency hosts a STEMI QI Committee with representation from all STEMI Centers, all non-STEMI hospitals, ALS transport and non-transport fire departments, BLS non-transport fire departments, and air ambulances. The committee structure, purpose, membership and meeting frequency are delineated in Policy 1020: EMS Advisory Committees.

The STEMI QI Committee, which meets quarterly, is a confidential QI Committee, protected by Evidence Code §1157.7. All members must sign a confidentiality agreement to participate on the committee. The purpose of the STEMI QI Committee is to review STEMI system care and to advise the Monterey County EMS Agency on STEMI system policy, organization, training, and equipment. Additionally, case reviews and data presentations are also part of the STEMI QI Committee's responsibilities. The STEMI QI Committee reports action items and non-confidential items to the Continuous Quality Improvement Technical Advisory Committee (CQI TAG), which in turn reports to the Medical Advisory Committee.

Education

STEMI Receiving Centers are required to participate in the Monterey County STEMI QI Committee, and to provide prehospital STEMI-related educational activities. Educational presentations, such as EKG Boot Camp, are offered to prehospital personnel by the STEMI Receiving Centers on a regular basis. STEMI Receiving Centers regularly do community outreach in both English and Spanish to educate the public on cardiac related health issues,

including signs and symptoms of a heart attack and the importance of calling 9-1-1 when experiencing a medical emergency.

STEMI System Goals

Goal	Purpose	Status
Participation in a STEMI data registry to simplify the submission and collection of STEMI outcome data from hospitals	Streamline data collection and submission	The EMS Agency is reviewing the registries available, verifying which registries are used by the STEMI Receiving Centers, and will select the best fit
Better tracking of under-triaged STEMI patients	Evaluate each under-triaged STEMI case to determine whether further education is necessary for the individual or for the prehospital system	STEMI QI Committee defined an undertriaged STEMI patient, and identified times when it may be acceptable to not have performed an ECG. Currently, STEMI Receiving Centers report undertriaged STEMI cases to the EMS Agency.
EMS Agency will write a STEMI plan to follow the new State STEMI Regulations	Maintain compliance with State Regulations; standardization of data collection, making true comparisons with other systems possible.	In process
Continue to refine data collection and report meaningful data at the STEMI QI Committee meetings	Use of data to improve the EMS System	Ongoing goal. Changes to data collection and reporting are discussed and agreed upon at STEMI QI Committee meetings.
Integrate all radio systems into the NEXGEN system	<ul style="list-style-type: none"> • Integration with Law Enforcement and Fire Communications • Digital System • Upgraded technology for better communications • Leaves all other systems in place for redundancy 	The radio IT is completing all the infrastructure and training needed to implement NEXGEN for EMS.

APPENDIX

Monterey County EMS System Policy



Policy Number: 3080
Effective Date: 7/1/2019
Review Date: 6/30/2022

HOSPITAL COMMUNICATIONS

PURPOSE:

This policy is to establish guidelines for essential communication between EMS field providers and receiving facilities. These guidelines pertain to communication prior to arrival at an approved receiving hospital, during communication with the Base Hospital, or during patient care turnover.

POLICY

- I. The person with the most knowledge of the patient's complaint and current condition will communicate with the receiving hospital or Base Hospital. This will usually be the provider with primary patient care responsibilities.
- II. Receiving hospital reports, including Base Hospital contact, allow the receiving hospital to prepare the appropriate bed, equipment, and personnel to care for the needs of the patient.
- III. This policy addresses the minimum acceptable information to be communicated.
- IV. Base hospital contact shall be made in the following circumstances:
 - A. To receive direction from a base hospital physician to administer medications or provide treatments that are restricted by policy or protocol to base contact order only.
 - B. For a patient presenting with symptoms that cause uncertainty regarding the appropriate protocol to be used.
 - C. To obtain a field pronouncement of death when the patient does not meet criteria for determination of death.
 - D. For ALS treatments not specifically authorized by Monterey County Policy and Protocol but are within the Monterey County paramedic scope of practice
 - E. For consultation with the base physician when:
 1. The patient is refusing care or transport and base physician involvement may convince the patient to accept the recommended treatment or transport
 2. There is disagreement among field providers regarding patient care.

3. The paramedic believes that base hospital physician involvement will benefit patient care.

F. As required under Monterey County EMS Policy such as Physician on Scene.

V. Base contact should be made to the following base hospitals and circumstances:

A. For patients meeting Step 1-3 Trauma Triage Criteria, contact Natividad Medical Center.

B. For patients who are believed to be experiencing a stroke, contact Salinas Valley Medical Center (SVMH) or Community Hospital of the Monterey Peninsula.

9. For patients who are believed to be experiencing a ST-Elevation Myocardial Infarction (STEMI), contact SVMH or CHOMP.

10. For all other base contacts, contact the intended receiving hospital, if it is also a base hospital. If it is not a base hospital, contact the closest base hospital.

a. If the base hospital is not also the receiving hospital, the base hospital shall contact the receiving hospital with a report on the patient and any orders given by the base hospital.

11. For cardiac arrests, unstable cardiac dysrhythmias, or ROSC, adult or pediatric, contact the nearest STEMI Receiving Center.

PROCEDURE

III. Communications during patient hand-offs shall utilize the SBAR mnemonic, as below:

A. **S**ituation

B. **B**ackground

C. **A**ssessment

D. **R**ecommendations/ **R**ecap

IV. A full report should take 60 seconds or less, unless there are multiple patients or other mitigating circumstances.

V. Paramedics shall repeat any orders given by a Base Hospital Physician prior to closing communication with the Base Hospital.

<i>Identify yourself, organization, unit, and type of call</i> <i>(e.g., "This is Paramedic Smith, AMR Medic 20 with a 52 y/o male Stroke Alert patient")</i>	
	<ul style="list-style-type: none">• Code 2 or Code 3• ETA• Age/Sex/Chief Complaint of patient• State urgent issues and immediate needs up front

<p>Situation</p>	<ul style="list-style-type: none"> Reason for base consult (trauma patient destination, specialty patient, AMA documentation, request for orders, etc.) 	
	<p style="text-align: center;">Trauma</p> <ul style="list-style-type: none"> MVC <ul style="list-style-type: none"> Speed (known mph and/or freeway or city streets) Type of impact (rollover, head-on, etc.) Describe significant damage to vehicle (e.g., amount of intrusion, entrapment, steering wheel damaged, etc.) Number and type of patients (e.g., 3 moderates, 2 criticals) MCC <ul style="list-style-type: none"> Protective clothing Damage to helmet Distance of ejection from motorcycle Falls <ul style="list-style-type: none"> Distance (2nd story, ground level fall, etc.) Assault <ul style="list-style-type: none"> Object (e.g., GSW, stabbing, fists, etc.) Impact area 	<p style="text-align: center;">Medical</p> <ul style="list-style-type: none"> Stroke <ul style="list-style-type: none"> Time last known well Time of onset of symptoms What was the positive hit on the BEFAST? STEMI <ul style="list-style-type: none"> ECG transmitted Is this patient s/p cardiac arrest with ROSC? OB <ul style="list-style-type: none"> # of months pregnant Gravida/Para status Prenatal care? Any known complications (e.g., breech presentation) Behavioral Health <ul style="list-style-type: none"> Restraints (physical and/or chemical) Security needed? Is the patient on a 5150?
<p>Background</p>	<ul style="list-style-type: none"> History of current illness/injury Pertinent past medical history Pertinent medications/allergies (e.g., stroke pt with history of A-fib, takes Coumadin, allergic to aspirin) 	
<p>Assessment</p>	<ul style="list-style-type: none"> AMC's Focused physical assessment General impression Vital signs (including systolic and diastolic blood pressure, if possible), GCS, lung sounds, pain level, skin signs, pupils, blood glucose, ECG as appropriate <ul style="list-style-type: none"> Vitals to be monitored every 15" for stable patients, every 5" for unstable 	

Recommendations/Recap	<ul style="list-style-type: none">• What would you like from the physician? If you are looking for a specific order, state that here.• Repeat orders given by a physician
<p><i>A full report should take 60 seconds or less, unless there are multiple patients or other mitigating circumstances.</i></p>	

Monterey County EMS System Policy



Policy Number: 5000
Effective Date: 7/1/2019
Review Date: 6/30/2022

PATIENT DESTINATION

PURPOSE

To provide guidance regarding hospital destination decisions for patients in the prehospital setting.

I. POLICY

Patients transported from the prehospital setting shall have the receiving hospital determined in accordance with the procedure outlined in this policy.

PROCEDURE

EMS personnel shall use the following criteria as the process for determining patient destination in the prehospital setting.

- A. In-Extremis Patients: Patients who are in-extremis shall be transported to the most accessible emergency department.
- B. Specialty Care Criteria: Patients who meet Monterey County EMS Agency established criteria for specialty care (i.e. trauma, STEMI, stroke, behavioral health) shall be transported to the most accessible designated hospital that provides that specialty care.
 1. Any individual who has met the criteria for and been placed on a 5150 hold by a person appointed to do so, requires a full and complete medical assessment by the responding EMS crew prior to transport of the patient. ***Destination decisions will be based on EMS crew assessment, patient's medical and psychiatric history, and rule out of underlying medical causes. Acute medical complaints and/or traumatic injuries should always be transported to the closest and most appropriate facility.***
 - a. Patients that are placed on a 5150 hold by an authorized behavioral health specialist, should be taken to the Emergency Department of the behavioral health specialist's request.
 - b. Patients that are placed on a 5150 hold by Law Enforcement Officers, without the aid of a behavioral health specialist requesting a destination, should be taken to Natividad Medical Center, or the Community Hospital of Monterey Peninsula.
- C. Patient Preference: Patients who express a desire to be transported to an emergency department shall have their wishes followed unless the patient is in-extremis. Should the patient need a specialty hospital such as STEMI, stroke, or trauma, the medic should

make every effort to convince the patient to go to the appropriate specialty hospital. A patient's refusal to go to a recommended specialty hospital shall be documented in the PCR.

- D. No Stated Preference: Patients with no stated preference should, in most cases, be transported to the most accessible emergency department.

V. OTHER DESTINATIONS

Out of County Emergency Department: Patients in Monterey County may have a personal physician or use a hospital that is in another county. The patient may express a desire for transport to an out of county emergency department or the out of county hospital may have the closest, most accessible emergency department. Patients may be transported to an out of county emergency department if that hospital is accessible and open for ambulance traffic. Medic Field Supervisor approval is required for destinations further than adjacent counties.

- A. Contact shall be made with EMS Dispatch to determine the open or closed status of out of county hospitals. EMS Dispatch may use EMResource to determine the status of the out of county hospital.
- B. Transport may continue to the out of county emergency department if it is able to accept the patient.
- C. If the out of county hospital is not able to accept the patient, the patient shall be transported to the most accessible Monterey County emergency department or needed specialty center.
- D. Medical control will remain with a Monterey County designated Base Hospital. A Base Hospital may be utilized to assist with difficult destination decisions.
- E. Patients considered in-extremis will be transported to the most accessible hospital regardless of open or closed status.

VI. AIR AMBULANCE TRANSPORT

Patients transported by air ambulance shall have the destination determined by utilizing the EMS Aircraft policy (#4070).

NOTES

- A. Consider utilizing more than one hospital when there are multiple patients to avoid overloading any single hospital. Follow patient distribution principles found in the MCI Plan in a declared MCI.
 - 1. Make every attempt to transport family members to the same trauma center, if possible.
- B. In the City of Salinas, patients located north of Market St. will be considered closer to Natividad Medical Center. Patients located south of Market St. will be considered closer to Salinas Valley Memorial.

- C. For scene calls, patients, who have a valid DNR order, who expire during transport, shall be transported to the destination hospital. If a transfer, the patient should be taken to the receiving hospital or returned to the sending hospital, whichever is closer. This decision may be based on paramedic judgement or family wishes if they are present.

Patient Destination Matrix

Type of Patient	Destination
In-Extremis	Most accessible Emergency Department
Specialty Care Criteria (i.e. trauma, STEMI, stroke, behavioral health)	Most accessible designated hospital that provides that specialty care
Patient Preference	Transport patient to hospital of choice. If patient needs specialty hospital, make every effort to convince patient to go to appropriate specialty hospital.
No stated preference	Most accessible Emergency Department
Out of County hospitals (patient preference or closest most accessible)	Allowed in certain circumstances. Hospital must be open and accepting patients. Contact Dispatch to determine status.
Air ambulance patients	See EMS Aircraft policy # 4070
Unsure as to appropriate destination	Contact a Base Hospital

Monterey County EMS System Policy



Policy Number: 5150

Effective Date: January 1, 2020

Review Date: December 31, 2023

STEMI RECEIVING CENTERS

I. PURPOSE

To define requirements for designation as a Monterey County STEMI Receiving Center (SRC) for patients transported, through the Monterey County EMS and Emergency Communications (9-1-1) Systems, with ST-elevation myocardial infarction (STEMI).

II. POLICY

A. The Monterey County EMS Agency Medical Director may designate a hospital as an SRC if all the following requirements are met:

1. The hospital shall have established protocols for triage, diagnosis, and Cath lab activation following field notification.
2. The hospital shall have a single call activation system to activate the Cardiac Catheterization Team directly.
3. Written protocols shall be in place for the identification of STEMI patients.
 - 1) At a minimum, these written protocols shall be applicable in the intensive care unit/coronary care unit, Cath lab and the emergency department.
4. The hospital shall be available for treatment of STEMI patients twenty-four (24) hours per day, seven (7) days per week, three hundred and sixty-five (365) days per year.
5. The hospital shall have a process in place for the treatment and triage of simultaneously arriving STEMI patients.
6. The hospital shall maintain STEMI team and Cardiac Catheterization Team call rosters.
7. The Cardiac Catheterization Team shall be immediately available.
 - 1) "Cardiac Catheterization Team" means the specially trained health care professionals that perform percutaneous coronary intervention. It may include, but is not limited to, an interventional cardiologist, mid-level practitioners, registered nurses, technicians, and other health care professionals.
 - 2) "Immediately available" means unencumbered by conflicting duties or responsibilities, responding without delay upon receiving notification, and being physically available to the specified area of the hospital when the patient is delivered in accordance with Monterey County EMS Agency policies and procedures.

8. The hospital shall agree to accept all STEMI patients except in situations of internal disaster.
9. SRCs shall comply with the requirement for a minimum volume of procedures for designation required by the Monterey County EMS Agency
 - 1) Cardiac catheterization laboratory team and interventional cardiologists shall meet or exceed current ACC/AHA/SCAI standards for competence regarding the number of procedures performed annually.
10. The hospital shall have and maintain the following personnel:
 - a. SRC Medical Director
 - 1) The STEMI Medical Director 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 Continuous Quality Improvement (CQI) as part of the hospital QI program.
 - b. SRC Program Manager
 - 1) The SRC Program Manager 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 CQI program.
 - c. Intra-aortic balloon pump technician(s)
 - d. Appropriate Cardiac catheterization nursing and support personnel
 - e. Physician Consultants
 - 1) Cardiology interventionalist
 - 2) CV Surgeon
 - f. Clinical Capabilities
 - 1) Performance (timeliness) and outcome measures will be assessed initially in the EMS survey process and will be monitored closely on an ongoing basis.
11. The hospital shall have job descriptions and organizational structure clarifying the relationship between the STEMI medical director, STEMI program manager, and the STEMI team.
12. A STEMI Receiving Center without cardiac surgery capability on-site shall have a written transfer plan and agreements for transfer to a facility with cardiovascular surgery capability.

III. QUALITY/PERFORMANCE IMPROVEMENT

- A. The hospital shall participate in the Monterey County EMS Agency quality improvement processes related to a STEMI critical care system.
 1. Participation in Monterey County EMS STEMI QI Committee as described in Monterey County EMS Policy #1020, EMS Advisory Committees.
 2. Meetings to be held on a quarterly basis initially.

3. Written internal quality improvement plan/ program description for STEMI patients shall include appropriate evidence of an internal review process that includes:
 - 1) Death rate (within 30 days, related to procedure regardless of mechanism)
 - 2) Emergency CABG rate (result of procedure failure or complication)
 - 3) Vascular complications (access site, transfusion, or operative intervention required)
 - 4) Cerebrovascular accident rate (peri-procedure)
 - 5) Post-procedure nephrotoxicity (increase in serum creatinine of >0.5)
 - 6) Sentinel event, system and organization issue review and resolution processes.
4. Participation in Prehospital STEMI related educational activities
- B. Once a hospital is notified that a possible STEMI patient is en route to their facility and an ECG is received from the field and confirmed to be a STEMI by the STEMI Receiving Center, the SRC shall activate their internal STEMI response.

III. APPLICATION PROCESS

To apply for designation as an EMS SRC for Monterey County, an interested hospital shall:

- A. A hospital requesting designation as an SRC shall apply to the Monterey County EMS Agency following the application process outlined in this policy. The application (attached) shall be submitted at least three (3) months prior to the desired date of implementation.
- B. Submit applicable designation fees to cover initial and ongoing Monterey County EMS Agency costs to support the STEMI program.
 1. STEMI Receiving Center application Fee: A STEMI Receiving Center application fee will be established. This fee will cover the costs associated with the designation process. These costs may include contract costs for plan development, Requests for Proposal development, review of proposals, out of area site team costs, legal reviews and agency costs in excess of the costs associated with the day to day STEMI system regulation. The STEMI Receiving Center application fee will be assessed for hospitals applying for STEMI Receiving Center designation. Fees paid that are in excess of actual costs will be returned to applicants.
 2. STEMI Receiving Center designation fee: The Monterey County Board of Supervisors will establish a STEMI Receiving Center annual fee. This fee covers the cost of monitoring the operation of the STEMI System in compliance with Monterey County policies. The fee will be based on the time requirements of the STEMI System Medical Director, STEMI System Coordinator, and other staff activity dedicated to STEMI issues as well as associated overhead and program support costs.
 3. Monterey County EMS Agency will provide the designated STEMI Receiving Centers written notice of any increase in the designated fee at least 180 days (6

months) prior to the effective date of the increase with an explanation for the increase and the basis on which it was calculated.

IV. DESIGNATION CRITERIA

- A. Hospitals wishing to be designated as a STEMI Receiving Center by the Monterey County EMS Agency shall meet the following requirements:
1. Current California licensure as an acute care facility providing Basic or Comprehensive Emergency Medical Services.
 2. Obtain and maintain accreditation as a “Heart Attack Receiving Center” from the American Heart Association, Mission: Lifeline program. Or the hospital may establish and maintain accreditation as a Chest Pain Center from the Society of Cardiovascular Patient Care.
 3. Possess a transfer agreement between applicant SRC hospital and each STEMI Referral Hospital (SRH) in Monterey County whereby applicant SRC agrees to immediately and rapidly accept the transfer of a STEMI patient from the transferring SRH upon notification of STEMI ALERT and request by the SRH-affiliated physician.
 4. Review list of requirements and checklist of documents, found in Appendix A – STEMI Center Designation Criteria Evaluation Tool, which must be completed and submitted with the application.
 5. Enter into and maintain a written STEMI Receiving Center agreement with the Monterey County EMS Agency that defines the roles and responsibilities of the STEMI Receiving Center and the EMS Agency relative to the care of STEMI patients.
 - f. appropriate internal (hospital) policies including:
 - 1) Cardiac interventionalist activation with the on-call cardiologist immediately available.
 - 2) Cardiac catheterization lab team activation with team arrival within thirty minutes of activation.
 - 3) Activation of the cardiac interventionalist and catheterization lab team upon notice that a patient with STEMI is being transported to their facility.
 - 4) STEMI contingency plans for personnel and equipment to include activation of a second cardiac interventionalist and catheterization lab team should this be needed.
 - 5) Coronary angiography.
 - 6) PCI and use of fibrinolytics.
 - 7) Interfacility transfer STEMI policies/protocols.
 - 8) Collection of data and a process for sharing requested data with the Monterey County EMS STEMI QI Committee.
 - 9) Developing and maintaining a hospital STEMI QI Committee.
 - 10) A needs assessment documenting the need of the community for a designated STEMI Receiving Center.

The Monterey County EMS Agency will designate a hospital as a STEMI Receiving Center if all the requirements of this policy are met *and* if a needs assessment demonstrates a need for an additional STEMI Receiving Center.

V. RE-DESIGNATION

- A. The Monterey County EMS Agency may suspend or revoke the approval of an SRC at any time for failure to comply with any applicable policies, procedures, or regulations, including failure to submit required data within the applicable timeframes.
- B. An SRC may be re-designated following a satisfactory review in accordance with current standards and the term of the written agreement.
- C. SRCs shall receive written notification of evaluation from the Monterey County EMS Agency.
- D. SRCs shall respond in writing regarding program compliance.
- E. On-site SRC visits for re-designation shall occur every three years, in coordination with the terms of the STEMI Receiving Center agreement with the Monterey County EMS Agency.
- F. SRCs shall notify the Monterey County EMS Agency by telephone, followed by a letter or email within 48 hours, of changes in program compliance or performance.

VI. DATA COLLECTION, SUBMISSION AND ANALYSIS

- A. Participation in National Cardiac Data Registry (NCDR)
- B. Participation in Monterey County EMS Agency data collection. Data shall be submitted to the Monterey County EMS Agency on a quarterly basis.
- C. STEMI Patient data elements shall include, but not be limited to:
 - 1. EMS ePCR Number
 - 2. Facility
 - 3. Name: Last, First
 - 4. Date of Birth
 - 5. Patient Age
 - 6. Patient Gender
 - 7. Patient Race
 - 8. Hospital Arrival Date
 - 9. Hospital Arrival Time
 - 10. Dispatch Date
 - 11. Dispatch Time
 - 12. Field ECG Performed
 - 13. 1st ECG Date
 - 14. 1st ECG Time
 - 15. Did the patient suffer out-of-hospital cardiac arrest?
 - 16. Cath Lab Activated
 - 17. Cath Lab Activation Date

18. Cath Lab Activation Time
19. Did the patient go to the Cath Lab?
20. Cath Lab Arrival Date
21. Cath Lab Arrival Time
22. PCI Performed
23. PCI Date
24. PCI Time
25. Fibrinolytic Infusion
26. Fibrinolytic Infusion Date
27. Fibrinolytic Infusion Time
28. Transfer
29. STEMI Referral Hospital (SRH) ED Arrival Date
30. SRH ED Arrival Time
31. SRH ED Departure Date
32. SRH ED Departure Time
33. Hospital Discharge Date
34. Patient Outcome
35. Primary and Secondary Discharge Diagnosis

D. STEMI System Data Elements shall include, but not be limited to:

1. Number of STEMI treated
2. Number of STEMI patients transferred.
3. Number and percent of emergency department STEMI patients arriving by private transport (non-EMS)
4. The false positive rate of EMS diagnosis of STEMI, defined as the percentage of STEMI alerts by EMS which did not show STEMI on ECG reading by the emergency physician.

E. STEMI QI COMMITTEE

1. The Monterey County EMS STEMI QI Committee is described in Policy 1020, EMS Advisory Committees
2. The Monterey County EMS STEMI QI Committee will be responsible for a quality improvement process that shall include, but not be limited to:
 - a. Evaluation of program structure, process and outcome.
 - b. Review of STEMI-related deaths, major complications, and transfers.
 - c. Shall be multidisciplinary, including both prehospital and hospital members.
 - d. Participation in the QI process by all designated STEMI Receiving Centers and prehospital providers involved in the STEMI critical care system
 - e. Evaluation of regional integration of STEMI patient movement
 - f. Compliance with the California Evidence Code, Section 1157.7 to ensure confidentiality, and a disclosure-protected review of selected STEMI cases.

- g. The Monterey County EMS Agency shall be responsible for ongoing performance evaluation and quality improvement of the STEMI critical care system.

VII. BASIS FOR LOSS OF DESIGNATION

- A. Inability to meet and maintain STEMI Receiving Center Designation Criteria
- B. Failure to provide required data and/or to participate in STEMI system QI activities
- C. Other criteria as defined and reviewed by the SRC QI Committee

APPLICATION FOR STEMI RECEIVING CENTER DESIGNATION

Hospital: _____

Contact: _____ Phone #: _____

Title: _____ E-Mail: _____

Administration/ Staffing

A. Medical Director (attach resume)

Name: _____

Title: _____ E-mail: _____ Phone #: _____

B. STEMI Program Manager (attach resume)

Name: _____

Title: _____ E-mail: _____ Phone #: _____

C. Cardiac Catheterization Lab Contact (if different from STEMI Program Manager) (attach resume)

Name: _____

Title: _____ E-mail: _____ Phone #: _____

STEMI Receiving Center Requirements:

A. Is your hospital licensed by the California Department of Health Services and accredited by a Heart Attack Receiving Center from the American Heart Association, Mission: Lifeline program or as a Chest Pain Center by the Society of Cardiovascular Patient Care? Yes No
(Provide copy of current accreditation documentation)

B. Is your hospital approved for Emergency Percutaneous Coronary Interventions (PCI)? Yes No

C. Number of PCIs per year: _____
(PCI will be defined as a therapeutic coronary intervention such as angioplasty, Stent placement, etc. Total personally performed therapeutic PCIs per year at all institutions, not just this hospital. This would include any PCI as defined above and not restricted to acute myocardial infarction.)

D. Is there a cardiovascular surgical call panel? Yes No
(Provide copies of Interventional Cardiologists daily roster On-Call Schedules [primary and backup] and proof that physicians will be immediately available upon notification.)

E. Do you have a Cath Lab team available or on call 24/7/365? Yes No
(Provide copies of Cath Lab Team daily roster On-Call schedules [primary and backup] and proof that team will be immediately available)

upon notification.)

- F. Does your hospital meet all requirements of the current Monterey County EMS Agency policy #5150 – STEMI Receiving Centers? Yes No
- G. Does your hospital have a special permit for cardiovascular surgery? Yes No
- H. Number of cardiovascular surgeries per year: _____
- I. Cardiovascular surgeon? Yes No
- J. Is there a dedicated recorded phone line, capable of being answered 24/7/365 for paramedic notification of STEMI patients? Yes No

Policies:

- G. Is there currently a hospital policy for the treatment of myocardial infarction that define who shall receive emergent angiography and who shall receive emergent fibrinolysis? Yes No
- H. Does the policy include diversion of STEMI patients only during times of Internal Disaster?
(Please attach) Yes No
- I. Is there currently a hospital policy regarding prompt acceptance of STEMI patients from other STEMI Referral Hospitals that do not have Emergency PCI capability? Yes No
- J. Is there currently a hospital policy for activation of the Cardiac Catheterization team when notified of an EMS transported STEMI?
(Please attach) Yes No
- K. Does the hospital provide continuing education opportunities for EMS personnel in areas of 12-lead ECG acquisition and interpretation, as well as assessment and management of STEMI patients?
(Provide documentation showing educational presentations) Yes No

Data:

- L. Does your hospital participate in the Monterey County STEMI data collection? Yes No
- M. Do you have a formal quality improvement process to review STEMI-related deaths, major complications and performance standards? Yes No
- N. Does your facility meet the primary door-to-balloon time of 90 minutes or less 90% of the time? Yes No

On behalf of the above-named hospital and physicians, I agree to all provisions identified in Monterey County policy #5150 – STEMI Receiving Centers.

Signature – Administrator

Date

Print Name

Please contact Laura Wallin, Monterey County EMS Agency Clinical Program Coordinator **prior to submission** of application. Questions may be directed via e-mail at Wallinl@co.monterey.ca.us.

STEMI Designation Standard	Objective Measurement	Meets Standard	Comments
Current License to provide Basic Emergency Services in Monterey County	Copy of License	Yes No	

Current copy of Joint Commission, HFAP or DN Certification	Copy of Certification	Yes No	
Cardiac catheterization lab available 24/7/365	On-call schedules for three (3) months On-call policy and procedures documented	Yes No	
Intra-aortic balloon pump capability with staffing available 24/7/365	Staffing policies demonstrate support of operations Intra-aortic balloon pump capability for # of patients: ____	Yes No	
Dedicated telephone line for base hospital contact by paramedics	Operational dedicated base hospital telephone line. Telephone number: _____	Yes No	
Notification of cardiologist and staff of a STEMI alert	Copy of policy for notification of cath lab team and cardiologist	Yes No	
Interfacility transfer agreements with Monterey County hospitals that are not designated as STEMI Receiving Centers	Copy of transfer agreements to allow automatic acceptance of all STMEI patients transferred from Monterey County hospitals	Yes No	
Cardiovascular surgical services available 24/7/365	California permit number	Yes No	
Accept all patients identified as STEMI by EMS personnel	Copy of policy	Yes No	
STEMI Team activation by ED physician upon notice of STMEI patient by EMS personnel	Copy of policy	Yes No	
Contingency plans for more than one STEMI patient at the same time	Copy of contingency plans/policies	Yes No	

HOSPITAL PERSONNEL

STEMI Receiving Center Program Medical Director: 1. Board Certified in Cardiovascular Disease 2. Board Certified in Interventional Cardiology 3. Credentialed member of medical staff with privileges for Primary PCI 4. Trained in cardiac radiographic imaging and radiation protection 5. Job description 6. Participates in Monterey County STEMI activities	Copy of Board Certification in Cardiovascular Disease	Yes	
	Copy of Board Certification in Interventional Cardiology		
	Documentation of training in radiographic imaging and radiation protection		
	Copy of job description		
	Documentation of Monterey County STEMI QI program participation		
	STEMI Receiving Center Program Manager: 1. Current RN License 2. STEMI program experience 3. Participates in Monterey County STEMI activities	Copy of current RN license or documentation of same	
Documentation of STEMI program experience		No	
Documentation of Monterey County STEMI QI program participation			
Cardiac Cath Lab Manager	Job description	Yes No	
Cardiology Interventionalist	Copy of On-call schedule for 3 months	Yes No	
		Yes No	
Cardiothoracic Surgery	Current Board Certification	Yes	
	On-call policy	No	

CLINICAL CAPABILITIES			
Process performance	3 months of data documenting door to device time in less than 90 minutes for 90% of STEMI patients	Yes No	
Cath Lab and Interventionalist activation	Copy of policy for STEMI activation	Yes No	
Policy identifying criteria for patients to receive emergent angiography or emergent fibrinolysis based on physician decision for individual patients	Copy of policy	Yes No	
PERFORMANCE IMPROVEMENT			
Program Review	Copy of policy for QI review of: <ul style="list-style-type: none"> • Deaths • Complications • Sentinel events • System issues • Organizational issues 	Yes No	
	Written QI plan	Yes No	
EMS QI program participation	Written agreement to participate in EMS STEMI QI program	Yes No	
Data submission to the EMS Agency	Written agreement to submit EMS Agency required data on a regular basis to be determined by the EMS Agency	Yes No	
EMS Education	Copy of EMS educational activities over the previous 3 months	Yes	
		No	

ADMINISTRATION			
Application submitted to the Monterey County EMS Agency	Date application received by the Monterey County EMS Agency	Yes No	Date of application receipt by Monterey County EMS Agency: _____
Written agreement with the Monterey County EMS Agency	Date agreement received by the Monterey County EMS Agency	Yes No	Date agreement signed by both hospital and Monterey County EMS Agency: _____



Protocol Number: C-3
Effective Date: 7/1/2019
Review Date: 6/30/2022

CHEST PAIN SUSPECTED CARDIAC ORIGIN

(Acute Coronary Syndrome)

BLS CARE

Routine Medical Care

Aspirin 324mg PO. This must be chewable aspirin and not enteric coated. (EMT only)

Nitroglycerin 0.4mg SL. May assist the patient with taking their own NTG if the patient desires and the patient's systolic BP is above 110 mmHg. May repeat every 5 minutes to total of 3 doses if the patient's systolic BP is above 110 mmHg. Do not allow the patient to self-administer if they have used erectile dysfunction medications within the prior 48 hours. (EMT only)

ALS CARE

Routine Medical Care.

NOTES:

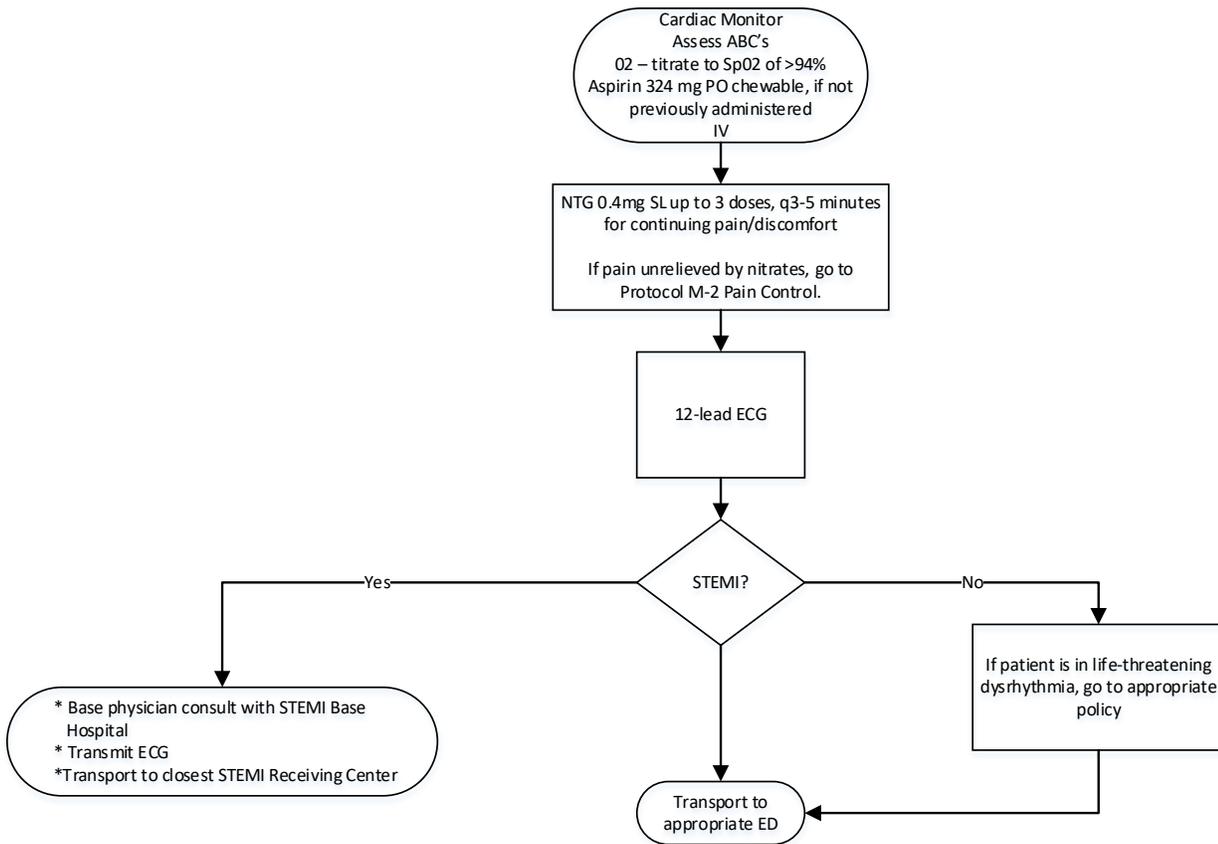
Do not administer Nitroglycerin in the following circumstances:

- Patient has used erectile dysfunction medications (e.g., Viagra, Cialis) within the previous 48 hours.
- Administer nitrates with extreme caution, if at all, to patients with inferior wall MI and suspected right ventricular involvement because these patients require adequate RV preload.

If BP drops >30mmHg from baseline at any time or if heart rate is <50 or >100 bpm, contact the base physician before administering/continuing NTG and/or pain control

Do not delay transport if technical difficulties impede ECG transmission. Attempt to send en-route whenever possible.

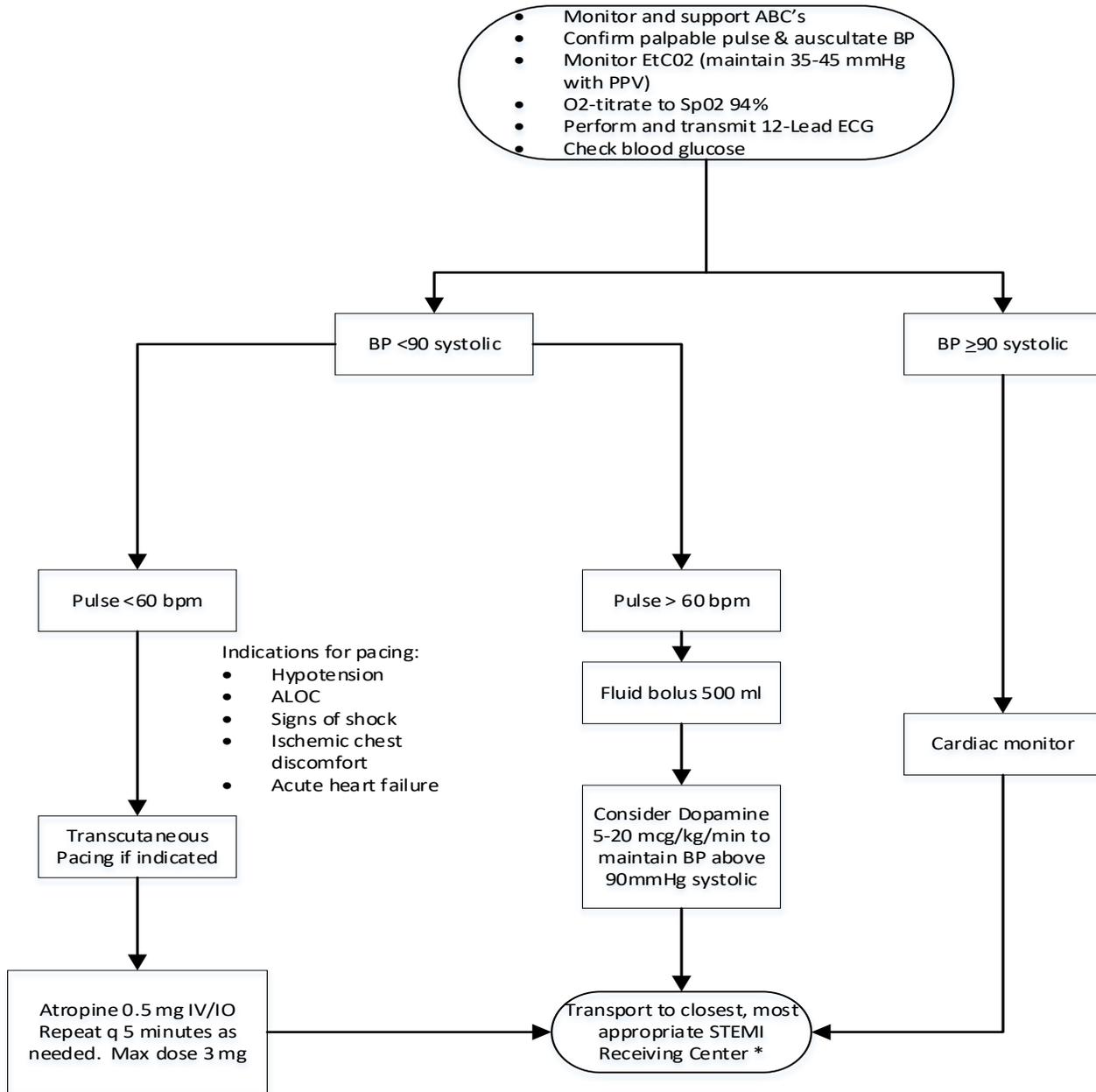
Patients who have SpO₂ of >94% without signs or symptoms of hypoxia or impending respiratory failure should not receive oxygen.



Monterey County EMS System Policy



CARDIAC ARREST-RETURN OF SPONTANEOUS CIRCULATION (ROSC)



*Patients with pulses after cardiac arrest where the cause is clearly determined to be other than cardiac (e.g. drowning, electrocution, etc.) are to be transported to the closest ED.

Monterey County EMS System Policy



ROUTINE MEDICAL CARE

BLS CARE

Evaluate scene safety/Personal Protective Equipment

Assess, establish and maintain airway.

Apply O₂ to maintain SpO₂ of $\geq 94\%$

Suction as needed

Evaluate breathing and circulation – control life threatening bleeding

Assess chief complaint

Remove patient's clothing to expose and identify injuries

Ensure patient warmth – cover patient after clothing removal to maintain core body temperature

Spinal Motion Restriction (SMR) if indicated per Policy 4509 (Spinal Motion Restriction)

Focused physical exam and vital signs shall be taken minimum q15 minutes for stable patients and q 5 minutes for unstable patients:

Pulse - first pulse rate will be obtained by palpation. Only after assuring the mechanical correlation of cardiac ECG to the physical pulse will the rate on the cardiac monitor be acceptable for subsequent assessments.

Blood pressure – First obtained blood pressure will be obtained manually by provider and will include both a systolic and a diastolic reading, if possible. Subsequent blood pressures may then be obtained by non-invasive blood pressure (NIBP) if unit is equipped.

Respiratory rate

Skin signs

BLS Treatment protocols

Collect patient medications and bring them to the hospital. Document the patient's allergies on the PCR

Evaluate the scene to provide information to better understand the patient's condition (e.g., domestic violence, child or elder neglect/abuse, etc.)

ALS CARE

BLS Routine medical care

Vascular access if indicated

Capnography, if available/applicable

Blood glucose measurement

12 Lead Electrocardiogram (ECG), if indicated

1. A 12-Lead ECG is indicated when the patient complains of any of the following:

- a. Chest pain, discomfort, pressure or tightness.
 - 1) Pain may radiate to the jaw, shoulders, or arms.
 - b. New onset cardiac dysrhythmias (including adult cardiac arrest, if return of spontaneous circulation)
 - c. Palpitations
 - d. Unexplained diaphoresis
 - e. Dyspnea
 - f. Syncope, near syncope, or dizziness
 - g. Known history of Acute Coronary Syndrome (ACS)
 - h. Epigastric pain
 - i. General weakness
 - j. Congenital heart problems
 - k. Any patient the paramedic feels would benefit from a 12-Lead ECG assessment.
2. Transmit ECGs when:
- a. The machine reads, ****Acute MI Suspected**** or equivalent
 - 1) “Infarct suspected, age indeterminate” usually indicates an MI in the patient’s past, and is usually not considered to be an Acute MI.
 - b. The paramedic interprets the ECG as STEMI, even if the machine does not read ****Acute MI Suspected**** or equivalent
 - 1) STEMI is defined as 1 mm ST elevation or greater in two or more contiguous leads with reciprocal depression.

Re-assess the patient.

Base Hospital contact as needed to manage patient care or hospital notification.

Document assessment findings and treatments rendered on the Patient Care Report. See Patient Care Report policy for more specific guidance.

NOTES:

Scene size-up for safety issues, need for additional resources, number of victims and mechanism of injury, and environmental hazards must be performed on all scenes.

Patient positioning is an important consideration for airway maintenance, circulatory support, patient comfort, and patient management.

Follow appropriate treatment protocols based on the patient’s presentation. Use of more than one protocol may be required to manage the patient.

Transport of the patient should be as early as possible. The time on-scene for trauma patients should be 10 minutes or less and 15 minutes or less for STEMI and stroke patients.