Monterey County EMS Agency Stroke Critical Care Plan

DECEMBER 23, 2019

Contents

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 residents[1], 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 California[3], 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.

Stroke Critical Care System

On July 1, 2019, all California Local EMS Agencies (LEMSAs) that had Stroke Critical Care Systems were required to comply with regulations described in the California Code of Regulation: Title 22, Division 9, Chapter 7.2. Up to this time, there has been no standardization

[1] https://datausa.io/profile/geo/Monterey-county-ca/, retrieved December 1, 2019

[2] https://www.seemontereycom/media/fact-sheet/ retrieved December 1, 2019

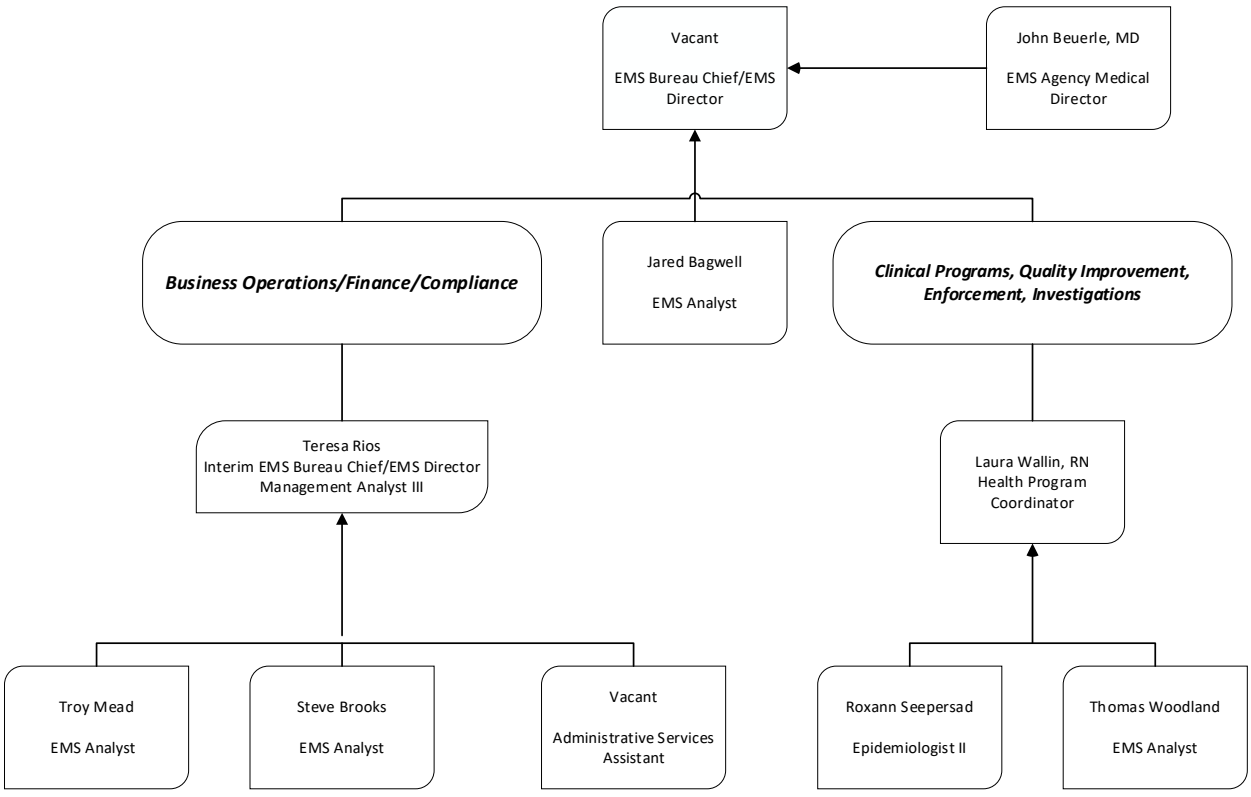
[3] https://www.virtuoso.com/articles/virtuoso-global/May-2019/How-to-Explore-the-Real-Monterey-County#.Xe1u7GxYaRd. Retrieved December 1, 2019

among California counties in their stroke systems of care. This Stroke Critical Care System Plan complies with the requirements of the Stroke Regulations.

Monterey County has had a Stroke Critical Care System in place with two designated Stroke Centers since 2010. Both hospitals underwent a site review from the Monterey County EMS Agency prior to designation to determine their capabilities. The Stroke 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 stroke. These policies and protocols are regularly reviewed and updated with the assistance of the Monterey County Stroke 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 Stroke 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 Stroke Centers

Monterey County has designated two of the four hospitals in our system as Stroke Receiving Centers: Community Hospital of the Monterey Peninsula (CHOMP) and Salinas Valley Memorial Hospital (SVMH). Both hospitals have undergone and maintained accreditation from The Joint Commission as Primary Stroke Centers. Both hospitals have agreements for the designation of Stroke Center and for the care of stroke patients with the Monterey County EMS Agency.

Facility	Contract Term	Agreement Type
Community Hospital of the Monterey Peninsula	March 6, 20014 – March 5, 2024	Stroke Center Agreement
Salinas Valley Memorial Hospital	January 24, 2014 – January 23, 2024	Stroke Center Agreement

For patients who are found to be suffering from Large Vessel Occlusion (LVO) strokes and who meet criteria for potential advanced endovascular therapies, Monterey County Stroke Centers have agreements with nearby out-of-county Comprehensive Stroke Centers to receive these stroke patients for a higher level of care. These patients are generally flown. When airships are not able to fly, ground transport is done emergently.

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 possible stroke:

- Policy 3080: Hospital Communications mandates hospital notification or base contact with a suspected stroke 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 5190: Stroke Center Designation states, “The Stroke Center shall activate their internal stroke response upon notification that a patient with appositive BEFAST Stroke Scale findings will be, or is, en route to their facility.”
    - Policy 5190 further states, “Monterey County Stroke Centers shall accept all ambulance transported patients with positive BEFAST Stroke Scale findings except in situations of internal disaster.” This applies equally to 9-1-1 patients and to patients being transferred from a non-Stroke hospital
- Protocol N-2: Non-Traumatic Neuro Impairment Suspected CVA directs EMS crews to “Transport patients Code 3 with positive BEFAST findings and last known well time of 20 hours or less, and patients with stroke/TIA symptoms that have resolved directly to a designated Stroke Receiving Center.” EMS crews are further advised to keep the scene time at 15 minutes or less.

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 stroke patients are required to contact the Stroke Center as early as possible in the call to notify them of an incoming stroke patient.

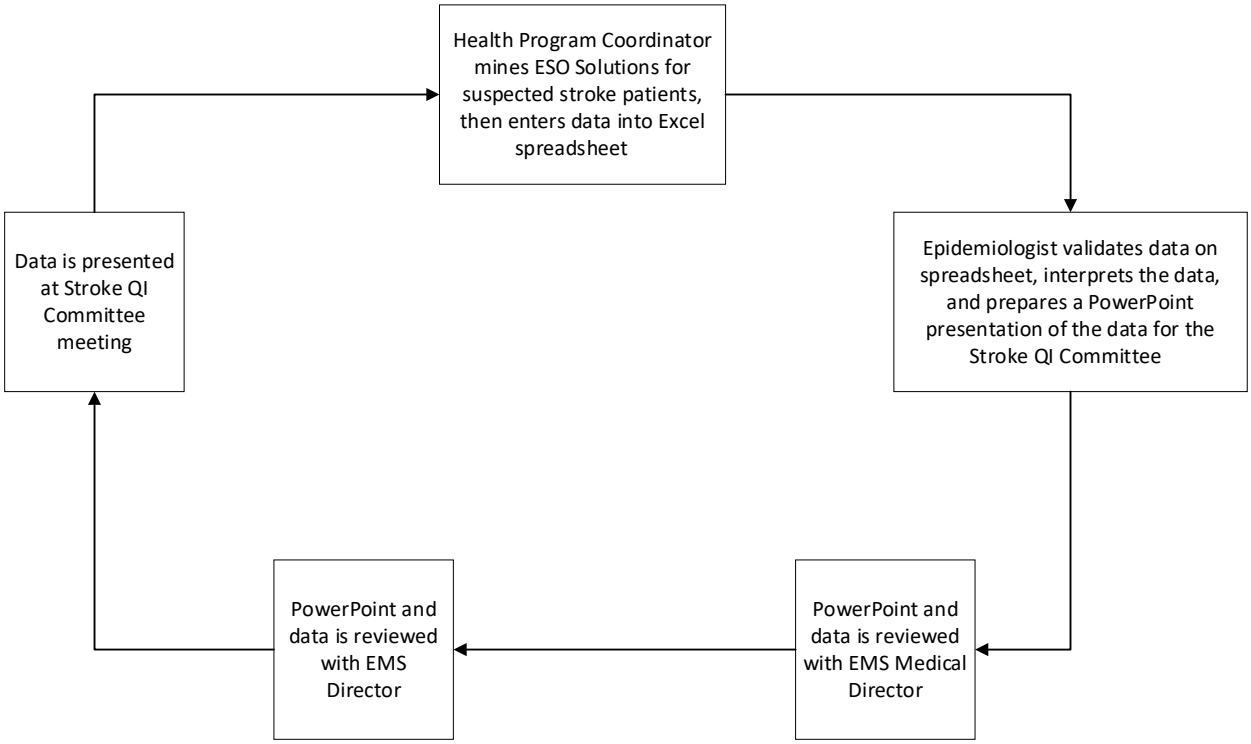
Data Collection

Currently, the Stroke Centers in Monterey County participate in American Heart Association/American Stroke Association's Get With The Guidelines (GWTG) – Stroke registry. The Monterey County EMS Agency is in the process of subscribing to the GWTG registry as a SuperUser, where data submitted by the Stroke Centers in Monterey County will be available to the EMS Agency for system monitoring and data collection.

Data elements collected and reported on by the EMS Agency at the Stroke QI Committee were agreed upon by the Committee. The EMS Agency utilizes ESO Solutions, the Countywide ePCR database, to identify prehospital suspected stroke patients and their destinations. Data is collected by the Health Program Coordinator and entered into a spreadsheet. Once the spreadsheet is completed for each quarter, it is sent to each hospital that received these patients. Hospital 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 stroke patients they receive, in order to support community education on the use of the 9-1-1 system when experiencing possible stroke symptoms.

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 PowerPoint 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 Stroke QI Committee. The Stroke QI Committee reports to the Continuous Quality Improvement Technical Advisory Group (CQI TAG), which reports on the greater non-confidential issues of the Stroke 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 data and reports to the Stroke QI Committee on the following metrics:

- Number of field-identified stroke patients vs. number of stroke patients confirmed by the Stroke Centers
- Scene time on suspected stroke patients
- Blood glucose checked in the field
- Prehospital stroke scale evaluated on suspected stroke patients
- Stroke patients by age and gender
- ED disposition of EMS-transported confirmed stroke patients
- Hospital disposition of EMS transported confirmed stroke patients
- Strokes by type – Ischemic, Hemorrhagic, TIA
- tPA given to ischemic stroke patients transported by EMS
- Undertriage of stroke patients – these are reviewed as Case Reviews at the Stroke QI meeting.

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. Stroke Centers in Monterey are obligated by policy to accept all ambulance transported patients who meet BEFAST criteria, except in situations of internal disaster.

Quality Improvement

Monterey County EMS Agency hosts a Stroke QI Committee with representation from all Stroke Centers, all non-stroke 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 Stroke 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 Stroke QI Committee is to review stroke system care and to advise the Monterey County EMS Agency on Stroke system policy, organization, training, and equipment. Additionally, case reviews and data presentations are part of the Stroke QI Committee's responsibilities. The Stroke 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

Stroke Centers are required to participate in the Monterey County Stroke QI Committee and to provide prehospital Stroke-related educational activities. Educational presentations, such as Advanced Stroke Life Support and classes on "Dizzy Strokes", are offered to prehospital personnel by the Stroke Centers on a regular basis. Stroke Centers regularly do community outreach in both English and Spanish to education the public on signs and symptoms of a stroke and the importance of calling 9-1-1 with any stroke symptoms.

Stroke System Goals

Goal	Purpose	Status
The EMS Agency will subscribe to the American Heart Association/ American Stroke Association (AHA/ASA) Get With The Guidelines (GWTG) Stroke Registry	Streamline data collection and submission	The EMS Agency is in the process of reviewing the AHA/ASA contract to subscribe to GWTG as a SuperUser.
The EMS Agency will write a Stroke Critical Care System	Compliance with regulations; standardization of data	This plan meets this goal

Plan which follows the new California Stroke Regulations	collection and reporting statewide	
Continue to refine data collection and report meaningful data at the Stroke QI Committee	Use of data to improve the EMS system.	Ongoing goal. Changes to data collection and reporting are discussed and agreed upon at Stroke QI Committee meetings
Integrate all radio systems into the NEXGEN system	• 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.

Identify yourself, organization, unit, and type of call *(e.g., "This is Paramedic Smith, AMR Medic 20 with a 52 y/o male Stroke Alert patient")*	
	• Code 2 or Code 3 • ETA • Age/Sex/Chief Complaint of patient • State urgent issues and immediate needs up front

<table>
<tr><td rowspan="2">Situation</td><td colspan="2">• Reason for base consult (trauma patient destination, specialty patient, AMA documentation, request for orders, etc.)</td></tr>
<tr><td>Trauma</td><td>Medical</td></tr>
<tr><td></td><td>• MVC
o Speed (known mph and/or freeway or city streets)
o Type of impact (rollover, head-on, etc.)
o Describe significant damage to vehicle (e.g., amount of intrusion, entrapment, steering wheel damaged, etc.)
o Number and type of patients (e.g., 3 moderates, 2 criticals)
• MCC
o Protective clothing
o Damage to helmet
o Distance of ejection from motorcycle
• Falls
o Distance (2nd story, ground level fall, etc.)
• Assault
o Object (e.g., GSW, stabbing, fists, etc.)
o Impact area</td><td>• Stroke
o Time last known well
o Time of onset of symptoms
o What was the positive hit on the BEFAST?
• STEMI
o ECG transmitted
o Is this patient s/p cardiac arrest with ROSC?
• OB
o # of months pregnant
o Gravida/Para status
o Prenatal care?
o Any known complications (e.g., breech presentation)
• Behavioral Health
o Restraints (physical and/or chemical)
o Security needed?
o Is the patient on a 5150?</td></tr>
<tr><td>Background</td><td colspan="2">• 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</td></tr>
<tr><td>Assessment</td><td colspan="2">• 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
o Vitals to be monitored every 15” for stable patients, every 5” for unstable</td></tr>
</table>

Recommendations/Recap	• What would you like from the physician? If you are looking for a specific order, state that here. • Repeat orders given by a physician
A full report should take 60 seconds or less, unless there are multiple patients or other mitigating circumstances.	

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 considered to be 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 a particular emergency department shall have their wishes followed unless the patient is considered to be 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 located 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: 5190
Effective Date: 1/2/2020
Review Date: 6/30/2023

STROKE CENTERS

I. PURPOSE

To define requirements for designation as a Monterey County Stroke Center for patients transported via the 9-1-1 system with positive findings on the approved prehospital stroke scale.

II. POLICY

A. Hospitals requesting designation as a thrombectomy-capable stroke center by the Monterey County EMS Agency shall meet the following minimum criteria:

1. Satisfy all the requirements of a primary stroke center as provided in Section II B.
2. The ability to perform mechanical thrombectomy for the treatment of ischemic stroke twenty-four (24) hours per day, seven (7) days per week, three hundred and sixty-five (365) days per year.
3. Dedicated neuro-intensive care unit beds to care for acute ischemic stroke patients twenty-four (24) hours per day, seven (7) days per week, three hundred and sixty-five (365) days per year.
4. Satisfy all the following staff qualifications:
    a. A qualified physician, board certified by the American Board of Radiology, American Osteopathic Board of Radiology, American Board of Psychiatry and Neurology, or the American Osteopathic Board of Neurology and Psychiatry, with neuro-interventional angiographic training and skills on staff as deemed by the hospital's credentialing committee.
    b. A qualified neuro-radiologist, board-certified by the American Board of Radiology or the American Osteopathic Board of Radiology.
    c. A qualified vascular neurologist, board-certified by the American Board of Psychiatry and Neurology or the American Osteopathic Board of Neurology and Psychiatry, or with the appropriate education and experience as defined by the hospital credentialing committee.
    d. If teleradiology is used in image interpretation, all staffing and staff qualification requirements contained in this section shall remain in effect and shall be documented by the hospital.
    e. The ability to perform advanced imaging twenty-four (24) hours per day, seven (7) days per week, three hundred and sixty-five (365) days per year, which shall include, but not be limited to, the following:
        1) Computed tomography angiography (ETA)

2) Diffusion-weighted MRI or CT Perfusion

3) Catheter angiography

4) Magnetic resonance angiography (MRA)

f. And the following modalities available when clinically necessary:

1) Transesophageal echocardiography (TEE)

2) Transthoracic echocardiography (TTE)

5. A process to collect and review data regarding adverse patient outcomes following mechanical thrombectomy.

6. Written transfer agreement(s) with at least one comprehensive stroke center.

B. Hospitals requesting designation as a Primary Stroke Center by the Monterey County EMS Agency shall meet the following minimum criteria:

1. Adequate staff, equipment, and training to perform rapid evaluation, triage, and treatment for the stroke patient in the emergency department.

2. Standardized stroke care protocol/order set.

3. Stroke diagnosis and treatment capacity twenty-four (24) hours per day, seven (7) days per week, three hundred and sixty-five (365) days per year.

4. Data-driven, continuous quality improvement process including collection and monitoring of standardized performance measures.

5. Continuing education in stroke care provided for staff physicians, staff nurses, staff allied health personnel, and EMS personnel.

6. Public education on stroke and illness prevention.

7. A clinical stroke team, available to see in person or via telehealth, a patient identified as a potential acute stroke patient within 15 minutes following the patient's arrival at the hospital's emergency department or within 15 minutes following a diagnosis of a patient's potential acute stroke.

8. At a minimum, a clinical stroke team shall consist of:

a. A neurologist, neurosurgeon, interventional neuro-radiologist, or emergency physician who is board certified or board eligible in neurology, neurosurgery, endovascular neurosurgical radiology, or other board-certified physician with sufficient experience and expertise in managing patients with acute cerebral vascular disease as determined by the hospital credentials committee.

b. A registered nurse, physician assistant or nurse practitioner capable of caring for acute stroke patients that has been designated by the hospital who may serve as a stroke program manager.

9. Written policies and procedures for stroke services which shall include written protocols and standardized orders for the emergency care of stroke patients.

These policies and procedures shall be reviewed at least every three (3) years, revised as needed, and implemented.

10. Data-driven continuous quality improvement process including collection and monitoring of standardized performance measures.
11. Neuro-imaging services capability that is available twenty-four (24) hours per day, seven (7) days per week, three hundred and sixty-five (365) days per year, such that imaging shall be initiated within twenty-five (25) minutes following emergency department arrival.
12. CT scanning or equivalent neuroimaging shall be initiated within twenty-five (25) minutes following emergency department arrival.
13. Other imaging shall be available within a clinically appropriate timeframe and shall at a minimum include:
    a. MRI
    b. CTA and/or Magnetic resonance angiography (MRA)
    c. TEE or TTE
    d. Interpretation of the imaging
14. Interpretation of the imaging.
    a. If teleradiology is used in image interpretation, all staffing and staff qualification requirements contained in this section shall remain in effect and shall be documented by the hospital.
    b. Neuro-imaging studies shall be reviewed by a physician with appropriate expertise, such as board-certified radiologist, board-certified neurologist, board-certified neurosurgeon, or residents who interpret such studies as part of their training in ACGME-approved radiology, neurology, or neurosurgery training program within forty-five (45) minutes of emergency department arrival.
        1) For the purpose of this subsection, a qualified radiologist shall be board certified by the American Board of Radiology or the American Osteopathic Board of Radiology.
        2) For the purpose of this subsection, a qualified neurologist shall be board certified by the American Board of Psychiatry and Neurology or the American Osteopathic Board of Neurology and Psychiatry.
        3) For the purpose of this subsection, a qualified neurosurgeon shall be board certified by the American Board of Neurological Surgery.
    c. Laboratory services capability that is available twenty-four (24) hours per day, seven (7) days per week, three hundred and sixty-five (365) days per year, such that services may be performed within forty-five (45) minutes following emergency department arrival

d. Neurosurgical services shall be available, including operating room availability, either directly or under an agreement with a thrombectomy-capable, comprehensive or other stroke center with neurosurgical services, within two (2) hours following the arrival of acute stroke patients to the primary stroke center.

e. Acute care rehabilitation services.

f. Transfer arrangements with one or more higher level of care centers when clinically warranted or for neurosurgical emergencies.

g. There shall be a stroke medical director of a primary stroke center, who may also serve as a physician member of a stroke team, who is board-certified in neurology or neurosurgery or another board-certified physician with sufficient experience and expertise dealing with cerebral vascular disease as determined by the hospital credential committee.

C. Hospitals requesting designation as an acute stroke ready center by the Monterey County EMS Agency shall meet the following minimum criteria:

1. A clinical stroke team available to see in person or via telehealth a patient identified as a potential acute stroke patient within twenty (20) minutes following the patient's arrival at the hospital's emergency department.

2. Written policies and procedures for emergency department stroke services that are reviewed, revised as needed, and implemented at least every three (3) years.

3. Emergency department policies and procedures shall include written protocols and standardized orders for the emergency care of stroke patients.

4. Data-driven continuous quality improvement process including collection and monitoring of standardized performance measures.

5. Neuro-imaging services capability that is available twenty-four (24) hours per day, seven (7) days per week, three hundred and sixty-five (365) days per year, such that imaging shall be performed and reviewed by a physician within forty-five (45) minutes following emergency department arrival.

6. Neuro-imaging services shall, at a minimum, include CT or MRI or both.

7. Interpretation of the imaging.

    a. If teleradiology is used in image interpretation, all staffing and staff qualification requirements contained in this section shall remain in effect and shall be documented by the hospital.

    b. Neuro-imaging studies shall be reviewed by a physician with appropriate expertise, such as a board-certified radiologist, board-certified neurologist, a board-certified neurosurgeon, or residents who interpret such studies as part of their training in ACGME-approved radiology, neurology, or neurosurgery training program within forty-five (45) minutes of emergency department arrival.

1) For the purpose of this subsection, a qualified radiologist shall be board-certified by the American Board of Radiology or the American Osteopathic Board of Radiology.

2) For the purpose of this subsection, a qualified neurologist shall be board-certified by the American Board of Psychiatry and Neurology or the American Osteopathic Board of Neurology and Psychiatry.

3) For the purpose of this subsection, a qualified neurosurgeon shall be board-certified by the American Board of Neurological Surgery.

8. Laboratory services shall, at a minimum, include blood testing, electrocardiography and x-ray services, and be available twenty-four (24) hours per day, seven (7) days per week, three hundred and sixty-five (365) days per year, and able to be completed and reviewed by physician within sixty (60) minutes following emergency department arrival.

9. Neurosurgical services shall be available, including operating room availability, either directly or under an agreement with a thrombectomy-capable, primary or comprehensive stroke center, within three (3) hours following the arrival of acute stroke patients to an acute stroke-ready hospital.

10. Provide IV thrombolytic treatment and have transfer arrangements with one or more thrombectomy-capable, primary or comprehensive stroke center(s) that facilitate the transfer of patients with strokes to the stroke center(s) for care when clinically warranted.

11. There shall be a medical director of an acute stroke-ready hospital, who may also serve as a member of a stroke team, who is a physician or advanced practice nurse who maintains at least four (4) hours per year of educational time in cerebrovascular disease.

12. Clinical stroke team for an acute stroke-ready hospital at a minimum shall consist of a nurse and a physician with training and expertise in acute stroke care.

D. An EMS receiving hospital that is not designated for stroke critical care services shall do the following, at a minimum and in cooperation with stroke receiving centers and the Monterey County EMS agency:

1. Participate in the Monterey County EMS Agency's quality improvement system, including data submission as determined by the Monterey County EMS agency medical director.

2. Participate in the interfacility transfer agreements to ensure access to a stroke critical care system for a potential stroke patient.

III. APPLICATION PROCESS

A. To apply for designation as a Stroke Center in Monterey County, an interested hospital shall:

1. Submit an application packet that contains all required documentation outlined in the Stroke Center application checklist.
2. Submit applicable designation fees to cover initial and ongoing Monterey County EMS Agency costs to support the stroke program.
    a. Stroke Center Application Fee: A stroke 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 stroke system regulation. The stroke center application fee will be assessed for hospitals applying for stroke center designation. Fees paid in excess of actual costs will be returned to applicants.
    b. The Monterey County Board of Supervisors will establish a stroke center annual fee. This fee covers the cost of monitoring the operation of the stroke system in compliance with Monterey County policies. The fee will be based on the time requirements of the stroke system medical director, stroke system coordinator, and other staff activity dedicated to stroke issues as well as associated overhead and program support costs.
    c. Monterey County EMS Agency will provide the designated stroke 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.
3. Develop agreements with other Monterey County hospitals to accept any stroke patients from those facilities. A copy of these agreements shall be included in the application packet.

IV. DESIGNATION CRITERIA

A. Hospitals wishing to be designated as a Stroke Receiving Center (Acute Stroke Ready Hospital, Primary Stroke Center, Thrombectomy-Capable Stroke Center or Comprehensive Stroke Center) in Monterey County must provide the EMS Agency with documentation of the following:
    1. Current California licensure as an acute care facility providing Basic or Comprehensive Emergency Medical Services.
    2. Review list of requirements and checklist of documents, found in Appendix A – *Stroke Center Designation Criteria Evaluation Tool*, which must be completed and submitted with the application.
    3. Complete and submit to the Monterey County EMS Agency all information and documents requested in *Appendix A,* Column 2, "objective measurement" of the *Stroke Center Designation Criteria Evaluation Tool*.

4. Enter into and maintain a written Stroke Center agreement with the Monterey County EMS Agency that defines the roles and responsibilities of the hospital and the EMS Agency relative to the care of stroke patients.
5. Receives, and maintains current certification as an Acute Stroke Ready Hospital, a Primary Stroke Center, a Comprehensive Stroke Center, or a Thrombectomy Capable Stroke Center by the Joint Commission, the Healthcare Facilities Accreditation Program (HFAP), or Det Norske Veritas Healthcare, Inc (DNV).
6. Appropriate internal (hospital) policies including:
    a. Designation of the Stroke Center Medical Director and Stroke Center Nurse Program Manager.
        1) Identify the names and contact information, including e-mail addresses for the key stroke personnel: The Stroke Medical Director, RN Program Manager, and Administrative contact.
    b. Staff and physician coverage.
        1) Availability requirements for timely staff and physician response upon notification or arrival of a stroke patient to the emergency department
    c. Interfacility transfer policies, protocols, and agreements.
    d. Collection of data and a process for sharing required data with the Monterey County EMS Agency.
    e. Active and regular participation in Monterey County EMS Stroke QI activities.
    f. Developing and maintaining a hospital Stroke QI Committee.
    g. Participation in the California Stroke Registry.

B. Stroke center designation will be provided to a hospital following satisfactory review of written documentation and initial site survey by Monterey County EMS Agency staff and receipt of stroke center fees by the Monterey County EMS Agency.

C. Stroke center designation period will coincide with the period covered in the written agreement between the Stroke Receiving Center and Monterey County.

D. Before Redesignation as a stroke center by Monterey County EMS Agency, stroke centers shall be reevaluated to meet the criteria established by this policy.

E. Designation shall be good for a period of no more than three (3) years. At that time, the EMS Agency will perform a site visit to re-designate the hospital as a Stroke Center.

V. REDESIGNATION CRITERIA

A. Stroke Centers shall be eligible for Redesignation every three (3) years. In order to be eligible for Redesignation, the Stroke Center shall meet all of the provisions of this

policy. Redesignation of a stroke center will require the documentation from sections IV-A-b, IV-A-e-1-a, and IV-A-c.

B. Hospital must be current with all data requirements of the Monterey County EMS Agency.

C. A site visit may be performed at the discretion of the Monterey County EMS Agency.

VI. PERFORMANCE IMPROVEMENT

A. Participation in the Monterey County EMS Stroke QI Committee with attendance at not less than 80% of the meetings.

B. Written internal quality improvement plan/program description for stroke patients.

   1. Plan will include a Community Stroke Reduction Plan including participation in outreach programs to reduce cardiovascular disease and stroke.

C. The Monterey County EMS Agency Stroke Critical Care System shall have a quality improvement process that shall include, at a minimum:

   1. Evaluation of program structure, process and outcome
   2. Review of stroke-related deaths, major complications, and transfers.
   3. A multidisciplinary Stroke Quality Improvement Committee, including both prehospital and hospital members.
   4. Participation in the QI process by all designated stroke centers and prehospital providers involved in the stroke critical care system.
   5. Evaluation of regional integration of stroke patient movement.
   6. Participation in the stroke data management system.
   7. Compliance with the California Evidence Code, Section 1157.7 to ensure confidentiality, and a disclosure protected review of selected stroke cases.
      a. The Monterey County EMS Agency shall be responsible for ongoing performance evaluation and quality improvement of the stroke critical care system.

John Beuerle, M.D.
EMS Medical Director

Mike Petrie

Michael Petrie, EMT-P, MBA, MA
EMS Bureau Chief

COUNTY OF MONTEREY
HEALTH DEPARTMENT
Elsa Jimenez, Director of Health

Administration
Behavioral Health
Clinic Services
Emergency Medical Services
Environmental Health/Animal Services
Public Health
Public Administrator/Public Guardian

Nationally Accredited for Providing Quality Health Services

Application for Stroke Center Designation

Hospital: _____

Contact: _____ **Phone #:** _____

Title: _____ **E-Mail:** _____

- Is your hospital licensed by the California Department of Health Services and accredited by a CMS-approved accrediting body as a Primary or Comprehensive Stroke Center? Yes □ No □
- Does your hospital have a special permit for Neurosurgical Services? ***(Not required for designation as an Acute Stroke Ready Hospital or a Primary Stroke Center)*** Yes □ No □

Name of Proposed Stroke Center Medical Director: _____

- Board Certified in Emergency Medicine □
  Neurology □
  Other: □

Name of proposed Stroke Center Coordinator: _____

Title: _____ **Phone #:** _____

- Do you use tele-neurology? Yes □ No □
  - *If yes, please include a copy of the contract with the tele-neurology service including timeframes for examination of Stroke/ TIA patients.*
- Do you use tele-radiology for interpretation of radiological studies? Yes □ No □
  - *If yes, please include a copy of the agreement with teleradiology service including timeframes for reading and interpreting radiological studies for Stroke/ TIA patients.*
- Do you have a dedicated and audio recorded phone line, capable of being answered 24 hours per day, seven days per week, for paramedic notification of Stroke/ TIA patients? Yes □ No □

Application for Stroke Center Designation

Policies:

- Does your organization have policies on the treatment of Stroke patients that define who shall receive emergent tPA or other IV thrombolytic medication? ***(Please attach)*** Yes □ No □
- Does your organization have a policy on the treatment of Stroke that includes emphasis on rapid treatment? ***(Please attach)*** Yes □ No □
- Does your organization have data and quality improvement policies that meet the requirements in the Monterey County Stroke Center policy? (Please attach) Yes □ No □

Data:

- Does your organization agree to participate in the California Stroke Registry/California Coverdell Program? Yes □ No □
- Does your organization agree to report data on stroke patients, including outcome data, to the EMS Agency every quarter?
- Please attach the previous 6 months' worth of the following data for your organization:
  - Total number of Stroke patients that were seen and treated at hour hospital. _____
  - Total number of Stroke patients that were transferred from an acute care hospital to your facility for definitive care. _____
  - Total number of Stroke patients who met criteria for receiving IV thrombolytics. _____
  - Total number of Stroke patients who met criteria for receiving IV thrombolytics who refused the therapy. _____
  - Total number of Stroke patients who received IV thrombolytics. _____
  - Total number of Stroke patients who were discharged alive. _____
  - Total number of Stroke patients who were discharged to a rehabilitation facility. _____
  - Total number of Stroke patients who were discharged home alive _____

Completed by (please print): _____ Date: _____

Signature: _____

Send Application to:

Monterey County EMS Agency – Attention: Laura Wallin, RN, CEN, Clinical Program Coordinator
1441 Schilling Place, South Building
Salinas, CA 93901
Phone: 831-755-5013 Fax: 831-755-8040 e-mail: Wallinl@co.monterey.ca.us

List of neurologists/neurointerventionalists/interventional radiologists proposed for call for EMS-delivered Stroke/TIA patients

Physician Name	At which hospitals do you have privileges?	Number of Stroke/TIA Pts/year

Stroke Designation Standard	Objective Measurement	Meets Standard	Comments
Acute Stroke Ready Hospital			
Current License to provide Basic Emergency Services in Monterey County	Copy of License	Yes No	
Current copy of Joint Commission, HFAP or DNV Certification	Copy of Certification	Yes No	
An acute Stroke team available within 20 minutes of patient's arrival in ED	On-call schedules for 3 months. On-call policy and procedure. Emergency Department protocol for initial screening and treatment of suspected stroke patients.	Yes No	May use telehealth for this requirement
Written policies and procedures for Stroke services	Copy of policies, procedures	Yes No	Include protocols and standardized orders and order sets
Data-driven, CQI process including collection and monitoring of standardized performance measures	3 months' worth of CQI data Data showing identification of areas in need of improvement and how the issue was dealt with.	Yes No	
Data reporting mechanism	Copy of agreement with AHA/ASA Get With The Guidelines – Stroke	Yes No	AHA Get With The Guidelines - Stroke
Neuro-imaging capability 24/7/365	Policies/protocols supporting operations	Yes No	CT and/or MRI
One of the following: • Qualified Radiologist • Qualified Neurologist • Qualified Neurosurgeon	Copy of appropriate board certification On-call schedules for 3 months	Yes No	If using telemedicine, hospital must document this standard
Laboratory services 24/7/365	Copy of policies/procedures/protocols for lab services	Yes No	Blood testing, ECG, and x-ray services
Provide IV thrombolytic treatment to qualified patients	Copy of policies/procedures/protocols for administration of tPA	Yes No	

Stroke Designation Standard	Objective Measurement	Meets Standard	Comments
Medical Director: • Physician • Advanced practice nurse Both must maintain at least 4 hours per year of educational time in cerebrovascular disease	Copy of CE units for previous 2 years	Yes No	
If no neurosurgical services available: Plan to transfer within 2 hours	Supporting policies, procedures and agreements	Yes No	Required if no neurosurgery
In-patient acute care rehabilitation	Policies/procedures for inpatient rehabilitation Agreement with other inpatient acute rehabilitation	Yes No	
Designated telephone number for prehospital	Actual number on file	Yes No	
Written transfer guidelines for higher level of service	Transfer policies/procedures Copy of agreement	Yes No	
Continuing Education Provider	Copy of approval letter with CE provider number	Yes No	
Stroke contingency plans • Personnel • Imaging equipment • Bed capacity	Pertinent policy and procedures to minimize disruption	Yes No	Expectation of no advisory status except for internal disaster
STAFFING			
Acute Stroke Care team:			
One of the following: • Neurologist • Neurosurgeon • Interventional neuroradiologist • Emergency Physician	Copy of appropriate board certification On-call schedule for 3 months Copy of job description	Yes No	Board certified or board eligible in neurology, neurosurgery, endovascular neurosurgical radiology, with experience and expertise in dealing with cerebral vascular disease
One of the following: • Registered Nurse • Physician assistant • Nurse practitioner	Copy of license Copy of job description	Yes No	Demonstrated competency in caring for acute stroke patients

Stroke Designation Standard	Objective Measurement	Meets Standard	Comments
PRIMARY STROKE CENTER			
Hospital must meet all requirements of an Acute Stroke Ready Hospital plus:			
An acute Stroke team available within 15 minutes	On-call schedules for 3 months. On-call policy and procedure. Emergency Department protocol for initial screening and treatment of suspected stroke patients.	Yes No	
Immediate, telemetry or critical care beds	Immediate: _____ Telemetry: _____ Critical Care: _____	Yes No	Number of beds
Neurosurgical services including operating room	Number of operating rooms on license: _____ Copy of agreement(s) with other Stroke Centers	Yes No	May be under agreement with another Stroke Center
If no neurosurgical services available: Plan to transfer within 2 hours	Supporting policies, procedures and agreements	Yes No	Required if no neurosurgery
Inpatient acute care rehabilitation	Policies/procedures for inpatient rehabilitation Agreement with other inpatient acute rehabilitation	Yes No	May contract with other acute inpatient rehabilitation provider
Designated telephone number for prehospital personnel to contact ED	Actual number on file	Yes No	
Written transfer guidelines for higher level of service	Transfer policies/procedures Copy of agreement	Yes No	
Monterey County designated Continuing Education Provider	Copy of approval letter with CE provider number	Yes No	
Stroke contingency plans • Personnel • Imaging equipment Bed capacity	Pertinent policy and procedures to minimize disruption	Yes No	Expectation of no advisory status except for internal disaster
STAFFING			
Acute Stroke Care Team			

Stroke Designation Standard	Objective Measurement	Meets Standard	Comments
One of the following: • Neurologist • Neurosurgeon • Interventional neuroradiologist Emergency Physician	Copy of appropriate board certification On-call schedule for 3 months Copy of job description	Yes No	Board certified or board eligible in neurology, neurosurgery, endovascular neurosurgical radiology, with experience and expertise in dealing with cerebral vascular disease
One of the following: • Registered Nurse • Physician assistant Nurse practitioner	Copy of license Copy of job description	Yes No	Demonstrated competency in caring for acute stroke patients
THROMBECTOMY CAPABLE STROKE CENTER			
Meets all requirements of Primary Stroke Center plus:		Yes No	
Ability to perform mechanical thrombectomy for the treatment of ischemic stroke 24/7/365	Copy of on-call schedules for interventionalists	Yes No	
Staffing: Must have all the following staff qualifications:			
A qualified physician, board certified by the American Board of Radiology, American Osteopathic Board of Radiology, American Board of Psychiatry and Neurology or the American Osteopathic Board of Neurology and Psychiatry, with neuro-interventional angiographic training and skills on staff	Copy of interventionalist CV	Yes No	
A qualified neuro-radiologist, board-certified by the American Board of Radiology or the American Osteopathic Board of Radiology	Copy of radiologist CV	Yes No	

Stroke Designation Standard	Objective Measurement	Meets Standard	Comments
A qualified vascular neurologist, board certified by the American Board of Psychiatry and Neurology or the American Osteopathic Board of Neurology and Psychiatry, or with appropriate education and experience as defined by the hospital credentials committee	Copy of CV	Yes No	
If teleradiology is used in image interpretation, all staffing and staff qualifications shall remain in effect and shall be documented by the hospital		Yes No	
The ability to perform advanced imaging 24/7/365, to include but not be limited to: • CTA • Diffusion-weighted MRI or CT Perfusion • MRA • Catheter angiography	On-call schedules for the last 3 months	Yes No	
The following modalities must be available when clinically necessary: • Carotid duplex ultrasound • TEE • TTE	Demonstrated on site survey	Yes No	
A process to collect and review data regarding adverse patient outcomes following mechanical thrombectomy	Written policies/protocols/procedures/ plans	Yes No	

Stroke Designation Standard	Objective Measurement	Meets Standard	Comments
EMS RECEIVING HOSPITALS (NON-DESIGNATED FOR STROKE CRITICAL CARE SERVICES			
EMS receiving hospital that is not designated for stroke critical care services shall do the following at a minimum and in cooperation with stroke receiving centers and the local EMS agency:			
Participate in the local EMS agency's quality improvement system, including data submission as determined by the Monterey County EMS Agency Medical Director	Copies of attendance at Stroke QI meetings Data submitted regularly	Yes No	
Participate in the interfacility transfer agreements to ensure access to a stroke critical care system for a potential stroke.	Copies of transfer agreements	Yes No	

Monterey County EMS System Policy

Protocol Number: N-2
Effective Date: 5/4/2018
Review Date: 6/30/2021

Protocol: Neurological

Non-Traumatic Neuro Impairment Suspected CVA

BLS CARE

Routine medical care

Identify time last well known. Be as specific as possible

Obtain a cell phone number for a family member who can make decisions for the patient, if possible.

ALS CARE

Routine medical care.

Use B.E. F.A.S.T for patient assessment for possible CVA.

- B- Balance. Loss or change in balance or coordination
- E- Eyes. Sudden vision changes
- F- Face. Facial droop
- A- Arm. Arm Drift
- S- Speech. Slurred of confused speech
- T- Time. What time did symptoms begin? When was patient last known well?

Obtain a 12-Lead ECG. Do not delay time on scene to obtain this.

Dextrose up to25gms IV if blood sugar is less than 70.

Transport patients Code 3 with positive B.E.F.A.S.T. findings and last known well time of 20 hours or less, and patients with stroke/ TIA symptoms that have resolved directly to a designated Stroke Receiving Center.

NOTE:

Scene time should be kept to 15 minutes or less.

Contact the closest designated Stroke Center as early as possible to allow them time to prepare for the patient's arrival. Inform the hospital that a "Stroke Alert" is being transported. Provide patient name and date of birth only if using the telephone.