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Emergency Medical Services Division

Stroke System of Care Policy

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Revision Log

11/2014	Initial draft
11/13/2014	EMCAB Approved
11/12/2015	Revised contracts deadlines. Added Division QI requirements. EMCAB approved.

I. PURPOSE

The purpose of the Stroke System of Care Policies (policies) is to define the following:

A. Requirements for Stroke Center application, designation, and re-designation by the Kern County EMS Division (Division);

B. Requirement for training pre-hospital personnel in recognition of Stroke victims, understanding benefit of a Stroke Center, and making appropriate destination decisions;

C. Requirements for on-going quality improvement review; and

D. Requirements for data management and mandatory elements.

The objective of having a Stroke Center designation is to provide rapid evaluation and appropriate treatment for all eligible stroke cases in the shortest time possible. In addition, a Stroke Center must have a component that addresses comprehensive post treatment management/rehabilitation, and involvement in pre-hospital personnel training. The EMS system objective is to transport qualifying stroke patients to a designated Stroke Center.

II. AUTHORITY

This policy is developed under the authority of Health and Safety Code, Division 2.5, California Evidence Code 1157.7, and California Code of Regulations (CCR) Title 22, Division 9, Chapter 7.3 (Draft).

III. DEFINITIONS

A. American Board of Radiology (ABR): oversees the certification and ongoing professional development of specialists in Diagnostic Radiology, Radiation Oncology and Medical Physics. The ABR certifies through a comprehensive process involving educational requirements, professional peer evaluation, and examination.

B. American Osteopathic Board of Radiology: an organization that provides board certification to qualified Doctors of Osteopathic Medicine (D.O.) who specialize in the use of imaging in the diagnosis and treatment of disease.

C. American Osteopathic Board of Neurology and Psychiatry: an organization that provides board certification to qualified Doctors of Osteopathic Medicine (D.O.) who specialize in disorders of the nervous system (neurologists) and to qualified Doctors of Osteopathic Medicine who specialize in the diagnosis and treatment of mental disorders.

D. American Board of Psychiatry and Neurology: Responsible for certifying physicians who have completed residency training in neurology and/or psychiatry in programs accredited by the American Osteopathic Association

E. Board-certified: Means that a physician has fulfilled all requirements, has satisfactorily completed the written and oral examinations, and has been awarded a board diploma in a specialty field.
F. Board-eligible: Means that a physician has applied to a specialty board and received a ruling that he or she has fulfilled the requirements to take the examination. Board certification must be obtained within five (5) years of the first appointment.
G. Certificate of Added Qualification (CAQ): A CAQ enables a physician to add to his or her skill set and qualifications, without completing an additional full fellowship training program. A CAQ consists of additional coursework, clinical education, and testing of a sub-specialized technique, procedure or area of medicine within the physician's medical specialty
H. Comprehensive Stroke Centers (CSC): These facilities are equipped with diagnostic and treatment facilities for stroke that are not found in other hospitals and are able to deliver time-sensitive treatment within an extended therapeutic time window. They also have advanced neurological and interventional neuroradiology capabilities. Neurosurgeons and interventional neuroradiologists play important roles for treating intracerebral hemorrhage and subarachnoid hemorrhage. In addition, brain tumors and subdural hematomas are common stroke mimics.
I. Computed Tomography (CT): CT radiography in which a three-dimensional image of a body structure is constructed by computer from a series of plane cross-sectional images made along an axis
J. Continuing Medical Education (CME): Education required for the maintenance of a license and refers to the highest level of continuing education approved or recognized by the national and/or state professional organization.
K. Emergency Medical Services Authority (Authority or EMSA): The department within the Health and Welfare Agency of the State of California that is responsible for the coordination and integration of all state activities concerning EMS.
L. Immediately Available: Unencumbered by conflicting duties or responsibilities.
M. Kern County Emergency Medical Services Division (Division): A division of the Kern County Public Health Services Department. The local emergency medical services agency responsible for the regulation and oversight of the emergency medical services system in Kern County.
N. Local Emergency Medical Services Agency (Local EMS Agency, or LEMSA): A county health department, an agency established and operated by the county, an entity with which the county contracts for the purposes of local emergency medical services administration, or a joint powers agreement between counties or cities and which is designed pursuant to chapter 4 of the California Health and Safety Code, Division 2.5, Section 1797.200. The Division is the LEMSA for Kern County.

O. Magnetic Resonance Imaging (MRI): MRI a noninvasive diagnostic technique that produces computerized images of internal body tissues and is based on nuclear magnetic resonance of atoms within the body induced by the application of radio waves
P. Primary Stroke Center (PSC): stabilizes and treats acute stroke patients, providing initial acute care. PSCs are able to appropriately use t-PA and other acute therapies such as stabilization of vital functions, provision of neuroimaging procedures, and management of intracranial and blood pressures. Based on patient needs and the hospital's capabilities, they either admit patients or transfer them to a comprehensive stroke center.
Q. Protocol: A predetermined, written medical care guideline, which may include standing orders.
R. Satellite Stroke Centers (SSC): These facilities are able to provide the minimum desirable level of care for stroke patients in the ED, particularly when paired with another hospital, but are not documented to provide the minimum level of care for admitted inpatients. These facilities should be regarded as stroke partners or "spokes" and should be aligned by formal agreement with a hospital that can provide the missing service (hub). The most common "missing service" is neurological expertise in the ED and inpatient Stroke Unit care for patients treated with recanalization therapies. In these hospitals, the necessary ED neurological expertise may be provided through telemedicine.
S. Stroke: A condition of impaired blood flow to a patient's brain resulting in brain dysfunction.
T. Stroke Call Roster: A schedule of licensed health professionals available twenty four (24) hours a day, seven (7) days a week for the care of the stroke patient.
U. Stroke Care: Emergency transport, triage, and acute intervention and other acute care service for stroke that potentially requires immediate medical or surgical intervention or treatment, and may include education, primary prevention, acute intervention, acute and subacute management, prevention of complications, secondary stroke prevention, and rehabilitative services.
V. Stroke Medical Director: A physician designated by the hospital who is responsible for the stroke service and performance improvement and patient safety programs related to stroke care.
W. Stroke Program Manager/Coordinator: A registered nurse or qualified individual designated by the hospital with the responsibility for monitoring and evaluating the care of stroke patients and the coordination of performance improvement and patient safety programs for the stroke center in conjunction with the stroke medical director.
X. Stroke Program: An organizational component of the hospital specializing in the care of stroke patients.

Y. Stroke Team: A team of healthcare professionals involved in the care of the stroke patient and may include, but not be limited to: neurologists, neurointerventionalists, neurosurgeons, anesthesiologists, emergency medicine and other stroke center clinical staff.

Z. Telemedicine: The use of medical information exchanged from one site to another via electronic communications to improve patients' health status. A neurology specialist will assist the physician in the center rendering a diagnosis. This may involve a patient "seeing" a specialist over a live, remote consult or the transmission of diagnostic images and/or video along with patient data to the specialist.

IV. DESIGNATION

A. Hospitals seeking formal designation as a Stroke Center shall meet the following requirements:

1. Possess current California licensure as an acute care hospital providing basic or standby emergency medical services.

2. Must hold current designation and valid contract with the county as a paramedic base hospital; standby ER's excluded for Satellite Stroke Center designation.

3. Obtain and maintain continuous accreditation as a Primary Stroke Center or Comprehensive Stroke Center from The Joint Commission or other CMS approved accrediting body. Satellite Stroke Centers (SSC) must obtain and maintain continuous designation with the County by completing the application documentation requirements every two (2) years as well as meet all provisions set forth in this policy.

4. All Primary Stroke Centers (PSC) and Comprehensive Stroke Centers (CSC) shall contract with the American Heart Association to submit data to "Get with the Guidelines-Stroke" (GWTG) registry. All PSC and CSC shall submit quarterly reports to the Division. All SSCs shall complete a data sheet to submit to the PSC or CSC upon transfer of patient.

5. The PSC and CSC shall maintain a designated telephone number (Hotline) to facilitate rapid inter-facility transfer and access to the PSC & CSC physician for consultation with SSC physicians and other providers regarding care and transfer of stroke patients.

6. Execute an agreement between the Stroke Center and the County of Kern to formally designate the hospital as a Primary, Comprehensive, or Satellite Stroke Center.

7. All Stroke Center's must be an approved Continuing Education provider with the County.

8. All Stroke Center's shall provide for the triage and treatment of simultaneously presenting stroke patients so long as the Stroke Center's E. D. is on "open" status.

9. All Stroke Center's shall provide stroke center services to any stroke patient that comes to the emergency department, regardless of the stroke patient's ability to pay physician fees and/or hospital costs. The phrase "comes to the emergency department" shall have the same meaning as set forth in the Emergency Medical Treatment and Active Labor Act (42 U.S.C § 1395dd) and the regulations promulgated thereunder (EMTALA).

10. All Stroke Center's shall notify the Division within twenty-four (24) hours of any failure to meet the provisions set forth in the designation criteria. The Hospital will identify its action to correct the deficiency and submit within the next 7 days after the failure.

11. All Stroke Center's shall actively and cooperatively participate in the "Stroke QI Committee," and other related committees that may, from time to time, be named and organized by the Division related to the Stroke System of Care.

12. Primary and Comprehensive Stroke Centers shall immediately accept all Stroke patients from all facilities within the County, upon notification of "Stroke Alert" and request by the transferring physician.

13. All Stroke Centers shall pay the established fee. The Division will charge for regulatory costs incurred as a result of Stroke Center application review, designation, and re-designation. The specific fees are based upon Division costs. Fee amounts shall be specified in the County Fee Ordinance Chapter 8.13, if applicable.

B. COMPREHENSIVE STROKE CENTERS SERVICE STANDARDS (CSC)

CSC's are certified by The Joint Commission (TJC); therefore the service standards are verified by TJC. A copy of the certification is required for local accreditation.

C. PRIMARY STROKE CENTERS SERVICE STANDARDS (PSC)

In Addition to the requirements listed in Section IV: A; 1-13, for all Stroke Centers, Primary Stroke Centers must meet the following service standards as outlined in California Code of Regulations (CCR) Title 22, Division 9, Chapter 7.3 (Draft). Once the following standards are met the PSC will receive local designation. The PSC will then have one year to obtain certification by The Joint Commission as a PSC and present a copy of the certification to the division. .

1. PSCs shall have adequate staff, equipment, and training to perform rapid evaluation, triage, and treatment in the emergency room.

2. PSCs shall have stroke diagnosis and treatment capacity twenty four (24) hours a day, seven (7) days a week.

3. PSCs shall have a quality improvement system to include data collection.

4. The Division may choose to use Centers for Medicare & Medicaid Services (CMS) approved accrediting body (i.e. The Joint Commission) or any other that the Division sees fit for designation review.

5. Evaluation of the PSC shall include assessment of the following components:

   i. An acute Stroke Team available to see in person or via telemedicine a patient identified as a potential acute stroke patient within fifteen (15) minutes following the patient's arrival at the hospital emergency department or within fifteen (15) minutes following the diagnosis of a patient's potential acute stroke.

   ii. Written policies and procedures for stroke services that are reviewed at least every two (2) years, revised more frequently as needed, and implemented. These policies and procedures shall include written protocols and standardized orders for emergency care of stroke patients.

iii. Evidence based, continuous quality improvement including collection and monitoring of standardized performance measures.

iv. Neuro-imaging services capability that is available twenty four (24) hours a day, seven (7) days a week, such that imaging shall be performed within twenty five (25) minutes following order entry. Such studies shall be reviewed by a physician with appropriate expertise, such as a board certified radiologist, board-certified neurologist, a board certified neuro-surgeon, or residents who interpret such studies as part of their training in an Accreditation Council of Graduate Medical Education-approved radiology, neurology, or neurosurgery training program within twenty (20) minutes of study completion.

v. Neuro-imaging services shall, at a minimum, include computerized tomography scanning or magnetic resonance imaging, as well as interpretation of the imaging.

vi. In the event that tele-radiology is used in image interpretation, all staffing and staff qualification requirements contained in this policy shall remain in effect and shall be documented by the hospital.

vii. A qualified radiologist shall be board-certified by the American Board of Radiology or the American Osteopathic Board of Radiology.

viii. A qualified neurologist shall be board-certified by the American Board of Psychiatry and Neurology or the American Osteopathic Board of Neurology and Psychiatry.

ix. A qualified neurosurgeon shall be board-certified by the American Board of Neurological Surgery.

x. Laboratory services capability twenty four (24) hours a day, seven (7) days a week, such that services may be performed within forty-five (45) minutes following order entry. Laboratory services shall, at a minimum, include blood testing. Electrocardiography and x-ray services must also meet these time and availability standards.

xi. Available telemetry or critical care beds.

xii. Neurosurgical services that are available, including operating room availability, either directly or under agreement with a CSC or another PSC, within two (2) hours following admission of acute stroke patients to the stroke center.

xiii. In-patient acute care rehabilitation services.

xiv. Transfer agreements with one or more higher level of care centers when clinically warranted.

xv. At a minimum, an acute Stroke Team shall consist of:

a.) A neurologist, neurosurgeon, interventional radiologist, or emergency physician who is board-certified or board-eligible in neurology, neurosurgery, endovascular neurosurgical radiology, with experience and expertise dealing with cerebral vascular disease. There shall be a physician director of a Primary Stroke Center, who may also serve as a physician member of a Stroke Team, who has appropriate expertise such as board-certified in neurology or neurosurgery.

b.) A registered nurse, physician assistant or nurse practitioner who has demonstrated competency, as determined by the physician director described in (a) above, in caring for acute stroke patients.

D. SATELLITE STROKE CENTERS SERVICE STANDARDS (SSC)

SSC's have no national accrediting body. In Addition to the requirements listed in Section IV: A; 1-13, for all Stroke Centers, Satellite Stroke Centers must meet the following service standards as outlined in California Code of Regulations (CCR) Title 22, Division 9, Chapter 7.3 (Draft):

1. The necessary emergency department neurological expertise may be provided in person or through telemedicine.

2. Evaluation of the SSC will include an assessment of the following components:

i. An acute Stroke Team available to see in person or via telemedicine a patient identified as a potential acute stroke

patient within thirty (30) minutes following the patient's arrival at the hospital's emergency department or within thirty (30) minutes following a diagnosis of a patient's potential acute stroke.

ii. Written policies and procedures for emergency department stroke services that are reviewed a least every three (3) years, revised more frequently as needed, and implemented. Emergency department policies and procedures shall include written protocols and standardized orders for emergency care of stroke patients.

iii. Evidence based, continuous quality improvement including collection and monitoring of standardized performance measures.

iv. Neuro-imaging services capability that is available twenty four (24) hours a day, seven (7) days a week, such that imaging shall be performed within sixty (60) minutes following code entry. Such 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 an Accreditation Council of Graduate Medical Education-approved radiology, neurology, or neurosurgery training program, within sixty (60) minutes of patient arrival at the emergency department.

v. Neuro-imaging services shall, at a minimum, include CT scanning or MRI, as well as interpretation of the imaging.

vi. In the event that tele-radiology is used in image interpretation, all staffing and staff qualification requirements shall remain in effect and shall be documented by the hospital.

a) A qualified radiologist shall be board-certified by the American Board of Radiology or the American Osteopathic Board of Radiology.

b) A qualified neurologist shall be board-certified by the American Board of Psychiatry and Neurology or the

American Osteopathic Board of Neurology and Psychiatry.

c) A qualified neurosurgeon shall be board-certified by the American Board of Neurological Surgery.

vii. Laboratory services capability twenty four (24) hours a day, seven (7) days a week, such that services may be performed within sixty (60) minutes following order entry. Laboratory services shall, at a minimum, include blood testing. Electrocardiography and x-ray services must also meet these time and availability standards.

viii. Neurosurgical services that are available, including operating room availability, either directly or under agreement with a PSC or CSC, within three (3) hours following admission of acute stroke patients to the SSC.

ix. Transfer arrangements with one (1) or more PSC or CSC that facilitate transfer of patients with strokes to the Stroke Center(s) or care when clinically warranted.

x. There shall be a director of the SSC, who may serve also as a member of the Stroke Team, who is a physician or advance practice nurse who maintains at least six (6) hours per year of educational time in cerebrovascular disease.

xi. At a minimum, an acute care Stroke Team shall consist of a nurse and a physician with six (6) hours per year of educational time in cerebrovascular disease.

V. APPLICATION PROCESS FOR STROKE CENTER DESIGNATION AND RE-DESIGNATION

A. The following milestones outline the application process for a hospital to become designated as a Stroke Center.

1. Review list of requirements and checklist of documents, found in *Appendix A- Stroke Center Designation Criteria Application and Evaluation Too*l, which must be completed and submitted with the application.

2. Submit letter of application to the Division. The letter shall contain:

a. Intent to obtain Stroke Center designation;

b. Identify the names and contact information, including email addresses for the key stroke personnel whose roles and responsibilities are defined in section III of this document: the Stroke Medical Director, RN Program Manager, and Administrative contact; and

c. Identify the anticipated target date for Stroke Center designation.

3. Complete and submit to the EMS Division all information and documents requested in *Appendix A*, Column 2, "objective measurement" of the *Stroke Center Designation Criteria Application and Evaluation Tool*.

4. All application materials will be reviewed for completeness. Additional information may be requested, if needed. Upon determination that the application is complete, the applicant and the Division will work towards execution of the designation agreement.

5. Stroke Center Designation agreement will be presented to the Board of Supervisors for approval and formal designation.

6. Stroke Centers shall be eligible for re-designation every two (2) years. In order to be eligible for re-designation, the Stroke Center shall meet all of the provisions of this policy. Re-designation of a stroke center will require the documentation from sections #1, #2b and #3 above to be resubmitted to the Division by February 28th before the end of the term.

VI. REVOCATION OF STROKE CENTER DESIGNATION

Any designated Stroke Center which is unable to meet the following requirements shall be subject to removal of designation as a Stroke Center:

A. A Stroke Center must comply with any policy, procedure, or regulation mandated by the Local, State, or Federal Government.

B. If the Division finds a Stroke Center to be deficient in meeting the above criteria, the Division will give the Stroke Center written notice, return receipt requested, setting forth with reasonable specificity the nature of the apparent deficiency. Within ten (10) calendar days of receipt of such notice, the Stroke Center must deliver to the Division, in writing, a plan to

cure the deficiency, or a statement of reasons why it disagrees with the Division's notice. The Stroke Center shall cure the deficiency within thirty (30) calendar days of receipt of notice of violation. If the Hospital fails to cure the deficiency within the allowed period or disputes the validity of the alleged deficiency, the issue will be brought to the Emergency Medical Care Advisory Board (EMCAB) for adjudication. EMCAB may make a recommendation to the Division for resolving the issue.

C. At least every two (2) years, the Stroke Center shall submit documentation to the Division showing the facility has obtained re-certification as a Primary Stroke Center or Comprehensive Stroke Center (PSC or CSC) by The Joint Commission accrediting body.

VII. QUALITY IMPROVEMENT

Stroke Center designated hospitals shall participate in performance improvement program for EMS patients including:

A. A Stroke Center shall provide the following representatives to participate in the countywide EMS Division Stroke QI Committee:

1. The Stroke Program Medical Director (PSC and CSC only)
2. The Stroke Program Manager/Coordinator (PSC and CSC only)
3. One QI staff member

B. The countywide Stroke QI Committee will hold regular multidisciplinary meetings that include representatives from each Primary Stroke Center, Comprehensive Stroke Center, Satellite Stroke Center, prehospital provider, and representatives from the Division as listed in Appendix E.

C. A Stroke Center shall implement a written internal QI plan/program with an internal review process that includes, but is not limited to:

1. Last known well to door times
2. Last known well to CT times
3. Last known well to IV t-PA times
4. Door to CT times
5. Door to IV t-PA times
6. Total Stroke Cases

7. Percent of total cases arrived by EMS

8. Of those that arrived by EMS what percent were activated as Stroke Alerts prior to arrival

9. What percent of total cases are Hemorrhagic Stroke

10. What percent of total cases are Ischemic Stroke

11. What percent of total cases are Transient Ischemic Attack

12. Disposition on discharge (i.e. deceased, hospice care, nursing facility, rehab, home)

D. A Stroke Center shall participate in prehospital stroke-related educational activities as determined by the Division.

VIII. DATA COLLECTION, SUBMISSION, AND ANALYSIS

Stroke Center designated hospitals shall be in continuous compliance with the following data collection, submission, and analysis standards:

A. Data element, submission, and analysis requirements are subject to change at Division's discretion.

B. Data shall be used for quality improvement purposes by the Stroke QI Committee, and data submitted by Stroke Centers are considered to be confidential under the provisions of Evidence Code Section 1157.7.

C. The Division may publically report aggregated data about the stroke system which is derived from any of the individual data elements.

D. Each designated Stroke Center shall submit quarterly data reports to the Division. Data reports shall consist of all relevant information to document achievement measures established by the American Heart Association's *Get With The Guidelines: Stroke* (GWTGL). This includes the seven (7) achievement measures at an 85% annual compliance rate to be eligible for Bronze, Silver, or Gold recognition and the 12 achievement measures at a 85% compliance rate for the Silver and Gold Plus recognition.

85% Compliance with the following seven (7) achievement measures:

1. Percent of acute ischemic stroke patients who arrive at the hospital within 120 minutes (2 hours) of time last known well and for whom IV t-PA was initiated at this hospital within 180 minutes (3 hours) of

time last known well. Corresponding measure available for inpatient stroke cases.

2. Percent of patients with ischemic stroke or Transient Ischemic Attack who receive antithrombotic therapy by the end of hospital day two. Corresponding measure available for inpatient stroke cases.

3. Percent of patients with ischemic stroke, hemorrhagic stroke, or stroke not otherwise specified who receive venous thromboembolism prophylaxis the day of or the day after hospital admission.

4. Percent of patients with an ischemic stroke or TIA prescribed antithrombotic therapy at discharge. Corresponding measure available for inpatient stroke cases.

5. Percent of patients with an ischemic stroke or TIA with atrial fibrillation/flutter discharged on anticoagulation therapy. Corresponding measure available for inpatient stroke cases.

6. Percent of patients with ischemic or hemorrhagic stroke, or TIA with a history of smoking cigarettes, who are, or whose caregivers are, given smoking cessation advice or counseling during hospital stay. Corresponding measure available for inpatient stroke cases.

7. Percent of ischemic stroke or TIA patients with LDL ≥ 100, or LDL not measured, or on cholesterol-reducer prior to admission who are discharged on statin medication. Corresponding measure available for inpatient stroke cases.

And, 85% compliance with the above achievement measures plus five (5) of the following seven (7) achievement measures:

8. Dysphagia Screening

9. Stroke Education

10. Rehabilitation Considered

11. LDL Documented

12. Intensive Statin Therapy

13. IV rt-PA 3.5 Hrs (Arrived by 3.5 hours TX by 4.5 hours)

14. NIHSS Reported

F. In addition to performance standards established by TJC and GWTGL the quarterly report shall include the following symptom timeline performance measures, breakdown of arrival status, and type of stroke treated:

1. Last known well to door times
2. Last known well to CT times
3. Last known well to IV t-PA times
4. Door to CT times
5. Door to IV t-PA times
6. Total Stroke Cases
7. Percent of total cases arrived by EMS
8. Of those that arrived by EMS what percent were activated as Stroke Alerts prior to arrival
9. What percent of total cases are Hemorrhagic Stroke
10. What percent of total cases are Ischemic Stroke
11. What percent of total cases are Transient Ischemic Attack
12. Disposition on discharge (i.e. deceased, hospice care, nursing facility, rehab, home)
13. Demographics: age, gender, ethnicity, race.

G. Data reports shall be submitted to the Division within 60 days of the end of the preceding quarter. All strokes received or encountered by the designated Stroke Center shall be included in the data report. This includes all stroke cases received by ambulance (prehospital and interfacility transfer), private vehicle, or walk in, including acute strokes occurring at the designated Stroke Center.

H. Falling below the 85% compliance requires a written action plan for improvement to be submitted with the quarterly reports.

I. Quarterly data reports will include a listing of the continuing education classes provided, including date, location, and topic made available to prehospital personnel during the quarter reported. Trainings will be provided by one Stroke Center each quarter and be rotated until all Stroke Centers have participated. If no trainings were offered a clear explanation of the circumstances surrounding the failure to provide education shall be documented.

    1. EMS personnel initial and continuing education training will be provided by Stroke Center staff

    2. The curriculum shall be submitted to the Division for approval before the training is conducted

    3. Initial curriculum shall include competency in recognizing stroke patients, understanding the importance of the Stroke Center, and demonstrate competency in Stroke Center activation criteria and hospital destination decision criteria. Continuing education topics should address system deficiencies as discovered through the Quality Improvement process.

    4. Stroke Centers shall provide EMS personnel appropriate continuing education credits. The Division may require changes in the continuing education training content for EMS personnel.

J. The Stroke Center will provide an annual report summary of final stroke case outcomes during the period of July 1st through June 30th of the previous year. The annual report is due 60 days after the end of the fiscal year (August 31).

K. The Stroke Center shall continuously examine on-going case data and summary data reports and will advise the Division of any trends, positive and/or negative, that are shown by the data. Improvement strategies and operational changes made as a result of data analysis will be included in the quarterly and annual reports. The Division may participate in the Stroke Center quality improvement process.

L. In addition to the above listed data elements, the EMS Division shall compile the following data points for review during quarterly QI meetings:

    1. Time from receipt of 911 call to dispatch of EMS resource(s);
    2. Time of dispatch of EMS resource(s) to time of EMS resource(s) arrival;

3. Patient contact time to depart scene time;
4. Inter-facility transport time, if applicable;
5. Transport time from scene to ED arrival;
6. Time from patient contact to ED arrival;
7. Total EMS contact time;
8. Stroke patient routed to designated stroke center or other hospital;
9. Use of validated stroke screening tool by EMS responders;
10. Results of validated stroke screening tool;
11. Pre-arrival notification of receiving hospital performed.
12. Demographics: age, gender.

IX. CONCEPT OF OPERATIONS OF THE STROKE SYSTEM OF CARE

A. Pre-Hospital: Ambulance/Paramedic Responsibilities

1. Recognize Signs and Symptoms of CVA: Upon an assessment finding of possible neurological distress with hypoglycemia and narcosis ruled out, paramedic shall conduct the Cincinnati Pre-hospital Stroke Scale (CPSS).

2. Facial droop, arm drift, abnormal speech: Paramedic will use any abnormal finding to determine if the patient has an abnormal CPSS.

3. Stroke Alert Early Notification: Upon receiving an abnormal CPSS and determining the onset was observed by a valid historian within the last three (3) hours, or the patient has questionable time of onset, paramedic shall immediately contact the destination hospital and issue a “Stroke Alert”.

4. Destination: parameters for stroke patient

   a. Abnormal CPSS goes to closest, most appropriate Stroke Center

   b. If the Stroke Center is more than 30 minutes away and the patient meets Thrombolytic inclusion criteria located in Appendix D; the patient may be transported to the closest ED regardless of designation

   c. Paramedic shall follow appropriate treatment protocol during transport

B. Hospital Relationships and Coordination

1. Transfer Agreements/Requirements

   a. Rapid Transfer – Stroke Center Automatic Acceptance of Stroke Patient from Transferring Hospital

b. Each Stroke Center agrees to immediately accept all “Stroke Alert” patients from any E. D. located within Kern County, so long as the Stroke Center’s E.D. is on “Open” status.

2. Specific Language to initiate immediate rapid transfer. The term, “Stroke Alert” will be used by paramedics as well as Satellite Stroke Centers and non-Stroke Hospital staff in order to notify the Stroke Center of an incoming Stroke patient. “Stroke Alert” shall be understood by all hospital staff as well as ambulance dispatchers to mean an emergent neurologic event is in progress with rapid treatment and transport necessary.

   a. Non-Stroke hospitals shall have written transfer agreements with Primary or Comprehensive Stroke Centers.

   b. The agreement shall include a one-call policy transfer/transport protocol to a designated Primary or Comprehensive Stroke Center.

C. Community Education

1. It is imperative that each Stroke Center recognize the need for community awareness as we work together to improve health in Kern County.

2. Each Stroke Center must be active participants and work together to promote public awareness activities, i.e. public service announcements, print ads, community events, task forces and classes. Education should focus on;

   a. Stroke disease factors

   b. The signs and symptoms of Stroke

   c. The need to call 911

3. Other community education themes might include:

   a. Stroke is preventable. People can reduce their chance of having a Stroke by controlling risk factors such as obesity, high blood pressure, and high cholesterol.

   b. Time-sensitive window for EMS/treatment response

4. Public Reporting of Performance Data - A large part of public awareness begins with data reporting. Pertinent aggregated stroke system data showing the performance of the Stroke System of Care may be posted publically. The following aggregated performance measurements may be publically released, and

additional reports may be published upon recommendation of the Stroke QI Committee.

a. Symptom onset time to EMS Call Time
b. EMS First contact to E.D. arrival time
c. E.D. arrival time to CT time
d. CT time to IV t-PA

APPENDIX A - Stroke Center Designation Criteria Application and Evaluation Tool

Stroke Designation Standard	Objective Measurement	Meets Standard	Comments
PRIMARY STROKE CENTER			
HOSPITAL SERVICES			
Current License to provide Basic Emergency Services in Kern County	Copy of License	Y N	
Current Designation to operate as a Paramedic Base Station in Kern County	Copy of contract	Y N	
Current Copy of Joint Commission Certification.	Copy of Certification	Y N	
An acute Stroke team available within 15 minutes	On-call schedules for 3 months. On-call policy and procedure	Y N	In person or telemedicine
Written policies and procedures for Stroke services	Copy of policies, procedures	Y N	Include protocols and standardized orders
Data-reporting mechanism	Copy of agreement with AHA	Y N	AHA Get with the Guidelines-Stroke
Neuro-imaging capability 24/7/365	Policies/protocols supporting operations	Y N	CT or MRI
One of the following: Qualified Radiologist, Qualified Neurologist, Or Qualified Neurosurgeon	Copy of appropriate board certification On-call schedules for 3 months	Y N	If using telemedicine, hospital must document this standard
Laboratory services 24/7	Copy of policies/procedures/ protocols for lab services	Y N	Blood testing, EKG, and x-ray services
Immediate, telemetry or critical care beds	Immediate: ____ Telemetry: _____ Critical Care: _____	Y N	
Neurosurgical services including operating room	Number of operating rooms ___ on license	Y N	May be under agreement with another PSC or CSC
If no neurosurgical services available: Plan	Supporting policies and procedures	Y N	Required if no Neurosurgery

to transfer within 2 hours			
In-patient acute care rehabilitation	Policies/procedures for in-patient rehabilitation	Y N	
Designated Telephone Number	Actual Number on File	Y N	
Written transfer guidelines for higher level of service	Transfer policies/procedures Copy of agreement	Y N	
Copy of Designation Agreement Between Hospital and County	Copy of Contract	Y N	
Continuing Education Provider	Copy of Approval Letter with CE provider Number	Y N	
Stroke contingency plans 1. Personnel 2. Imaging equipment	Pertinent policy and procedures to minimize disruption	Y N	Expectation of NO DIVERSION
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	Y N	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	Y N	Demonstrated competency in caring for acute Stroke patients
COMPREHENSIVE			**All of the above PLUS**
Written policies and procedures for comprehensive Stroke services	Copies of policies/ procedures/ protocols for activation of Stroke care	Y N	Reviewed every two years and revised as needed
Data driven CQI Including collection and monitoring of standardized Comprehensive Stroke Center performance	Copies of data collection procedures Copies of internal CQI process	Y N	

measures			
Transfer agreements with primary Stroke Centers to accept transfer of patients with complex Strokes	Copies of transfer agreements Policies/ procedures/ protocols in place to accept patients	Y N	
Provide guidance and continuing education to hospitals designated as Primary Stroke Centers with which they have agreements	Copies of policies/ procedures/ guidelines to provide CME Copies of agreements	Y N	
SATELLITE STROKE	**CENTERS**		
Current License to provide Basic Emergency Services in Kern County or Standby Services	Copy of License	Y N	
Current Designation to operate as a Paramedic Base Station in Kern County	Copy of contract	Y N	Standby ER's Excluded
Acute Stroke care team	Copies of policies/ procedures/ protocols On call schedule	Y N	May be via telemedicine
Emergency Department policies and procedures	Copies of ED policies/ procedures/ protocols/ standard orders for Stroke care	Y N	
Data driven CQI Collection and monitoring of performance measures	CQI polices/ procedures/ guidelines/ standards	Y N	
Neuro-imaging capability 24/7/365	Policies/protocols supporting operations	Y N	CT or MRI, as well as interpretation
Physician with appropriate expertise: Radiologist Neurologist	Copy of Board certificates	Y N	Telemedicine may be used for interpretation All staff qualification

Neurosurgeon Residents			requirements shall be documented by the hospital
Laboratory Services 24/7/365	Policies/protocols supporting operations	Y N	Minimum include blood testing, ECG, and x-ray services
Neurosurgical services, including OR availability, within 3 hours of admission	Supporting policies and procedures Number of operating rooms ___ on license	Y N	OR may be under agreement with PSC or CSC
Transfer arrangements with PSC or CSC	Copies of agreements	Y N	
Director: Physician or Advanced Practice Nurse	Copy of license Documentation of training Copy of job description	Y N	Maintains 6 hours per year education in cerebrovascular disease
Acute Stroke Care Team: At a minimum- Registered Nurse and Physician	Copy of Licenses Documentation of Training	Y N	Some training and expertise in acute Stroke care

APPENDIX B - STROKE CENTER ACTIVATION PROTOCOL

SIGNS/SYMPTOMS OF CEREBRAL VASCULAR ACCIDENT

↓

RULE OUT HYPOGLYCEMIA AND NARCOSIS AS APPROPRIATE

↓

ASSESS ONSET OF SIGNS OR SYMPTOMS

↓

ASSESS PATIENT IN ACCORDANCE WITH CINCINNATI PREHOSPITAL STROKE SCALE (CPSS)

<u>FACIAL DROOP</u> (Have the Patient Show Teeth or Smile)
- **Normal: Both Sides of Face Move Equally**
- **Abnormal: One Side of Face does not Move as Well as the Other Side**

<u>ARM DRIFT</u> (Patient Closes Eyes and Extends Both Arms Straight Out, with Palms Up, for 10 Seconds)
- **Normal: Both Arms Move the Same or Do Not Move at All**
- **Abnormal: One Arm does Not Move or One Arm Drifts Down Compared to the Other**

<u>ABNORMAL SPEECH</u> (Have the Patient Say "You can't teach an old dog new tricks")
- **Normal: Patient Uses Correct Words with No Slurring of Words**
- **Abnormal: Patient Slurs Words, Uses Wrong Words, or is Unable to Speak**

IF ONE OR MORE ABNORMAL CPSS ARE PRESENT

<u>AND</u>

ONSET OBSERVED WITHIN 3 HOURS BY VALID HISTORIAN; *<u>OR</u>* QUESTIONABLE ONSET TIME

– EXPEDITE CONTACT WITH DESIGNATED STROKE CENTER BASE HOSPITAL

TRANSPORT AS FOLLOWS:

- **In Exclusive Ambulance Operational Areas (EOA) 1, 2, 4, 5, 9, or 8 (excluding the Tehachapi area)** where transport to a Bakersfield area hospital is the closest destination, Stroke patients that meet the Stroke Center Activation Protocol indications shall be transported to a Stroke Center. This is applicable to both ALS and BLS level ambulance transports.
- **In EOA 3, 6, or Tehachapi area of 8:**
  1. ALS Ambulance: A stroke patient that meets Stroke Center Activation Protocol indications shall be transported to a stroke center. A stroke patient from these areas may be transported to the closest hospital emergency department if the patient meets thrombolytic inclusion criteria; airway cannot be managed appropriately; or if the patient condition is deteriorating rapidly, at paramedic discretion.
  2. BLS Ambulance: A stroke patient that meets Stroke Center Activation Protocol indications shall be transported to the closest hospital emergency department.
- **In EOA 7 or 11:**
  1. ALS Ambulance: A stroke patient that meets Stroke Center Activation Protocol and thrombolytic inclusion criteria, shall be transported to the closest hospital emergency department. For patients who fall out of thrombolytic therapy, contact with a stroke center shall be made to request bypass of closest facility and shall be transported to a Stroke Center. Air transport is indicated in compliance with EMS Aircraft Dispatch-Response-Utilization Policies and Procedures.
  2. BLS Ambulance: A stroke patient that meets Stroke Center Activation Protocol indications shall be transported to the closest hospital emergency department unless air transport is indicated in compliance with EMS Aircraft Dispatch-Response-Utilization Policies and Procedures.
- Air transport shall be used if an air ambulance is available and the overall time savings will be 10 minutes or more in comparison with ground transport in compliance with EMS Aircraft Dispatch-Response-Utilization Policies and Procedures. Generally, 10 minutes time-savings cannot be attained with ground transport times of 30 minutes or less, if patient is ready for transport and air ambulance has not yet launched.
- **Interfacility Transfer:**
  A patient that meets Stroke Center Activation Protocol indications at a hospital that is not a designated Stroke Center should be transferred to a designated Stroke Center by the receiving hospital. If indicated, the receiving hospital shall notify the Stroke Center emergency department to activate response.

PRE-HOSPITAL ASSESSMENT, STROKE CENTER ALERT AND TRANSPORT DESTINATION

A. The patient shall be immediately assessed and managed in accordance with the Stroke Center Activation Protocol.

B. If the patient meets Stroke Center Activation Protocol indications for transport to a Stroke Center, prehospital personnel shall provide immediate notice to the Stroke Center emergency department. The notice shall include a description of the patient problem, treatment provided, current location of the ambulance, and estimated time of arrival.

C. The Stroke Center emergency department shall immediately alert and request response of the Stroke Center Stroke Team, neurologist, and/or neurosurgeon as indicated by the patient problem.

D. In Exclusive Ambulance Operational Areas (EOA) 1, 2, 4, 5, 9, or 8 (excluding the Tehachapi area) where transport to a Bakersfield area hospital is the closest destination, Stroke patients that meet the Stroke Center Activation Protocol indications shall be transported to a Stroke Center. This is applicable to both ALS and BLS level ambulance transports.

E. In EOA 3, 6, or Tehachapi area of 8:

1. ALS Ambulance: A stroke patient that meets Stroke Center Activation Protocol indications shall be transported to a stroke center. A stroke patient from these areas may be transported to the closest hospital emergency department if the patient meets thrombolytic inclusion criteria; airway cannot be managed appropriately; or if the patient condition is deteriorating rapidly.

2. BLS Ambulance: A stroke patient that meets Stroke Center Activation Protocol indications shall be transported to the closest hospital emergency department.

F. In EOA 7 or 11:

1. ALS Ambulance: A stroke patient that meets Stroke Center Activation Protocol and thrombolytic inclusion criteria shall be transported to the closest hospital emergency department. For patients who fall out of thrombolytic therapy, contact with a stroke center shall be made to request bypass of closest facility and shall be transported to a Stroke Center. Air transport is indicated in compliance with *EMS Aircraft Dispatch-Response-Utilization Policies and Procedures*.

2. BLS Ambulance: A stroke patient that meets Stroke Center Activation Protocol indications shall be transported to the closest hospital emergency department unless air transport is indicated in compliance with *EMS Aircraft Dispatch-Response-Utilization Policies and Procedures*.

G. The Division may authorize certain exceptions to transport destinations or mode of transport defined above for documented hospital-based arrangements and protocols that are clearly in the best interest of Stroke patient management. The Division will coordinate any exemptions with appropriate hospitals, ambulance providers and air ambulance providers.

H. Air transport shall be used if an air ambulance is available and the overall time savings will be 10 minutes or more in comparison with ground transport in compliance with EMS Aircraft Dispatch-Response-Utilization Policies and Procedures. Generally, 10 minutes time-savings cannot be attained with ground transport times of 30 minutes or less, if patient is ready for transport and air ambulance has not yet launched.

I. The designated Stroke Center emergency department shall be notified by prehospital personnel as early as possible. This enables the designated Stroke Center to begin mobilizing resources.

APPENDIX C- PRE-HOSPITAL THROMBOLYTIC SCREEN (CVA)

Patient Name: _____ (Last Name) _____ (First Name)

Patient Information:

A. Age _____ B. Sex _____ Last known well _____

C. Past medical History:_____

D. Current medications:_____

E. Drug allergies: _____

F. Initial B/P: _____ (Right Arm) _____ (Military Time) _____ (Left Arm) _____ (Military Time)

	YES	NO
g. Age less than or = 18 years	{ }	{ }
h. Onset of symptoms greater than or = 4 hours	{ }	{ }
i. Patient was asleep when symptoms started	{ }	{ }
j. Rapidly improving or minor symptoms	{ }	{ }
k. History of intracranial hemorrhage	{ }	{ }
l. Seizure at onset of symptoms	{ }	{ }
m. Stoke or serious head injury in less than or = 3 months	{ }	{ }
n. Major surgery or other serious trauma in less than or = 2 weeks	{ }	{ }
o. GI or urinary tract hemorrhage in less than or = 3 weeks	{ }	{ }
p. Systolic B/P greater than or = 185 mmHg	{ }	{ }
q. Diastolic B/P greater than or = 110 mmHg	{ }	{ }
r. Aggressive treatment to lower B/P (use of vasodilators)	{ }	{ }
s. Blood glucose less than or = 60	{ }	{ }
t. Blood glucose greater than or = 400	{ }	{ }
u. Symptoms of subarachnoid hemorrhage (sudden severe headache followed by a brief loss of consciousness)	{ }	{ }
v. Arterial puncture at non-compressible site or lumbar puncture less than or = 1 week	{ }	{ }
w. Pregnant or lactating females	{ }	{ }

If all of the **Pre-hospital Thrombolytic Screen (CVA)** criteria are met (all **NO's)**, alert the receiving facility of a possible thrombolytic candidate as soon as possible.
If not (one or more YES), make base contact with a Stroke Center to verify bypass of the nearest hospital for transport directly to a Stroke Center.

Form Completed By:_____

APPENDIX D - Stroke Center QI Committee Purpose and Structure

PURPOSE

Care of the Stroke patient requires a system approach to ensure optimal care. To assist the EMS Division in its quest to achieve best care possible, the Stroke QI Committee shall assess, monitor, and facilitate the Quality Improvement (QI) process for the Kern County Stroke Centers.

AUTHORITY

Health and Safety Code Division 2.5
California Evidence Code, Section 1157.7
California Civil Code, Part 2.6, Section 56

DEFINITION

"Stroke QI Committee" means the multi-disciplinary peer-review committee, composed of representatives from the Stroke Center's, prehospital care providers, and other professionals designated by the Division, which audits the Stroke System of Care, makes recommendations for system improvements, and functions in an advisory capacity on other Stroke System of Care issues.

COMMITTEE MEMBERSHIP

1. Membership Composition
    a. PSC & CSC Members:
        i. PSC & CSC E. D. Physician
        ii. PSC & CSC Program Manager/Coordinator
        iii. QI Staff Member

    b. Satellite Stroke Center Members:
        i. E.D. Physician
        ii. E.D. Nurse
        iii. QI Staff Member

    c. Prehospital Members:
        i. At least one (1) representative from each prehospital agency

    d. EMS Members:
        i. EMS Coordinator

2. Confidentiality

To the extent Evidence Code Section 1157.7 is applicable, closed meetings will occur when business addressed by 1157.7 is being transacted. The Committee's 1157.7 business, records and minutes shall be considered confidential and all members are prohibited from any unauthorized disclosures. At each meeting members and attendees will sign a statement of confidentiality as a condition of participation.

3. Schedule/Location
   The Stroke Center QI Committee shall meet quarterly on the *(week day TBD)* of the month following the end of the quarter at *(time TBD)* Mount Vernon Ave. Time and Conference room to be determined.

4. Case Review Instructions
   Each meeting participants will present the results of the quarterly data submitted by each Stroke Center. Each Stroke Center's data will be discussed and evaluated in a structured process focusing on outcomes. The committee will work together to identify root causes of problems, intervene to reduce or eliminate those causes, and take steps to correct the process and recognize excellence in performance and delivery of patient care.

   In addition, on a rotating basis, each Stroke Center will present case reviews to the committee. These reviews should highlight difficult, challenging or exceptional cases that might provide valuable information to the other members of the committee.

5. PowerPoint format
   All presentations are to be formatted in PowerPoint and sent to the EMS Coordinator assigned to the committee one (1) week prior to the quarterly meeting. Any audio or video files should accompany the PowerPoint.

6. Recommendations for System Improvement
   The Committee will develop recommendations for improvement of the Stroke system of care. Recommendations will be presented at the EMS System Collaborative meeting and to the EMS Medical Director.