POLICY: 522.20
TITLE: Stroke Triage, Treatment and Destination

EFFECTIVE: 10/22/20
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SUPERCEDES:

APPROVAL SIGNATURES ON FILE IN EMS OFFICE

Stroke Triage, Treatment and Destination

I. AUTHORITY

Division 2.5, California Health and Safety Code, Sections 1797.67, 1798, 1798.101, 1798.105, and 1798.170, California Code of Regulations, Title 22, Division 9

II DEFINITIONS

A. **ALS** - means Advanced Life Support, as defined in Section 1797.52, Division 2.5 of the Health and Safety Code.

B. **Cincinnati Prehospital Stroke Scale (CPSS) -** means a validated prehospital screening tool used to identify the presence of a stroke in a patient. The scale tests for facial droop, arm drift and speech. If any one of these three tests show positive findings, the patient is considered to have an abnormal CPSS.

C. **Emergency Medical Services (EMS)** - means the services utilized in responding to a medical emergency.

D. **MVEMSA** - means Mountain-Valley EMS Agency.

E. **MVEMSA Stroke Criteria** - means a patient stroke assessment using the Cincinnati Prehospital Stroke Scale and the VAN (vision, aphasia, neglect) resulting in a positive finding in either assessment tool.

F. **Primary Stroke Center (PSC)** - means a hospital designated to stabilize and treat acute stroke patients, providing initial acute care. PSCs are able to appropriately use t-PA/alteplase and other acute therapies such as stabilizations 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.

G. **Quality Improvement (QI)** - means a method of evaluation of services provided, which includes defined standards, evaluation methodologies and utilization of evaluation results for continued system improvement. Such methods may include, but are not limited to, a written plan describing the program objectives, organizations, scope and mechanisms for overseeing the effectiveness of the program.

H. **Stroke** - means a condition of impaired blood flow to a patient's brain resulting in brain dysfunction.

I. **Stroke Alert** - means a notification from the transporting ground or air ambulance to a PSC

or CSC that a patient meeting MVEMSA Stroke criteria is being transported to their facility. A Stroke Alert must be made as soon as possible after stroke criteria is confirmed..

J. **Comprehensive Stroke Center (CSC)** – refers to a hospital that has received comprehensive status through American Heart Association (AHA) and Joint Commission review. CSC sites have availability of advanced imaging techniques including Computed Tomography Angiogram/Perfusion (CTA/CTP), Transcranial Doppler (TCD). These facilities have 24/7 availability of personnel, imaging, operating room and endovascular facilities allowing for the management of large ischemic strokes, intracerebral hemorrhage and subarachnoid hemorrhage.

K. **VAN (vision, aphasia, neglect) Assessment** - means a prehospital screening tool used to identify the presence of large vessel occlusive stroke. The patient is deemed to have a positive VAN assessment with any arm weakness and at least one of the following; vision change, aphasia or neglect on exam. A VAN negative exam is either no arm muscle weakness OR the presence of arm muscle weakness without vision, aphasia or neglect findings.

L. **Large Vessel Occlusion (LVO)** – refers to the site of an ischemic clot within the brain leading to stroke symptoms. LVO strokes may benefit from transport to a CSC facility per MVEMSA Stroke Destination Policy.

III PURPOSE

To rapidly identify suspected acute stroke patients, provide treatment and prompt transport, to the appropriate Primary Stroke Center (PSC) or Comprehensive Stroke Center (CSC) for rapid evaluation and treatment.

IV. POLICY

A. STROKE SYSTEM TRIAGE

1. Appropriate triage of the suspected acute stroke patient using stroke alert criteria relies on rapid prehospital care:

    a. Recognition of signs and symptoms of stroke using CPSS and VAN assessment for LVO.

    b. Determination of time last known well without stroke symptoms within the past 24 hours by a reliable historian.

2. Stroke Alert notification to PSC or CSC to report positive stroke assessment findings.

B. TREATMENT PROTOCOL: Characterized by weakness or paralysis on one side of the body or face, slurred speech, speech difficulty, trouble with balance, could struggle in naming objects, confusion, difficulty swallowing, headache, visual disturbances (double vision, blindness, paralysis of extra-ocular muscles). **Decreased level of consciousness is very rarely caused by an Ischemic stroke.**

EMR Standing orders	
Patient Assessment	Circulation, Airway and Breathing. Assess vitals every 5 minutes. Consider trauma mechanism and maintain patent airway
Oxygen Administration	Provide oxygen therapy if appropriate
TLKW	Attempt to obtain a specific time patient was last known well and report to transporting paramedic

EMT Standing orders	
Note	Must perform items in EMR standing orders if applicable.
TLKW	Attempt to obtain specific time patient was last known well and report to the transporting paramedic
Glucometer	Check blood sugar
Glucose	Oral glucose if patient can protect airway, has a gag reflex, and if blood sugar is <60mg/dl.
Pulse Oximetry	Consider if respiratory distress is observed or suspected, use pulse oximetry, and record initial reading before supplemental oxygen is given. Report initial reading to the transporting paramedic.
Naloxone	2mg IN/IM if mental status and respiratory effort are depressed. Must be a strong suspicion of opiate overdose. Max single dose of 2mg, may repeat dose once in 3 minutes if there was no response to initial dose. Max total dose of 4 mg.

Paramedic Standing Orders	
Note	Must perform items in EMR and EMT standing orders if applicable
Monitor	Treat heart rhythm as appropriate and obtain 12 lead EKG
Temperature	Consider sepsis for any altered patient with a fever
IV/IO Access	TKO. If systolic BP is < 90mmHg, give 250ml fluid boluses to systolic BP 90-100 or a max of 2 liters. Shall reassess vitals/patient after each bolus. If time permits, 2 IV sites are preferred.
Dextrose	For blood sugar <60mg/dl and signs of hypoglycemia are present: D50W 25gms IV/IO. Recheck blood sugar after 5 minutes
Glucagon	If no IV/IO access immediately available with blood glucose <60 mg/dl, give one (1) unit IM. May repeat once. Recheck blood glucose 5 minutes after each dose.
Naloxone	2 mg IV/IO/IN/IM if mental status and respiratory effort are depressed. Must be a strong suspicion of opiate overdose. Max single dose of 2 mg, may repeat once in 3 minutes if there was no response to initial dose. Max total dose of 4mg.
Stroke scale	Perform, document and report to receiving hospital the Cincinnati Prehospital Stroke scale. If Cincinnati Prehospital Stroke Scale is positive, paramedic shall perform, document and report a VAN positive or negative to the receiving hospital

C. DESTINATION

1. Suspected acute stroke patients shall be transported to the appropriate PSC or CSC within the following parameters:

   a. If the patient has a positive Cincinnati Prehospital Stroke Scale assessment and is found to be **VAN positive** the patient may be transported directly to a CSC if the following criteria are met:

      i. Last known well time is within 24 hrs.

      ii. Transport time to the CSC will not exceed 60 minutes.

      iii. Transport time will not take the patient out of the 4.5-hour window for thrombolytic therapy from onset of symptoms or TLKW.

   b. If the patient has a positive Cincinnati Prehospital Stroke Scale assessment, and is found to be **VAN negative**, the following transport criteria shall be followed:

      i. If the patient does not have a preference, the patient shall be transported to the nearest PSC or CSC

      ii. If transport to a PSC or CSC is estimated to be greater than twenty (20) minutes, the patient shall be transported to the nearest ED facility capable of receiving stroke patients.

      iii. All emergency rooms can receive stroke patients.

   c. Paramedics in Mariposa, Amador and Calaveras Counties may exercise their judgment and, in communication with the base hospital, request air transport (if available) for stroke patients to a PSC or CSC.

   d. Unstable stroke patients shall be transported to the closest emergency department. Unstable stroke patients are defined as any ONE of the following:

      i. Patients under CPR.

      ii. Inability to ventilate and/or oxygenate the patient with BLS maneuvers.

2. A PSC/CSC may request advisory status through the EMS Duty Officer for incoming stroke patients only when:

   a. The PSC/CSC is on internal disaster; or

   b. Inoperable CT/MRI.

3. Patients may be taken directly to the CT scanner.

   a. The patient is to remain on cardiac monitor if taken directly to the CT. The patient will remain on the cardiac monitor until Paramedic transfers patient care.

   b. Paramedic will give report to the nurse, transfer patient directly from gurney to CT scanner platform and return to service.

   c. If there is any delay, such as CT scanner not being readily available, the paramedic will not be expected to wait. The patient will be taken to a monitored bed and report given to a receiving nurse or physician as is customary.

D. STROKE ALERT/PATIENT REPORT

1. As soon as a suspected stroke patient is confirmed with CPSS and VAN assessments, the appropriate destination shall be determined, and a Stroke Alert promptly communicated to the PSC/CSC and/or the closest receiving facility. The Stroke Alert is to contain the following information:

   a. Identify the call as a "Stroke Alert" and verify CT operability.

   b. Provide estimated time of arrival (ETA).

   c. Patient's age and gender.

   d. Give time patient was last seen without stroke symptoms (Last Known Well Time).

   e. CPSS and VAN assessment result-negative or positive.

   f. Blood Glucose and Vital Signs.

   g. Treatment and response to treatment.

2. Electronic Patient Care Report(ePCR) documentation must include:

   a. Time last known well CPSS and VAN assessment results, transport factors that determined patient destination

   b. Blood glucose check

   c. Neurological assessments

CINCINNATI PREHOSPITAL STROKE SCALE			
Sign/Symptom	How Tested	Normal	Abnormal
Facial Droop	Have the patient show their teeth, or smile.	Both sides of the face move equally.	One side of the face does not move as well as the other.
Arm Drift	The patient closes their eyes and extends both arms straight out for 10 seconds	Both arms move about the same, or both do not move at all.	One arm either does not move, or one arm drifts downward compared to the other.
Speech	The patient repeats "The sky is blue in Cincinnati."	The patient says the correct words with no slurring of words	The patient slurs words, says the wrong words, or is unable to speak.

V.A.N STROKE SCALE		
	Sign/Symptom	How Tested
Vision	Forced gaze to one side, Loss of vision, or uneven eyes.	Have patient follow your finger with their eyes moving to left, then right.
Aphasia	Difficulty naming objects or repeating simple phrase. (Usually seen with right sided CPSS positive patients)	Ask patient to name two easily identified objects (ie, pen and watch). Have patient repeat "The sky is blue in Cincinnati". DO NOT CONSIDER DYSARTHRIA (Slurring of words)
Neglect	Patient ignores left side of body. (Usually seen with left sided CPSS positive patients)	Have patient close their eyes, and touch individually the right arm, then left arm and confirm patient has sensation bilaterally. Then touch both arms simultaneously and note if patient no longer has sensation unilaterally.

Clinical PEARLS

- Time of onset must be within a 24-hour timeframe and confirmed by a reliable historian
- Do not hesitate to activate a Stroke Alert to the receiving hospital if the condition warrants
- High index of suspicion of hemorrhagic stroke in a non-traumatic altered patient
- History of previous stroke or neurological deficits
- Intravenous access is preferred over Intraosseous unless patient is unstable
- Move patient to a safe area if the situation warrants
- Consider D-10W 250ml drip if D50W is unavailable and Blood Glucose <60. Continue D-10W until patient symptoms improves
- Secure airway with simplest technique, i.e. BLS airway unless unable to manage
- Naloxone- May use the prescribed grant administered aerosol 4mg doses if that is all that is available
- Naloxone must be administered prior to intubation if narcotic overdose is suspected
- MICN- If Time Last Known Well is not reported via radio report, ask!
- MICN-confirm CT status when stroke alert is received