COHESIVE HEALTHCARE MANAGEMENT & CONSULTING

Mangum Regional Medical Center

TITLE		POLICY
Management of Stroke (Level IV Stroke Center)		**EMD-009**
MANUAL	EFFECTIVE DATE	REVIEW DATE
Emergency Department		
DEPARTMENT	REFERENCE	
Emergency Department	See References below	

I. SCOPE

This policy applies to Mangum Regional Medical Center for the initial assessment, stabilization and rapid transfer of patients presenting to the Emergency Department (ED) with signs and symptoms suggestive of stroke.

II. PURPOSE

Mangum Regional Medical Center has attested as a Level IV Stroke Center in the State of Oklahoma, adheres to the 2019 Update to the 2018 Guidelines for the Early Management of Acute Ischemic Stroke and other evidence-based standards of practice. Stroke is one of the leading causes of death and disability in the U.S. Each year approximately 795,000 people experience a new or recurrent stroke. On average every 40 seconds someone in the Unites States will experience a stroke. Stroke is currently the leading cause of serious long-term disability. In Oklahoma, stroke is the 5th leading cause of death accounting for more than 1 in 20th deaths.

Risk factors for stroke include but are not limited to the following:

- Age > 45 years of age;
- History of transient ischemic attack (TIA), previous stroke or myocardial infarction (MI);
- Atrial fibrillation (increases risk 5-fold);
- Hypertension;
- Smoking;
- Sleep apnea;
- Substance abuse or alcoholism;
- Heredity;
- Ethnicity (Black, Hispanic, Asian);
- Female gender (women age 55-75 have a slightly higher risk of stroke compared to men).

The five most common signs and symptoms of stroke are:

- Sudden numbness and/or weakness of the face, arm, and/or leg;
- Sudden confusion, trouble speaking, and/or understanding, others;
- Sudden trouble seeing in one or both eyes;
- Sudden dizziness, trouble walking, and/or loss of balance or coordination;
- Sudden severe headache with no known cause;

There are two different types of strokes:

- Ischemic Stroke: an interruption of blood flow to the brain due to a clot.
- Hemorrhagic Stroke: caused by bleeding into and around the brain due to ruptured blood vessels. There are two types:
    - Intracerebral hemorrhage: caused when a blood vessel ruptures and bleeds into the brain itself.
    - Subarachnoid hemorrhage: caused when a blood vessel ruptures and bleeds into the space surrounding the brain.

For every 15 minutes we are faster with diagnoses and treatment, more stroke patients have better outcomes including less mortality and morbidity (Saver, et al. 2013; Jahan, R., et al. 2019). Therefore, the effectiveness of organized stroke care in reducing mortality, institutionalization and dependency in activities of daily living has been clearly shown. Organized stroke care is intended to facilitate the use of best practices to minimize or prevent, when possible, the complications of a stroke through rapid identification of symptoms, initial assessment, timely and appropriate stabilization and rapid transfer to the appropriate higher level of stroke center.

III. DEFINITIONS

A. **Stroke:** also known as a "brain attack", occurs when a clot blocks the blood supply to the brain (ischemic stroke) or when a blood vessel in the brain bursts (hemorrhagic stroke).

B. **Last Known Normal:** the time prior to hospital arrival at which the patient was last known to be without signs or symptoms of the current stroke or at his or her baseline state of health.

C. **Activase/Alteplase:** a tissue plasminogen activator (tPA), also known as the "clot buster", the only FDA approved drug to treat ischemic stroke. It is a natural enzyme that initiates fibrinolysis (break down of the thrombus). The FDA has approved intravenous Alteplase for the use in eligible acute ischemic stroke patients within 3 hours of last known normal. The ASA and other organizations have recommended the use of intravenous Alteplase with additional exclusionary criteria within 4.5 hours of last known normal.

D. **Endovascular treatment:** refers to the non-surgical treatment for acute stroke. The treatment uses microcatheters (thin tubes visible under x-rays) which are inserted into the blood clot from the groin or the arm.

E. **Stroke Alert:** a rapid stroke team response that facilitates the evaluation and management of stroke patients presenting to the hospital for treatment.

F. **Competent Staff:** refers to those staff that have completed a facility-based competency assessment initially and on a minimum of a bi-annual basis related to the core elements required to assess, stabilize and rapidly transfer an acute stroke patient.

IV. POLICY

Competent ED hospital staff will immediately triage, provide initial assessment, initiate indicated resuscitation and appropriate evidence-based emergency stroke care for patients presenting with signs and symptoms suggestive of stroke. A patient presenting with signs and symptoms suggestive of stroke will initially be triaged using the Emergency Severity Index (ESI) tool (See EMD-006A) and should be considered for a minimum ESI score of 2 indicating a high-risk situation. After initial triage a presumptive stroke patient will be screened using the ***B.E.F.A.S.T.*** Screening Tool on the Stroke Alert Nurse note to assess the patient's presenting symptoms of stroke and identify the patient's last known normal (onset of symptoms) time. The ***B.E.F.A.S.T***. is an evidence-based neurological assessment tool that can detect changes in neurological status in a rapid manner which may indicate a stroke is occurring. The acronym B.E.F.A.S.T. stands for:

- **B – Balance:** Sudden loss of balance or coordination
- **E – Eyes:** Sudden vision change/trouble seeing
- **F – Face:** One side of the face droops when the person smiles
- **A – Arm:** One arm (or leg) drifts down when the person raises the arm (or leg)
- **S – Speech:** Person's speech is slurred, garbled, slow or strange
- **T – Time:** Time the person was last known to be normal (onset of symptoms) if within the last 12 yours it is time to initiate a STROKE ALERT!

If the patient's last known normal was within 12 hours of arrival to the ED a STROKE ALERT will be initiated, and the provider notified. Hospital staff will immediately notify emergency medical services (EMS) of an acute stroke patient needing emergent transfer to a higher-level stroke center. Upon arrival to the ED the provider will perform an initial assessment which will include completion of the National Institutes of Health Stroke Scale (NIHSS) to assess stroke-related neurological deficits. The provider will use the VAN Stroke Screening Assessment Tool (See Attachment A) to rule out a large vessel occlusion.

The patient will be provided stabilizing treatment while awaiting transfer to a higher-level stroke center that may include but not be limited to the following:

- Resuscitative efforts following ACLS protocol
- Performance of a CT scan to rule out a hemorrhage or other brain pathology that may be responsible for the patient's neurologic symptoms
- Treatment of blood pressure following ASA recommended parameters (See Blood Pressure Management Protocol for Acute Stroke (See Attachment B).
- Labs including a point of care of glucose to rule out any electrolyte or metabolic conditions that may be responsible for the patient's neurologic symptoms

Once the stroke patient has been stabilized and determined ready for transfer, the provider and Registered Nurse (RN) will provide a hand-off to EMS providers using the Acute Stroke Interfacility Transfer Protocol (See Attachment C). The patient arrival to departure time will be 60 minutes or less.

V. PROCEDURE

All patients with signs and symptoms suggestive of strokes who present to the ED should be treated as a potential life-threatening situation. The provider should be immediately notified of the patient's presentation, taken directly to an ED room and assessed by the RN.

A. STROKE PROTOCOL (See Stroke Alert Standing Orders Attachment D)

1. The patient should be triaged immediately using the ESI upon arrival to the ED.
    a. Assignment of an ESI triage category should be done in < 5 minutes of patient's arrival.
2. Rapid assessment of airway, breathing, circulation, and disability.
3. Perform brief screening exam using the BE-FAST scale to determine neurological deficits suggestive of stroke and identify the patient's last known normal (onset of symptoms).
    a. Date and time of last known normal should be documented in the patient's medical record.
4. If patient has a positive BE-FAST screening exam and onset of symptoms was within 12 hours of arrival, hospital staff will initiate a STROKE ALERT immediately.
5. Notify provider of positive assessment and patient's last known normal (onset of symptoms) time.
6. Initiate the Stroke Alert Standing Orders
6. Notify EMS or Air Evac within 10 minutes of patient arrival of the need for emergent transfer to a higher-level stroke center.
    a. Hospital staff should request an expected estimated time of arrival (ETA) from EMS/Air Evac dispatch. This time should be documented in the patient's medical record.
7. Provider will perform an appropriate medical screening examination (MSE) within 15 minutes of the patient's arrival in the ED using the STROKE ALERT – Provider Note (see Attachment E).
    a. The provider will perform an NIHSS to determine the extent of any stroke-related neurological deficits.
    b. The completed (MSE) including the NIHSS will be documented in the patient's medical record.
8. Nursing staff will complete a full nursing assessment, obtain a complete set of vital signs (HR, BP, RR, Temp, O2 sat), assessment of pain, place the patient on continuous cardiopulmonary and pulse oximetry monitoring using the STROKE ALERT- Nurses Note (See Attachment F) .
    a. Neurological checks and vital signs will be monitored and documented in the patient's medical record every 15 minutes.

b. A nursing assessment, including neurological check and vital signs will be completed at the time of discharge. All should be documented in the patient's medical record prior to discharge.

9. Transfer patient to radiology for a STAT non-infused CT scan.
10. Laboratory staff should obtain STAT labs including blood glucose, PT/INR, PTT, CBC, and BMP or CMP.
    a. Obtain a urine drug screen and/or ETOH level if substance abuse or intoxication is suspected.
    b. Hyperglycemia should be treated to achieve blood glucose levels in the range of 140 to 180 mg/dL and closely monitored through frequent finger stick blood sugar (FSBS) to prevent hypoglycemia.
    c. Hypoglycemia (blood glucose <60mg/dL) should be treated.
11. Obtain an EKG and Chest X-ray if ordered.
12. Supplemental oxygen should be provided to maintain oxygen saturation >94%.
    a. Supplemental oxygen is not recommended in non-hypoxic patients with acute ischemic stroke.
13. Manage BP if greater than 220/120 mmHg or otherwise ordered
14. The patient will remain NPO (nothing by mouth) including all medications until transfer to decrease the risk of possible aspiration, unless a swallow screen is performed and documented in the patient's medical record by the nursing staff using the Nursing Bedside Swallow Screen (See Attachment G).
15. Expediate transfer arrangements to a higher-level Level II Primary or Level I Comprehensive Stroke Center immediately or within 60 minutes of patient arrival.

VI. ROLE RESPONSIBILITIES

A. Code Stroke Nurse (House Supervisor/Charge Nurse)

1. Announce "STROKE ALERT" via hospital intercom system. State "STROKE ALERT" and location of the patient.
2. Serve as recorder.
3. Immediately notify EMS or Air Evac of need for emergent transfer of an acute stroke patient to a Level II Primary or Level I Comprehensive Stroke Center within 10 minutes of the patient's arrival.
    a. Obtain an estimated ETA.
3. Assign specific duties.
4. Supports and transfer information to the patient's family and/or patient's representative.
5. Assist with supplies and medications if needed.

B. ED Nurse or Floor Nurse (RN or LPN)

1. Stabilize patient, initial assessment.
2. Immediate triage for suspected stroke using ***B.E.F.A.S.T.*** method.
3. Establish time last known normal (onset of symptoms).
4. Notify House Supervisor/Charge nurse to call STROKE ALERT.
5. Initiate Stroke Protocol upon provider determination of stroke symptoms.

6. Communicate patient's history and condition to provider.
7. Perform a full nursing assessment, including neurological assessment, pain assessment and vital signs.
    a. Perform vital signs and neuro/stroke assessments every 15 minutes.
8. Perform FSBS and treat hyper/hypoglycemia.
9. Coordinate emergent transfer to a Level II or Level I Stroke Center.
    a. If House Supervisor/Charge Nurse is unavailable it will be the ED nurse's responsibility to notify EMS/Air Evac of need for emergent transfer within 10 minutes of the patient's arrival.
10. Coordinate transfer of the patient to radiology for STAT non-contrast CT scan of the head if time allows prior to transfer of the patient.
11. Manage BP if greater than 220/120mmHg or otherwise ordered.
12. Ensure patient remains NPO, until completion of a validated dysphagia screen.

C. Provider

1. Assist in stabilizing the patient and perform an appropriate MSE within 15 minutes of patient's arrival.
2. Perform baseline NIHSS to determine stroke-related neurological deficits and document score in the patient's medical record.
3. Discuss need for emergent transfer to a Level II or Level I Stroke Center with patient/family.
4. Contact Level II or Level I Stroke Center and request emergent transfer and acceptance of acute stroke patient within 20 minutes of patient's arrival.
5. Place orders for the emergency management of stroke as needed based on patient assessment and CT findings.
6. Complete transfer orders and Acute Stroke Inter-Facility Transfer Protocol.
7. Ensure all appropriate EMTALA forms are completed prior to patient transfer.

VII. DOCUMENTATION

Documentation in the patient's medical record should include but not be limited to the following:

A. Assessments and reassessments per policy and procedure.
B. Date, time of last known normal (onset of symptoms), and "STROKE ALERT" initiated.
C. Responses to interventions.
D. Results of dysphagia screen utilizing screening tool.
E. Completion of all appropriate EMTALA forms
F. Patient and family discussions, education and response.

IX. QUALITY ASSURANCE

A. A log will be maintained of all patients who present to the ED with acute stroke signs and symptoms. The log will include the following information:
   1. Date;
   2. Patient Name;
   3. Time of Arrival;
   4. Time of provider notification;
   5. Time EMS or Air Evac notified;
   6. Time EMS or Air Evac arrived;
   7. Departure time;
   8. Primary or Comprehensive Stroke Center location;
   9. Receiving Nurse.

   All occurrences of stroke will be reported to the Quality Committee, Medical Staff Committee, and the Governing Body.

B. The Quality Department will track and report the following data:
   1. EMS/Air Evac notification of emergent transfer within 15 minutes of patient arrival.
   2. Transfer of patient to a Level II or Level I Stroke Center within 60 minutes of patient arrival.
      a. If the arrival-to-departure time exceeds >60 minutes more than 35% of time over two consecutive quarters the hospital will implement a quality improvement initiative in order to improve this indicator.
   3. Completion of an appropriate MSE by the provider within 15 minutes of patient arrival.
   4. Number of stroke patients.
   5. Number of acute stroke patients.
   6. Number of stroke patients determined eligible for thrombolytics and indications for why they were not treated.

C. Each Stroke Alert will be evaluated by the Quality Manager using the Stroke Alert Outcome Review Form (see Attachment H). Stroke Alerts will be forwarded and reviewed by the CCO to determine compliance with hospital policy and procedure.

X. STROKE TRAINING

All nursing staff (RN and LPNs) and providers are required to have initial orientation and bi-annual education and competency (except as otherwise noted) in the following:

A. Management of the acute stroke patient.

B. National Institutes of Health Stroke Scale (NIHSS) and other stroke assessment scales.

All nursing staff will also be certified in BCLS and ACLS according to the American Heart Association (AHA) standards of training. All clinical staff are required to have BCLS certification.

XI. ATTACHMENTS

See EMD-006A: Emergency Severity Index (ESI) Algorithm
Attachment A: VAN Screening Tool
Attachment B: Blood Pressure Management Protocol for Acute Stroke
Attachment C: Acute Stroke Inter-Facility Transfer Protocol
Attachment D: Stroke Alert Standing Orders
Attachment E: STROKE ALERT – Provider Note
Attachment F: STROKE ALERT – Nurses Note
Attachment G: Nursing Bedside Swallow Screen
Attachment H: Stroke Alert Outcome Review Form

XII. REFERENCES

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REVISIONS/UPDATES

Date	Brief Description of Revision/Change