

Protocol 3-5

SECTION: Adult General Medical Emergencies

PROTOCOL TITLE: Medical – Stroke/TIA

REVISED: 07/2017

OVERVIEW:

Stroke is a major cause of disability and a leading cause of death in the U.S. There are two main mechanisms of stroke: (1) Blood vessel occlusion and (2) Blood vessel rupture. Ischemic strokes are most often caused by large vessel thrombosis, although embolism or hypoperfusion can cause them. Causes of thrombosis include atherosclerosis, vessel dissection, and some infectious diseases. Hemorrhagic strokes are divided into intracerebral (ICH) and subarachnoid (SAH) hemorrhages. Risk factors for ICH include heart disease, hypertension, smoking, diabetes, elevated cholesterol, older age, prior stroke, family history, and cocaine use. Stroke symptoms will present according to which area of the brain is being inadequately perfused.

HPI	Signs and Symptoms	Considerations
<ul style="list-style-type: none"> • Previous CVA/ TIA's • Previous cardiac / vascular surgery • Associated diseases; diabetes, hypertension, CAD, atrial fibrillation • Medications (blood thinners) • History of trauma 	<ul style="list-style-type: none"> • Altered mental status • Weakness, paralysis • Blindness or other sensory loss • Aphasia, dysarthria • Syncope • Vertigo, dizziness • Vomiting • Headache • Seizures • Respiratory pattern change • Hypertension, hypotension 	<ul style="list-style-type: none"> • TIA • Seizure • Hypoglycemia • Stroke • Thrombotic • Embolic • Hemorrhagic • Tumor • Trauma

STROKE

	EMR	EMT	A	I	P
1. Perform general patient management.	•	•	•	•	•
2. Support life-threatening problems associated with airway, breathing, and circulation. <i>Be alert for aspiration, upper airway obstruction and hypoventilation.</i>	•	•	•	•	•
3. Administer oxygen to maintain <u>SPO₂</u> 94 - 99%. Support respirations as necessary with a BVM.	•	•	•	•	•
4. Perform and document Cincinnati or FAST stroke evaluation and if positive, perform VAN	•	•	•	•	•
5. Determine last known well time	•	•	•	•	•
6. If positive BEFAST/FAST, notify hospital of stroke alert. If positive VAN test, notify hospital of stroke alert with positive VAN.		•	•	•	•

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	EMR	EMT	A	I	P
7. Perform rapid glucose determination. If glucose less than 60 mg / dL or clinical signs and symptoms indicate hypoglycemia, refer to the <i>Medical – Diabetic – Hypoglycemia</i> protocol.		•	•	•	•
8. Ensure that a witness accompanies the patient to the hospital or obtain contact telephone for the hospital	•	•	•	•	•
9. Establish an IV of normal saline at KVO. If possible, establish secondary IV as well.			•	•	•
10. Place patient on cardiac monitor and obtain 12 lead ECG (and interpret if ALS) within 10 minutes of patient contact.		•	•	•	•
11. Perform ongoing assessment as indicated.		•	•	•	•
12. Transport to closest appropriate hospital with capabilities to provide the appropriate level of treatment based on <u>time from last known well to estimated time of arrival at facility</u> and <u>positive stroke scale</u>					
a. less than 3.5 hrs with weakness and negative VAN – transport to any stroke certified hospital or stroke capable facility					
b. less than 3.5 hrs with weakness and positive VAN (or <u>any</u> wake up stroke) – transport to comprehensive stroke center or primary stroke center with endovascular capabilities		•	•	•	•
c. between 3.5 hrs and 24 hours (any stroke)– transport to comprehensive stroke center or primary stroke center with endovascular capabilities					
d. greater than 24 hours (any stroke) – transport to any stroke certified hospital or stroke capable facility					
13. Consider not bypassing stroke capable/primary stroke centers if time to higher level of care is greater than 15 minutes		•	•	•	•
14. Consider air medical transport if ground transport time >30 minutes	•	•	•	•	•

BEFAST Stroke Scale²**B - Balance. Is there a sudden loss of balance or coordination?**

- Normal – the person can walk unassisted and upright
- Abnormal – unbalanced, difficulty ambulating, unable to coordinate gait

E - Eyes. Are there sudden vision changes?

- Normal – vision acuity is normal for patient
- Abnormal – blurry vision, deficits in vision, unable to track with eyes

F - Face. Does one side of the face droop?

- Normal — both sides of face move equally
- Abnormal — one side of face does not move as well as the other side

A - Arm. Does one arm drift downward?

- Normal — both arms move the same or both arms do not move at all (other findings, such as pronator drift, may be helpful)
- Abnormal — one arm does not move or one arm drifts down compared with the other

S - Speech. Are the words slurred? Is speech confused?

- Normal — patient uses correct words with no slurring
- Abnormal — patient slurs words, uses the wrong words, or is unable to speak

T - Time. What time did the symptoms begin? When was the person last seen looking or acting normally?

VAN Stroke Scale

V – Vision. Ask the patient to look left, right, up, and down

- Normal – No changes in vision
- Abnormal – Field cut (which side) (4 quadrants), double vision, blind new onset

A – Aphasia. Can the patient understand and speak coherently?

- Normal – Patient can understand language
- Abnormal – inability to speak or periphrastic errors, unreceptive (not understanding or following commands such as close eyes, make fist)

N – Neglect. Is the patient forcibly gazing to the right or left and not acknowledging the other side

- Normal – Able to maintain vision fields
- Abnormal – Forced gaze or inability to track to one side, unable to feel both sides at the same time, or unable to identify own arm, ignoring one side

POSSIBLE CAUSES OF UNCONSCIOUSNESS

A	Alcohol, Abuse, Acidosis	T	Toxidromes, Trauma, Temperature, Tumor
E	Endocrine, Electrolytes, Encephalopathy	I	Infection, Intussusception
I	Insulin	P	Psychogenic, Porphyria, Pharmacological
O	Oxygenation, Overdose, Opiates	S	Space occupying lesion, Sepsis, Seizure, Shock
U	Uremia		

PEARLS:

1. Every hospital and free standing emergency department in the region is an "Acute Stroke Capable Hospital." Primary Stroke Centers (PSC) are (in alphabetical order): Chippenham, HDH-F, Johnston-Willis, JRMC, MRMCM, PDH, Richmond Community Hospital, SRMC, SFMC, VCU Medical Center.
2. Onset of symptoms is defined as the last **witnessed** time the patient was symptom free (i.e., a patient awakening with stroke symptoms would be defined as an onset time of the previous night when the patient was symptom free).
3. The differentials listed in the Unconscious / Syncope / AMS Patient Care Protocol should also be considered.
4. Be alert for airway problems (difficulty swallowing, vomiting, aspiration, etc).
5. Hypoglycemia can present as a localized neurological deficit in the elderly.
6. There is an increased risk of stroke after a myocardial infarction (MI). Positive predictors of stroke after MI include: advanced age; diabetes; hypertension; history of prior stroke; anterior location of index MI; prior MI, atrial fibrillation; heart failure; and nonwhite race.¹
7. Scene and transport times should be minimized so the patient may receive the maximum benefit of intravenous thrombolytic therapy or endovascular intervention.
8. Wake up strokes may be treated as acute strokes, even up to 24 hrs. Studies indicate improvement with intervention.

¹ Am J Med. 2006 Apr;119(4):354.e1-9.

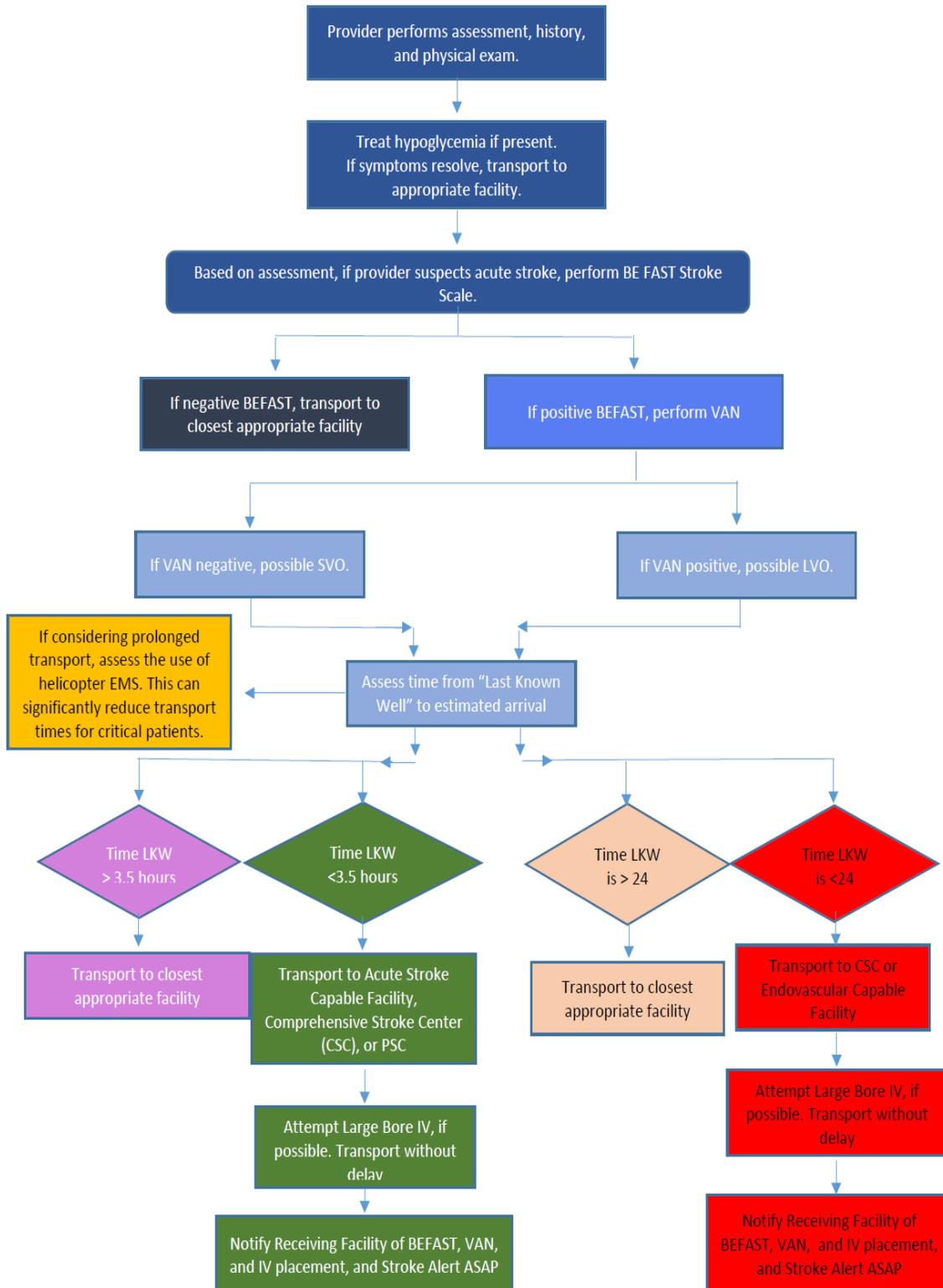
The incidence of stroke after myocardial infarction: a meta-analysis.

Witt BJ, Ballman KV, Brown RD Jr, Meverden RA, Jacobsen SJ, Roger VL.

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Hospital	Acute Stroke capabilities with cardiac surgery capabilities	Acute Stroke Capable Hospitals	Primary Stroke Centers (PSC)	Comprehensive Stroke Center (CSC)
Bon Secours/Memorial Regional Med Center	✓	✓	✓*	
Bon Secours/Richmond Community Hospital		✓	✓	
Bon Secours/St Francis Medical Center		✓	✓	
Bon Secours/St Mary's Hospital	✓	✓	✓	✓
Centra/Southside Community Hospital		✓		
CHS/Southern Virginia Regional Med Center		✓		
CHS/Southside Regional Medical Center	✓	✓	✓	
HCA/CJW Medical Center- Chippenham	✓	✓	✓	
HCA/CJW Medical Center- Johnston Willis	✓	✓	✓	✓
HCA/Henrico Doctor's Hospital - Forest	✓	✓	✓*	
HCA/John Randolph Medical Center		✓	✓	
HCA/Parham Doctor's Hospital		✓	✓	
HCA/Retreat Doctor's Hospital		✓	✓	
McGuire VA Medical Center		✓		
Sentara Halifax Regional Hospital		✓		
SOVAH Health-Danville		✓	✓	
VCU Community Memorial Hospital		✓	✓	
VCU Health System	✓	✓	✓	✓
Free-Standing Emergency Departments – Acute Stroke Capable ONLY				
Bon Secours - Westchester Emergency Center		✓		
HCA – Hanover Emergency Department		✓		
HCA – West Creek Emergency Department		✓		
HCA – TriCities Emergency Center		✓		
HCA – Chippenham Hospital Swift Creek ER		✓		

*This facility is a Primary Stroke Center with endovascular surgery capabilities.

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