Virginia Office of Emergency Medical Services
Division of Trauma/Critical Care
Prehospital and Interhospital
State Stroke Triage Plan

DRAFT

Virginia Department of Health
Office of Emergency Medical Services
P.O. Box 2448
Richmond, Virginia 23218
(804) 864-7600
www.vdh.virginia.gov/oems

Index

Executive Summary 2

Field Stroke Triage Decision Scheme 3

Guidance Documents 4

Acute Stroke Patients 6

Designated Stroke Centers 7

Interhospital Triage Considerations 8

Stroke Triage Qiality Monitoring 9

Stroke Related Resources 10

DRAFT

Executive Summary

Under the *Code of Virginia* § *32.1-111.3*, The Office of Emergency Medical Services acting on behalf of the Virginia Department of Health has been charged with the responsibility of maintaining a Statewide Stoke Triage Plan. The Statewide Stroke Triage Plan establishes a strategy through formal regional stroke triage plans that incorporate each region's geographic variations and acute stroke care capabilities and resources, including hospitals designated as "Primary Stroke Centers" through certification by the Joint Commission or a comparable process consistent with the recommendations of the Brain Attack Coalition. The Statewide Stroke Triage Plan is to include guidelines for prehospital patient care as well as inter-hospital patient transfers.

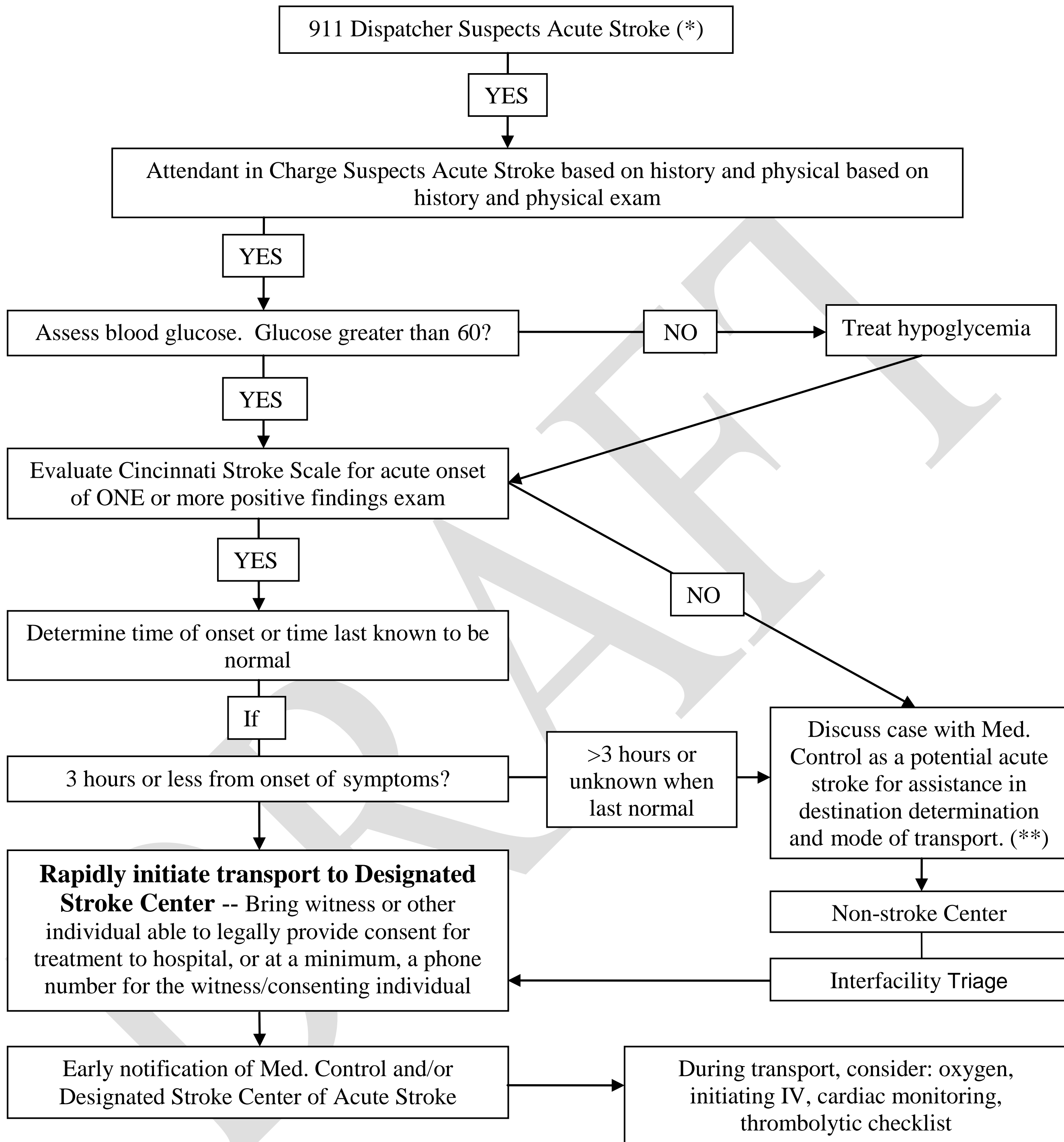
The purpose of the Statewide Stroke Triage Plan is to establish a uniform set of criteria for the prehospital and inter-hospital triage and transport of acute stroke patients. Formal regional or local stroke triage plans may augment the State Stroke Triage Plan to acknowledge and address variations in each region's EMS and hospital resources. This State Stroke Triage Plan, and the related regional plans, address patients experiencing an “acute stroke.” For the purposes of this document, “acute stroke” is defined as any patient suspected of having an acute cerebral ischemic event or stroke with the onset of any one symptom within a three hour period. The primary focus of the plan is to provide guidelines to facilitate the early recognition of patients suffering from acute stroke and to expedite their transport a center able to provide definitive care within an appropriate time window.

It is very important to note that because of the continuing evolution of scientific evidence indicating successful management of acute stroke greater than the three-hour time window, *real-time contact with regional or local medical direction should be freely used to discuss individual cases outside the three-hour window*. In selected cases it may be determined that expeditious transfer or transport directly to a Designated Stroke Center may be of beneficial for a specific patient.

Some selected acute stroke types may benefit from intervention *up to 24 hours* following symptom onset. Regardless of time of onset the sooner an acute stroke is treated, the better the potential outcome (“Time is Brain”). Based on a individual patient’s time of onset and following discussion with Medical Command, consider what mode of transport would be most appropriate to transport the patient expeditiously to a Designated Stroke Center.

DRAFT

Field Stroke Triage Decision Scheme



DRAFT

(*) See Appendix A for guidance regarding dispatch protocols

(**) If time from symptom onset is more than 3 hours, discuss case with Medical Command as a potential acute stroke for destination determination. Recall that patients with specific acute stroke types may benefit from intervention up to 24 hours, although the sooner an acute stroke is treated, the better the potential outcome. Based on patient time of onset and discussion with Medical Command, consider whether use of helicopter EMS will offer potential benefit to the patient, either in time to Designated Stroke Center, or for critical care management expertise. EMS does not determine whether a patient is excluded from any or all therapeutic options. Final decisions regarding patient eligibility for any given intervention will be determined by the receiving physician(s).

Guidance Documents

Cincinnati Prehospital Stroke Scale (CPSS)

All patients suspected of having an acute stroke should undergo a formal screening algorithm such as the CPSS. Use of stroke algorithms has been shown to improve identification of acute strokes by EMS providers up to as much as 30 percent. The results of the CPSS should be noted on the prehospital medical record. ANY abnormal (positive) finding which is suspected or known to be acute in onset is considered an indicator of potential acute stroke.

F-(face)	FACIAL DROOP: Have patient smile or show teeth. (Look for asymmetry) Normal: Both sides of the face move equally or not at all. Abnormal: One side of the patient's face droops.
A-(arm)	MOTOR WEAKNESS: Arm drift (close eyes, extend arms, palms up) Normal: Remain extended equally, drifts equally, or does not move at all. Abnormal: One arm drifts down when compared with the other.
S-(speech)	"You can't teach an old dog new tricks" (repeat phrase) Normal: Phrase is repeated clearly and correctly. Abnormal: Words are slurred (dysarthria) or abnormal (aphasia) or none.
T-Time	Time of SYMPTOM ONSET:________________________________

* Results of the F.A.S.T. should be included on the patient's prehospital medical record

Local/Regional Protocols

Local and regional prehospital patient care protocols for acute stroke should include:

- An initial/primary assessment
- Focused assessment including:
  - Blood glucose level (if authorized to perform skill)
  - Documented time of onset or time last known to be normal
  - Cincinnati Prehospital Stroke Scale
  - SAMPLE history to include mention of acute stroke mimics (i.e. seizures, migraines, hypo/hyper glycemia and others as deemed appropriate)
  - SAMPLE history to include potential thrombolytic exclusions (i.e. pregnancy, seizure at onset, terminal illness and others as deemed appropriate as on check sheet)
- Appropriate treatment for hypoglycemia. IV access and cardiac monitoring if available, reassessment of neurologic exam and stroke scale. Contact with medical command and/or receiving hospital to advise of potential acute stroke patient.
- Transport criteria that direct acute stroke patients with stable airway and without hypotension to Designated Stroke Centers if time of onset is within 3 hours of EMS assessment. If symptoms are acute, but over the 3 hour window, real-time contact with regional or local medical direction should be freely used to discuss the individual patient case to determine whether transport directly to a Designated Stroke Center would be of benefit in that specific patient.
- EMS Regions incorporate specific strategies appropriate to their area to assure that acute stroke patients evaluated more than 3 hours from symptom onset can still potentially access specialty resources for acute stroke intervention and management. Examples may include partnerships with acute stroke specialists at the Designated Stroke Center who can provide input on specific patient cases in a timely manner to either the medical command physician or EMS directly.

DRAFT

- For regions wishing to include a thrombolytic checklist, see Appendix B for Sample Acute Stroke Thrombolytic Checklist. EMS does not determine whether a patient is excluded from any or all therapeutic options. Final decisions regarding patient eligibility for any given intervention will be determined by the receiving physician(s).

DRAFT

Acute Stroke Patient Transport Considerations

MODE OF TRANSPORTATION: EMS Patient Care Protocols should address mode of transport considerations. Each jurisdiction is unique in its availability of EMS and acute stroke care resources. Consideration should be given to the hospital(s) that is/are available in the region and the resources that they have available to acute stroke patients when developing plans and protocols, as well as EMS system capacity.

RAPID TRANSPORTATION: Because stroke is a time-critical illness, time is of the essence, and EMS should rapidly initiate transport once acute stroke is suspected. Consideration should also be given to prehospital resources including use of helicopter EMS (HEMS) available at the time of the incident, and other conditions such as transport time and weather conditions. Use of HEMS can facilitate acute stroke patients reaching Designated Stroke Centers in a timeframe that allows for acute treatment interventions. **The likelihood of benefit of acute stroke therapy decreases with time**, **but there are several therapy options which offer definite benefit outside the standard 3 hour window.** Interventions may include any or all of the following: specialty physician or ICU capability, medical therapy (such as tPA or new experimental therapies), radiologic evaluation and procedures (MRI, intraarterial thrombolytics, mechanical thrombectomy), or life-saving emergent surgery (hemicraniectomy, large artery thrombus extraction).

Field transports of acute stroke patients by helicopter as defined in this plan:

1. should significantly lessen the time from scene to a Designated Stroke Center compared to ground transport
2. should be utilized to achieve the goal of having acute stroke patients expeditiously transported to a Designated Stroke Center, ideally within three hours of symptom onset.
3. should only be to non-stroke centers in very unusual circumstances, following consultation with local or regional medical command. If a HEMS resource is used, the patient should be transported directly to a Designated Stroke Center..

DRAFT

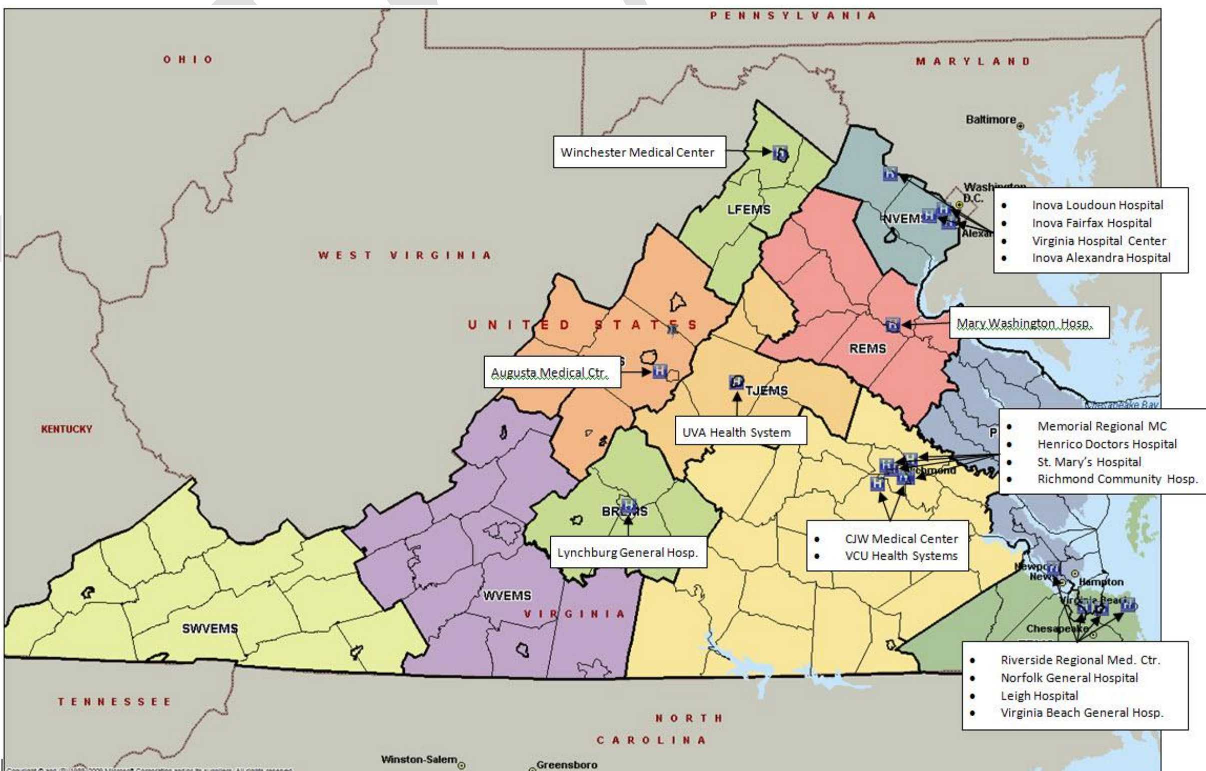
Designated Stroke Centers

The Commonwealth of Virginia defines a Designated Stroke Center as a hospital that has achieved Primary Stroke Center Certification by the Joint Commission. The process of Stroke Designation/Certification is entirely voluntary on the part of the hospitals and identifies hospitals that have established and maintain an acute stroke program that provides a specific level of medical, technical, and procedural expertise for acute stroke patients. Designation ensures that the hospital is prepared to provide definitive acute stroke care at all times and has an organized approach to providing clinical care, performance improvement, education etc. As of December 31, 2009, the current Virginia Stroke Designated Centers are:

Augusta Medical Center	Richmond	**Medicorp Mary Washington**	Fredericksburg
Bon Secours Memorial Regional MC	Richmond	**Riverside Regional MC**	Newport News
Bon Secours Richmond Community	Richmond	**Sentara Leigh Hospital**	Norfolk
Bon Secours St. Mary's Hospital**	Richmond	**Sentara Norfolk General Hospital****	Norfolk
Centra Lynchburg General	Lynchburg	**Sentara Virginia Beach General**	Virginia Beach
CJW Medical Center**	Richmond	**University of Virginia Health System****	Charlottesville
Henrico Doctors' Hospital	Richmond	**VCU Health Systems****	Richmond
Inova Alexandria Hospital	Alexandria	**Virginia Hospital Center**	Arlington
Inova Fairfax Hospital**	Falls Church	**Winchester Medical Center****	Winchester
Inova Loudoun Hospital Center	Leesburg		

***denotes that the hospital meets the Brain Attack Coalition's criteria as comprehensive stroke center via self-reported survey and not through a formal designation process (known existing as of this publication date)*

A current list of The Joint Commission Primary Stroke Centers that meet the definition of Virginia Designated Stroke Centers is available at http://virginiastrokesystems.org/ or by entering the state of interest at http://www.qualitycheck.org/consumer/searchQCR.aspx



DRAFT

Interhospital Triage Criteria

When acute stroke patients cannot be transported directly to a Designated Stroke Center in a timely manner, ideally within the three-hour window, consideration may be given to transport to a closer hospital. Various hospitals meet many of the components of a Designated Stroke Center based on national survey results and would be the next logical choice. The closest hospital may not be the most appropriate hospital. Resource information via self-reported data on the level of acute stroke care provided by hospitals which are not Designated Stroke Centers is available at http://virginiastrokesystems.org/.

These considerations should be addressed specifically within the regional plan in a manner consistent with this state stroke plan, and should be updated as hospital resource availability changes. Individual EMS regions are best qualified to assess the capabilities of their EMS and hospital stroke management resources and provide direction to EMS agencies within their regional guidelines. The default destination for acute stroke patients should be a Designated Stroke Center. Regional plans should provide guidance for situations where patients would be transported to non-stroke centers, as well as specific guidance for use of HEMS for transport to Designated Stroke Centers.

Non-stroke center hospitals should have transfer guidelines and agreements in place for the expeditious and appropriate management of acute strokes when the care required exceeds their capabilities. This is especially critical for transfer of patients following thrombolysis since specific protocols must be followed to diminish the risk of cerebral or systemic hemorrhagic complications.

DRAFT

Stroke Triage Quality Monitoring

The Virginia Office of EMS, acting on behalf of the Commissioner of Health, will report aggregate acute stroke triage findings on an intermittent basis, but no less than annually, to assist EMS systems and the Virginia Stroke Systems Task Force improve the local, regional and Statewide Stroke Triage Plans. A de-identified version of the report will be available to the public and will include, minimally, as defined in the statewide plan, the frequency of (i) over- and undertriage to Designated Stroke Centers in comparison to the total number of acute stroke patients delivered to hospitals and (ii) interfacility transfers that do not meet criteria for transfer to Designated Stroke Centers (iii) HEMS utilization. The program reports shall be used as a guide and resource for health care providers, EMS agencies, EMS regions, the Virginia Office of EMS, and the Virginia Stroke Systems Task Force. Additional specific data points to be collected within the EMS prehospital patient care report (written or electronic) will be established collaboratively between OEMS and VSSTF. Information to be contained in routine reports on both system and patient-level indicators and outcomes will be developed by OEMS in partnership with VSSTF to guide further system development in a patient focused way.

Hospitals, EMS Regions, and EMS agencies are encouraged to utilize their performance improvement programs to perform quality monitoring and improve the delivery of acute stroke care within their regions.

Annual reporting on the State Stroke Triage Plan will typically be provided through the OEMS, Division of Trauma/Critical Care's "Trends" report and on an ad-hoc basis in response to appropriate inquiries.

Stroke Related Resources

Virginia Stroke System Web page: http://virginiastrokesystems.org/
Virginia Office of EMS Stroke Web page: http://www.vdh.virginia.gov/OEMS/Trauma/Stroke.htm
Joint Commission: http://www.jointcommission.org/CertificationPrograms/PrimaryStrokeCenters/

DRAFT

Appendix A: Sample Thrombolytic Checklist

NOTE: Exclusions on this checklist are not absolute. Final decisions regarding patient eligibility for any given intervention will be determined by the receiving physician(s).

Date:______________ Time:__________EMS Unit: ___________

PHOTOCOPY THIS FORM AND LEAVE COPY WITH ED PHYSICIAN OR NEUROLOGIST AT BEDSIDE

Patient Name:____________________________________ Age:_________

Estimated .weight:_______lbs/kg

1. Did patient awaken with symptoms? Yes / No
2. Time last known to be normal: _______________________
3. Time of symptom onset: _________________________
4. Onset witnessed or reported by: ___________________
5. Witness/Family or other individual able to legally provide consent for treatment coming to Emergency Department? ______________ [ENCOURAGE TO DO SO].

If not, phone # where such individuals will be immediately available for calls from hospital staff to assist in giving additional patient history and consent.

( ) -

Cincinnati Stroke Scale Score:

Symptoms from **Cincinnati Stroke Scale** (circle abnormal findings)

ANY ONE FINDING = POSSIBLE STROKE=MINIMIZE ON SCENE TIME

FACIAL DROOP: R L

ARM DRIFT: R L

SPEECH: slurred wrong words mute /unable to speak

1 2 3

Indicate status for each

Current use of anticoagulants (e.g., warfarin sodium/Coumadin)	Yes	No	?
Has blood pressure consistently over 185/110 mm Hg	Yes	No	?
Witnessed seizure at symptom onset	Yes	No	?
intracranial hemorrhage history	Yes	No	?
GI or GU bleeding history within 3 weeks	Yes	No	?
Stroke within 3 months of prior stroke	Yes	No	?
Stroke within 3 months of serious head trauma	Yes	No	?
Stroke within 21 days of acute myocardial infarction	Yes	No	?
Stroke within 21 days of lumbar puncture (spinal tap)	Yes	No	?
Stroke within 14 days of major surgery or serious trauma	Yes	No	?
Is pregnant	Yes	No	?
Abnormal blood glucose level (<50) FSBS (if done):			

Receiving Site/Physician Printed Name: ______________________Time___________

EMS Provider Name: ___________________Signature__________________________

DRAFT