

# Regional Stroke Triage Plan

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## **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 Stroke Triage Plan. To augment the Statewide Stroke Triage Plan, the Peninsulas EMS Council, Inc. is responsible for establishing and maintaining a formal, region-wide Stroke Triage Plan that incorporates the region's geographic variations, and acute stroke care capabilities and resources.

The Peninsulas Regional Stroke Triage Plan establishes a uniform set of criteria for the prehospital and interhospital care, triage, and transport of acute stroke patients. This plan addresses all patients experiencing an “acute stroke.” For the purposes of this document, an 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 24-hour period.”** The primary focus of this plan is to provide guidelines to facilitate the early recognition of the acute stroke patient and to expedite their transport to the most appropriate certified stroke center capable of providing definitive care within an appropriate time window.

It is 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 on-line medical control should be freely used to discuss individual cases outside the 24-hour window.** In some cases, expeditious transfer, or transport directly to a certified stroke center may still be beneficial to the patient.

Some types of acute stroke may benefit from intervention **up to 24 hours** following symptom onset. Regardless of onset time, the sooner an acute stroke is treated, the better the potential outcome. (“Time is Brain”).

The primary goal of the PEMS Regional Stroke Plan is: **To develop a Stroke Emergency Care System that, when implemented, will result in decreased stroke mortality and morbidity in the PEMS Region.** The following processes are necessary to meet this goal:

1. The ability to rapidly and accurately identify patients suffering from stroke-like presentations. When stroke is possible/suspected, can accurately assess for stroke severity.
2. The provision of immediate and comprehensive assessment, resuscitation, intervention, and definitive care at the *most appropriate* certified stroke center based upon the stroke severity assessment.
3. The Peninsulas EMS Council will provide continuous and effective region-wide coordination of prehospital and hospital care; establish and maintain a method of tracking the care of stroke patients and ensure quality oversight of the process.
4. Ensure that all hospitals in the region may choose to participate and can receive stroke patients if they are willing to meet the system and operational criteria established by this plan.

5. Provide quality EMS and patient care to citizens and visitors within the PEMS region.
6. Continuously evaluate the EMS system based on the current, established performance measures for stroke.

### **Stroke Field Triage**

The PEMS Stroke Field Triage decision scheme is in the Administrative Policies section of the Regional Patient Care Protocols, Policies and Procedures and is based on the Virginia Stroke Field Triage Decision Scheme.

### **Acute Stroke Patient Transport Considerations**

**MODE OF TRANSPORTATION:** Each of the three PEMS sub-regions is unique in its availability of EMS and acute stroke care resources. Consideration should be given to hospitals available to the region and the resources they have available to acute stroke patients.

**RAPID TRANSPORTATION:** Stroke is a time-sensitive emergency. Based on scientific evidence and A.H.A. guidelines, the PEMS region has adopted the BEFAST assessment to identify patients experiencing a stroke, and the **Rapid Arterial Occlusion Evaluation (RACE)** tool to predict the possibility of a Large Vessel Occlusion (LVO), which may benefit from neurovascular intervention at a Comprehensive Stroke Center.

In this region, stroke patients determined to have a **RACE Score of 5 or greater within 24 hours of symptom onset** should be transported to the closest Comprehensive Stroke Center if **transport time is not extended by more than 30 minutes**. Patients with scores of **4 or less** should be transported as normal to the closest certified stroke center.

Consideration should also be given to prehospital resources available at the time of the incident, including use of helicopter EMS (HEMS), and other conditions such as transport time, road, and weather conditions.

The use of **HEMS** may facilitate the delivery of an acute stroke patient to the most appropriate certified stroke center in a timeframe that allows for acute treatment interventions when ground transport cannot. Therefore, suspected stroke patients, **whose transport time to a certified stroke center would be extended by more than 30 minutes**, should be transported to the closest hospital unless they can be delivered to that hospital more rapidly by a helicopter EMS (HEMS) service.

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

1. should significantly lessen the time from scene to a certified stroke center compared to ground transport.

2. should achieve the goal of having acute stroke patients transported to an *appropriate* certified stroke center within 24 hours of symptom onset unless on-line medical control advises otherwise.
3. The optimal HEMS destination should be a Comprehensive Stroke Center or a center with comprehensive level capabilities (24-7 Neurosurgery and Neuro-intervention). Interfacility transfer plans should address both non-stroke centers and the post thrombolytic transfer of patients for interventional therapy.
4. Any patient with a compromised airway or impending circulatory collapse should be transported to the closest hospital Emergency Department.

**The potential benefits associated with acute stroke therapies decrease with time. However, several treatment options now offer the potential for benefit within a 24-hour window from symptom onset.**

**NOTE:** The use of the term “rapid transport” is a reminder to reduce *on-scene* times (preferably less than 15 minutes) and does not relieve the vehicle operator from always exercising due regard for safety of the patient, crew, and the public.

### **Stroke Center Certification**

The Commonwealth of Virginia recognizes multiple levels of stroke certification (a Certified Stroke Center) consistent with recommendations of the Brain Attack Coalition. These are Comprehensive Stroke Centers, Primary Stroke Centers, Primary Stroke Centers with supplementary levels of stroke care distinction, and Acute Stroke Ready hospitals. There are multiple certifying bodies including the Joint Commission, DNV, the American Heart Association and potentially others.

The process of stroke certification by regional hospitals is entirely voluntary and identifies those 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. Certification ensures the hospital is prepared to always provide definitive acute stroke care and has an organized approach to providing clinical care, performance improvement and education.

Certified stroke centers easily accessible from within the PEMS region either by ground or HEMS can be found in Appendix A: Hospital Stroke Certifications.

### **Interhospital Triage Considerations**

Various hospitals meet many of the components of a certified stroke center based on national survey results and would be the *next* logical choice. ***The closest hospital may not be the most appropriate hospital.***

Non-stroke center hospitals within the PEMS region should develop 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 should be followed to diminish the risk of cerebral or systemic hemorrhagic complications.

The PEMS Council does not direct or advise hospitals about interfacility transfer of patients. However, the Virginia Stroke Triage Plan states that if the patient has received, or is receiving thrombolytic therapy, it is the responsibility of the sending facility to ensure that the transporting agency is staffed with providers that have received appropriate training in the monitoring of this patient population.

### **Stroke Triage Quality Monitoring**

The Virginia Office of EMS (OEMS), 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 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 use of and the completeness of, the prehospital stroke assessment, under-triage to certified stroke centers in comparison to the total number of acute stroke patients delivered to hospitals and 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 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.

The PEMS Regional Stroke Committee will perform quality monitoring and data collection associated with acute stroke care as it relates to EMS and shall report any significant quality issues to the PEMS Performance Improvement Committee.

### **Stroke Related Resources**

Virginia Code § 32.1-111.3.: <https://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+32.1-111.3>

Virginia Office of EMS Stroke Web page:

<http://www.vdh.virginia.gov/emergency-medical-services/trauma-critical-care/virginia-stroke-system/>

Virginia Stroke Systems Task Force: <http://www.vdh.virginia.gov/stroke/virginia-stroke-systems-task-force/>

Joint Commission: [https://www.jointcommission.org/certification/primary\\_stroke\\_centers.aspx](https://www.jointcommission.org/certification/primary_stroke_centers.aspx)

DNV Certification: <http://dnvglhealthcare.com/certifications/stroke-certifications>

## Appendix A

### Hospital Stroke Certifications

**Definitions:**

**Acute Stroke Ready –**

- These facilities can care for the acute stroke patient and administer IV thrombolytics (TNKase, Alteplase).
- Most of the acute stroke patients will be cared for and then transferred to a Primary Stroke Center or a Comprehensive Stroke Center for further treatment and/or stabilization.

**Primary Stroke Center-**

- They treat and stabilize most of the emergent stroke patients.
- They can administer IV thrombolytics and admit them to a designated stroke unit if the patient is stable.
- They will transfer to a Comprehensive Stroke Center if the patient requires endovascular procedures.

**Comprehensive Stroke Center-**

- Can treat large ischemic strokes and hemorrhagic strokes, including aneurysmal subarachnoid hemorrhage.
- Resources for other hospitals.
- 24/7 Neurosurgery/Neurointerventional coverage.

*Shaded rows indicate hospitals located within the geographic boundaries of the Peninsulas region. Based on geographic location and/or patient complexity, EMS providers may opt for transport to an appropriate stroke center outside the PEMS region if it best meets the patient's needs.*

<b>Hospital</b>	<b>Location</b>	<b>Acute Stroke Ready</b>	<b>Primary</b>	<b>Comprehensive</b>
Bon Secours Mary Immaculate	Newport News		X	
Bon Secours Rappahannock General Hospital	Kilmarnock		X	
Bon Secours Memorial Regional Hospital	Mechanicsville		X	
<b>Bon Secours St. Mary's Hospital</b>	<b>Richmond</b>			<b>X</b>
HCA Henrico Doctor's Hospital	Richmond		X	
HCA Chippenham Hospital	Richmond		X	
<b>HCA Johnston Willis Hospital</b>	<b>Richmond</b>			<b>X</b>
Mary Washington Hospital	Fredericksburg		X	
Riverside Doctor's Hospital	Williamsburg		X	
<b>Riverside Regional Medical Center</b>	<b>Newport News</b>			<b>X</b>
Riverside Walter Reed Hospital	Gloucester		X	
Sentara Williamsburg Regional Hospital	Williamsburg		X	
Sentara Careplex Hospital	Hampton		X	
<b>Sentara Norfolk General Hospital</b>	<b>Norfolk</b>			<b>X</b>
VCU Tappahannock	Tappahannock			<b>X</b>
<b>VCU Main Hospital-Richmond</b>	<b>Richmond</b>			<b>X</b>