

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 purpose of the Peninsulas Regional Stroke Triage Plan is to establish 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 selected cases, it may be determined that expeditious transfer or transport directly to a certified stroke center may still be beneficial to the 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”).

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.
2. The provision of immediate and comprehensive assessment, resuscitation, intervention, and definitive care at the *most appropriate* Certified Stroke Center.
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 insure quality oversight of the process.
4. All hospitals in the region may participate and have the ability to 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 established and current EMS performance measures for stroke.

Stroke Field Triage

The PEMS Stroke Field Triage decision scheme is located 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 recent scientific evidence and A.H.A. guidelines, the PEMS region has adopted the Rapid Arterial Occlusion Evaluation (RACE) tool as a means to identify patients experiencing an acute stroke.

The RACE tool provides **all** aspects of the FAST exam, but goes further in an effort 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 as long as **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 Designated 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 acute stroke patients reaching appropriate Certified Stroke Centers in a timeframe that allows for acute treatment interventions when ground transport cannot. Therefore, suspected stroke patients, **outside the 30 minute ground transport time** to a Certified Stroke Center, should be transported to the closest hospital unless they can be delivered to such a center 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 be utilized to achieve the goal of having acute stroke patients expeditiously transported to an *appropriate* Certified Stroke Center within 24 hours of symptom onset unless on-line medical control advises otherwise.
3. It is recommended that if HEMS is utilized, optimal destination should be a Comprehensive Stroke Center or a center with Comprehensive level capabilities (e.g. 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 likelihood of benefit of acute stroke therapy decreases with time, but there are several therapy options, which may offer definite benefit within the 24-hour window.

NOTE: The use of the term “rapid transport” is a reminder to reduce *on-scene* times and does not relieve the vehicle operator from exercising due regard for safety of the patient, crew and the public at all times.

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 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. Certification 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 and education.

Certified Stroke Centers accessible from within the PEMS region via ground or HEMS with minimal delay can be found in this plan under Appendix A: Certified Stroke Centers.

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 presume to direct hospitals with regard to 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 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 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 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.

The PEMS Performance Improvement Committee in collaboration with the PEMS Regional Stroke Task Force will perform quality monitoring and data collection associated with acute stroke care as it relates to EMS.

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

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

Appendix A: Certified Stroke Centers

This is the most current list of certified stroke centers that can be reached from within the PEMS region via ground or HEMS with minimal delay.

(*) Indicates a Comprehensive Stroke Center.

Bon Secours DePaul	Norfolk	Riverside Regional Medical Center (*)	Newport News
Bon Secours Mary Immaculate Hospital	Newport News	Riverside Doctor’s Hospital	Williamsburg
Bon Secours Memorial Regional Hospital	Richmond	Riverside Walter Reed Hospital	Gloucester
Bon Secours Rappahannock General Hospital	Kilmarnock	Sentara Careplex Hospital	Hampton
Bon Secours St. Mary’s Hospital (*)	Richmond (2020 update)	Sentara Williamsburg Regional Medical Center	Williamsburg
HCA-Johnston Willis Chippenham (*)	Richmond	Sentara Norfolk General Hospital	Norfolk
Henrico Doctor’s Hospital	Richmond	VCU Health Systems (*)	Richmond
Mary Washington Hospital	Fredericksburg		