Western Virginia Emergency Medical Services Council, Inc.

Western Virginia EMS Council
Regional Stroke Triage Plan

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Developed by the WVEMS Stroke Committee, Charles J. Lane, MD, Chair
In conjunction with the Virginia Department of Health, Office of EMS and the Virginia Stroke Systems, a statewide collaborative for improving stroke care.
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Executive Summary

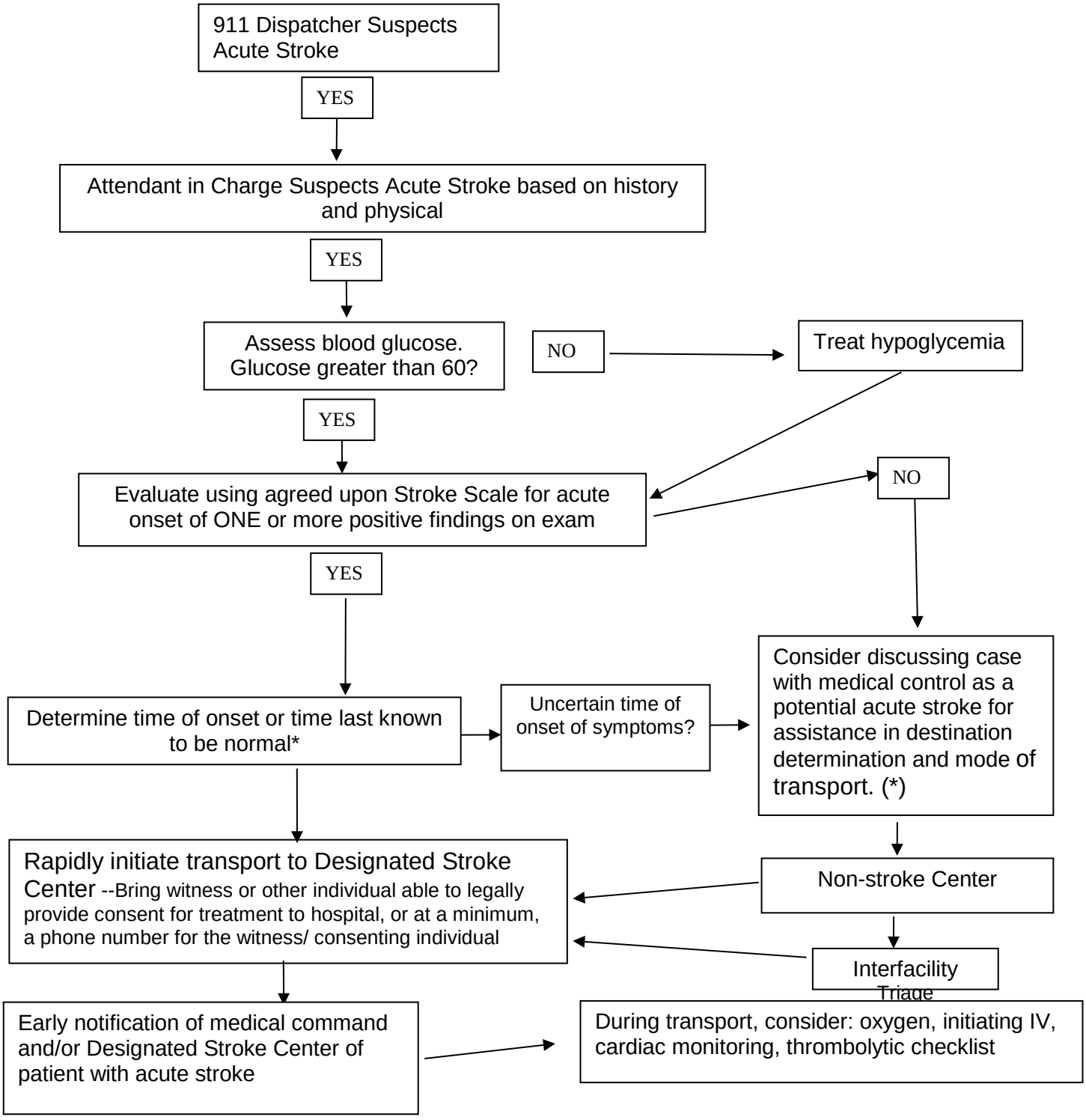
Under the *Code of Virginia* **§** *32.1-111.3*, The Office of Emergency Medical Services acting on behalf of the Virginia Department of Health has been charged with the responsibility of maintaining a Statewide Stroke Triage Plan. The Western VA EMS region which includes the counties of Alleghany, Botetourt, Craig, Floyd, Franklin, Giles, Henry, Montgomery, Roanoke, Patrick, Pittsylvania and Pulaski; and the cities of Covington, Danville, Martinsville, Radford, Roanoke and Salem is responsible for establishing a strategy through a formal region wide Stroke Triage Plan that will incorporate the region's geographic variations, variances within out-of-hospital provider capabilities and acute stroke care capabilities and resources including hospital capabilities and the capacity to transfer patients between hospitals and tertiary care centers, such as Joint Commission "certified" Stroke Centers or comparable process of care consistent with the recommendations of the Brain Attack Coalition.

The purpose of the Western VA EMS Council Regional Stroke Triage Plan is to establish a uniform set of criteria for the prehospital care, treatment and transport of the acute stroke patient. The plan will identify a formalized stroke plan that will augment the state stroke triage plan to recognize and address variations within our region in both prehospital and hospital resources. This Regional Stroke Triage Plan addresses patients experiencing an "acute stroke" defined as any patient suspected of having an acute cerebral ischemic event, hemorrhagic event, or stroke with the onset of any one symptom within a six hour period although acknowledgement of an extension may be appropriate in situations where advanced medical consult is available. The primary focus of this plan is to provide guidelines to facilitate the early recognition of the patient suffering from acute stroke symptoms and to expedite their transport to a center able to provide definitive care within the six-hour time window.

The primary goal of the WVEMS Regional Stroke Plan is to develop a Stroke Emergency Care Plan that, when implemented, will result in decreased stroke mortality and morbidity in the WVEMS region. In order to accomplish this, a number of specific processes are essential. These are:

1. The ability to rapidly and accurately identify patients suffering from stroke-like symptoms.
2. Patients who have sustained an acute stroke event must receive care in a hospital that has a stroke treatment program in place, capable of providing immediate and comprehensive assessment, resuscitation, intervention, and definitive care.
3. The Western VA EMS Council must provide continuous and effective region-wide coordination of prehospital and hospital care resources so stroke patients will be most expeditiously transported to the closest available interventional center capable of performing stroke interventions, so patient care can be provided in a manner both appropriate and timely, while establishing and maintaining continuity. To accomplish this process there must be a method of tracking the care capability for stroke patients and reviewing the quality of the process itself.
4. The regional plan must provide all hospitals in the region the opportunity to participate in the system (an inclusive system), and to receive stroke patients if they are willing to meet the system and operations criteria, as established by this plan.
5. Provide quality EMS service and patient care to the EMS system citizens.
6. Continuously evaluate the EMS system based on established EMS performance measures for stroke.

Field Stroke Triage Decision Scheme



(**)EMS Providers are encouraged to initiate real-time contact with Medical Direction to discuss individual cases that may fall outside of their established agency protocol onset of symptoms guidelines. 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 Control, consider whether use of HEMS will offer potential benefit to the patient, either in time to Certified 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)/FAST

All patients suspected of having an acute stroke should undergo a formal screening algorithm such as the CPSS/FAST. 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/FAST 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 for 10 seconds; in only one leg is involved, have patient hold leg off floor for 5 seconds) **Normal:** Remain extended equally, drifts equally, or does not move at all. **Abnormal:** One arm drifts down when compared with the other.
S-(speech)	Have the patient repeat, "You can't teach an old dog new tricks" **Normal:** Phrase is repeated clearly and correctly. **Abnormal:** Words are slurred (dysarthria) or abnormal (dysphasia) or none (aphasia).
T-Time	Time of SYMPTOM ONSET:_____ If patient awakened with symptoms, when were they last known to be normal?

* Results of the CPSS/FAST should be included on the patient's prehospital medical record.

EMS VAN: Acute Stroke Screening Tool

Time of on set: < 6 hrs

Is ARM weakness present?

☐ Yes **Continue the VAN exam**

☐ No. **Patient is VAN negative. Stop VAN Exam.**

	Yes	No
Visual Disturbance?		
Aphasia?		
Neglect?		

If patient has **any degree of weakness PLUS any one of the below:**

Visual Disturbance (Assess field cut by testing both sides, 2 fingers right, 1 left)

Aphasia (Inability to speak or understand. Repeat and name 2 objects, close eyes, make fist)

Neglect (Forced gaze to one side or ignoring one side, touching both sides)

This is likely a large artery clot (cortical symptoms) = VAN Positive

Acute Stroke Patient Transport Considerations

MODE OF TRANSPORTATION: Because of the diverse geography of the Western VA EMS Council region, EMS systems face unique challenges in the transport of their patients to a Certified Stroke Center. Consideration should be given to hospitals available to the region and the resources they have available to acute stroke patients.

Consideration should also be given to prehospital resources including, the level of care available by the ground EMS crews, the closest HEMS (Helicopter EMS) service available at the time of the incident, and other conditions such as transport time and weather conditions. Use of HEMS services can assist with the stroke patient reaching definitive medical care in a timely fashion.

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

1. Significantly lessen the time from scene to a Certified Stroke Center compared to ground transport.
2. Bypassing a non-stroke designated hospital to transport directly to a Certified Stroke Center should not be greater than 30 minutes.
3. Stroke patients transported by air must meet the clinical triage criteria for transport and be transported to the closest Certified Stroke Center. It is recommended that if HEMS is utilized, the destination optimally should be a Comprehensive Stroke Center or center with Comprehensive level capabilities. (e.g. 24-7 Neurosurgery and Neuro-intervention).
4. HEMS transport should be considered to meet the goal of having acute stroke patients expeditiously transported to a Certified Stroke Center, within six hours of symptom onset; unless consultation with on-line medical control has occurred.
5. Patient required a level of care greater than can be expected by the local ground provider if the HEMS unit can be on scene in a time shorter than the ground unit can transport to the closest hospital.

NOTE: Any patient with a compromised airway or impending circulatory collapse must be transported to the closest hospital emergency department for stabilization and treatment.

RAPID TRANSPORTATION: Because stroke is a time-critical illness, time is of the essence, and EMS should initiate ***rapid transport*** once an 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 Certified 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 six hour window; and therefore, consultation with on-line Medical Control is STRONGLY encouraged in the situation of a patient being unable to arrive at a Certified Stroke Center within the six-hour window from symptoms onset.

NOTE: The use of the term "rapid transport" does not relieve the operator of the vehicle from exercising "due regard, and should not be interpreted as requiring the use of red-lights and siren." Rather it is a reminder to reduce time on scene to minimize out of hospital time.

Certified Stroke Centers

The Commonwealth of Virginia recognizes three levels of stroke certification (a Certified Stroke Center) consistent with recommendations of the Brain Attack Coalition. These are Comprehensive Stroke Centers, Primary Stroke Centers, and Acute Stroke Ready Hospitals. 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. 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, education etc. As of March 1, 2018, the list of Certified Stroke Centers accessible to the Western VA EMS Council region includes:

***Carilion Roanoke Memorial Hospital**	Roanoke, VA	***Centra Lynchburg General**	Lynchburg, VA
***Lewis-Gale Medical Center**	Salem, VA	***Hugh Chatham Memorial Hospital**	Elkin, NC
****University of Virginia Medical Center**	Charlottesville, VA	***Augusta Health Center**	Fishersville, VA
****Duke University Hospital**	Durham, NC	****University of North Carolina Hospitals**	Chapel Hill, NC
****North Carolina Baptist Hospital**	Winston-Salem, NC	****Moses H Cone Memorial Hospital**	Greensboro, NC
****Forsyth Memorial Hospital**	Winston Salem, NC	***Twin County Regional Hospital**	Galax, VA
***Sovah Health - Danville**	Danville, VA		

* Indicates Primary Stroke Center
** Indicates Advanced Comprehensive Stroke Center

The list of hospitals becoming designated as stroke centers is increasing. There are multiple certifying bodies including the Joint Commission, DNV, and potentially others.

Interhospital Triage Criteria

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

Non-stroke center hospitals within the Western VA EMS Council region must develop transfer guidelines and agreements that would allow 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. The Western VA EMS Council does not presume to direct hospitals with regard to interfacility transfer of patients. If the patient has received, or is receiving thrombolytic therapy, it is the responsibility of the sending facility to ensure the transporting agency is staffed with providers that have received appropriate training in the monitoring of this patients population.

Stroke Triage Quality Monitoring

The Western VA EMS Council, Inc., 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 to 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 under triage to Designated Stroke Centers in comparison to the total number of acute stroke patients delivered to hospitals and
(ii) Helicopter EMS utilization.
(iii) EMS Benchmarks

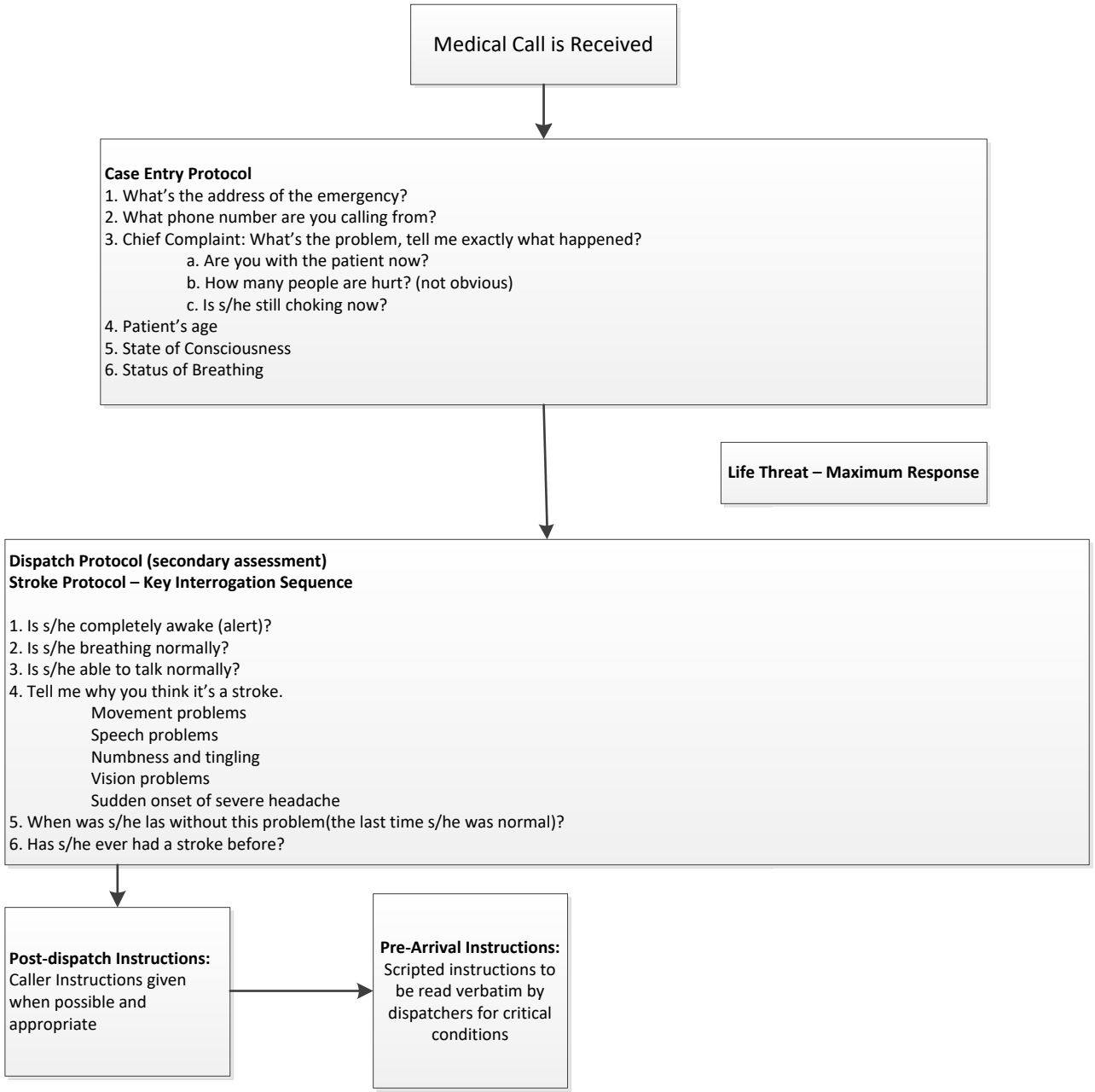
The Western VA EMS Council Performance Improvement Committee will produce a report which will be used as a guide and resource that will establish the EMS Benchmarks to be measured. This report will have three primary evaluation areas: timeliness of care, treatment provided, and outcomes of care. The fields identified are critical to analyses for the following reasons: they allow linking of EMS data and hospital stroke data, they allow for "real time" collection of data focused upon process improvement, and they allow for retrospective systemic analyses. The ultimate goal of collecting this data is to provide actionable information, to the WVEMS Stroke Committee and the WVEMS Medical Direction Committee, relative to the care processes and outcomes associated with their treatment of acute stroke patients as it relates to EMS.

Stroke Related Resources

Virginia Stroke System Task Force Web page: http://www.vdh.virginia.gov/stroke/virginia-stroke-systems-task-force/
Virginia Office of EMS Stroke Web page: http://www.vdh.virginia.gov/emergency-medical-services/trauma-critical-care/virginia-stroke-system/
Joint Commission Web page: http://www.jointcommission.org/certification/primary_stroke_centers.aspx
DNV GL Healthcare Web Page: https://www.dnvglhealthcare.com/certifications/stroke-certifications

Appendix A: Sample Dispatch Resources

The following information is offered as a guideline for use by dispatch centers within the Western Virginia EMS Council region that do not have established procedures. The questions to be asked of the caller have been established by the Medical Priority Dispatch System and are contained on Card 28.



Appendix B: 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 Agency/Unit: _____
Patient Name:_____ Age:_____ Estimated .weight:_____lbs/kg

PROVIDE THIS FORM TO THE ED NURSE, PHYSICIAN OR NEUROLOGIST AT BEDSIDE

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.

( ) - OR ( ) -

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	**1 2 3**
ARM DRIFT:	R		L	
SPEECH:	slurred	wrong words	mute /unable to speak	

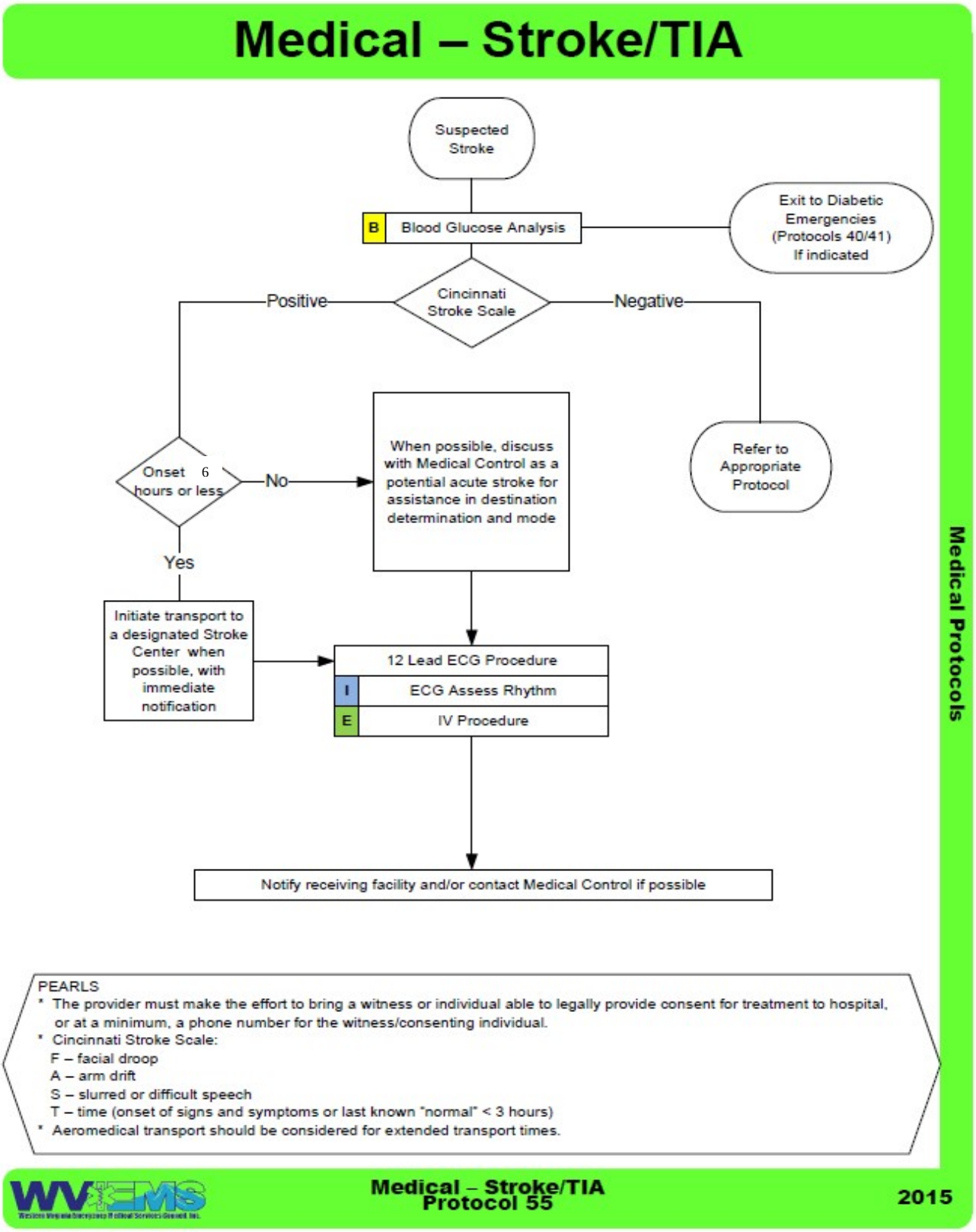
Indicate status for each

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

Receiving Site/Physician Printed Name: _____Time_____

EMS Provider Name: _____Signature_____

Appendix C: WVEMS Stroke Protocol



Code of Virginia References

Code of Virginia

§ 32.1-111.3. Statewide Emergency Medical Care System

A.

1. Establishing a comprehensive emergency medical services patient care data collection and evaluation system pursuant to Article 3.1 (§ 32.1-116.1 et seq.) of this chapter;

2. Collecting data and information and preparing reports for the sole purpose of the designation and verification of trauma centers and other specialty care centers pursuant to this section. All data and information collected shall remain confidential and shall be exempt from the provisions of the Virginia Freedom of Information Act (§ 2.2-3700 et seq.);

B

1. A strategy for implementing the statewide Trauma Triage Plan through formal regional trauma triage plans developed by the Regional Emergency Medical Services Councils which can incorporate each region's geographic variations and trauma care capabilities and resources, including hospitals designated as trauma centers pursuant to subsection A of this section. The regional trauma triage plans shall be implemented by July 1, 1999, upon the approval of the Commissioner.

1. *A uniform set of proposed criteria for prehospital and inter hospital triage and transport of trauma patients, consistent with the trauma protocols of the American College of Surgeons' Committee on Trauma, developed by the Emergency Medical Services Advisory Board, in consultation with the Virginia Chapter of the American College of Surgeons, the Virginia College of Emergency Physicians, the Virginia Hospital and Healthcare Association, and prehospital care providers. The Emergency Medical Services Advisory Board may revise such criteria from time to time to incorporate accepted changes in medical practice or to respond to needs indicated by analyses of data on patient outcomes. Such criteria shall be used as a guide and resource for health care providers and are not intended to establish, in and of themselves, standards of care or to abrogate the requirements of § 8.01-581.20. A decision by a health care provider to deviate from the criteria shall not constitute negligence per se.*

§ **32.1-116.1:1**. Disclosure of medical records.

Any licensed physician, licensed health care provider, or licensed health care facility may disclose to an emergency medical services provider, emergency medical services physician, or their licensed parent agency the medical records of a sick or injured person to whom such emergency medical services provider or emergency medical services physician is providing or has rendered emergency medical care for the purpose of promoting the medical education of the specific person who provided such care or for quality improvement initiatives of their agency or of the EMS system as a whole. Any emergency medical services provider or emergency medical services physician to whom such confidential records are disclosed shall not further disclose such information to any persons not entitled to receive that information in accordance with the provisions of this section.

§ 32.1-116.2. Confidential nature of information supplied; publication; liability protections.

A. The Commissioner and all other persons to whom data is submitted shall keep patient information confidential. Mechanisms for protecting patient data shall be developed and continually evaluated to ascertain their effectiveness. No publication of information, research or medical data shall be made which identifies the patients by names or addresses. However, the Commissioner or his designees may utilize institutional data in order to improve the quality of and appropriate access to emergency medical services.

B. No individual, licensed emergency medical services agency, hospital, Regional Emergency Medical Services Council or organization advising the Commissioner shall be liable for any civil damages resulting from any act or omission preformed as required by this article unless such act or omission was the result of gross negligence or willful misconduct.

§ 8.01-581.19 Civil Immunity for physicians, psychologists, podiatrists, optometrists, veterinarians, nursing home administrators and certified emergency services personnel while members of certain committees.

A *Any physician, chiropractor, psychologist, podiatrist, veterinarian or optometrist licensed to practice in this commonwealth shall be immune from civil liability for any communication, finding, opinion or conclusion made in performance of his duties while serving as a member of any committee, board group, commission or other entity that is responsible for resolving questions concerning the admission of any physician, psychologist, podiatrist, veterinarian or optometrist to, or the taking of disciplinary action against any member of, any medical society, academy or association affiliated with the American Medical Association, the Virginia Academy of Clinical Psychologists, the American Psychological Association, the Virginia Applied Psychology Academy, the Virginia Academy of School Psychologists, the American Podiatric Medical Association, the American Veterinary Medical Association, the International Chiropractic Association, the American Chiropractic Association, the Virginia Chiropractic Association or the American Optometric Association provided that such communication, finding, opinion or conclusion is not made in bad faith or with malicious intent.*

B Any nursing home administrator licensed under the laws of this Commonwealth shall be immune from civil liability for any communication, finding, opinion, decision or conclusion made in performance of his duties while serving as a member of any committee, board, group, commission or other entity that is responsible for resolving questions concerning the admission of any health care facility to, or the taking of disciplinary action against an member of, the Virginia Health Care Association, provided that such communication, finding, opinion, decision or conclusion is not made in bad faith or with malicious intent.

C Any emergency medical services personnel certified under the laws of the Commonwealth shall be immune from civil liability for any communication, finding, opinion, decision or conclusion made in performance of his duties while serving as a member of any regional council, committee, board, group, commission or other entity that is responsible for resolving questions concerning the quality of care, including triage, interfacility transfer and other components of emergency medical services care, unless such communication, finding, opinion, decision or conclusion is made in bad faith or with malicious intent.

EMS Regulation 12 VAC 5-31-390. Destination/trauma triage.
An EMS agency shall participate in the Regional Trauma Triage Plan established in accordance with § 32.1-111.3 of the Code of Virginia.