

PRE-HOSPITAL PATIENT CARE PROTOCOLS

BASIC LIFE SUPPORT/ADVANCED LIFE SUPPORT



EMS COUNCIL INC.

**Board Approved June 2007
Revised December 2009
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**Rappahannock EMS Council
435 Hunter Street
Fredericksburg, VA 22401**

PRE-HOSPITAL PATIENT CARE PROTOCOL

REFERENCE SECTION

Section V

**Rappahannock EMS Council
435 Hunter Street
Fredericksburg, VA 22401**

**BASIC LIFE SUPPORT/ADVANCED LIFE SUPPORT
ADMINISTRATIVE PATIENT CARE PROTOCOL**

REVISED JUNE 2007; DECEMBER 2009; JULY 2011
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Rappahannock EMS Council
Protocol Reference Section
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Trauma Designation

All licensed hospitals are required by the *Code of Virginia* to submit data on their trauma cases to the Virginia Statewide Trauma Registry. Of those 94 licensed hospitals, 14 have been designated as a trauma center. A trauma center's designation is defined by the following criteria:

Level I

Level I trauma centers have an organized trauma response and are required to provide total care for every aspect of injury, from prevention through rehabilitation. These facilities must have adequate depth of resources and personnel with the capability of providing leadership, education, research, and system planning.

Level II

Level II trauma centers have an organized trauma response and are also expected to provide initial definitive care, regardless of the severity of injury. The specialty requirements may be fulfilled by on call staff, that are promptly available to the patient. Due to limited resources, Level II centers may have to transfer more complex injuries to a Level I center. Level II centers should also take on responsibility for education and system leadership within their region.

Level III

Level III trauma centers, through an organized trauma response, can provide prompt assessment, resuscitation, stabilization, emergency operations and also arrange for the transfer of the patient to a facility that can provide definitive trauma care. Level III centers should also take on responsibility for education and system leadership within their region.

Level I Trauma Centers

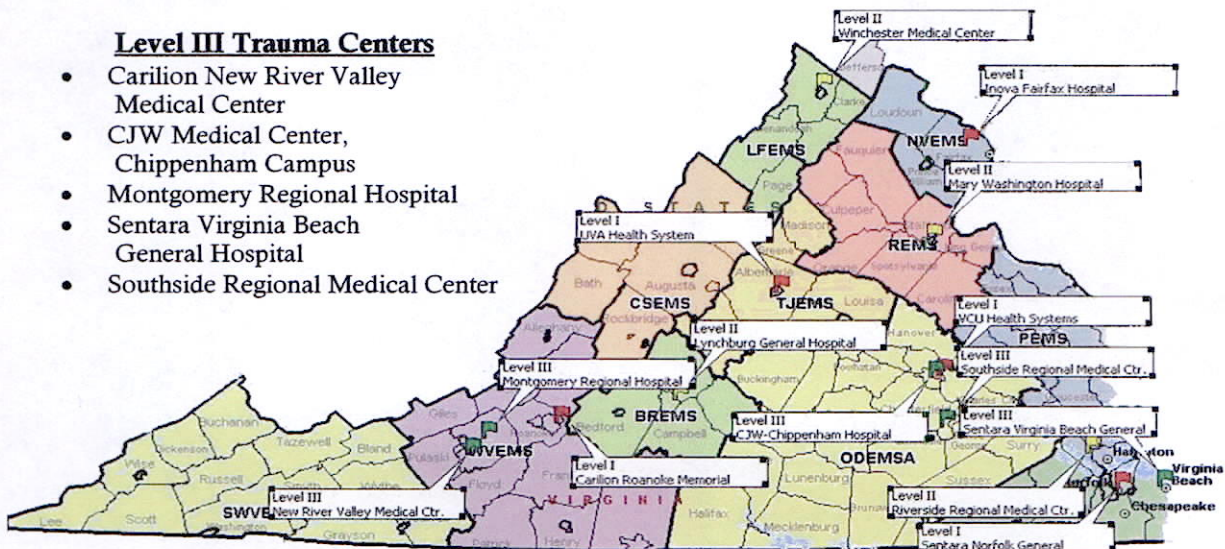
- Carilion Roanoke Memorial Hospital
- Inova Fairfax Hospital
- Sentara Norfolk General Hospital
- UVA Health System
- VCU Health Systems

Level II Trauma Centers

- Lynchburg General Hospital
- Riverside Regional Medical Center
- Winchester Medical Center
- Mary Washington Hospital (*Designated in 9/2008. Not included as a designated Trauma Center in data analyses on the following pages.*)

Level III Trauma Centers

- Carilion New River Valley Medical Center
- CJW Medical Center, Chippenham Campus
- Montgomery Regional Hospital
- Sentara Virginia Beach General Hospital
- Southside Regional Medical Center



Hospitals, Trauma Centers, Burn Centers and Stroke Centers

Hospitals:

Mary Washington Hospital - Fredericksburg, VA

412 bed, acute care hospital facility with a 24-hour physician staffed 50 bed Emergency Department and 14 Operating Room Suites. **Designated as a Level II Trauma Center.**

Mary Washington Freestanding Emergency Department - Spotsylvania, VA

This is an 11 bed freestanding Emergency Department with 24-hour physician staffing.

Culpeper Regional Hospital - Culpeper, VA

This is a 70 bed, acute care hospital with a 24-hour staffed Emergency Department and surgical services.

Fauquier Hospital - Warrenton, VA

This is an 86 bed, acute care hospital with a 24-hour staffed 15 bed Emergency Department and 5 Operating Room Suites.

Stafford Hospital Center - Stafford, VA

This is a 100 bed, acute care hospital facility with 24-hour staffed 15 bed Emergency Department and 4 Operating Room Suites.

Spotsylvania Regional Medical Center - Spotsylvania, VA

This is a 126 bed, acute care hospital facility with a 24-hour Emergency Department and advanced-technology operating rooms.

Other full-service hospitals outside our region that our ambulances transport to include:

Potomac Hospital	-	Northern Virginia
Tappahannock Hospital	-	Tidewater, VA
Henrico Hospital	-	Richmond, VA
Memorial Regional Medical Center	-	Richmond, VA
VCU Medical Center	-	Richmond, VA
St. Mary's Hospital	-	Richmond, VA
UVA Medical Hospital	-	Charlottesville, VA

Trauma Centers:

The Rappahannock EMS Council region currently includes one Level II designated trauma center (Mary Washington Hospital). There are several Level I designated trauma centers that patients from our region are transported to by air or ground. These include:

INOVA Fairfax Hospital	-	Fairfax, VA
Washington Hospital Center	-	Washington, D.C.
UVA Medical Hospital	-	Charlottesville, VA
VCU Medical Center	-	Richmond, VA

Burn Centers:

These facilities should be considered as needed for severe burn patients:

Washington Hospital Center	-	Washington, D.C.
UVA Medical Center	-	Charlottesville, VA
VCU Medical Center	-	Richmond, VA

Stroke Centers:

These facilities should be considered based on time zero and the window of opportunity for treatment of patients exhibiting signs and symptoms of stroke.

Mary Washington Hospital	-	Fredericksburg, VA
UVA Medical Hospital	-	Charlottesville, VA
VCU Medical Center	-	Richmond, VA



EMS STROKE ALERT CHECKLIST

Date: _____

What time did the symptoms start?

(If the patient awoke with stroke symptoms, the time that the PT fell asleep is considered the onset time)

Onset of Symptoms Witnessed By: _____

Witness Contact Number: _____

SYMPTOMS		√ if abnormal	
		Initial	Reassess
Severe Headache with Neuro Deficit			
Difficulty speaking or understanding			
Visual impairment (i.e. loss of vision/double vision)			
Limb weakness or drift			
Loss of sensation on one side of the body			
Sudden onset ataxia(i.e. limb un-coordination/ difficulty walking)			

Does the patient have any of the above abnormal symptoms?

YES / NO

Deficit not likely due to head trauma?

YES / NO

Blood glucose greater than 60?

Blood Glucose Result _____

YES / NO

Time of onset less than 3 hours?

YES / NO

If answer is **YES** to **ALL** of the above questions, **CALL STROKE ALERT** & TRANSPORT TO NEAREST STROKE CENTER

EXAMINATION		√ if abnormal	
		Initial	Reassess
Pre-hospital Stroke Scale	Level of Consciousness (A V P U) (Circle One)		
	Speech (repeat "You can't teach an old dog new tricks")		
	Facial Droop (show teeth or smile)		
	Arm Drift or arm/leg weakness (close eyes and extend arms or leg)		

TPA EXCLUSION CRITERIA (PT may still be a Stroke Alert even if excluded from TPA)

Recent (within 30 days) surgery or biopsy of an organ

YES / NO

Recent (within 30 days) trauma with internal injuries or ulcerative wounds

YES / NO

Recent (within 90 days) head trauma or prior stroke

YES / NO

Any Active or Recent (within 30 days) hemorrhage

YES / NO

Known hereditary or acquired hemorrhagic condition

YES / NO

Terminal illness (such as end stage cancer, end stage HIV, or severe Alzheimer's Disease)

YES / NO

Coma

YES / NO

Seizure occurring concurrently with stroke symptoms

YES / NO

Patient on anticoagulants (Coumadin, Heparin or Lovenox)

YES / NO

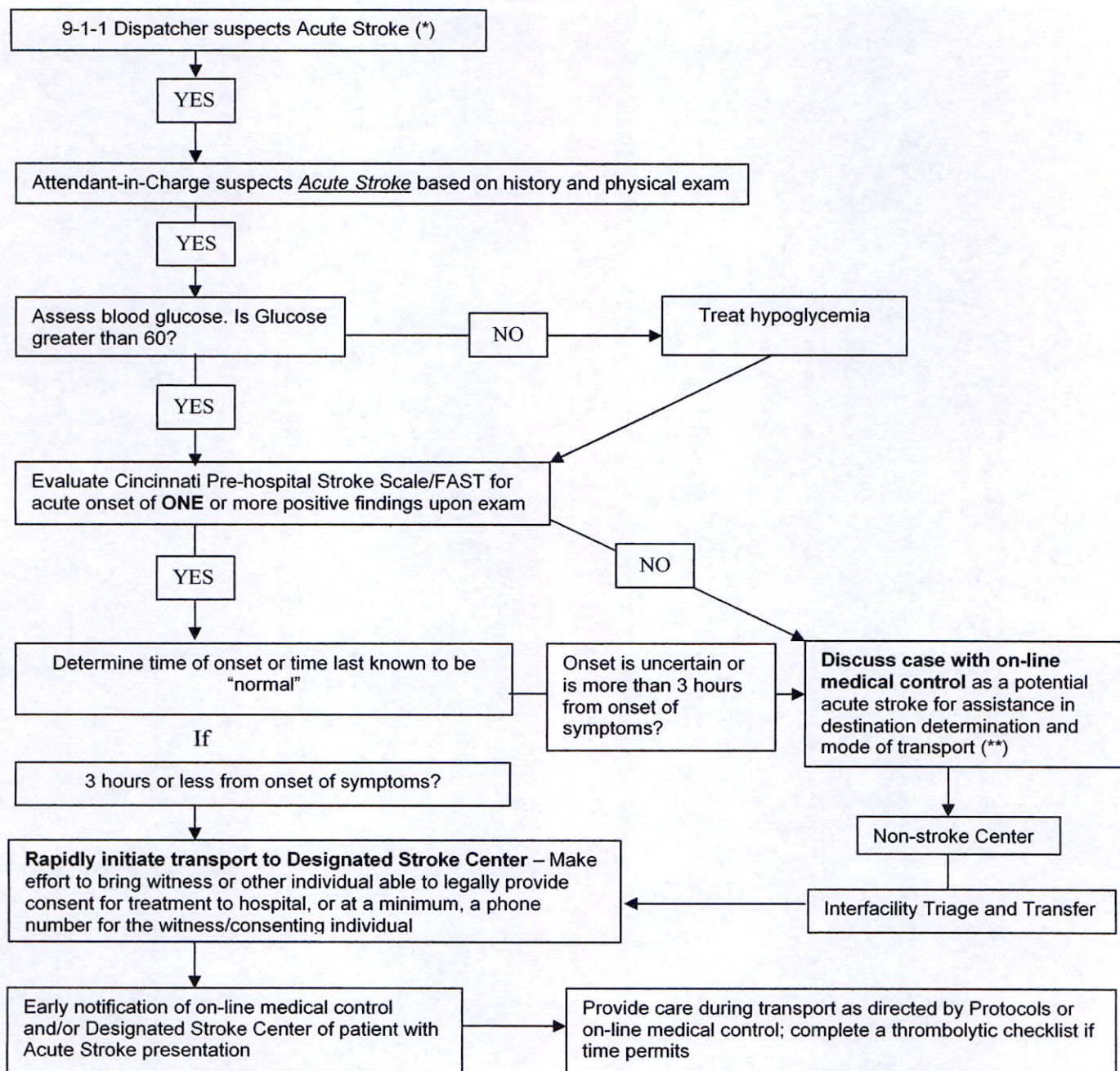
Contact Nearest Primary Stroke Center per Regional Stroke Triage Plan

Patient's Name/Age: _____

EMS Signature: _____

Date/Time: _____

FIELD STROKE TRIAGE DECISION SCHEME



(*) See Appendix A for guidance regarding dispatch protocols / procedures.

(**) If time from symptoms onset is more than 3 hours, discuss case with on-line Medical Control as a potential acute stroke treatment for destination determination (clot removal). 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 Control, consider whether 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).

ACUTE STROKE PATIENT TRANSPORT CONSIDERATIONS

Mode of Transportation: Consideration should be given to hospitals available to the region and the resources they have available to acute stroke patients.

Stroke patients who meet any of the criteria of the Cincinnati Prehospital Stroke Scale/FAST, indicative of an acute stroke, shall be transported to the **closest appropriate certified Stroke Center within a 3-hour time from symptom on-set**; if the certified Stroke Center is within a 30-minute ground transport time.

Stroke patients, not within 30 minutes ground transport time to a certified Stroke Center should be transported to the closest hospital, unless they can be delivered to a certified Stroke Center more rapidly by a HEMS service.

Transport of acute stroke patients, as defined in this plan, by helicopter EMS (HEMS) should:

1. Significantly lessen the time from scene to a certified Stroke Center compared to ground transport.
2. Be utilized to achieve the goal of having acute stroke patients expeditiously transported to a Designated Stroke Center, within three hours of symptom onset; unless consultation with on-line medical control has occurred.
3. Be to non-stroke certified hospitals in very unusual circumstances and following consultation with on-line medical control. In general, if HEMS resource is used, the patient will be transported directly to a certified Stroke Center.

NOTE: Any patient with a compromised airway or impending circulatory collapse must be transported to the closest hospital Emergency Department.

Rapid Transportation: Because stroke is a time-critical event, time is of the essence, and EMS providers should initial **rapid transport** once acute stroke is suspected. Consideration should also be given to pre-hospital resources, including use of helicopter EMS (HEMS), available at the time of the incident, and other conditions such as transport time, road and weather conditions. Use of HEMS can facilitate acute stroke patients reaching certified Stroke Centers in a time frame 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; 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 3-hour window from symptom 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.

I Lateral	aVR	V1 Septal	V4 Anterior
II Inferior	aVL Lateral	V2 Septal	V5 Lateral
III Inferior	aVF Inferior	V3 Anterior	V6 Lateral

Location	STEMI	Reciprocal
Septal	V1, V2	None
Anterior	V3, V4	None
Anteroseptal	V1, V2, V3, V4	None
Lateral	I, aVL, V5, V6	II, III, aVF
Anterolateral	I, aVL, V3, V4, V5, V6	II, III, aVF
Inferior	II, III, aVF	I, aVL
Posterior	None	V1, V2, V3, V4

Standard Medication Infusions

Amiodarone

SVT/VT with a Pulse:

Mix 150 mg in 50 ml of D5W

150 mg over 8-10 minutes

Using a macrodrip (10 gtts/ml): Run at 60-75 gtts/min

Post arrest infusion:

Mix 100 mg in 100 ml

1 mg/min

Using a microdrip (60 gtts/ml): Run at 60 gtts/min

Using a macrodrip set (10 gtts/ml): Run at 10 gtts/min

Pediatric:

Mix desired dose (5 mg/kg) in 50 ml of D5W

Using a microdrip (60 gtts/min): Run at 60 gtts/min

Epinephrine

Mix 1 mg/250 ml D5W

Concentration = 4 mcg/ml

Dose: 2-10 mcg/min

Dopamine

Mix 400 mg/250 ml

Mix 800 mg/500 ml

Concentration 1600mcg/ml

Dose: 2-10 mcg/kg/min

Lidocaine

Mix 1 gm/250 ml of D5W

Concentration = 4 mg/ml

Dosage: 1-4 mg/min

Magnesium Sulfate

Eclampsia (seizures)

Mix 4 gm/50 ml of D5W

Concentration = 80 mg/ml

Dosage: 4gm over 5-10 minutes

Using macrodrip (10 gtts/ml): Run at 58-116 gtts/min

Torsades de Pointes/Polymorphic V-Tach

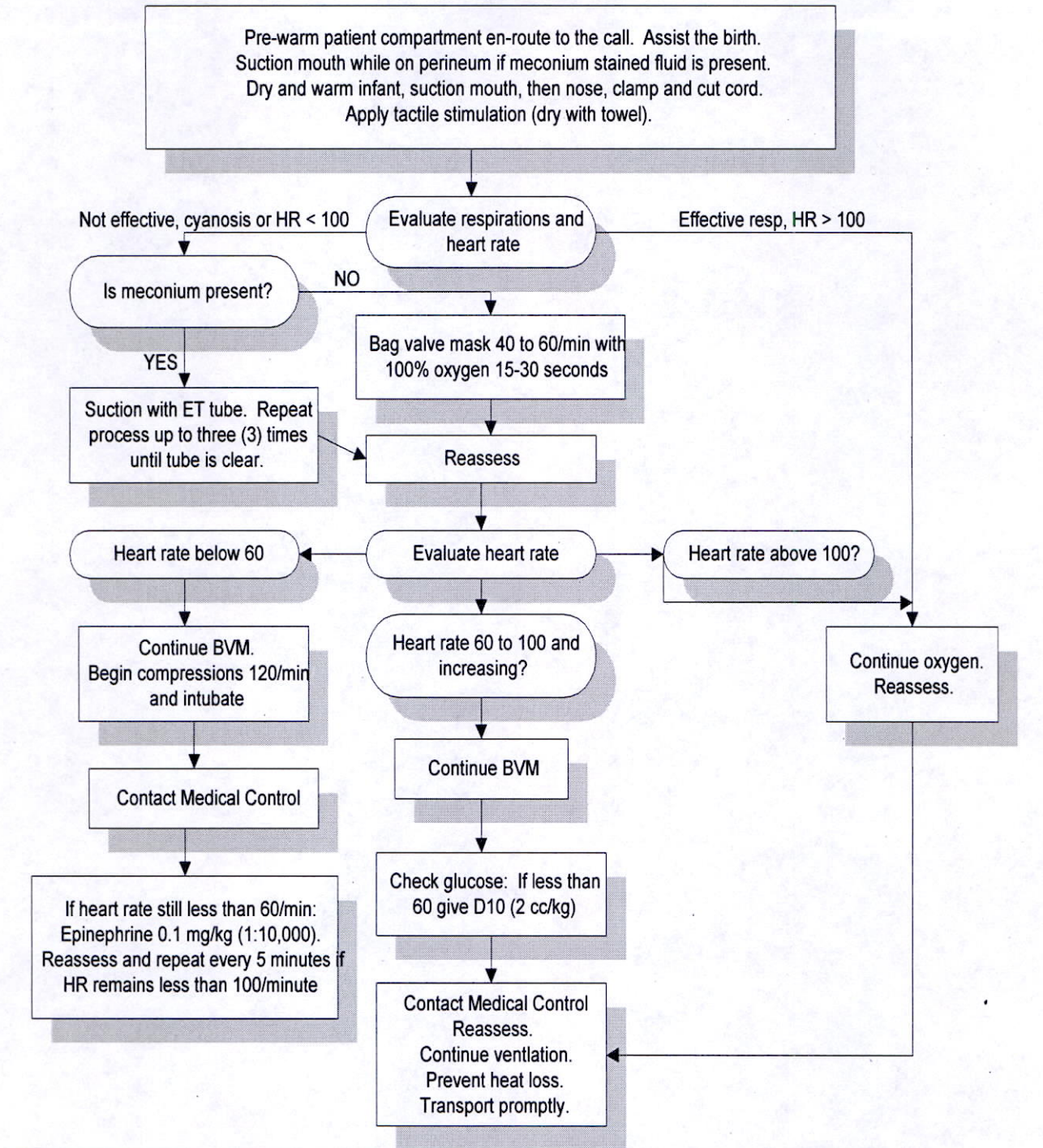
Mix 1-2 gm in 50 ml of D5W

Concentration = 20-40 mg/ml

Dosage 1-2 gm over 1-2 minutes

Using a macrodrip (10 gtts/ml): Run at 270 gtts/min

Newborn Resuscitation Algorithm



Sign	0	1	2
A = appearance/color	Blue or pale	Only body pink	Completely pink
P = pulse	Absent	< 100	> 100
G = Grimace / Reflex	No response	Some motion / cry	Vigorous crying
A = activity/tone	Flaccid / limp	Some flexion	Good flexion
R = respiratory effort	Absent	Slow / irregular	Strong / regular

APGAR should be checked at 1 minute and 5 minutes of age. APGAR of 3 or less requires significant resuscitation and should have a significant improvement with the next check.

Position: First Unit On-Scene

Mission/Tasks: First unit on scene gives visual size-up, assumes and announces command, and confirms incident location, then performs the 5 S's:

SAFETY assessment. Assess the scene observing for:

- ☐ Electrical hazards.
- ☐ Flammable liquids.
- ☐ Hazardous Materials
- ☐ Other life threatening situations.
- ☐ Be aware of the potential for secondary explosive devices.

SIZE UP the scene: How big and how bad is it? Survey incident scene for:

- ☐ Type and/or cause of incident.
- ☐ Approximate number of patients.
- ☐ Severity level of injuries (either Major or Minor).
- ☐ Area involved, including problems with scene access.

SEND information:

- ☐ **Contact dispatch with your size-up information and declare a Multiple or Mass Casualty Incident.**
- ☐ **Request additional resources.**
- ☐ **Notify the closest hospital / emergency department of the incident.**

SETUP the scene for management of the casualties:

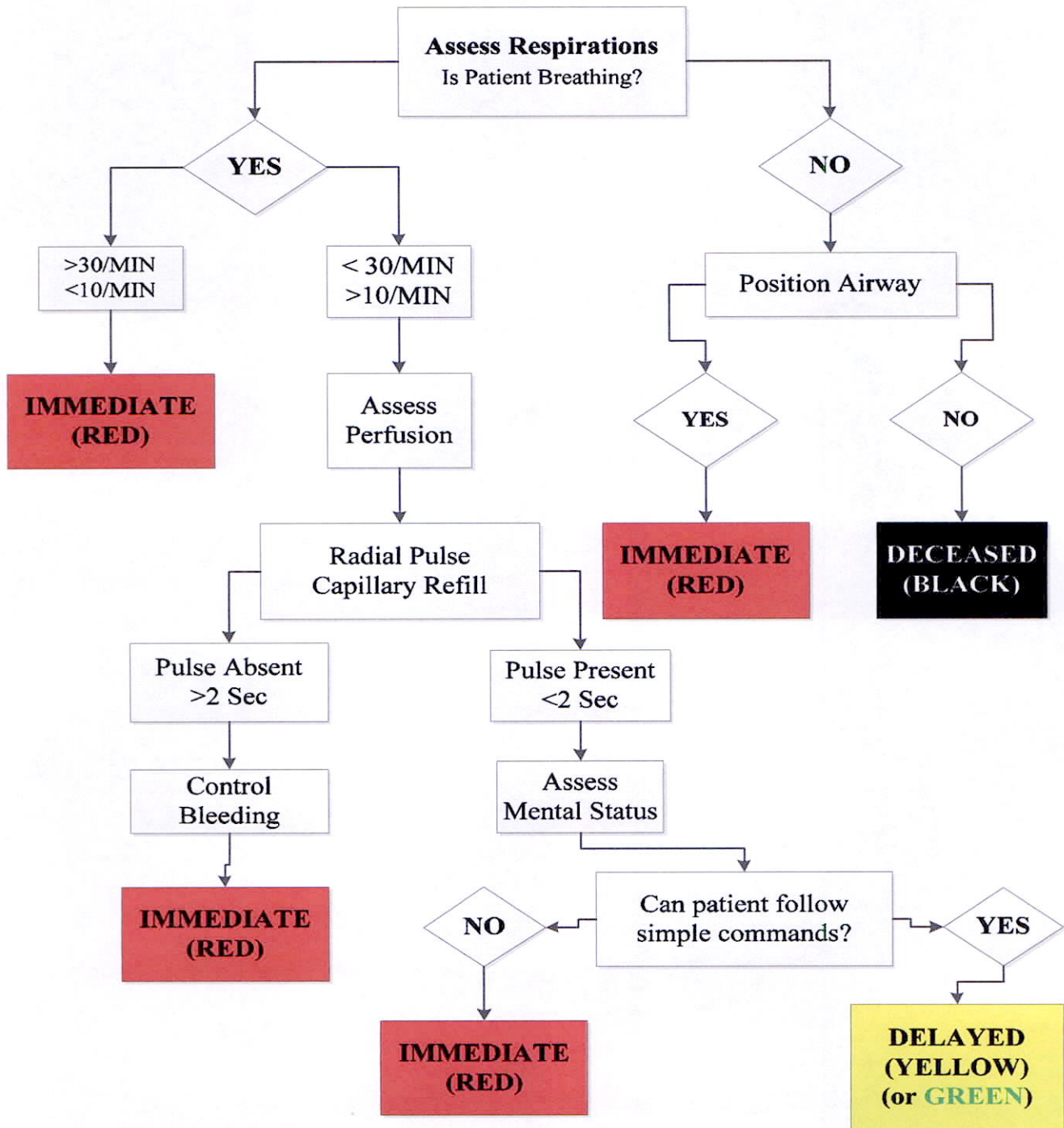
- ☐ Establish staging.
- ☐ Identify access and egress routes.
- ☐ Identify adequate work areas for Triage, Treatment, and Transportation.

START (Simple Triage And Rapid Treatment) and JumpSTART (for pediatric patients).

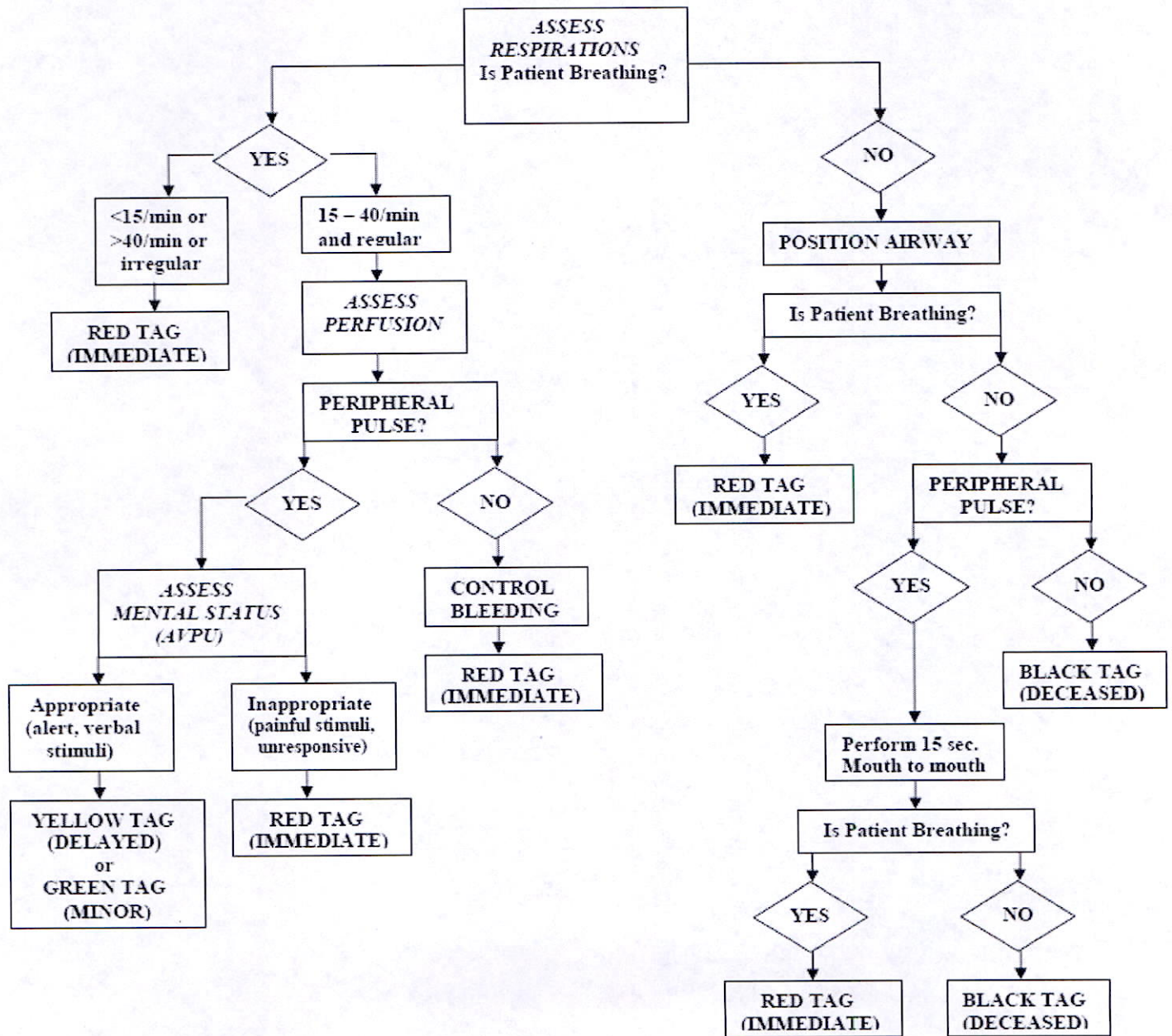
- ☐ Begin where you are.
- ☐ Ask anyone who can walk to move to a designated area.
- ☐ Use surveyor's tape to mark patients.
- ☐ Move quickly from patient to patient.
- ☐ Maintain patient count.
- ☐ Provide only minimal treatment.
- ☐ Keep moving!
- ☐ **Remember...** Establish COMMAND, SAFETY, SURVEY, SEND, SET-UP AND START/JumpSTART

S.T.A.R.T. Simple Triage and Rapid Treatment

Remember **RPM** (Respirations, Perfusion, Mental Status)

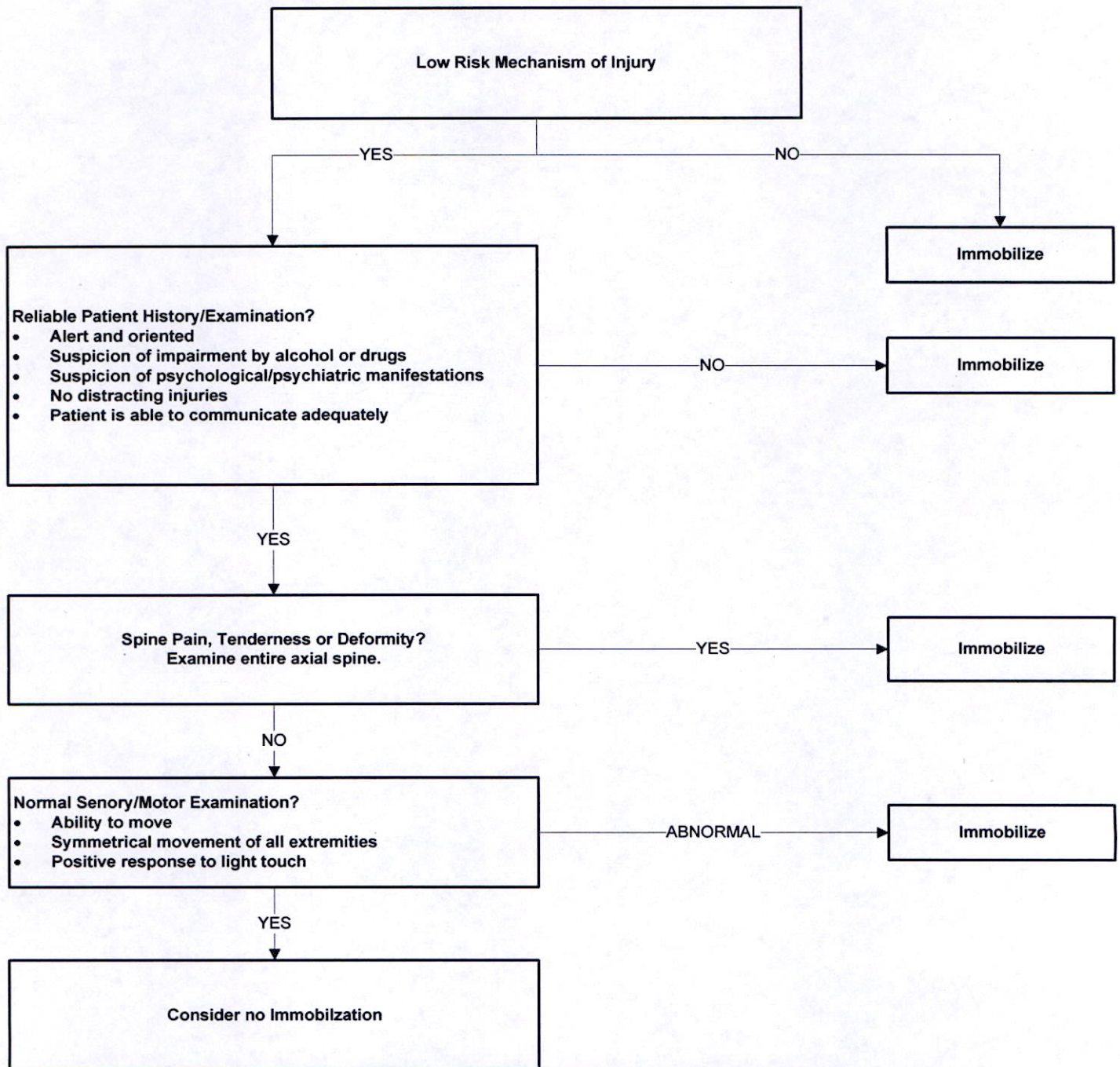


JumpStart Pediatric Triage
JUMPSTART
PATIENTS AGED 1 – 8 YEARS



Spinal Immobilization Clearance

For patients 18 Years and Older

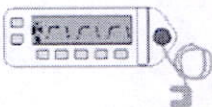


CAPNOGRAPHY


Arterial CO₂ (PaCO₂)
Arterial Blood Gas Sample (ABG)

Normal PaCO₂ Values
35 - 45 mmHg
4.7 - 6.0 kPa
4.6 - 5.9%

ETCO₂
from Capnograph



Normal ETCO₂ Values
30 - 43 mmHg
4.0 - 5.7 kPa
4.0 - 5.6%



Capnography

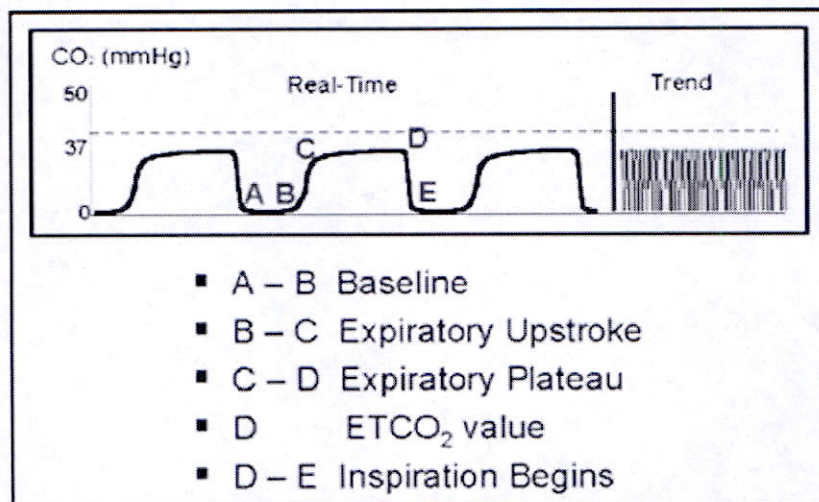
- Measurement and display of both ETCO₂ value and capnogram (CO₂ waveform)
- Measured by a capnograph

ETCO₂ **RR**

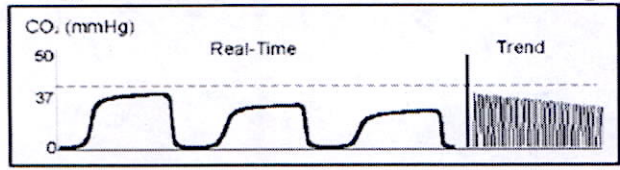
34 **15**

Capnometry

- Measurement and display of ETCO₂ value (no waveform)
- Measured by a capnometer



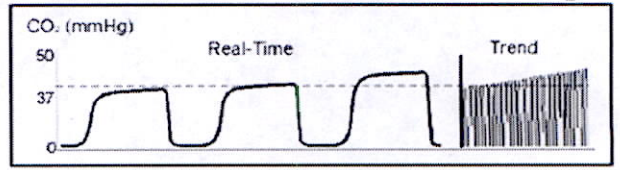
Hyperventilation (Decrease in ETCO₂)



Possible Causes:

- Increase in respiratory rate
- Increase in tidal volume
- Decrease in metabolic rate
- Fall in body temperature

Hypoventilation (Increase in ETCO₂)



Possible Causes:

- Decrease in respiratory rate
- Decrease in tidal volume
- Increase in metabolic rate
- Rapid rise in body temperature (hyperthermia)

Executive Summary

The Rappahannock EMS Council Inc. recognizing the complexity of the region's variability in demographics and geography has adopted the Virginia Trauma Triage Plan as template for the REMS Regional Trauma Triage Plan. REMS has developed, monitored, and revised a regionalized trauma triage plan. Through regionalized Performance Improvement Committees, all issues of trauma triage, trauma care on scene, in transit and within hospitals can be addressed. 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 Trauma Triage Plan. Emergency Medical Services (EMS) Agencies are required by EMS Regulation 12 VAC 5-31-390 to follow triage plans. This plan is to include pre-hospital and inter-hospital patient transfers.

The *Code* states the State Trauma Triage Plan shall incorporate, but not be limited to, the plans prepared by the regional emergency medical services councils. The *Code* further directs the collection of data through The EMS Registry, whether paper or electronic, and Statewide Trauma Registry and protects its ability to be used by Trauma Committees that report to the Governors EMS Advisory Board. In accordance with § 32.1-116.2, any such data or information in the possession of or transmitted to the Commissioner (OEMS as the designee), the EMS Advisory Board, or any committee acting on behalf of the EMS Advisory Board, any hospital or pre-hospital care provider, or any other person shall be privileged and shall not be disclosed or obtained by legal discovery proceedings, unless a circuit court, after a hearing and for good cause shown arising from extraordinary circumstances, orders disclosure of such data.

The Virginia Trauma System is an inclusive system, but all hospitals participate in the Trauma Triage Plan. Establishing a comprehensive statewide emergency medical care system, incorporating healthcare facilities, transportation, human resources, communications, and other components as integral parts of a unified system that will serve to improve the delivery of emergency medical services and thereby decrease morbidity, hospitalization, disability, and mortality.

These goals can be achieved by reducing the time acutely injured patients are identified and assisted in reaching definitive high quality trauma care. A coordinated effort between ground and air pre-hospital resources, as well as hospitals, whether trauma designated or not, can lead to getting the right patient to the right hospital, in the shortest amount of time possible, while maximizing resources.

The REMS Regional Trauma Triage Plan provides a uniform set of proposed criteria for pre-hospital and Inter-hospital triage and transport of trauma patients. The development and monitoring of these criteria is performed by the REMS Regional Performance Improvement (PI) Committee.

These improvements can be accomplished by conducting, promoting, and encouraging programs of education and training designed to upgrade the knowledge, skills, and abilities of healthcare providers involved in trauma care. These criteria do not supersede applicable laws such as EMTALA and HIPAA.

Rappahannock Emergency Medical Services Council Hospital Diversion Policy for Emergency Patients

- A. PURPOSE:** To maintain an orderly, systematic and appropriate distribution of emergency patients transported by ambulances during a single or multiple hospital diversion situation within the Rappahannock EMS Council region.
- B. SCOPE:** This policy pertains to all 6 acute care hospitals and all licensed EMS agencies providing ground ambulance transportation as defined in Virginia Department of Health regulations.

C. POLICY ELEMENTS:

- 1. INDICATIONS:** Acute care hospitals (those with emergency departments) occasionally become overwhelmed with patients, exceeding the capacity for the medical staff to adequately treat and monitor those patients. To alleviate this temporary situation, a receiving hospital – after completing an established process, may declare a diversion of acute patients, whereby ambulances are diverted to other area hospitals.

Ambulance diversion should occur only after the hospital has exhausted internal mechanisms to relieve the situation. When a hospital declares a diversion online medical control will recommend to the EMS ambulance crew to transport the patient to another hospital. A representative of the hospital will contact the 911 Center for the EMS system and request a period of diversion.

- 2. CONTRAINDICATIONS:** Patients with airway obstruction, uncontrollable airway, uncontrollable bleeding, who are in extremis, or with CPR in progress should immediately be taken to the closest appropriate hospital, without regard to the hospital's diversion status.
- 3. DIVERSION OVERRULE:** Pre-hospital EMS providers may overrule diversion if a patient is in extremis, or significant weather/traffic delays, mechanical problems, etc. An EMS provider who believes an acute decompensation is likely to occur if the patient is diverted to a more distant hospital *always* has the option to take that patient to the closest Emergency Department regardless of the diversion status.

4. **CONSIDERATIONS:** When there are questions about hospital destination in and out of hospital situations, the pre-hospital attendant-in-charge should contact the local hospital as early as possible by radio or phone for destination guidance.

CATEGORIES OF HOSPITAL STATUS	
Open	When a hospital has a full capacity for receiving its usual patient load.
Special Diversion	When a hospital is unable to handle certain types of patient.
Closed to Ambulances	When the hospital has exhausted all resources to appropriately treat additional patients. The Emergency Department is closed to all EMS traffic except those noted in the Contraindications.
Force Open	The hospital Emergency Department would be on diversion, but is open because of multiple hospital ED closures in the region.
Out of Service	Critical or catastrophic circumstances result in operational shutdown. Hospital cannot receive any new patients by EMS or other means. Hospital cannot be placed in Forced Open category.

HOSPITAL SECTOR	
Culpeper Sector	Culpeper Regional Hospital
Fauquier Sector	Fauquier Hospital
Fredericksburg Sector	Mary Washington Hospital (Level II Trauma Center)
Spotsylvania Sector	Mary Washington Free Standing ED Spotsylvania Regional Medical Center
Stafford Sector	Stafford Hospital

Approved by Board of Directors: 04/20/2011

Revised 02/18/11