PRE-HOSPITAL PATIENT CARE PROTOCOL

MEDICAL PROTOCOLS

Section II

Rappahannock EMS Council
250 Executive Center Parkway
Fredericksburg, VA 22401

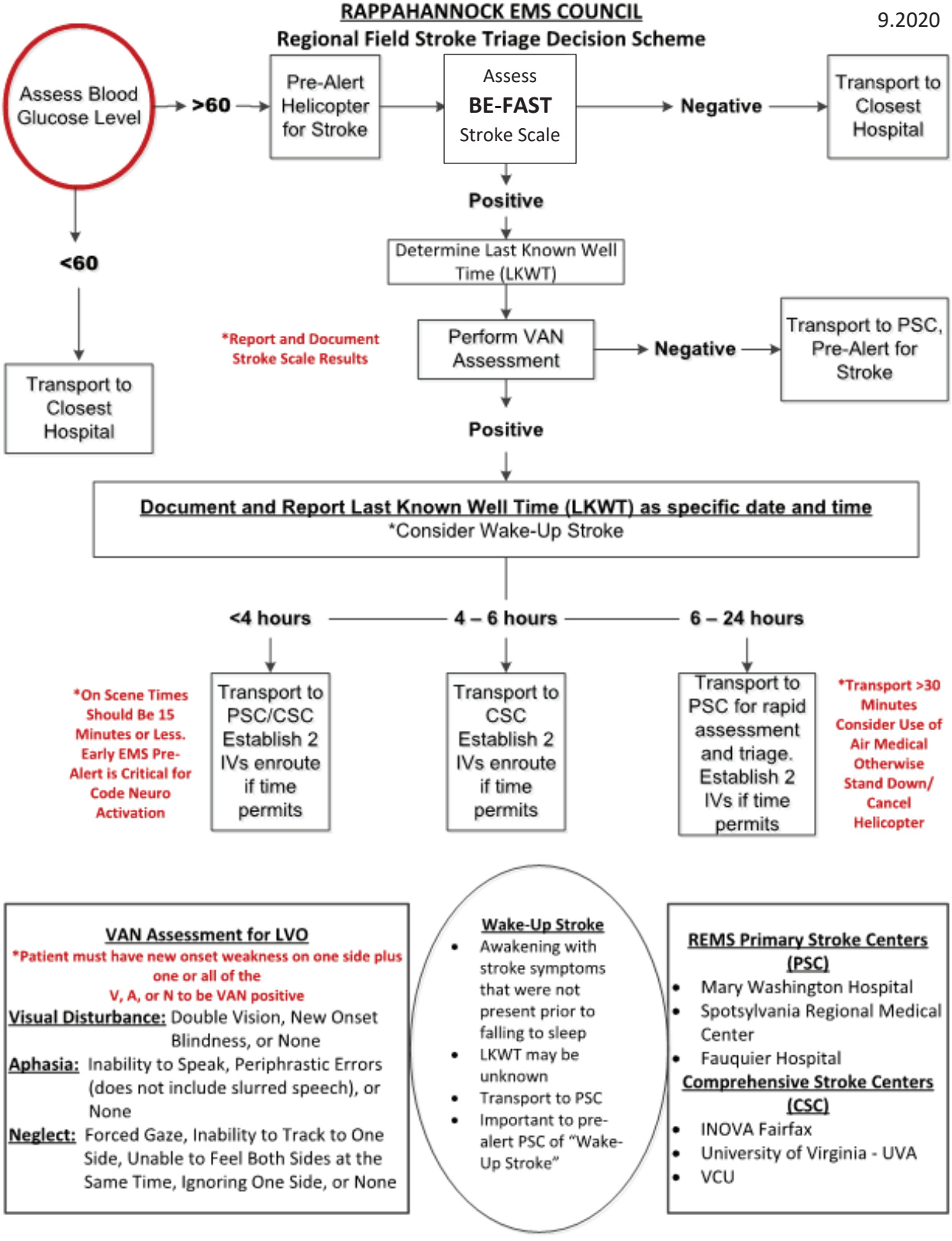
BASIC LIFE SUPPORT/ADVANCED LIFE SUPPORT
ADMINISTRATIVE PATIENT CARE PROTOCOL

BOARD APPROVED AUGUST, 2022

9.2020

RAPPAHANNOCK EMS COUNCIL

Regional Field Stroke Triage Decision Scheme



VAN Assessment for LVO

*Patient must have new onset weakness on one side plus one or all of the V, A, or N to be VAN positive

Visual Disturbance: Double Vision, New Onset Blindness, or None

Aphasia: Inability to Speak, Periphrastic Errors (does not include slurred speech), or None

Neglect: Forced Gaze, Inability to Track to One Side, Unable to Feel Both Sides at the Same Time, Ignoring One Side, or None

Wake-Up Stroke

- Awakening with stroke symptoms that were not present prior to falling to sleep
- LKWT may be unknown
- Transport to PSC
- Important to pre-alert PSC of "Wake-Up Stroke"

REMS Primary Stroke Centers (PSC)

- Mary Washington Hospital
- Spotsylvania Regional Medical Center
- Fauquier Hospital

Comprehensive Stroke Centers (CSC)

- INOVA Fairfax
- University of Virginia - UVA
- VCU

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PATIENT CARE PROTOCOLS

Universal Patient Care/Initial Patient Contact Protocol

Criteria: Should be used for any patient contact

EMR

Establish Scene Safety
Utilize Appropriate PPE
Request Additional Resources, as needed
Consider need for C-Spine, if trauma patient
If patient is in Cardiac Arrest, go to Cardiac Arrest algorithms

B

Perform Primary and Secondary assessments
Obtain vital signs (HR, RR, BP, Temp, and pain scale)
Position/open airway manually, and utilize Oral/Nasal airway as necessary.
Administer Oxygen as needed to assure SpO2 94-99%. Assess for and treat for shock (body positioning and warming).

GO TO APPROPRIATE PROTOCOL BASED ON ASSESSMENT FINDINGS

B

Initial Procedures May Include:
Monitor oxygen Saturation (goal is 94-99%)
Monitor blood pressure (goal is >90 SBP, MAP >60)
Check blood sugar
Obtain 12 lead EKG
Monitor capnography (goal is 35-45 mmHg)

A

Initial Procedures May Include:
Provide IV access

I

Initial Procedures May Include:
Perform 4/12 lead interpretation

Notes:

1. Decontaminate and remove patient clothes if they have been exposed to any dangerous or noxious substances
2. EMS reports must be completed in compliance with OEMS Rules and Regulations
3. Timing of transport should be based on patient's clinical condition
4. All patient care must be appropriate for your level of training and as authorized by your OMD
5. It may be necessary to reference several protocols while treating a patient. Refer to the appropriate protocols and provide the required interventions as necessary
6. Airway management, oxygen administration, IV procedures, and cardiac monitoring should be performed as indicated based on the results of the patient assessment or protocols
7. EMT's may conduct a 12 Lead EKG and transmit to the Emergency Department, but may not interpret the rhythm

Revised: 07/22/2022

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Cardiac Arrest- Unknown Rhythm

Criteria: 1: Any medical cardiac arrest or near-arrest patient, including cardiac dysrhythmias such as tachycardias, bradycardias, and ineffective cardiac rhythms (VF, PEA, IVR, etc.). Treat with the appropriate algorithm within your scope of practice
2. In all cases, attempt to determine cause of the problem and resolve or treat appropriately

B	Recommend use of automated chest compression device and CPR feedback mechanisms. Movement and/or transport of the patient while performing manual CPR is not recommended. Consider elevating patient's head 30 degrees if using mechanical CPR device
	Insert BIAD "Rescue Airway" such as King, Combitube, iGel, and ventilate at rate of NO FASTER THAN 1 every 6 seconds for adults and 1 every 2-3 seconds for pediatrics
A	Evaluate for and treat any causes of cardiac arrest or any other special circumstances in Special Circumstances Resuscitation Protocol
I	Upon achieving ROSC, if the patient is 13 years or older, consider placing an endotracheal tube. DO NOT STOP COMPRESSIONS or STOP RESUSCITATION to place endotracheal tube If patient had pVT or VF during their cardiac arrest and are having ventricular ectopy in ROSC, begin antiarrhythmic infusion - either lidocaine loading dose 1-1.5 mg/kg (max dose 100 mg), followed by maintenance infusion of 1-4 mg/min or 30-50 mcg/kg/min, or Amiodarone 150 mg over 10 minutes
P	Upon achieving ROSC, if the patient is 12 years or under, consider placing an endotracheal tube.

Medication Summary:

Amiodarone: 150 mg over 10 minutes
Lidocaine: 1-1.5 mg/kg loading dose (max dose 100 mg), 1-4 mg/min or 30-50 mcg/kg/min maintenance dose

Notes:

1. Patients that have ROSC should be stabilized to ensure optimal patient outcome. Recommendation is that the patient have 10 minutes of spontaneous circulation (see ROSC algorithm) PRIOR to transporting the patient
2. Immediately return to chest compressions after any rhythm or pulse check, pauses to deliver a shock should last no more than 5 seconds; have defibrillator charged and ready to go prior to stopping compressions
3. ACLS/PALS treatment algorithms should be utilized - see enclosed references. ROSC algorithm is based on adult patient, adjust for pediatric ROSC and use weight-based dosing and age-appropriate dosing. Pediatric patient is one with no signs of puberty.
4. If appropriate, contact medical control for Code Grey after potential causes have been corrected and patient remains unresponsive to therapy
5. Consider using lower end of dosing range or halving the dosage of medications in patients with renal failure, hepatic failure, and/or patients >70 years of age
6. Depth, rate of compressions and ventilation rate per current ECC guidelines

Created: 05/20/2009 **Revised: 07/22/2022**

Medical – Cardiac Arrest: Special Resuscitation Orders

Criteria: Patients found in cardiac arrest, from a possible cause not covered by standard ACLS/PALS algorithms

I

If patient is found in cardiac arrest with one of these causes suspected, use appropriate ACLS/PALS algorithm while considering:

Electrolyte abnormalities:

Hyperkalemia: Administer **Calcium** 1 g (*pediatric dose 20 mg/kg, max dose 1 g*) and **Sodium Bicarbonate** 50-100 mEq, (*pediatric dose 1-2 mEq/kg to max dose 100 mEq*) through separate IV lines

Hypomagnesia (Torsades)**:** Administer **Magnesium** 1-2 g (*pediatric dose 25-50 mg/kg, max dose 2 g)*

Toxins:

Cyanide Poisoning**:** Mix **Hydroxocobalamin** according to manufacturer's recommendations. Administer 5 g, (*pediatric dose 70 mg/kg, max dose 5 g*) repeat once if patient does not improve after completion

Tricyclic Antidepressant OD**:** Administer **Sodium Bicarbonate** 50-100 mEq (*pediatric dose 1-2 mEq/kg, max dose 100 mEq*)

Medication Summary:

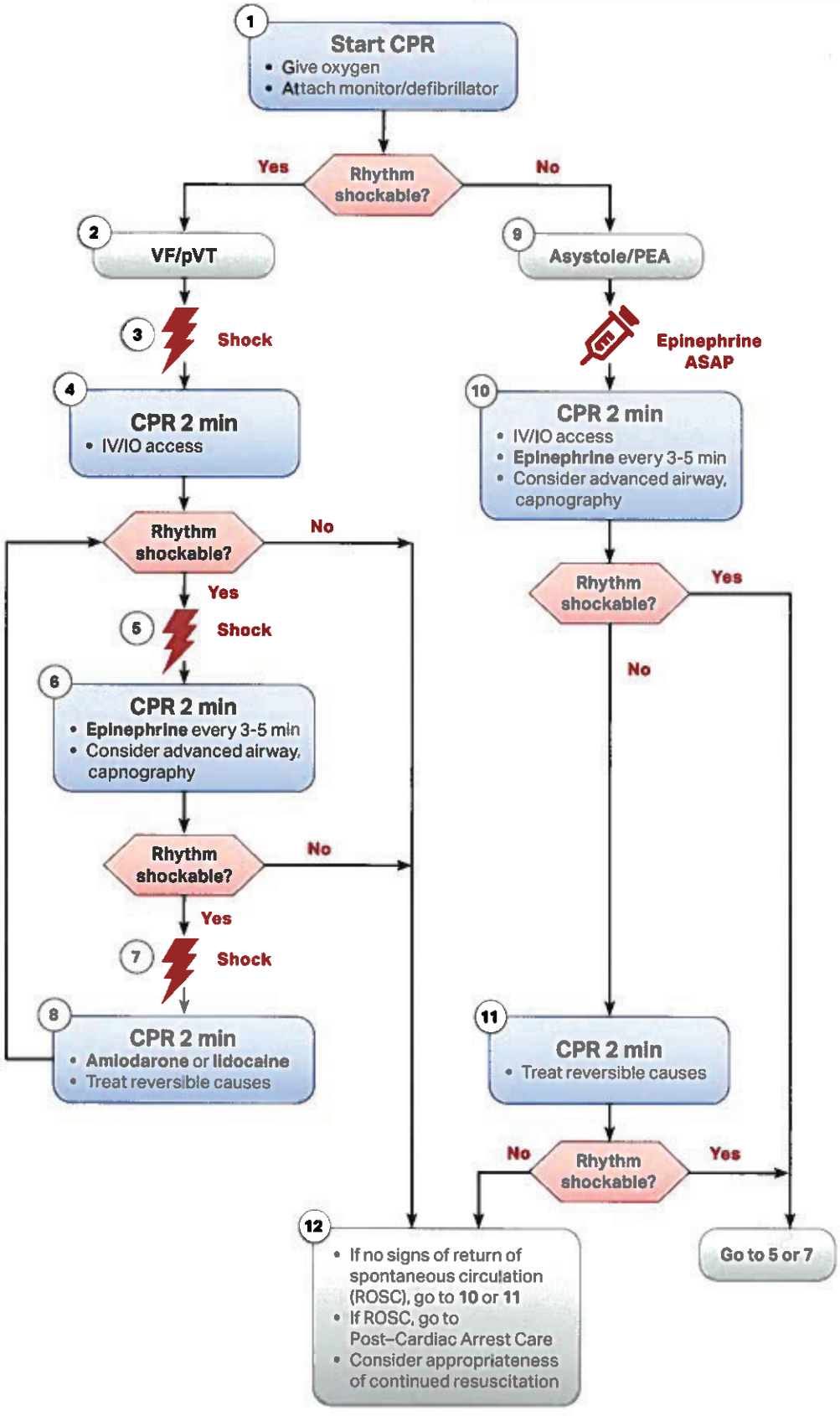
Calcium (Calcium Chloride): 1 g (*pediatric dose 20 mg/kg, max dose 1 g*)
Hydroxocobalamin (Cyanokit): 5 g Repeat once (if needed) (*pediatric dose 70 mg/kg, max dose 5 g*)
Magnesium Sulfate: 1-2 g (*pediatric dose 25-50 mg/kg, max dose 2 g)*
Sodium Bicarbonate: 50-100 mEq (*pediatric dose 1-2 mEq/kg to max dose 100 mEq*)

Notes:
1. Hyperkalemia – consider in patients with dialysis, crush syndrome, profound dehydration. Medications should be given as slow IVP
2. Hypomagnesia – consider with overuse of diuretics, chronic alcoholism/malnutrition, renal failure. May present with Torsades de Pointes. Medications should be given as slow IVP
3. Cyanide poisoning – consider with exposure to combustion in enclosed space (house fire, suicide attempt); administer Cyanokit over 15 minutes

Adult Cardiac Arrest Algorithm

American Heart Association.

Advanced Cardiovascular Life Support



CPR Quality

- Push hard (at least 2 inches [5 cm]) and fast (100-120/min) and allow complete chest recoil.
- Minimize interruptions in compressions.
- Avoid excessive ventilation.
- Change compressor every 2 minutes, or sooner if fatigued.
- If no advanced airway, 30:2 compression-ventilation ratio.
- Quantitative waveform capnography
  - If P_{ETCO_2} is low or decreasing, reassess CPR quality.

Shock Energy for Defibrillation

- **Biphasic:** Manufacturer recommendation (eg, initial dose of 120-200 J); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- **Monophasic:** 360 J

Drug Therapy

- **Epinephrine IV/IO dose:** 1 mg every 3-5 minutes
- **Amiodarone IV/IO dose:** First dose: 300 mg bolus. Second dose: 150 mg.
  or
  Lidocaine IV/IO dose: First dose: 1-1.5 mg/kg. Second dose: 0.5-0.75 mg/kg.

Advanced Airway

- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions

Return of Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Abrupt sustained increase in P_{ETCO_2} (typically ≥40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

Reversible Causes

- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-/hyperkalemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary
- Thrombosis, coronary

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Pediatric Cardiac Arrest Algorithm

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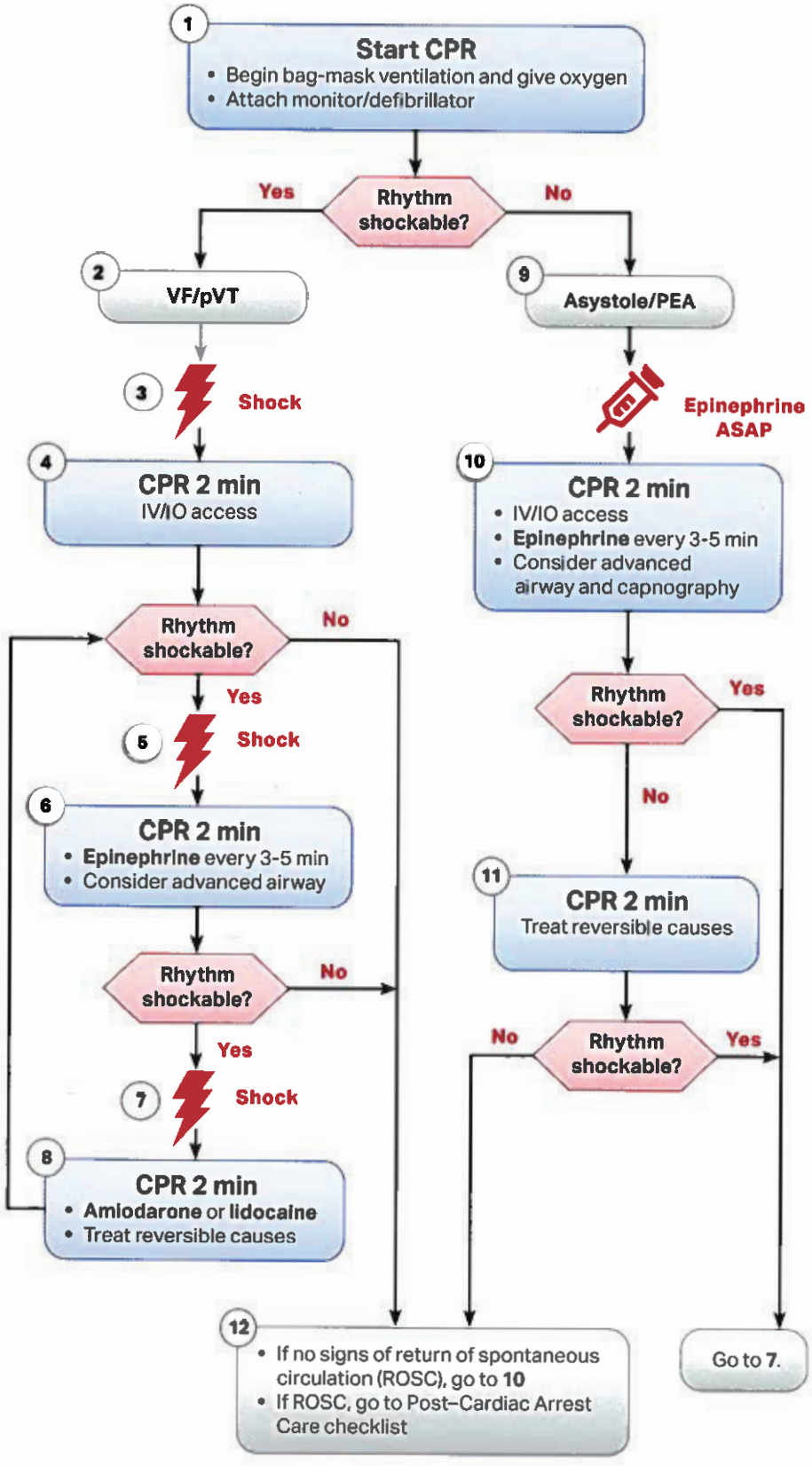
Pediatric Advanced Life Support



CPR Quality

- Push hard (≥⅓ of anteroposterior diameter of chest) and fast (100-120/min) and allow complete chest recoil
- Minimize interruptions in compressions
- Change compressor every 2 minutes, or sooner if fatigued
- If no advanced airway, 15:2 compression-ventilation ratio
- If advanced airway, provide continuous compressions and give a breath every 2-3 seconds

Shock Energy for Defibrillation

- First shock 2 J/kg
- Second shock 4 J/kg
- Subsequent shocks ≥4 J/kg, maximum 10 J/kg or adult dose

Drug Therapy

- **Epinephrine IV/IO dose:** 0.01 mg/kg (0.1 mL/kg of the 0.1 mg/mL concentration). Max dose 1 mg. Repeat every 3-5 minutes. If no IV/IO access, may give endotracheal dose: 0.1 mg/kg (0.1 mL/kg of the 1 mg/mL concentration).
- **Amiodarone IV/IO dose:** 5 mg/kg bolus during cardiac arrest. May repeat up to 3 total doses for refractory VF/pulseless VT
  or
  Lidocaine IV/IO dose: Initial: 1 mg/kg loading dose

Advanced Airway

- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement

Reversible Causes

- **H**ypovolemia
- **H**ypoxia
- **H**ydrogen ion (acidosis)
- **H**ypoglycemia
- **H**ypo-/hyperkalemia
- **H**ypothermia
- **T**ension pneumothorax
- **T**amponade, cardiac
- **T**oxins
- **T**hrombosis, pulmonary
- **T**hrombosis, coronary

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Adult Post–Cardiac Arrest Care Algorithm

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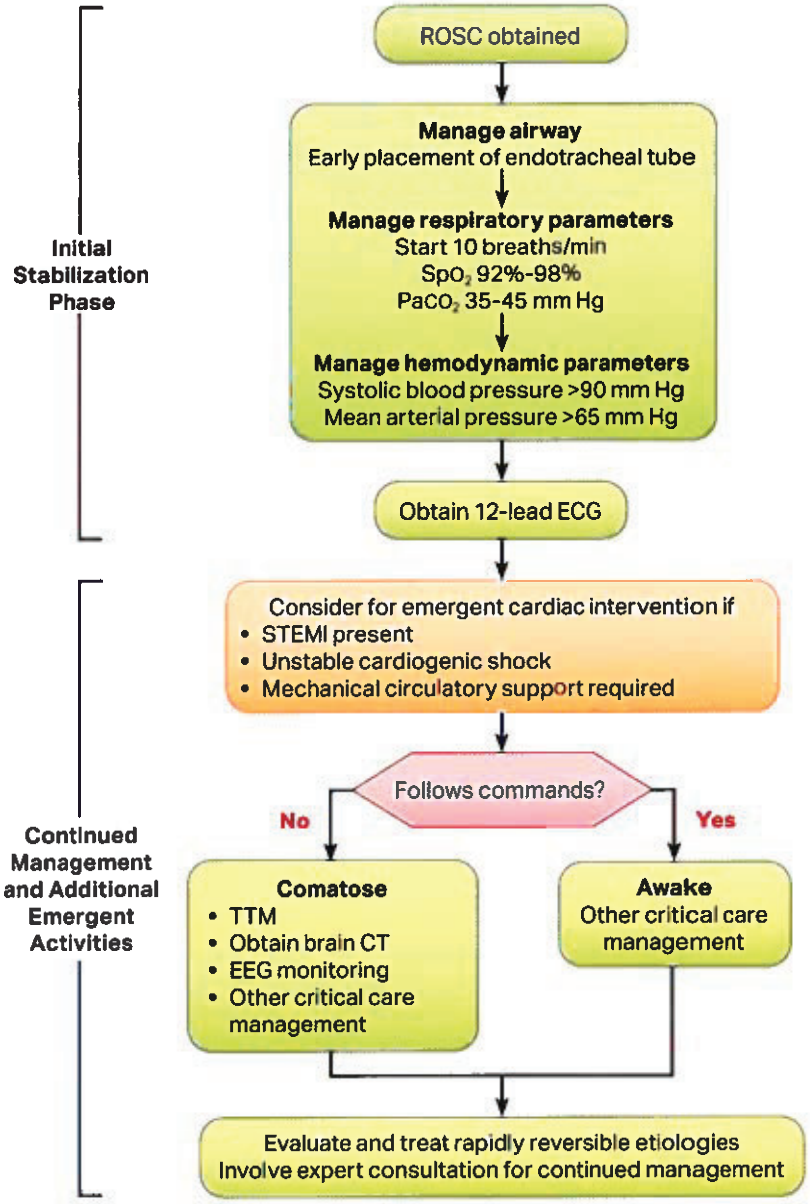

Initial Stabilization Phase

Resuscitation is ongoing during the post-ROSC phase, and many of these activities can occur concurrently. However, if prioritization is necessary, follow these steps:

- Airway management: Waveform capnography or capnometry to confirm and monitor endotracheal tube placement
- Manage respiratory parameters: Titrate FIO_2 for SpO_2 92%-98%; start at 10 breaths/min; titrate to $PaCO_2$ of 35-45 mm Hg
- Manage hemodynamic parameters: Administer crystalloid and/or vasopressor or inotrope for goal systolic blood pressure >90 mm Hg or mean arterial pressure >65 mm Hg

Continued Management and Additional Emergent Activities

These evaluations should be done concurrently so that decisions on targeted temperature management (TTM) receive high priority as cardiac interventions.

- Emergent cardiac intervention: Early evaluation of 12-lead electrocardiogram (ECG); consider hemodynamics for decision on cardiac intervention
- TTM: If patient is not following commands, start TTM as soon as possible; begin at 32-36°C for 24 hours by using a cooling device with feedback loop
- Other critical care management
  - Continuously monitor core temperature (esophageal, rectal, bladder)
  - Maintain normoxia, normocapnia, euglycemia
  - Provide continuous or intermittent electroencephalogram (EEG) monitoring
  - Provide lung-protective ventilation

H's and T's

Hypovolemia
Hypoxia
Hydrogen ion (acidosis)
Hypokalemia/**h**yperkalemia
Hypothermia
Tension pneumothorax
Tamponade, cardiac
Toxins
Thrombosis, pulmonary
Thrombosis, coronary

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Adult Bradycardia Algorithm

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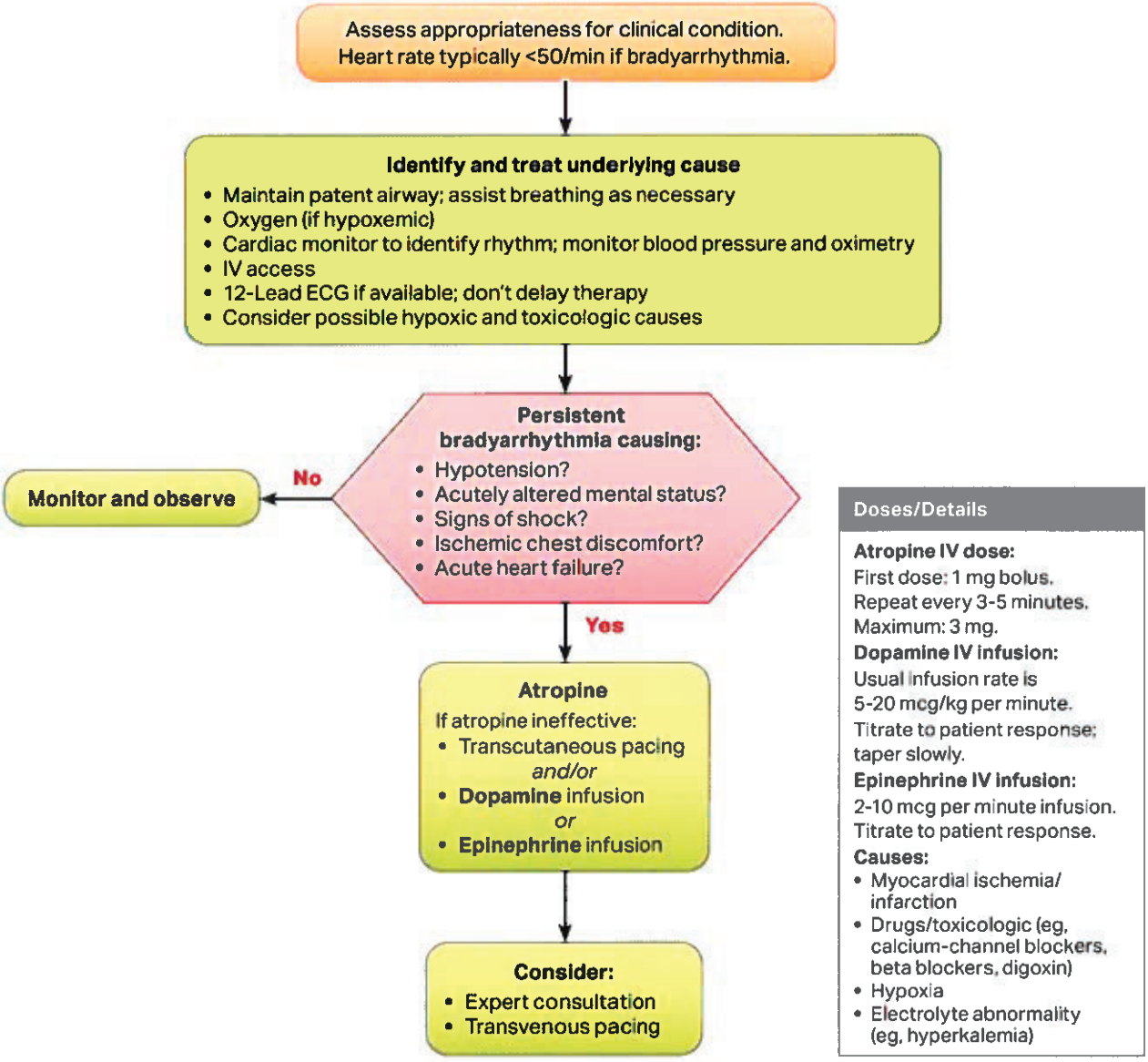

Doses/Details

Atropine IV dose:
First dose: 1 mg bolus.
Repeat every 3-5 minutes.
Maximum: 3 mg.

Dopamine IV infusion:
Usual infusion rate is 5-20 mcg/kg per minute.
Titrate to patient response; taper slowly.

Epinephrine IV infusion:
2-10 mcg per minute infusion.
Titrate to patient response.

Causes:
- Myocardial ischemia/infarction
- Drugs/toxicologic (eg, calcium-channel blockers, beta blockers, digoxin)
- Hypoxia
- Electrolyte abnormality (eg, hyperkalemia)

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Pediatric Bradycardia With a Pulse Algorithm

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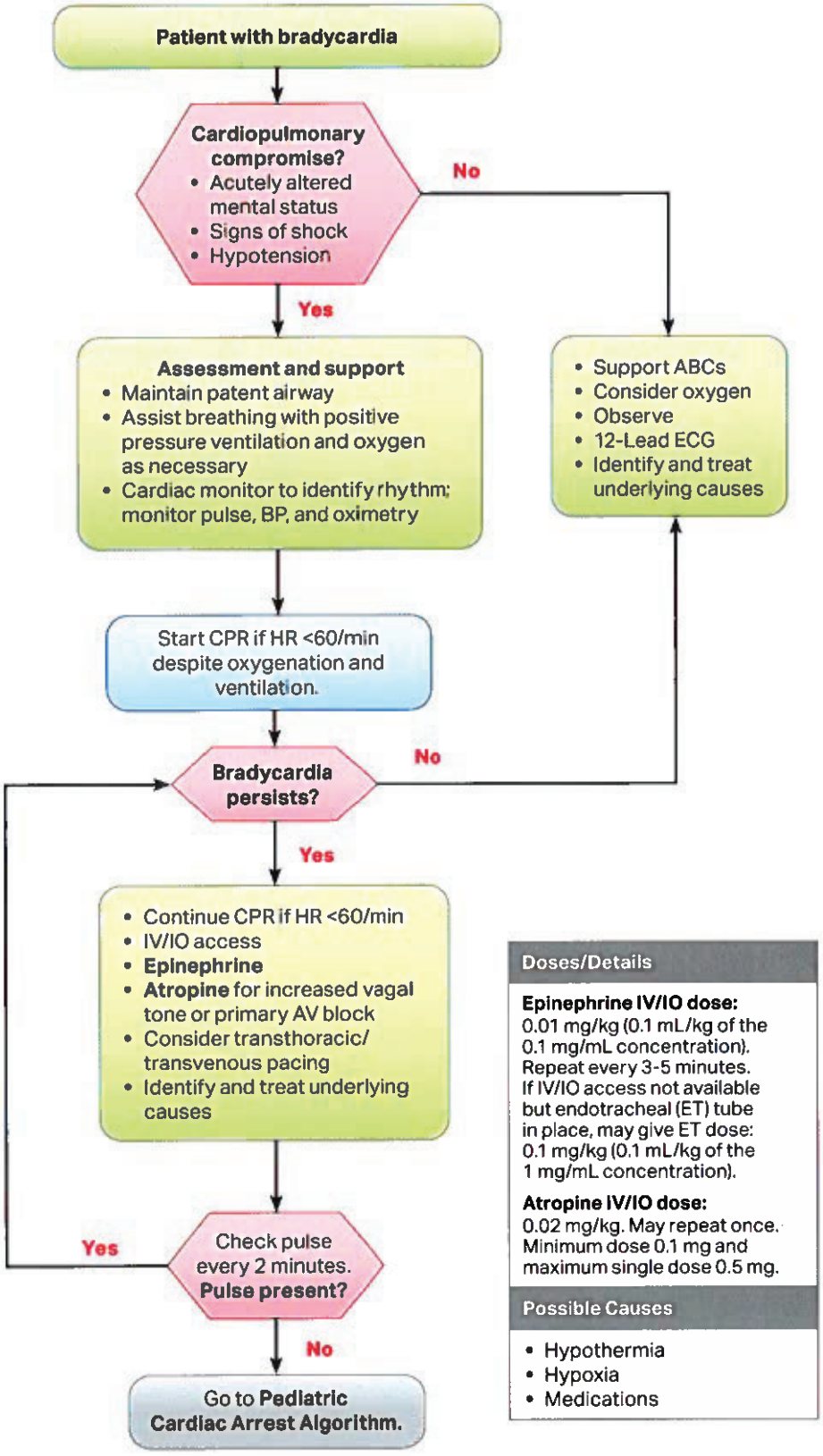

Doses/Details

Epinephrine IV/IO dose:
0.01 mg/kg (0.1 mL/kg of the 0.1 mg/mL concentration). Repeat every 3-5 minutes. If IV/IO access not available but endotracheal (ET) tube in place, may give ET dose: 0.1 mg/kg (0.1 mL/kg of the 1 mg/mL concentration).

Atropine IV/IO dose:
0.02 mg/kg. May repeat once. Minimum dose 0.1 mg and maximum single dose 0.5 mg.

Possible Causes

- Hypothermia
- Hypoxia
- Medications

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Adult Tachycardia With a Pulse Algorithm

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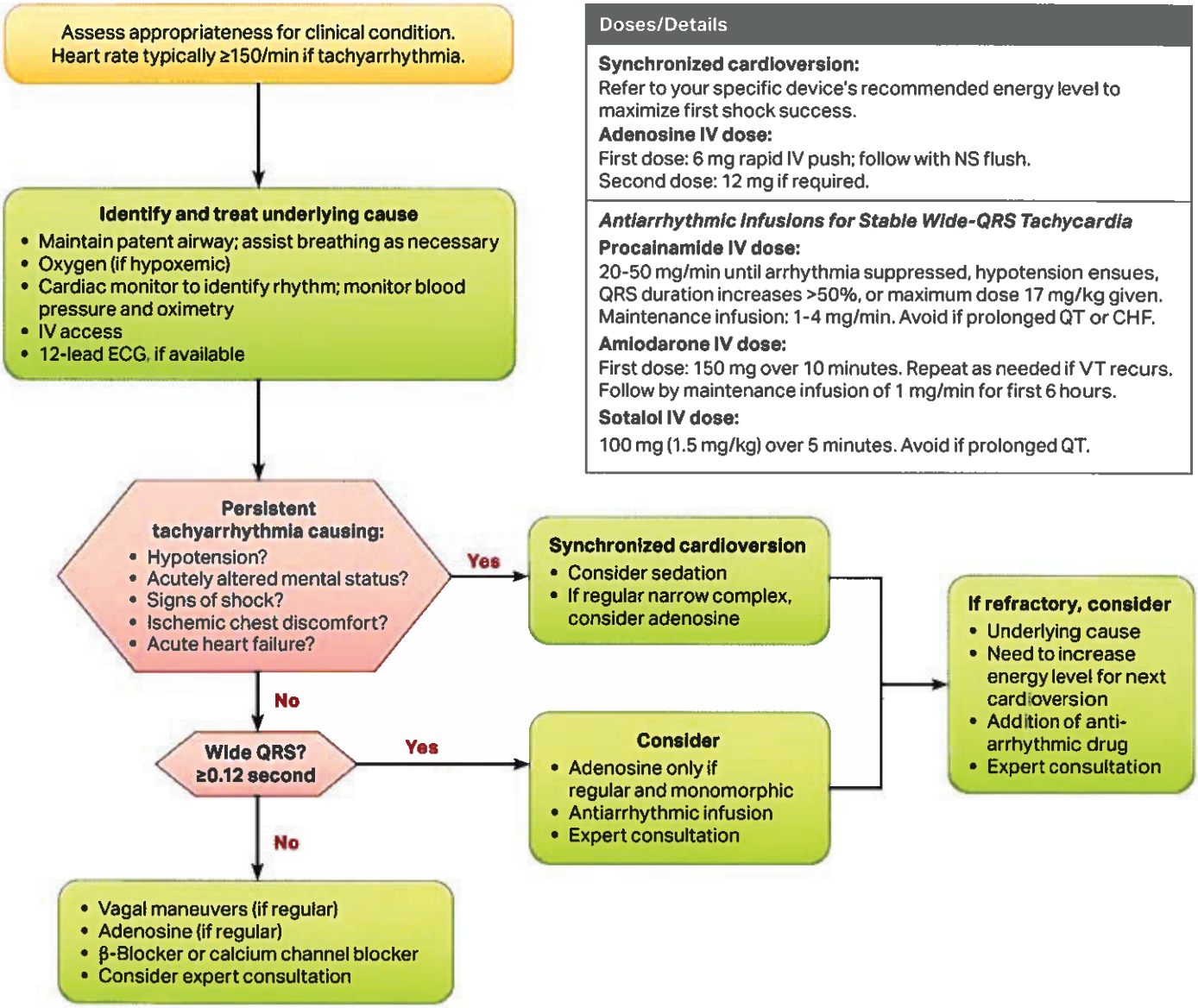

Doses/Details
Synchronized cardioversion: Refer to your specific device's recommended energy level to maximize first shock success. **Adenosine IV dose:** First dose: 6 mg rapid IV push; follow with NS flush. Second dose: 12 mg if required.
Antiarrhythmic Infusions for Stable Wide-QRS Tachycardia **Procainamide IV dose:** 20-50 mg/min until arrhythmia suppressed, hypotension ensues, QRS duration increases >50%, or maximum dose 17 mg/kg given. Maintenance infusion: 1-4 mg/min. Avoid if prolonged QT or CHF. **Amiodarone IV dose:** First dose: 150 mg over 10 minutes. Repeat as needed if VT recurs. Follow by maintenance infusion of 1 mg/min for first 6 hours. **Sotalol IV dose:** 100 mg (1.5 mg/kg) over 5 minutes. Avoid if prolonged QT.

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Pediatric Tachycardia With a Pulse Algorithm

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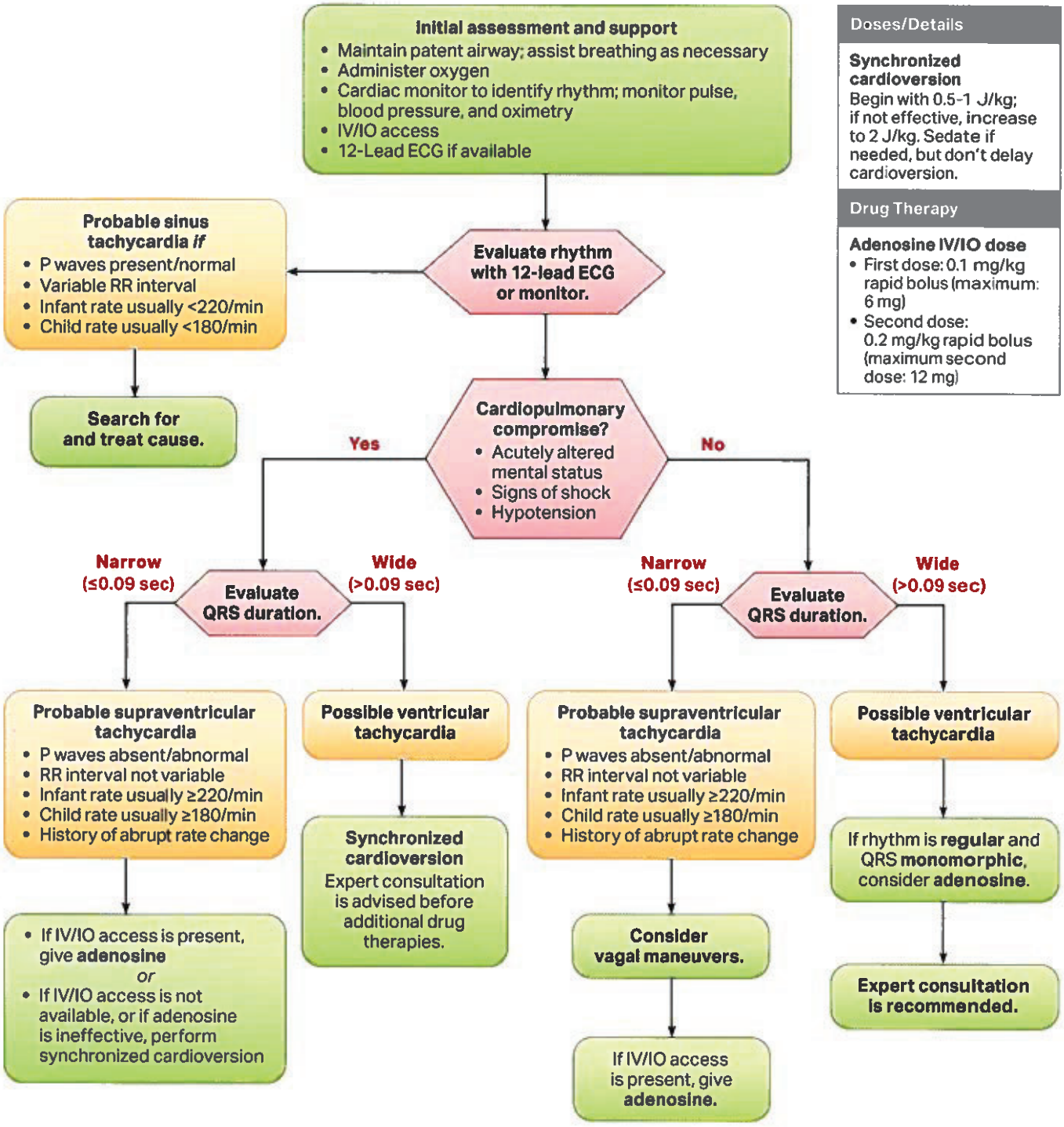

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Medical – Supraventricular Tachycardia (Including Atrial Fibrillation)

Criteria: Adult patients who are symptomatic and stable, with stable atrial fibrillation or atrial flutter (usually greater than 150 bpm) and a pulse.

I	If SBP > 130 mmHg, administer Cardizem 0.25 mg/kg IV/IO over two minutes (max 20 mg to achieve desired heartrate < 120 bpm); if no improvement after 15 minutes and SBP remains > 130 mmHg, administer 0.35 mg/kg IV/IO over two minutes (max 25 mg to achieve desired heartrate <120 bpm) If Cardizem is not available, or SBP < 130 mmHg, administer Metoprolol 5 mg q 5 minutes SIVP, to a max total dose of 15 mg to achieve desired heartrate < 120 bpm.

Medication Summary:

Diltiazem (Cardizem): 0.25 mg/kg first dose; 0.35 mg/kg second dose; max total dose of 20 mg
Lopressor (Metoprolol): 5 mg, repeat every five minutes; max total dose 15 mg

Notes:

- For patients over 70 years old, reduce Cardizem bolus by half.
- Unstable criteria: altered mental status, hypotension, ischemic chest pain, signs of shock, and acute heart failure.

Exposure- Radiologic Agent

Criteria: Patients who have been exposed to known/unknown levels of radioactive contamination.

B	Encapsulate patient using blankets and sheets to limit contaminates from spreading off the patient.
A	If hypotensive, establish peripheral IV/IO and administer Normal Saline or Lactated Ringers.

Notes:

1. Lifesaving medical attention takes priority over contamination control. Patient monitoring to determine level and extent of contamination may be deferred to the hospital. ***In order to contain contaminates to the patient, once encapsulated limit procedures to only those that are lifesaving.***
2. EMS personnel shall report to the Radiological Officer for radiological briefing and to receive dosimetry. The Radiological Officer shall inform EMS personnel of basic radiological status, recommend protective clothing usage, and controls required to prevent cross contamination from the patient.
3. Level of scene decontamination will be determined and conducted by Hazardous Materials personnel
4. EMS personnel shall establish a control boundary around the contaminated patient and determine if the medical status allows time for detailed contamination monitoring and decontamination. Limit personnel to the minimum needed to provide the necessary care.
5. To prevent spread of radioactive materials, secure items used in poly bags or over pack drums labeled hazardous material.
6. VCU is the preferred hospital for receipt of contaminated patients. Notify the VCU Emergency Communications at 804-828-8888 when enroute to the hospital. VCU may divert radiologically contaminated patients to other hospitals (e.g., Mary Washington Hospital) with radiological emergency response capability. While enroute, the AIC shall notify the receiving hospital staff of contamination status, if known.
7. Upon arrival at the hospital, EMS shall remain in the vehicle while hospital staff conduct proper monitoring of the ambulance. Follow the direction of the hospital staff for the transfer of the patient into the designated patient receiving location.
8. Both the crew and ambulance are to remain at the hospital until a contamination survey is performed and the ambulance and crew are clear of radioactive material. Secure contaminated items in the hospital over pack drums labeled hazardous material.
9. Should crew members be contaminated, follow the direction of Hazardous Materials personnel for decontamination instruction/location.
10. Primary and Backup Hospital for North Anna Power Station:
    Primary: Virginia Commonwealth University (VCU), 1006 E Marshall St, Richmond, VA 23298
    Backup: Mary Washington Hospital, 1001 Sam Perry Blvd, Fredericksburg, VA 22401

General – Behavioral/Patient Restraint

Criteria:

1. Patients without the capacity to refuse treatment, who are exhibiting behavior that presents a clear and present danger to themselves, the EMS crew, or others
2. Patients who require management of anxiety and/or sedation for a medical procedure (such as cardioversion), and/or to maintain sedation after a procedure

B	Ensure sufficient number of personnel are present to control the patient while applying restraints. Utilize law enforcement assistance where possible Inform the patient that you intend to restrain them and why. This should not be used or perceived as a threat or ultimatum to patient Perform thorough physical assessment sufficient to document findings and injuries present before application of restraints Utilize soft restraints and/or cravat to prevent the patient from harming themselves and providers Place patient on stretcher in supine position, apply chest belt high on the chest, apply lower extremity belt, and then apply abdominal/waist strap and shoulder straps. After application of safety belts, ensure the patient can still take full inspiratory breaths. Adjust as needed Four-point soft restraints shall be applied as to not impair circulation in the extremity. The dominant arm of the patient should be restrained above the patient's head Circulatory checks distal to the restraints shall be performed immediately after application of four-point restraints and again performed (and documented) every 15 minutes If the patient has a seizure, CUT/RELEASE THE RESTRAINTS IMMEDIATELY
I	For longer procedural sedation and/or anxiety management administer **Midazolam** 0.02 mg/kg, max single dose 5mg (*pediatric dose 0.1 mg/kg, max dose 5 mg*). Repeat x1 after 10 minutes if needed. For chemical restraint in lieu of or in addition to physical restraint, administer **Midazolam** 2-5 mg Consider administration of 25 mg **Diphenhydramine**. *Pediatric dose is 1 mg/kg with a max single dose of 25 mg*

General – Behavioral/Patient Restraint cont'd

P

For brief procedural sedation administer **Etomidate** 0.3 mg/kg. *Pediatric dose the same.*

For chemical restraint in lieu or in addition to physical restraint. Administer 2 mg/kg IM **Ketamine**; repeat x1 after 10 minutes if needed. If appropriate and available, 1-2 mg/kg IV **Ketamine** can be used in lieu of IM, repeat x1 after 5 minutes if needed

Medication Summary:

Benadryl (Diphenhydramine): 25 mg (*pediatric dose 1 mg/kg, max of 25 mg*)
Etomidate (Amidate): 0.3 mg/kg (*pediatric dose same as adult*)
Ketamine (Ketalar): 2 mg/kg IM repeat x1 q 10 minutes; 1-2 mg/kg IV (*pediatric dose same, max dose 100 mg IV and 200 mg IM*)
Midazolam (Versed): Procedural Sedation: 0.02 mg/kg (max 5mg), (*pediatric dose 0.1 mg/kg, max dose 5 mg*); Chemical Restraint: 2-5 mg (*pediatric dose 0.1 mg/kg, max dose 5 mg*)

Notes:

1. Documentation in patient care report must include evidence of need for restraint, treatment that was necessary and, in the patient's best interest, type and location of restraint(s), injuries that occurred during or after restraint, and every 15-minute circulation checks
2. Restraints, both physical and chemical, should be considered a "last resort". The least-restrictive means to maintain provider and patient safety should be used
3. Do not position or transport any restrained patient prone, or in such a way that could impair the patient's respiratory or circulatory status.
4. Administer sedating agents cautiously in patients where alcohol or other depressant use is suspected
5. Use caution with Versed administration in the elderly

General-Hospice Care

Criteria: Patients under the care of hospice that may require assistance, reassurance, or help with patient's prescribed hospice medication, but not transport.

EVERY EFFORT SHOULD BE MADE TO CONTACT PATIENT'S HOSPICE PROVIDER BEFORE MAKING A TRANSPORT DECISION

B	Administer oxygen for relief of labored breathing
A	Administer patient's hospice medications * as directed on prescription label based on signs and symptoms, making sure to observe the five rights of medication administration

Notes:

1. Patient's experiencing a medical or traumatic emergency not related to their hospice diagnosis should be treated like all other patients
2. Hospice patients may have an altered mental status or be unresponsive, **Naloxone** is only indicated with a respiratory rate less than 6 and the patient is not actively dying.
3. Consider using hospice and/or medical control for questions on patient treatment/transport
4. All patients requesting transport will be transported to the closest appropriate facility
5. * Example home medications include: **Alprazolam** (Xanax), **Clonazepam** (Klonopin), **Diazepam** (Valium), **Haloperidol** (Haldol), **Fentanyl (**Sublimaze**)**, **Lorazepam** (Ativan), and **Morphine**. Providers can administer medications that are within the state scope of practice for their practice level – see Virginia OEMS Scope of Practice Formulary for EMS Providers.

General – Indwelling Medical Device/Equipment

Criteria: Patients with ventricular assist devices and other implanted medical equipment

E M R	If patient is unconscious carefully evaluate for reversible causes prior to initiating CPR - chest compressions may cause irreversible damage to devices. PRIOR TO CPR - check reference guide to see if CPR is allowed for patient's particular indwelling medical device Identify and attempt to contact the patient's primary caretaker (spouse, guardian, etc) as well as their VAD coordinator as early as possible
B	Work with the caregiver, patient, and VAD coordinator to determine if the problem is related to the implanted device. If so, attempt to arrange transport to patient's VAD center Ensure to transport all available VAD equipment with the patient (spare batteries, troubleshooting equipment, replacement parts, etc) Utilize end-tidal CO2 to assess quality of ventilation and perfusion. Provide supplemental Oxygen to ensure optimal perfusion
A	If patient is demonstrating signs of hypoperfusion, administer 250 cc bolus of Normal Saline or Lactated Ringers q 5 min until improvement is noted

Notes:

1. Patients with properly functioning VAD's may NOT have a detectable pulse, normal blood pressure, or Oxygen Saturation
2. Patients with medical or trauma situations not related to a device malfunction should be treated traditionally. For example, a diabetic who has a VAD and has hypoglycemia is treated traditionally. Also, a VAD patient suffering from a traumatic injury should be treated and transported using standard trauma triage guidelines
3. Please refer to http://mylvad.com/content/ems and see the reference section for a color-coded guide to various devices that are on the market

General – Pain Control

Criteria: Patients with pain resulting from chronic/acute medical or trauma conditions who are experiencing moderate to severe pain

A

If age is <65 and patient has NO history of renal failure, NO suspected active bleeding, and NO need for surgical intervention, consider **Ketorolac** 30 mg (*pediatric dose is 0.5 mg/kg – max dose 30 mg*)

Administer **Fentanyl** 0.5-1 mcg/kg (single dose max is 100 mcg). *Pediatric dosing is the same*. Repeat every 15 minutes as needed provided respiratory effort and blood pressure remains sufficient

I

If Fentanyl is not effective or available, administer **Ketamine** 0.25-0.5 mg/kg. *Pediatric dosing is the same*. Repeat once after 10 minutes if needed

Medication Summary:

Fentanyl (Sublimaze): 0.5-1.0 mcg/kg (single dose max 100 mcg) (*pediatric dose same as adult*)
Ketamine (Ketalar): 0.25-0.5 mg/kg; Repeat x1 q 10 if needed (*pediatric dose same as adult*)
Ketorolac (Toradol): 30 mg (*Pediatric Dose 0.5 mg/kg max dose 30 mg*)

Notes:

1. If greater than 300 mcg of Fentanyl is necessary to manage the patient's condition, contact medical control for additional orders
2. DO NOT use Ketorolac in patients who meet trauma triage criteria to be seen at a trauma center
3. DO NOT use Ketorolac in patients with suspected intracranial hemorrhage
4. Ketorolac is only for patients > 2 years of age
5. Consider lower dosing for parenteral analgesic in geriatric patients
6. Should monitor GCS and use pain scale to monitor efficacy

Medical - Heat Emergencies

Criteria: Any patient with a heat related emergency with core temperature greater than 100.4

B	**Temperature 100.4-104F:** Remove clothing, use passive cooling **Temperature >104F:** Remove clothing, use active cooling measures (iced sheets, topical application of chilled water, ice packs at neck/groin/armpits, etc.)
A	**Temperature 100.4-103.9F:** Bolus 1 L Normal Saline or Lactated Ringers. **Temperature >104F:** Bolus chilled Normal Saline or Lactated Ringers, not to exceed 1 L

Notes:
1. If patient has altered mental status, transport emergently regardless of temperature.
2. Only cool patient to 102˚
3. Preferred way to take patient's temperature is rectally and should be monitored throughout treatment

Medical – Allergic Reaction/Anaphylaxis

Criteria: Any patient who is having an adverse reaction to a foreign substance.

B	If the patient has a history of allergic reaction and is currently experiencing symptoms of anaphylaxis, administer Epinephrine utilizing the color-coded syringe or a kit approved by the agency's OMD
A	For dystonic reaction, administer **Diphenhydramine** 25 mg *MINOR allergic reaction*, administer **Diphenhydramine** 25-50 mg (*pediatric dose 1 mg/kg – max dose 50 mg*) If the reaction has systemic involvement or is severe, administer **Methylprednisolone** 125 mg (*Pediatric dose 2 mg/kg up to max dose of 125 mg*)
	SEVERE allergic reaction, administer **Epinephrine** (1:1,000) 0.3 mg IM (*pediatric dose 0.01 mg/kg – max dose 0.3 mg*), in addition to **Diphenhydramine**. If patient is deteriorating rapidly, consider administering 1:10,000 **Epinephrine** 0.3 mg IV instead.
I	If the patient is altered and SBP < 90mmHg, use push pressor **Epinephrine 1:100,000** 5-20 mcg q 3-5 minutes or **Epinephrine** 2-10 mcg/min infusion**.** If **Epinephrine** is not available administer **Dopamine infusion** 5-20 mcg/kg/min to maintain SBP greater than 90 mmHg or MAP > 60.

Medication Summary

Diphenhydramine (Benadryl): 25-50 mg Minor Allergic Reaction; 25 mg Dystonic Reaction (*pediatric dose 1 mg/kg max dose 25 mg*)
Dopamine: 2-20 mcg/kg/min
Epinephrine: 1:1,000 0.3 mg IM; *Pediatric Dose: 0.01mg/kg; max dose 0.3 mg*
Severe allergic reaction: 1:10,000 0.3 mg IV. Infusion: 2-10 mcg/min. 1:100,000 5-20 mcg push pressor
Methylprednisolone (Solu-Medrol): 125 mg; *(Pediatric dose 2 mg/kg up to max of 125 mg)*

Notes:

1. ALS should be utilized whenever possible for all severe and most moderate reactions.
2. If the substance causing the reaction is still present, minimize contact with patient and attempt to isolate the substance.
3. If pediatric patient has a PMH of anaphylaxis and is exhibiting signs and symptoms of allergic reaction, do not wait for progression to severe allergic reaction before administering Epinephrine.
4. **To mix the Epinephrine push pressor** – mix 1ml 1:10,000 Epinephrine in 9 ml of Normal Saline to provide 10 mcg/ml. **To mix an Epinephrine infusion** – mix 1 mg (1 mL) of 1:1000 Epinephrine in 1L of fluid (to produce 1 mcg/ml). See Epinephrine infusion drip chart in reference section for further.

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Medical – Altered Mental Status

Criteria:
1. Patients that are unresponsive or a GCS < 15
2. Thorough attempts should be made to determine the cause of the altered LOC, and specific management should be made based on the cause

B

If BGL < 60 and patient is able to swallow effectively administer oral glucose

If patient is unable to swallow, administer 1mg **Glucagon** IM/SQ

A

Titrate Normal Saline or Lactated Ringers to achieve SBP at or above 90 mmHg and administer 20 cc/kg if < 90 mmHg

If BGL < 60 administer 100cc of **Dextrose 10%**
- Repeat after 2 minutes if symptoms are not resolved
- Pediatric dose for **Dextrose 10%** is 5 cc/kg IV and Neonatal (< 30 days) is 2 cc/kg
  If unable to achieve IV access, administer 1 mg **Glucagon** IM/SQ

If BGL > 500 or "high" administer 20 cc/kg IV Normal Saline or Lactated Ringers to maximum of 2 liters

Medication Summary:

Dextrose 10%: 100 cc *(Pediatric dose – 5cc/kg IV; Neonatal dose 2cc/kg)*
Glucagon (Glucagen): 1mg IM/SQ

Notes:
1. Possible causes of unconsciousness: A E I O U T I P S - Acidosis/alcohol, Epilepsy/Ethylene glycol, Infection, Overdose, Uremia (Renal Failure), Trauma/tumor, Insulin, Psychosis, and Stroke
2. Administration of medications by BLS providers must be in a color-coded and/or dose-limiting device

RAPPAHANNOCK REGIONAL EMS COUNCIL
PATIENT CARE PROTOCOLS

Medical- Chest Pain - Cardiac Suspected

Criteria: Patients with chest pain can have a variety of conditions - some of which are life-threatening. Determination should be made as to the root cause of the problem with special attention on early recognition and proper treatment of life-threatening conditions

B

Perform 12-lead EKG immediately. If machine interpretation includes "acute", "acute MI", or "infarct" statement, begin urgent transport to facility capable of PCI. If possible, transmit EKG to receiving facility. **Do not delay care on the scene for interventions**. An early report should be given. State "**Code STEMI**" at beginning of report

If the patient has not taken > 160 mg of Aspirin in the preceding four hours, administer four (4) **81 mg chewable Aspirin** from the STAT Kit

If the patient is currently having pain, has not taken three (3) or more tablets, administer 0.4 mg of SL **Nitroglycerin** tablets/spray or 1 inch of **Nitro Paste** TD (patient's or STAT kit supplied). Administer additional doses (q 5 minutes) up to two (2) doses

A

Establish IV; administer 20 cc/kg bolus of Normal Saline or Lactated Ringers if the patient is hypotensive (SBP < 90 mmHg or MAP < 60)

I

If patient's pain is >5 on pain scale administer **Fentanyl** 0.5-1.0 mcg/kg (max single dose is 100 mcg) IV q15 minutes until patient is pain free

If systolic BP is <90 mmHg (unrelated to analgesia) begin **Epinephrine push pressor** 5-20 mcg 1:100,000 q 3-5 minutes or **Epinephrine** infusion (2-10 mcg/min) to maintain BP

If patient does not respond to **Epinephrine**, begin **Dopamine** drip (5-20 mcg/kg/min) and titrate to maintain adequate perfusion

Medication Summary

Aspirin (Disprin): 81 mg x4 (do not exceed 324 mg concurrent to patient's intake)
Dopamine (Intropin): 5-20 mcg/kg/min
Epinephrine: 2-10 mcg/min infusion or 1:100,000 push pressor 5-20 mcg q 3-5 minutes
Fentanyl (Sublimaze): 0.5-1.0 mcg/kg (max single dose 100 mcg)
Nitroglycerin: 0.4 mg SL, spray or 1 inch paste transdermal

Notes:
1. Chest pain should always be considered caused by life-threatening conditions until proven otherwise. If transport to cardiac catheterization facility is > 45 minutes consider alternate means of transport or possibility of transport to closer facility that can provide initial stabilization and then transfer
2. BLS providers must be trained on equipment/acquisition of 12 lead in order to perform as standing order
3. Avoid precipitous drop of BP greater than 10% (30% if relatively hypertensive) through the administration of NTG
4. In the setting of an AMI, PVC's may be resulting from cardiac ischemia. Treat the chest pain not the PVC's.
5. If 12 lead EKG shows right-sided infarct, NTG is not recommended and crystalloid fluid may be necessary to support BP
6. **To mix the Epinephrine push pressor** – mix 1ml 1:10,000 Epinephrine in 9 ml of Normal Saline to provide 10 mcg/ml. **To mix an Epinephrine infusion** – mix 1 mg (1 mL) of 1:1000 Epinephrine in 1L of fluid (to produce 1 mcg/ml). See Epinephrine infusion drip chart in reference section for further.

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General - Epistaxis

Criteria: Patients who are experiencing bleeding from their nose

B	Have patient lean forward and apply direct pressure with a thumb and forefinger to their nose (pinch), for 10-15 minutes. If the patient is able, they can perform this treatment
A	If bleeding cannot be controlled by direct pressure, apply 200 mg of **Tranexamic Acid** to rolled gauze and insert into bleeding nostril, or administer via mucosal atomization device.

Medication Summary:

Tranexamic Acid (Cyklokapron): 200mg topical

Notes:

1. TXA can only be used in patients greater than 11 years of age
2. Uncontrolled epistaxis can lead to hemorrhagic shock

Medical- Hypotension/Shock Non-Trauma

Criteria: Patients that are symptomatic and have systolic blood pressure of < 90 mmHg

B	Administer 4mg ODT **Ondansetron** to treat and prevent vomiting
A	Administer 20 cc/kg bolus of Normal Saline or Lactated Ringers. Titrate IV fluid to achieve a systolic BP > 90 mm Hg up to 2 L. If sepsis is suspected (see note below), administer 30 ml/kg bolus instead. See note 1 for further. Administer **Ondansetron** 4 mg (*pediatric dose is 2 mg*) to treat or provide prophylaxis against nausea. May repeat x1 after 5 minutes if needed
I	If patient remains hypotensive with signs of hypoperfusion after fluid challenge, administer **Epinephrine push pressor** 5-20 mcg 1:100,000 q 3-5 minutes or **Epinephrine** infusion (2-10 mcg/min), or begin **Dopamine** infusion 5-20 mcg/kg/min. Titrate for SBP at or above 90 mm Hg or MAP > 60.

Medication Summary:

Dopamine (Intropin): 5-20 mcg/kg/min
Epinephrine: 2-10 mcg/min infusion or 1:100,000 5-20 mcg push pressor
Ondansetron (Zofran): 4 mg IV (*pediatric dose 2 mg)*

Notes:

1. Whenever administering IV fluid bolus, especially in patients with existing cardiac disease, monitor closely for sign of pulmonary edema, peripheral edema, and JVD. If patient develops SOB or rales, stop fluid bolus and move to vasopressor therapy.
2. Volume deficit from vomiting, diarrhea, or other forms of infection should be treated aggressively with isotonic boluses prior to beginning vasopressor and require a medium or large bore peripheral line
2. All patients with unstable VS should be monitored by EKG and pulse oximetry. Whenever possible also evaluate capnography
3. **To mix the Epinephrine push pressor** – mix 1ml 1:10,000 Epinephrine in 9 ml of Normal Saline to provide 10 mcg/ml. **To mix an Epinephrine infusion** – mix 1 mg (1 mL) of 1:1000 Epinephrine in 1L of fluid (to produce 1 mcg/ml). See Epinephrine infusion drip chart in reference section for further.
4. Avoid creating hypertension
5. General sepsis criteria and findings:
    1. Patient >18 years old and not pregnant
    2. Patient meets at least two of the following Systemic Inflammatory Response Syndrome symptoms: temperature > 38C (100.4F) or < 36C (96.8F), heart rate > 90bpm, or respiratory rate > 20 or mechanically ventilated
    3. Suspected or confirmed infection
    4. Hypoperfusion manifested by any of the following: systolic BP less than 90, MAP < 60, altered mental status, EtCO2 < 20 cmH2O, known lactate level > 4 mmol/L or WBC count > 12,000 or < 4,000

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Medical – Nausea/Vomiting

Criteria: Patients with nausea and/or vomiting

B	Administer 4 mg ODT **Ondansetron**
A	Establish IV access based on patient presentation. Administer 20 cc/kg bolus of Normal Saline or Lactated Ringers. Titrate IV fluid to achieve a systolic BP > 90 mmHg up to 2 Liters. Administer 4 mg IV **Ondansetron** (*pediatric dose is 2 mg*) to treat or provide prophylaxis against nausea. May repeat x1 after 5 min if needed.

Medication Summary:

Ondansetron (Zofran): 4 mg ODT ; 4 mg IV *(Pediatric dose – 2 mg)*

Medical-Overdose/Poisoning/Toxic Ingestion

Criteria: Patients with intentional or accidental exposure to medications and substances that affect various body systems

B	If the suspected overdose/poisoning is an opioid AND the patient is unconscious and has insufficient respiratory effort, administer 1 pre-filled syringe of **Naloxone** IN/IM from the STAT kit
A	Administer 20 cc/kg bolus of Normal Saline or Lactated Ringers. Titrate IV fluid, up to 2 L, to achieve a systolic BP > 90 mmHg or MAP > 60 If the suspected overdose/poisoning is an opioid AND there is significant respiratory depression administer **Naloxone** beginning at 0.5 mg, IV/IM/IO/IN/Neb every 2-5 min titrating repeat doses for effective respiratory function. Pediatric dose for **Naloxone** is 0.1 mg/kg to maximum dose of 2 mg, titrated for effective respiratory function Contact poison control (1-888-222-1222) for assistance when with other substances

Medication Summary:

Naloxone (Narcan): Adult: 0.5 mg IV/IM/IO/IN/Neb every 2-5 minutes (*pediatric: 0.1 mg/kg up to 2mg*)

Notes:
1. Always consider the fact that multiple substances may be involved and symptoms from conflicting substances may be masked. Whenever possible, gather the substance and transport with the patient for evaluation at the receiving facility
2. Treatment is generally supportive. Induction of emesis is rarely appropriate
3. Some drugs and substances have specific antidotes, it is important to accurately and quickly recognize the substance(s) that are involved.
4. BLS providers may access/use Narcan from the STAT kit, medication box, or other approved pharmacy source per department policy and procedures

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Medical –Pulmonary Edema/CHF

Criteria: Patients exhibiting signs of congestive heart failure or acute pulmonary edema

B

For patients in moderate to severe respiratory distress, consider CPAP/BiPAP 5-10

I

If SBP < 100 mmHg (MAP < 65 mmHg), administer **Epinephrine** push pressor 5-20 mcg 1:100,000 q 3-5 minutes or **Epinephrine** infusion 2-10 mcg/min

If SBP > 175 mmHg and Heart Rate > 60 bpm, administer 0.4 mg **Nitroglycerin** SL and 1 inch **Nitro paste** TD. If respiratory distress persists and SBP > 175 mmHg, repeat q 5 minutes as long as respiratory distress persists and SBP remains > 175 mmHg

Consider 0.5 mg/kg IV **Furosemide** if patient does not take already. If patient is prescribed Lasix, consider 1.0 mg/kg (max single dose of 40 mg)

Medication Summary:

Epinephrine 1:100,000 5-20 mcg push pressor or 2-10 mcg/min infusion
Furosemide (Lasix): 0.5 mg/kg IV if patient does not take as home med; if they do, consider 1.0 mg/kg IV (max single dose 40 mg)
Nitroglycerin 0.4 mg SL q 5 minutes
Nitroglycerin paste 1 inch transdermal

Notes:

1. Avoid Nitroglycerin with any patient that has use Viagra, Cialis, Levitra or herbal equivalents within the past 24 hours
2. BLS should consider ALS assistance
3. **To mix the Epinephrine push pressor** – mix 1ml 1:10,000 Epinephrine in 9 ml of Normal Saline to provide 10 mcg/ml. **To mix an Epinephrine infusion** – mix 1 mg (1 mL) of 1:1000 Epinephrine in 1L of fluid (to produce 1 mcg/ml). See Epinephrine infusion drip chart in reference section for further.

Medical - Respiratory Distress/Asthma/COPD/Croup/Reactive Airway

Criteria: Includes any patient who is having difficulty breathing or disordered breathing related to an acute or chronic process

B

If patient has a rescue inhaler, administer one dose if they have not already had two doses in the last 30 minutes. If the patient is in moderate to severe respiratory distress, administer a nebulizer of **Albuterol** 2.5 mg and **Ipratropium Bromide** 0.5 mg from the STAT kit together

Consider CPAP for distress NOT related to allergic reaction

A

Repeat 2.5mg of **Albuterol** as needed (online medical control required for > 7.5 mg). **Albuterol** pediatric dose the same if > 2 years of age; < 2 years of age administer 1.25 mg diluted with 2 cc NS

Administer **Methylprednisolone** 125 mg IV if no relief or improvement from first dose of Albuterol (*pediatric dose 2 mg/kg IV, maximum dose 125 mg*)

For a severe asthma attack with deteriorating patient condition administer **Epinephrine** 1:1,000 0.3 mg IM (pediatric 0.01 mg/kg; max dose 0.3 mg)

P

For Asthma: if no response to Albuterol consider **Magnesium Sulfate** 50 mg/kg IV over 10-20 minutes (*pediatric dose 50 mg/kg – max dose 2 g*). Can repeat 30 mg/kg x1 q10 minutes. Do not exceed 2.5 g total

For croup, ARDS, and/or status asthmaticus administer 3 ml **Epinephrine** 1:10,000 diluted with 3 cc NS by nebulizer (*pediatric dose the same*)

Medication Summary:

Albuterol (Ventolin): 2.5 mg if >2 years old; if <2 years old, administer 1.25 mg diluted with 2 cc NS
Epinephrine 1:1,000: Adult- 0.3 mg IM, *Pediatric- 0.01 mg/kg to a maximum of 0.3 mg*
Epinephrine - Racemic: 3 ml Epinephrine 1:10,000 and 3 cc NS by nebulizer *(adult and pediatric the same)*
Ipratropium Bromide (Atrovent): 0.5 mg (*adult and pediatric the same*)
Magnesium Sulfate: 50 mg/kg IV over 10-20 minutes, repeat in 10 minutes at 30 mg/kg but do not exceed 2.5 g total *(adult and pediatric dose the same; peds max 2 g)*
Methylprednisolone (Solu-Medrol): Adult- 125 mg, *pediatric: 2 mg/kg, max of 125 mg*
Nitroglycerin (Nitrostat): one inch of paste TD

Notes:
1. Perform detailed assessment and gather appropriate PMH to determine suspected cause of dyspnea
2. Epinephrine is a potent inotrope and chronotrope and should be used with extreme caution in patients greater than 60 years of age, pre-existing cardiomyopathy, and those with a heart rate > 120
3. Contact Medical Control for total administration greater than 7.5 mg Albuterol

Medical-Seizure

Criteria: Patients who are having seizures

B

If respirations are <8, assist with BVM ventilations

If it's an adult patient who is hypoglycemic, administer 1 mg **Glucagon** IM

A

If patient is hypoglycemic, administer 100 cc **Dextrose 10%** (*pediatric dose is 5 cc/kg*). Repeat after 2 minutes if symptoms are not resolved

For active seizure administer **Midazolam** 2-5 mg repeat every 5 minutes (*pediatric dose is 0.1 mg/kg up to max single dose of 2 mg*) - may repeat once after 5 minutes

Medication Summary:

Dextrose 10%: 100 cc, repeat after 2 min if necessary (*pediatric dose is 5 cc/kg, and neonatal is 2 cc/kg*)
Glucagon (Glucagen): 1 mg IM
Midazolam (Versed): 2-5 mg, repeat after 5 min (*pediatric dose: 0.1 mg/kg max of 2 mg*)

Notes:
1. Versed may cause respiratory depression - monitor respiratory effort closely after administration, provide Oxygen, monitor and protect airway

OB/GYN- Eclampsia

Criteria: Pre-eclampsia includes symptoms of peripheral edema, hypertension, and visual changes or disturbances. Eclampsia is any pregnant patient (in second or third trimester) who is having seizure activity

B	Check blood sugar
A	For active seizure, administer 2 mg IV/IN **Midazolam**. May repeat x1 after 5 minutes if necessary
I	***ONLINE MEDICAL CONTROL:*** Obtain approval then administer **Magnesium Sulfate** 2-4 g IV/IO over 20 minutes per online medical control
P	Administer **Magnesium Sulfate** 2-4 g IV/IO infusion over 20 minutes for eclamptic patients

Medication Summary:

Magnesium Sulfate: 2-4 g IV/IO over 20 minutes
Midazolam (Versed): 2-5 mg IV/IN, repeat after 5 min

Notes:
1. When transporting a pregnant patient, transport in the left lateral recumbent position to avoid supine hypotension
2. If patient is distinctly pre-eclamptic with symptoms of a headache, EMT-I and EMT-P providers may contact online medical control to request **Magnesium Sulfate** as a preventative measure
3. **Calcium chloride/gluconate** should be available as an antidote for signs of magnesium toxicity (flushed skin, diaphoresis, hypotension, flaccid paralysis, hypothermia, respiratory depression/paralysis, cardiac and CNS depression)
4. Stopping the seizure takes priority over magnesium administration