Regional Medical Protocols

(Version: July 1, 2025)

Tidewater Emergency Medical Services Council, Inc.

TIDEWATER EMERGENCY MEDICAL SERVICES COUNCIL, INC.
REGIONAL MEDICAL PROTOCOLS, Version: July 1, 2025
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Tidewater EMS Council, Inc.

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Acknowledgments

This manual was prepared by the Education Training and Protocol Committee, with technical assistance, guidance and approval from the Medical Operations Committee and Operational Medical Directors Committee of the Tidewater Emergency Medical Services Council, Inc.

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The revision of these protocols could not have been accomplished without the invaluable assistance and input from the following individuals:

David Long, Executive Director — Tidewater EMS Council, Inc.
James Reynolds, Chair — Medical Operations Committee
Matt Owens, Chair — Education Training and Protocol Committee

We would also like to thank all the physicians, nurses, and EMS providers who unselfishly gave their time and expertise in reviewing and commenting on the protocols during the revision process. Without their input we would not be using the most well organized, progressive, and complete set of prehospital medical protocols in the Commonwealth of Virginia today. Many thanks are extended to each and every person who assisted in this project. Thank you all very much from the TEMS staff.

Philosophy of Protocols

PHILOSOPHY OF PROTOCOLS

Medical protocols in the pre-hospital setting are established to ensure safe, efficient and effective interventions during the pre-hospital phase of patient care. Provider safety, coupled with the patient's best interests, should be the final determinants for all decisions. The goals of the Tidewater EMS Regional Medical Protocols are:

- To establish minimum expectations for appropriate patient care
- To relieve pain and suffering, improve patient outcomes and do no harm
- To ensure a structure of accountability for operational medical directors, facilities, agencies and providers

These protocols represent a consolidation of national, state and local sources of information, and will serve as the ideal standard of care for all pre-hospital patient care providers within the Tidewater EMS region, as directed by the Operational Medical Directors committee. ***In situations where an approved medical protocol conflicts with other recognized care standards, the care provider shall adhere to the Tidewater EMS Regional Medical Protocol***. It is acknowledged that there are situations in which deviation from the protocols may be needed in the interest of patient care. In those situations, when possible, EMS personnel should obtain permission from on-line medical control to deviate from established protocols. All instances of protocol deviation must be thoroughly documented in the patient care report, noting the deviation which occurred and the specific circumstances and reasoning that led to that deviation.

It is expected that providers will use the protocols in conjunction with each other as necessary. Providers should use the Airway/Oxygenation/Ventilation protocol on each patient, and may implement two or more protocols simultaneously as the patient condition warrants.

EXPECTATIONS

Ongoing review of protocols is required to remain current with interventions known to be effective in pre-hospital care and should be the responsibility of each provider of the Tidewater EMS region. ***It is expected that each provider maintain a functional knowledge of these protocols***, and apply them appropriately during all patient interactions, so the continuum of care may be effectively achieved.

The protocols should be used to direct appropriate treatments, both through standing orders and with on-line medical control, for the patients we encounter. At each patient encounter it is expected that a primary assessment will be completed, regardless of whether the patient is transported. The primary assessment should include, at a minimum:

- Scene size-up: Is the scene safe? Do you have enough resources? If not, how can you get them? What is the mechanism of injury / nature of illness?
- Airway: Is the airway open? If not, correct any airway problems immediately. If you cannot correct an airway problem, transport the patient immediately to the closest hospital.
- Breathing: Is the patient breathing? Is it adequate? If respirations are absent or inadequate, ensure an open airway and assist the patient's ventilations as needed.
- Circulation: Assess the patient's pulse and note the skin color and temperature. The initial blood pressure reading should be obtained manually, by auscultation (preferred) or palpation
- Disability: Assess the patient's level of consciousness and mental status. A simple AVPU exam and/or Glasgow Coma Scale should be completed and documented on each patient as appropriate.

Further assessment may be warranted based on patient's complaint or presentation.

BLS providers are expected to request ALS assistance if the patient has any deficits in the initial assessment. Additional ALS providers may be needed for critically sick or injured patients.

All providers are expected to reassess patients throughout the EMS encounter. Stable patients should be reassessed at least every 15 minutes, and unstable patients should be reassessed at least every 5 minutes. Vital signs should be obtained and documented on every patient, including those who ultimately refuse transportation.

These protocols are not intended to prolong the treatment of patients on scene or delay transport. These protocols exist to provide prompt, quality pre-hospital medicine to the sick and injured patients in our community.

It is expected that providers will make early contact with the receiving facility to advise them about incoming patients. Waiting to contact the facility until you are just a few minutes out provides little benefit to patient care. Providers should persist in their attempts to contact medical control, using radio, cellular phone or relay through dispatch as needed. In situations where providers are truly unable to make contact with medical control, providers may implement lifesaving procedures as standing

orders not to exceed their scope of practice. The provider must notify their agency and thoroughly document the incident, utilizing the patient care report and the TEMS regional quality improvement form.

AUTHORITY

TEMS Regional Medical Protocols are developed by consensus of participating agencies, under Virginia Emergency Medical Services Regulations 12VAC-31-2730 (Performance standards). Each agency OMD must approve the protocols and has the authority to limit or expand implementation of protocols within their agency. Virginia Emergency Medical Services Regulations 12VAC5-31-1890 (responsibilities of operational medical directors) grant authority to establish and enforce protocols, policies and procedures. All prehospital medical care is carried out with the express written authority of the Operational Medical Directors and under their supervision. Virginia Emergency Medical Services Regulations 12VAC 5-31-1040 (Operational medical director authorization to practice) states “EMS personnel may only provide emergency medical care while acting under authority of the operational medical director for the EMS agency for which they are affiliated and within the scope of the EMS agency license.”

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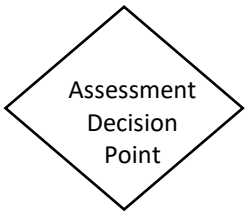
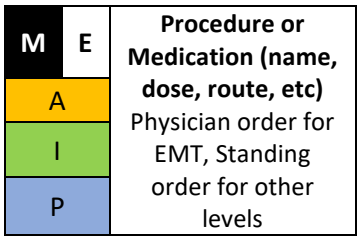
Legend of Symbols

Diamond: Asks a question. Yes or No determines the path followed



Assessment/Action box: Indicates an act, procedure, medication that should be completed. Some may include color. Other boxes include specific provider levels (E:EMT, A:Advanced, I:Intermediate, P:Paramedic) in order to perform it. If an "M" (Medical Control) is noted next to a level, that level requires Physician Order before performing.

*Note: If level not specified, then action can be performed by all levels on standing orders.



Protect patient from injury
Check blood glucose

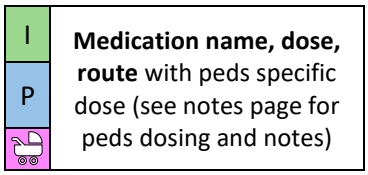
Medical Control Box: A reminder to contact the receiving facility about your patient and ETA.

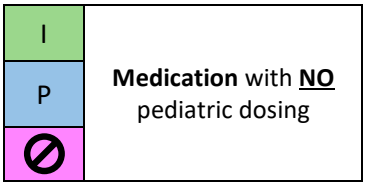
Pediatrics: **Per CHKD – pediatric is defined as 14 years old (up to 15th birthday) and younger**

Pediatric protocols are incorporated with adult protocols when feasible. If pediatric specific dosing is needed, a baby carriage on pink background will be included in the assessment/action box. If a medication is not indicated for a pediatric patient at all, the pink box will have a "no" symbol

For the pediatric dosing or specific procedure, use Handtevy **OR** the bottom section of the specific protocol's notes page for details.

Pediatric specific pages will include pink in the header and a baby carriage with pink background near the top as a reminder. Pediatric will also be included in the title and as a watermark.





Other example boxes

INCORPORATE other APPROPRIATE Protocol(s) ***as indicated***

Notes/Special things off to the side

EXIT to ROSC Protocol

Scene Safety

Stage as necessary

Treatment per Airway/Oxygenation/Ventilation Protocol

EXIT to APPROPRIATE Protocol

Whole Blood

Low Titer Type O+

Transport

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Prehospital Skills Delineation

The following skills are authorized for technicians functioning in the Tidewater EMS region *with the approval* of their agency's Operational Medical Director and in accordance with the Regional Medical Protocols.

✓ – Procedure is approved

O - Optional Skill, Agency OMD Approval Needed

Skill	EMT	Advanced	Intermediate	Paramedic
Airway				
Endotracheal Intubation				
• Oral ≥12 y/o of age			✓	✓
• Oral <12 y/o of age				O
• Nasal				✓
• Magill use		O	✓	✓
Capnography	O	✓	✓	✓
CPAP/BiPAP	O	O	O	O
Cricothyrotomy (Needle/Kit)				✓
Chest Decompression (Needle/Kit)			✓	✓
Gastric Decompression (OG/NG)				
• Adult with advanced airway		✓	✓	✓
• Pediatric with BLS/ALS airway		O	✓	✓
Mechanical Ventilator			O	O
Supraglottic	O	✓	✓	✓
Circulatory Support				
Defibrillation				
• Automatic	✓	✓	✓	✓
• Manual			✓	✓
External Jugular Cannulation			✓	✓
Glucometry	✓	✓	✓	✓
Intraosseous Cannulation		✓	✓	✓
Pacing			✓	✓
Peripheral IV		✓	✓	✓
Synchronized Cardioversion			✓	✓
Ultrasound				O
Medications (Skill Only)				
Inhaled Medication - Nebulizer	✓	✓	✓	✓
Intramuscular Medication	✓ (Epi Autoinjector)	✓	✓	✓
Intranasal Medication	✓	✓	✓	✓
Patient Assisted Medications (PAM)	✓	✓	✓	✓
Patient Restraint – Medicated			O	O
PO (Prescript Orally) Medication	✓	✓	✓	✓
Rectal Medication			✓	✓
Sublingual Medication	✓	✓	✓	✓
Transdermal Medication		✓	✓	✓

Reference Protocols

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9 Rights of Medication Administration

INDICATIONS: (EMT, A, I, P)

- To ensure proper medication administration for patient provided medications

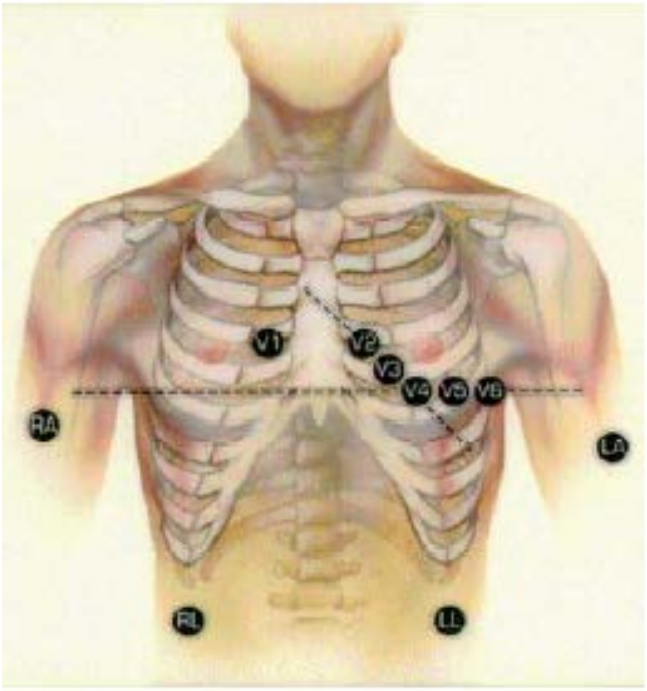
PROCEDURE

1. Right to Refuse – Patient has the right to refuse taking any prescribed medication
2. Right Patient – Verify the identity of the patient
3. Right Reason – Confirm the rationale for the medication, does the patients' medical history match the type of medication
4. Right Medication – Check the medication label and match to the current patient
5. Right Dose – Verify the dose with the prescription or use current drug references
6. Right Route – Confirm the route of administration and ensure patient can tolerate that route
7. Right Time – Check the frequency of administration and confirm administration time of last dose
8. Right Response – Verify the patient had the desired effect from the medication
9. Right Documentation – Document the administration given to include time, route, or any other specific information needed

12-Lead ECG

INDICATIONS (EMT, A, I, P)

- Suspected cardiac patient
- Suspected overdose
- Electrical injuries
- Syncope/Near-Syncope
- CHF
- Nausea/Vomiting
- Chest Pain
- Shortness of Breath
- Abdominal Pain
- Upper back pain (non-muscular)
- Weakness
- Toxic exposures
- Atypical presentations



Standard

PROCEDURE

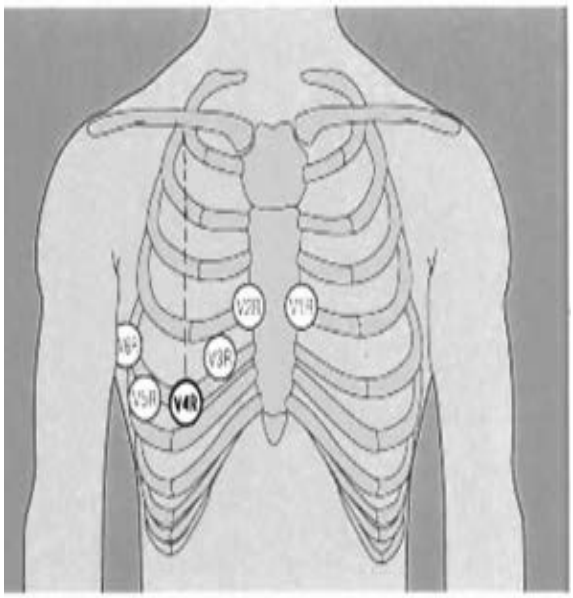
1. Prepare 12-Lead ECG monitor and connect patient cable with electrodes
2. Expose chest, thoroughly clean and abrade with cloth. Modesty of the patient should be respected
3. Use undamaged electrodes from a sealed package
4. Apply chest leads and extremity leads using the following landmarks:
    - RA- Right arm
    - LA- Left arm
    - RL- Right Leg
    - LL- Left Leg
    - V1- 4th intercostal space at right sternal border
    - V2- 4th intercostal space at left sternal border
    - V3- Directly between V2 and V4
    - V4- 5th intercostal space at midclavicular line
    - V5- Level with V4 at left anterior axillary line
    - V6- Level with V5 at left mid-axillary line
5. Instruct patient to remain still
6. Press the appropriate button to acquire the 12-Lead ECG within 10 minutes of patient contact
    - Obtain 12 lead PRIOR to moving the patient, unless there are concerns with scene safety or privacy
7. Transmit the 12-Lead to the receiving facility, as soon as practical, within 10 minutes of acquisition
8. If necessary, verify receipt of 12- Lead during pre-hospital report

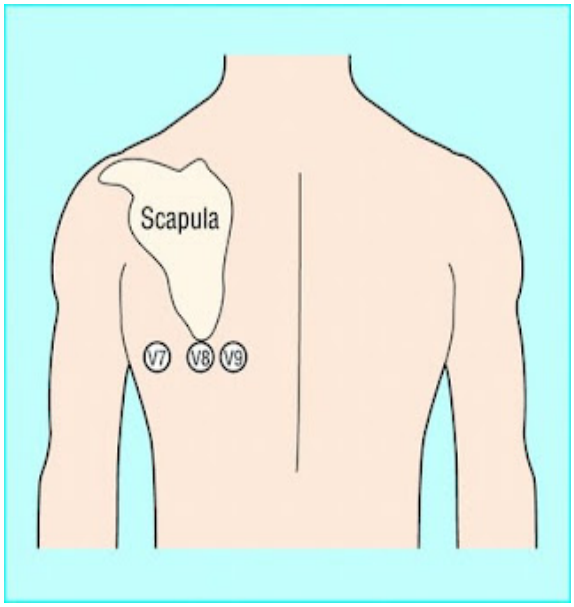
PROCEDURE FOR RIGHT-SIDED 12 LEAD

For Right-sided 12-Lead ECG (V4R) & Posterior 12-Lead ECG (V8 & V9), both together constitutes a 15-Lead ECG:

- V4R- (formerly V4) 5th intercostal space at midclavicular line on the patient's right side
- V8 - (formerly V5) 6th intercostal space left posterior at midscapular line
- V9 - (formerly V6) 6th intercostal space left at perispinal line
- Label the second 12-Lead ECG to reflect the new leads: V4 as V4R, V5 as V8, and V6 as V9

1. Print data as per guidelines and place the name and age of the patient on the paper copy of the 12-Lead ECG
2. STEMI suspected: notify and transmit to the closest Percutaneous Coronary Intervention (PCI) Center as soon as practical, within 10 minutes
3. Document the procedure, time, and results on/with the patient care report (PCR)





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APGAR / Pediatric Glasgow Coma Scale Score

APGAR

After delivery, an APGAR score should be determined at 1 minute and 5 minutes following delivery.

Indications of an APGAR score are:

- 10 – infant is in the best possible condition
- 7-9 – infant is slightly depressed (near-normal)
- 4-6 – infant is moderately depressed
- 0-3 – infant is severely depressed

*If <7, reassess APGAR every 5 minutes for 20 minutes

Sign	0	1	2
Appearance (skin color)	Blue, pale	Body pink, blue extremities	Completely pink
Pulse rate (heart rate)	Absent	<100 beats/minute	>100 beats/minute
Grimace (irritability)	No response	Grimace	Cough, sneeze, cry
Activity (muscle tone)	Limp	Some flexion	Active motion
Respirations (effort)	Absent	Slow, irregular	Good, crying

Credits: Mosby's Paramedic Textbook, 4th Edition, p. 1298

Pediatric Glasgow Coma Scale (GCS) Score

Eye	Verbal	Motor
4 –Spontaneous eye opening 3 – Eye opening on command 2 – Eye opening to painful stimulus 1 – No eye opening *If eye(s) cannot be opened due to severe swelling, the patient should receive the score based on what he/she would be able to do	*>5 Years of Age* 5 – Oriented and converses 4 – Disoriented and converses 3 – Inappropriate words 2 – Incomprehensible sounds 1 – Makes no verbal response ***2-5 Years of Age*** 5 – Appropriate words and phrases 4 – Inappropriate words 3 – Cries/screams 2 – Grunts 1 – Makes no verbal response ***Birth to 2 Years of Age*** 5 – Cries appropriately, smiles, coos 4 – Cries 3 – Inappropriate crying/screaming 2 – Grunts 1 – Makes no verbal response *See note about intubation	6 – Follows command 5 – Localizes painful stimuli 4 – Withdrawal to pain 3 – Responds with abnormal flexion to painful stimuli (decorticate) 2 – Responds with abnormal extension to painful stimuli (decerebrate) 1 – Gives no motor response

- It is important to break the score down into its components (e.g., E3/V3/M5 = GCS 11)
- If patient intubated, GCS score contains only eye and motor scales and a "T" is added to note the inability to assess verbal response (e.g., "8T")
- 13-15 = minor injury / 9-12 = moderate injury / 8 or less = major injury

Credits: PHTLS, 8th Edition, p. 387 and Mosby's Paramedic Textbook, 4th Edition, p. 1344

BiLevel Positive Airway Pressure / Continuous Positive Airway Pressure

INDICATIONS: (EMT, A, I, P)

The BiLevel/CPAP device should be considered in patients with severe respiratory distress and inadequate ventilation.

Examples of conditions for which BiLevel/CPAP may be considered included, but are not limited to:

- Pulmonary edema
- Pneumonia
- Asthma
- COPD
- Near-drowning

CONTRAINDICATIONS:

- Patients under 8 years of age
- Unable to maintain drive to breathe
- Decreased level of consciousness
- Apnea
- Pneumothorax
- Facial trauma/ burns
- Penetrating neck and chest trauma
- Recent facial surgery
- Patient unable to tolerate mask
- Active vomiting
- Precaution if systolic BP less than 90 mm/Hg

PROCEDURE FOR CPAP MODE:

- Ensure adequate oxygen supply to ventilation device
- Explain the procedure to the patient
- Set dial to CPAP
- Place the delivery mask over the mouth and nose. Oxygen should be flowing at this point
- Place the head harness on the patient
- Secure the lower straps to the mask
- Adjust the forehead pads so they rest on the patient's forehead
- Check for any air leaks
- Increase oxygen flow rate to reach desired pressure
- Evaluate the response in the patient
- Monitor capnography, pulse oximetry & cardiac status
- If patient condition does not improve, consider other methods of managing ventilation (i.e. BVM)

BILEVEL/CPAP

PROCEDURE FOR BILEVEL MODE:

- Ensure adequate oxygen supply to device
- Explain the procedure to the patient
- Set dial to CPAP mode
- Place the delivery mask over the mouth and nose. Oxygen should be flowing at this point
- Place the head harness on the patient
- Secure the lower straps to the mask
- Adjust the forehead pads so they rest on the patient's forehead
- Check for any air leaks
- Increase oxygen flow rate to 15LPM to reach 10cm H20, this will be the IPAP (Inspiratory Positive Airway Pressure)
- Confirm pressure has been achieved on the manometer
- Turn dial from CPAP to BiLevel (BiPAP)
- Rotate the EPAP (Expiratory Positive Airway Pressure) dial clockwise to increase the pressure and counterclockwise to decrease the pressure (Blue Gear)
- On the manometer, the lowest number the needle stops at during exhalation is the EPAP
- Evaluate the response in the patient
- Monitor mental status, capnography, pulse oximetry, & cardiac status
- If patient condition does not improve, consider other methods of managing ventilation (i.e. BVM)
- Observe closely for signs of complications

PROCEDURE FOR USE OF NEBULIZER

- Set the device to CPAP mode
- Assemble the nebulizer kit (The nebulizer kit will require its own oxygen source)
- Attached the T-piece to the face mask and the CPAP/BiLevel mechanism
- Leave the device in CPAP mode (The BiLevel mode will not work with the nebulizer kit attached)

Blood Draws

Indications: (A, I, P)

Suspected stroke

Procedure:

- Blood should be drawn no more than 15 minutes prior to arrival to the hospital
- Establish IV access
- Disconnect infusing fluids
- If preexisting IV, use 10 cc syringe to draw 10 cc of blood for waste (not needed if initial access)
- Connect vacutainer
- Use tubes to draw blood in the order recommended by the manufacturer or facility
- Invert tubes 8-10 times
- Complete labels with the following information and place on tubes:
    - Patient's name
    - Date and time of blood draw
    - Provider's initials
    - Unit Number
- Place tubes in biohazard bag and seal it
- Flush IV or restart fluids
- Hand off to nurse or tech upon arrival

Notes:

- Do not delay transport to establish IV or draw labs.
- Stroke kits should be restocked at the hospital.
- Ensure that biohazard bag does not get thrown into conventional trash if lab draw is incomplete.

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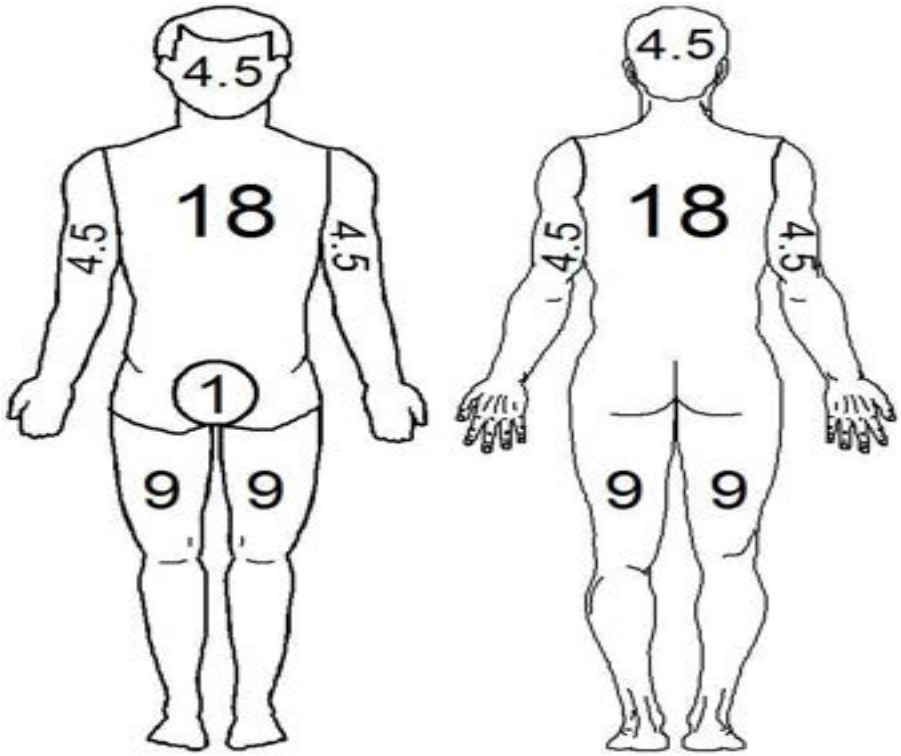
Burn Chart: Adult - Reference

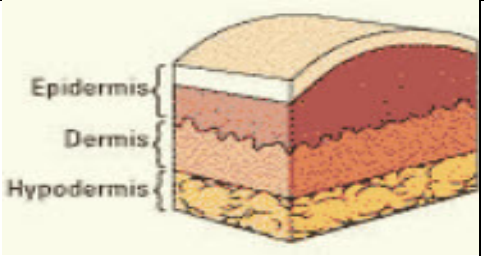
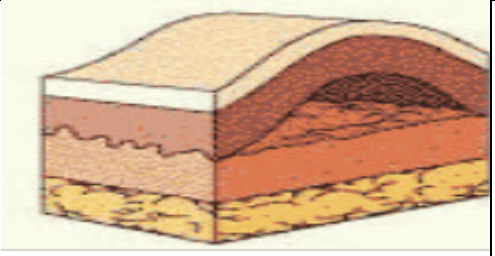
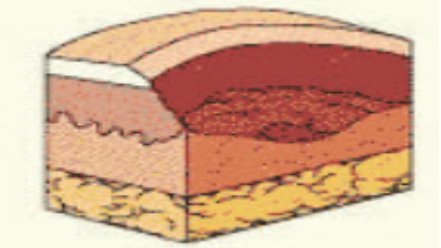


Palm Method:

The palm method is a tool whereby the size of the patient's palm is used as an indicator for a specific percentage of TBSA.

The surface area of a patient's palm equals approximately 1% of TBSA.

This method is particularly useful where the burn has an irregular shape or has a scattered distribution.

Superficial (First-Degree)	Partial Thickness (Second-Degree)	Full Thickness (Third-Degree)
		
Damage to the outer layer of skin {epidermis}, causing pain, redness and swelling.	Damage to both outer skin and underlying tissue layers {epidermis and dermis} causing pain, redness, swelling and blistering.	Damage extends deeper into tissues {epidermis, dermis and hypodermis} causing extensive tissue destruction. The skin may feel numb.

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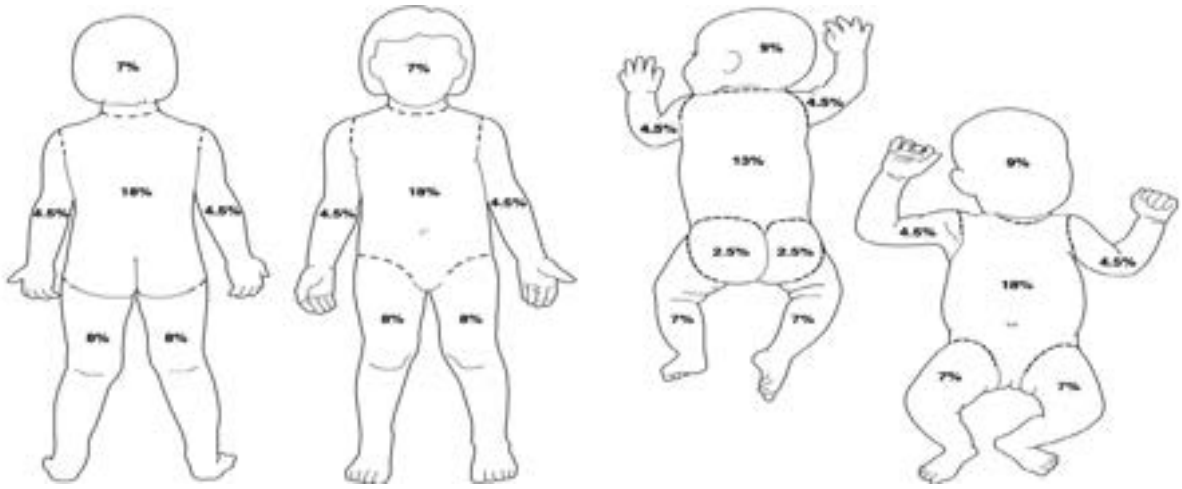
Burn Chart: Pediatric - Reference



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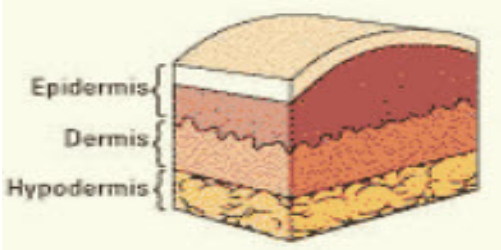
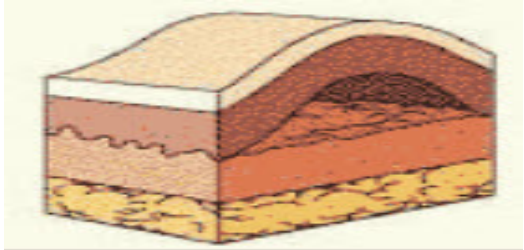
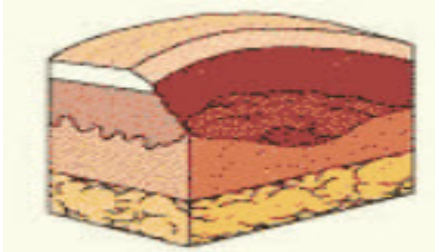
Superficial (First-Degree)	Partial Thickness (Second-Degree)	Full Thickness (Third-Degree)
		
Damage to the outer layer of skin {epidermis}, causing pain, redness and swelling.	Damage to both outer skin and underlying tissue layers {epidermis and dermis} causing pain, redness, swelling and blistering.	Damage extends deeper into tissues {epidermis, dermis and hypodermis} causing extensive tissue destruction. The skin may feel numb.

Capnography

INDICATIONS

- Respiratory distress that is severe or when respiratory medications are being administered/considered
- Advanced airway in place and/or inadequate respiratory effort
- Administration/maintenance of medications with potential to impact respiratory effort (Opiates, Benzodiazepines, Sedatives, etc.)
- Cardiac arrest when resuscitation is attempted and/or during ROSC
- Sepsis (Known/possible infection and 2 or more SIRS criteria)
- LVAD (signs and symptoms of hypo perfusion)

CONTRAINDICATIONS

None

PROCEDURE

Follow manufacturer's instructions for placement and use of device.
Use on both adult and pediatric patients.
Endotracheal tube (ETT)/blind insertion airway device (BIAD)/bag valve mask (BVM): • Place $ETCO_2$ sampling device in between ventilation device (BVM/ventilator) and the mask/endotracheal tube (ETT)/King Airway/Combitube/ Laryngeal Mask Airway (LMA) • The filter line shall remain in place with the airway and be monitored throughout prehospital care and transport.
Non-intubated spontaneously breathing patient: • Place the sampling nasal cannula on the patient. • The filter line shall remain in place and be monitored throughout prehospital care and transport.
Continuous positive airway pressure (CPAP)/ Bilevel positive airway pressure (BiPAP): • Follow manufacturer's recommendations for placement of $ETCO_2$ in conjunction with use of CPAP/BIPAP. • Place sampling nasal cannula on the patient. • Place CPAP/ BiPAP mask on patient ensuring a good seal. • Observe and record results. • The filter line shall remain in place and be monitored throughout prehospital care and transport.

PEARLS

Normal range → $ETCO_2$ in adult and pediatric patients is 35-45 mm Hg.

Cardiac arrest → Attempt to keep $ETCO_2$ above 10 mm Hg.

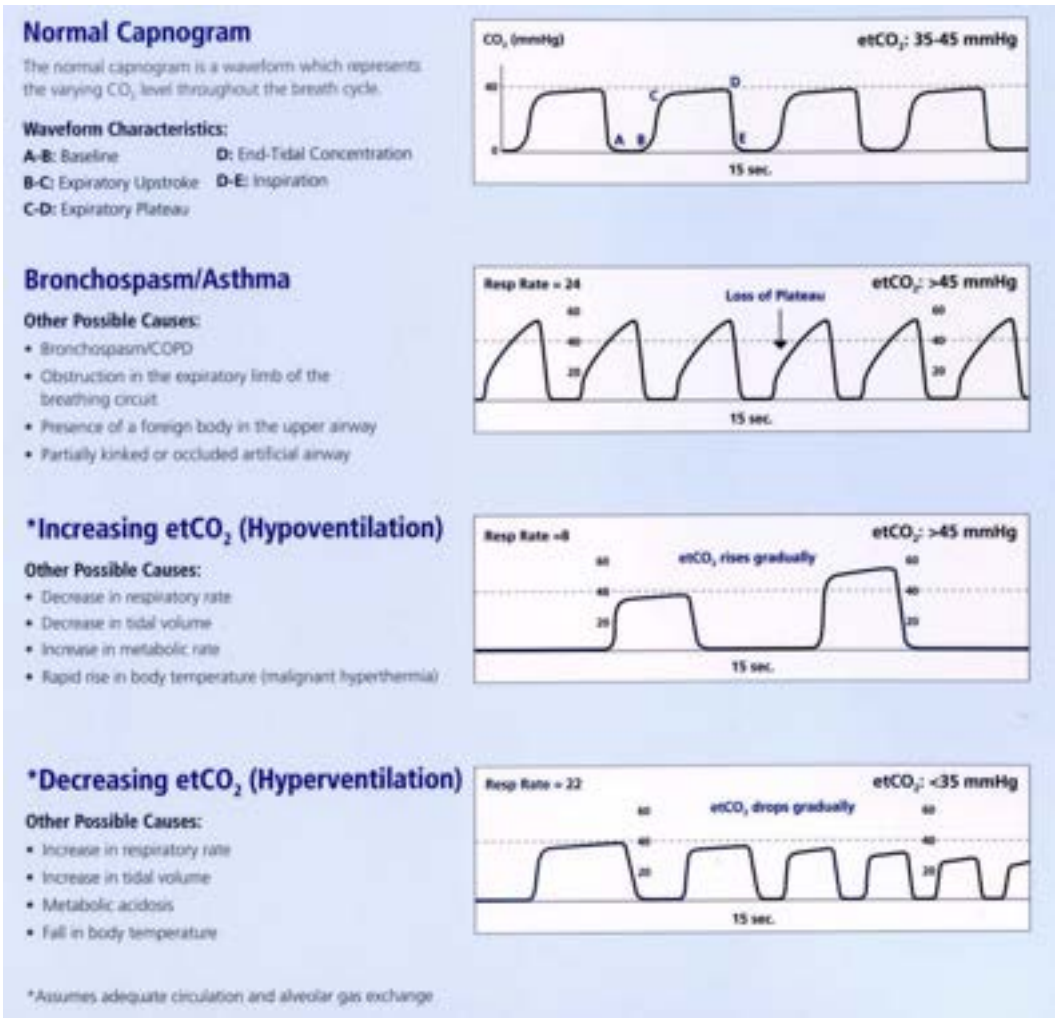
Post-cardiac arrest → Attempt to keep $ETCO_2$ between 35-45 mm Hg.

If $ETCO_2$ levels remain above 45 mm Hg despite ventilatory assistance, bronchodilators, CPAP or BIPAP, intubation may be needed.

When $ETCO_2$ is not detected, three factors must be addressed:

- Loss of airway/apnea → Esophageal ETT placement or migration
- Circulatory collapse → Cardiac arrest, pulmonary embolism, hypoperfusion
- Equipment failure → Disconnected BVM or ventilator, obstruction in $ETCO_2$ detector or sampling tube

Normal and Abnormal $etCO_2$/Capnograph Waveforms



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Chest Decompression With Needle

INDICATIONS: (I, P)

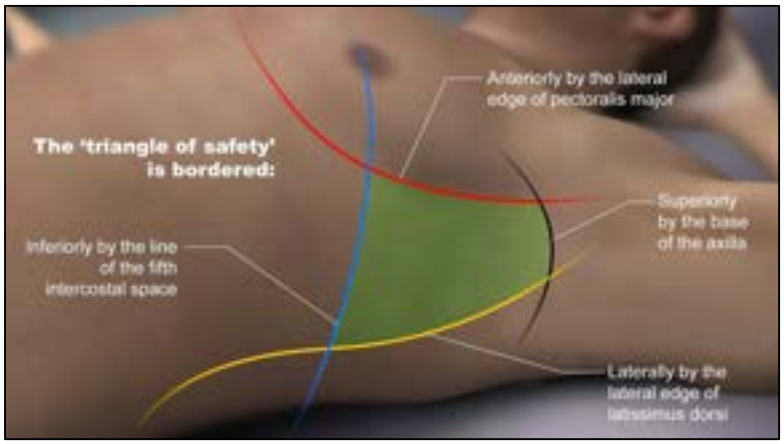
Suspected tension pneumothorax

SIGNS/SYMPTOMS OF TENSION PNEUMOTHORAX

Absent/decreased breath sound(s) with hypotension (SBP<90) or other clinical signs of shock
AND
At least one of the following:
severe/progressive respiratory distress/tachypnea, Jugular vein distension (JVD), tracheal deviation, increased resistance when ventilating a patient

PROCEDURE:

- Administer high flow oxygen
- Identify landmarks on the side of the suspected tension pneumothorax
  - Preferred site: 4th intercostal space on midaxillary line, must be within the "Safety Triangle"
  - Alternate site: 2nd intercostal space on midclavicular line
- Prepare equipment (commercial device preferred)
  - Adult – At least 14g and 3.25in. or largest available
  - Pediatric – 18g (consider adult size for adolescent or larger children)



- Cleanse the site
- Insert needle/catheter unit at an angle perpendicular to the chest wall and just over the top of the lower rib at the insertion site, through the parietal pleura, until a "pop" is felt and air or blood exits through the catheter under pressure, then advance the catheter only to the chest wall
- Hold in place for 5-10 seconds to allow chest decompression to occur
- Remove the needle, leaving the catheter in place, then cap with 3-way stopcock
- Secure the catheter hub to the chest wall with dressings and tape
- Evaluate the patient response
  - Assess breath sounds, oxygen saturation, and general appearance
- Monitor and observe for complications
  - Pulse oximetry, capnography, cardiac status, and vital signs
- Document time of procedure and response on patient care report (PCR)

NOTES:

- Perform bilateral chest decompression in traumatic cardiac arrest if thoracic injuries are suspected
- It is inappropriate to perform a needle decompression in the absence of clinical signs of shock
- Tracheal deviation is often a late sign and presents away from the side of injury
- Incorporate Ultrasound, if available

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Conversion Table

GOALS

- To aid providers with conversions

Conversions

- 1 kilogram (kg) = 1,000 grams (g)
- 1 gram (g) = 1,000 milligrams (mg)
- 1 milligram (mg) = 1,000 micrograms (mcg)
- 15 grains (gr) = 1 Gram = 1,000 milligrams (mg)
- 1 grain (gr) = 60 milligrams (mg)
- 1 milliliter (ml) = 1 cubic centimeter (cc)
- 1 ounce (oz) = 30 milliliters (ml)
- 1 tablespoon (T or tbsp.) = 15 milliliters (ml)
- 1 teaspoon (t or tsp) = 5 milliliters (ml)
- 1 kilogram (kg) = 2.2 pounds (lbs)

Calculations

- Convert Grams to Milligrams by multiplying grams by 1,000
- Convert Milligrams to Grams by dividing milligrams by 1,000
- Convert Grams to Grains multiply grams by 15
- Convert Grains to Grams divide grains by 15
- Convert Grains to Milligrams multiply grains by 60
- Convert Milligrams to Grains divide Milligrams by 60
- Convert Pounds to Kilograms divide pounds by 2.2
- Convert Kilograms to Pounds multiply kilograms by 2.2

Cricothyrotomy - Needle

INDICATIONS: (P)

Pediatric and adult medical cases:

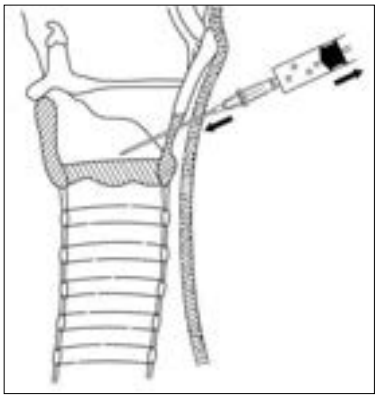
- Respiratory arrest or impending respiratory failure, especially in the setting of upper airway obstruction due to foreign body or infection and inability to ventilate by any means available.

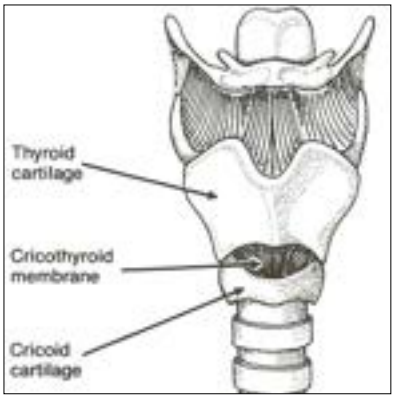
Trauma:

- Advanced airway is required due to respiratory arrest or inability to maintain airway due to face, neck, or chest trauma, or; impending respiratory failure, inability to ventilate due to obstruction of airway, distortion of area, or inability to extend neck in cases of suspected C-spine injury.

PROCEDURE:

- Palpate the cricothyroid membrane midline just below the thyroid cartilage and above the cricoid cartilage
- Cleanse the area
- Insert the largest available needle, at minimum 14-gauge catheter with a 10 cc syringe attached midline directed at a 45-degree angle towards the navel, while aspirating the syringe. When trachea is entered, air will be aspirated easily
- Attach the appropriate adapter and ventilate using high flow device
- Assess for adequacy of ventilation. Listen for breath sounds and observe for chest expansion
- Evaluate the response in the patient. Assess breath sounds, oxygen saturation, and general appearance of the patient
- Monitor capnography, pulse oximetry, and cardiac status. Observe closely for signs of complications
- Document time and response on the patient care report (PCR)
- Transport to the closest emergency department for definitive care
- Caution: Despite proper technique, ventilation may still be inadequate, especially of an adult.
- Possible complications include bleeding, perforation of the esophagus or perforation through the trachea, local cellulitis or hematoma and subcutaneous or mediastinal emphysema





Cricothyrotomy - Surgical

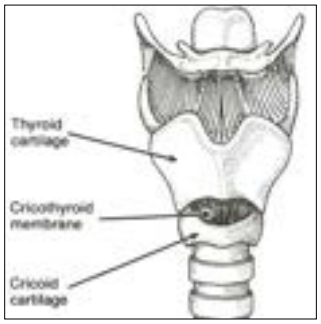
INDICATIONS: (P)

Adult medical cases:

- Respiratory arrest or impending respiratory failure, especially in the setting of upper airway obstruction due to foreign body or infection, and inability to ventilate by any means available.

Trauma: Advanced airway is required due to:

- Respiratory arrest, inability to maintain airway due to face, neck, chest trauma, impending respiratory failure, with inability to ventilate by mask or intubate trachea whether due to obstruction of airway, distortion of area.



CONTRAINDICATIONS: Patients under 10 years of age

PROCEDURE:

Use cricothyrotomy kit, if available, according to manufacturer's recommendations. Otherwise:

- Place patient in the supine position with the neck in a neutral position
- Palpate the cricothyroid membrane between the thyroid and cricoid membranes for orientation
- Cleanse the area
- Stabilize the thyroid cartilage with non-dominant hand
- Make a vertical incision until the membrane is exposed. Carry the incision in each direction until the total length is approximately 2 cm. Ensure vehicle is stopped during incision.
- Make horizontal incision through the membrane approximately 1 cm. Insert the scalpel handle and rotate 90° to the incision; open and maintain the airway
- Insert a size 5-6 cuffed ET tube or tracheostomy tube into the airway, directing the tube into the trachea in a manner similar to the insertion of a pediatric OPA: sideways and then rotating to avoid false passing the tube. ET tube should only be inserted until the bulb passes through the membrane. The use of a bougie is recommended.
- Ensure you have not false passed the endotracheal tube outside of the trachea
- Inflate cuff and ventilate the patient
- Observe lung inflations and auscultate chest for adequate ventilation
- Secure tube to prevent inadvertent dislodging
- Evaluate the response in the patient. Assess breath sounds, oxygen saturation, general appearance of the patient, monitor capnography, pulse oximetry, and cardiac status
- Observe closely for signs of complication.
- Transport to closest emergency department if difficulty is encountered with procedure. If successful, transport to closest appropriate facility.

De-Escalation Techniques / Patient Restraints

Clinical Indications:

- Patients suffering from a behavioral crisis or psychiatric emergency.
    - Can be any age
    - Exhibit agitated, violent, or uncooperative behavior
    - May be a danger to themselves or others including EMS personnel
- Causes include but are not limited to: anxiety disorders, chronic depression, schizophrenia, dementia, delirium, alcohol / drug-intoxicated patients, restless, combative head-injury patients, physical abuse patients, etc.
- Patients are treated under implied consent. If a patient is refusing treatment, law enforcement should be present.
- Techniques include verbal de-escalation, physical restraint and/or chemical restraint.

Verbal Procedure:

- Attempt to control the patient with verbal counseling.
- Make every attempt not to aggravate or worsen pre-existing injuries or medical conditions.
- Safety guidelines for a behavioral crisis:
    - Assess the scene. Consider law enforcement involvement. Stay alert for signs of potential violence
        - Agitation, rocking or pacing back and forth, clinched fists or jaw, increase volume of voice
    - Ensure you have a means of communication and/or retreat
    - Know where your exits are and position yourself between the patient and the exit
    - Ensure no weapons are within reach of the patient
    - Secure loose items that could be used as a weapon
    - Have a definite plan of action
    - In a calm and friendly manner, identify yourself and your agency and set boundaries for acceptable behavior
        - Be mindful of your body language, breathe deep and slow and keep your hands visible
        - Don't overwhelm the individual with a group approach. There may be only 1 person in the crew that truly connects with the individual
    - Be prepared to spend extra time. Stay with the patient and be patient. Be willing to slow down and disengage if appropriate
    - Ask before entering their personal space. Keep in mind everyone's personal space is different
    - Maintain a safe distance and refrain from touching
    - Involve people the patient trusts to gain the patient's cooperation. Empathize. Use positive feedback
        - Don't lie or make false promises, they WILL catch on and remember this
    - Express interest in the patients' story. Listen to the patient's concerns. Identify how the individual feels
        - Ask what happened, not what's wrong with you
        - Be honest and reassuring. Remain calm and speak clearly. Do not judge
        - Avoid fighting with the patient
            - Do not challenge the patient regarding the reality of their delusions
            - Do not go along with their delusions
            - Do not make an issue of their delusions. Focus on real things
    - Be direct. Explain what you want to do. Outline the patients' choices
        - Involve the patient, if possible, with the plan of their care and give them options. (E.g., Which arm can I use for your blood pressure?) However, do NOT give them options that you don't want them to choose

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De-Escalation Techniques / Patient Restraints

Physical Restraint Procedure:

- Use the minimum physical restraint required to accomplish necessary patient care and ensure safe transportation:
  - Soft restraints may be sufficient
  - Call for law enforcement prior to attempting restraint procedures
  - Do not endanger yourself or your crew
- Avoid placing restraints in a way that precludes evaluation of the patients' medical status (airway, breathing, and circulation). Consider if placement of restraints will interfere with necessary patient care activities or cause harm.
- Safety guidelines for a behavioral crisis:
  - Ensure sufficient personnel are present to control the patient while restraining him/her, **USE LAW ENFORCEMENT ASSISTANCE WHEN AVAILABLE**
  - Secure **ALL** extremities with soft restraints (or equivalent) while patient is in a supine position
    - Try to restrain lower extremities first around both ankles
    - Next, restrain the patient's arms (one up/one down) around each wrist
  - Place padding under patient's head and wherever else needed to prevent the patient from further harming themselves or restricting circulation
  - Document circulatory status of restrained extremities every 15 minutes
    - Physical restraint MUST be used any time a potentially violent or unstable patient (i.e., head injury, altered mental status, or under the influence) is transported by **air ambulance**

Chemical Restraint Procedure:

- Sedative agents may be used to provide a safe, humane method of restraining a violently combative patient who presents a danger to themselves or others and prevent further patient injury while secured by physical restraints.
- Safety guidelines for a behavioral crisis:
  - Assess the possibility of using physical restraint first; evaluate the personnel needed to safely attempt to restrain the patient
  - Assess the need for sedation
  - Have sedative medication prepared for injection; prepare for possible hypotensive side effects
  - Administer medication as directed in the Agitated/Combative Patient Protocol
    - Vital signs should be assessed within the first five minutes and every five minutes thereafter
    - If necessary, contact On-Line Medical Control for additional sedation
  - Chemical restraint precautions: Side effects of Haldol may include hypotension, tachycardia, and acute dystonic reactions. Treat symptoms of dystonic reaction following the Agitated/Combative Patient protocol. Watch for increased sedation

Patient Capacity Considerations:

- Medical decision-making capacity is defined as the ability to give informed consent to go through a particular medical test or intervention or the ability to refuse such intervention
- When tasked to determine the mental capacity of a patient to refuse treatment, consider:
  - Is the patient in danger of hurting themselves or others?
  - Is/Could there be an underlying medical emergency that may lead to death or worsen considerably if not treated soon?
  - Is there an emergency medical intervention that must be made to avoid a worsening patient condition?
  - Does the patient understand the risks of refusing these treatments or interventions? If not, make them clear

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De-Escalation Techniques / Patient Restraints

Minimum Documentation Requirements:

- In what manner was the patient violent? Record patient's comments *verbatim.*
- Did you feel threatened? Why?
- Were you concerned about the patient's outcome without emergency medical interventions? Why?
- Could you treat your patient appropriately without the use of restraints?
- What Law Enforcement Officer was present?
- What physician provided the order? Who was on-line medical control?
- Document the frequency of respiratory and mental status change assessments. Proof of constant evaluation of the patients' airway status is extremely important
- What kind of restraints were used and location of where the restraints were placed?

Note:

Consider reaching out to local law enforcement and/or CSB to attend a CIT (Crisis Intervention Training) class.

The goal of CIT is to improve the outcomes of first responders' (Police, Dispatchers, EMS and Fire) interactions with people living with mental illnesses, as well as provide these individuals with appropriate access to community resources.

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Epinephrine / Norepinephrine (Levophed) Drip Charts

Thoroughly mix the bag by inverting it twice. Inspect for any leaks or particulate.
All drip rates calculated using a micro-drip set (60 drop set); prime drip set and remove air from line; label bag.

Epinephrine Drip
To prepare an epinephrine drip solution:
Add 1 mg of Epinephrine to a 250 mL bag of Normal Saline (NS)
1 mg of Epinephrine is:
1 mL of Epinephrine (1 mg/mL concentration) or 10 mL of Epinephrine (0.1 mg/mL concentration)

For 4 mcg/mL

Epinephrine Dose	2 mcg/min	3 mcg/min	4 mcg/min	5 mcg/min	6 mcg/min	7 mcg/min	8 mcg/min	9 mcg/min	10 mcg/min
Drops per 60 seconds	30	45	60	75	90	105	120	135	150
Drops per 15 seconds	8	11	15	19	23	26	30	34	38

Norepinephrine (Levophed)
Add 4 mg of Norepinephrine (Levophed) to a 250 mL Normal Saline (16 mcg/mL)

Levophed Dose	2 mcg/ min	3 mcg/ min	4 mcg/ min	5 mcg/ min	6 mcg/ min	7 mcg/ min	8 mcg/ min	9 mcg/ min	10 mcg/ min	11 mcg/ min	12 mcg/ min
Drops per 60 seconds	8	11	15	19	23	26	30	34	38	41	45
Drops per 15 seconds	2	3	4	5	6	7	8	9	10	11	12

The infusion should be titrated to achieve a systolic blood pressure between 90 – 100 mmHg.

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Existing Catheter Access

Clinical Indications:

- Patient with immediate need for delivery of medications, whole blood, and/or fluid **(I, P)** **AND**
  - Inability to establish an adequate peripheral IV, EJ IV, or IO **AND**
  - Patient has existing venous catheter for medication or fluid administration **OR** central venous access in a cardiac arrest patient **OR** existing catheter that is already accessed by a healthcare provider

Contraindications:

- Ability to obtain IV, EJ or IO access
- Ability to administer IM or IN medication for condition
- Suspected infection of existing catheter or infection of unknown source
- Patient has existing medication infusion running via catheter/port
- Access that is under the skin such as subcutaneous infusion ports or hemodialysis fistulas/grafts
- Ports or access that require special devices to access

Procedure:

- Do not remove the current cap
- Put on new gloves
- Clean the port of the catheter with alcohol prep twice using a new alcohol prep each time
- Using aseptic technique, aspirate 5-10 mL of blood and discard in sharps container
- Clean the port of the catheter with a new alcohol prep
- Using aseptic technique, gently flush the line with 5-10 mL of saline
- Clean the port of the catheter with a new alcohol prep
- Using aseptic technique, gently administer fluids/medications per protocol
  - Use larger sized syringes, small syringes (3-5 mL) can cause excessive force to the catheter walls
- Closely monitor access, insertion site and patient
  - If there is any resistance to flush, patient complains of discomfort or there was any difficulty with the process, stop using the existing catheter and find other access
- Document use of existing catheter, steps used to access and any difficulties in patient record

Notes:

- Accessing an existing catheter is inappropriate for prophylactic access!
- Do not remove any existing medication infusions from access without verifying with online medical control.
- Aseptic technique and cleanliness are imperative due the nature of the access.
- Do not allow any air into catheter. Clamp lines (if clamps are present) before disconnecting from catheter.
- Do not allow IV fluids to run empty.
- PICC lines require 5 mL of blood aspiration and central lines require 10 mL.
- Do not use needles to access ports/catheters since they are needleless systems.

External Cardiac Pacing

INDICATIONS: (I, P)

Monitored heart rate less than 60 per minute with signs and symptoms of inadequate cerebral or cardiac perfusion such as:

- Ischemic chest pain
- Hypotension
- Pulmonary edema
- Altered Mental Status, disorientation, confusion, etc.

PROCEDURE:

- Attach standard monitor leads
- Apply defibrillation/pacing pads (per manufacturer's recommendation)
- Place device in pacing mode
- Adjust heart rate to 60 BPM for an adult and 100 BPM for a child
- Note pacer spikes on ECG screen
- Slowly increase output from 0 mA until capture of electrical rhythm on the monitor, then increase the mA by 10%
- If unable to capture while at maximum current output, stop pacing immediately
- If electrical capture observed on monitor, assess for mechanical capture by obtaining a radial or femoral pulse and blood pressure. Observe for other signs of adequate perfusion. Note: Palpation of the carotid pulse could give an inaccurate impression of the patient's perfusion status due to the provider confusing the muscular contractions for a carotid pulse
- Consider the use of sedation or analgesia for patient if time and condition permits

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Glasgow Coma Score

The GCS is scored between 3 and 15, 3 being the worst, and 15 the best. It is composed of three parameters: Best Eye Response, Best Verbal Response, and Best Motor Response, as given below:

Glasgow Coma Score Eye Opening (E) Verbal Response (V) Motor Response (M)

Best Eye Response. (E)	Best Verbal Response. (V)	Best Motor Response. (M)
1. No eye opening. 2. Eye opening to pain. 3. Eye opening to verbal command. 4. Eyes open spontaneously.	1. No verbal response 2. Incomprehensible sounds. 3. Inappropriate words. 4. Confused 5. Orientated	1. No motor response. 2. Extension to pain. 3. Flexion to pain. 4. Withdrawal from pain. 5. Localizing pain. 6. Obeys Commands.
Note that the phrase 'GCS of 11' is essentially meaningless, and it is important to break the figure down into its components, such as Total = E+V+M Displayed as = E3V3M5 = GCS 11. A Coma Score of 13 or higher correlates with a mild brain injury, 9 to 12 is a moderate injury and 8 or less a severe brain injury.		

The Glasgow Coma Scale is the most widely used scoring system used in quantifying level of consciousness following traumatic brain injury. It is used primarily because it is simple, has a relatively high degree of interobserver reliability and because it correlates well with outcome following severe brain injury.

It is easy to use, particularly if a form is used with a table similar to the one above. One determines the best eye opening response, the best verbal response, and the best motor response. The score represents the sum of the numeric scores of each of the categories. There are limitations to its use. If the patient has an endotracheal tube in place, they cannot talk. For this reason, many prefer to document the score by its individual components; so a patient with a Glasgow Coma Score of 15 would be documented as follows: E4 V5 M6. An intubated patient would be scored as E4 V-intubated M6. Of these individual factors, the best motor response is probably the most significant.

Other factors which alter the patient's level of consciousness interfere with the scale's ability to accurately reflect the severity of a traumatic brain injury. So, shock, hypoxemia, drug use, alcohol intoxication, metabolic disturbances may alter the GCS independently of the brain injury. Obviously, a patient with a spinal cord injury will make the motor scale invalid, and severe orbital trauma may make eye opening impossible to assess. The GCS also has limited utility in children, particularly those less than 36 months. In spite of these limitations, it is quite useful and is far and away the most widely used scoring system used today to assess patients with traumatic brain injury.

High Performance CPR

Choose high performance CPR.

INDICATIONS: (EMT, A, I, P)

- Patient does not have a pulse and is not breathing

PROCEDURE:

- Compress at a rate 100-120/min. Consider using external feedback devices like metronomes
- Compress to a depth of at least 2 inches (5 cm) for adults and 1/3 of the chest for kids
- Allow complete chest recoil after each compression. Don't lean on the chest between compressions
- If $ETCO_2$ falls below 10, evaluate CPR quality
- Don't over-ventilate! Ventilate only to see the beginning of chest rise
    - Use the ratio of 30 compressions to 2 breaths for adults. For pediatric patients use the ratio of 30 compressions to 2 ventilations when performing single-rescuer CPR and switch to 15:2 ratio when multiple rescuers are available
    - After establishing ALS airway switch to continuous compressions with asynchronous ventilations at a rate of no faster that 10 breaths/min for adults and no faster than 30 breaths/min for pediatric patients
    - For newly born resuscitation use the ratio of 3 compressions to 1 ventilation
- When performing manual CPR, switch compressors every 2 minutes regardless of whether they are tired or not
- Consider assigning a role of CPR Coach to perform Quality Control of the CPR
- Minimize interruptions in chest compressions. Try to limit pauses in chest compressions to less than 10 seconds. The goal is Chest Compression Fraction (CCF) of at least 60%, ideally above 80%

WAYS TO INCREASE CCF:

- Pre-charge the defibrillator 15 seconds before a 2-minute rhythm analysis regardless of what the previous rhythm was. This makes it possible to conduct a rhythm check and give a shock (if needed) within 10 seconds or less
- Compressor hovers over the chest (not touching it), ready to start chest compressions immediately after a shock, a rhythm analysis, or other necessary pauses in compressions
- Have the next compressor ready to take over immediately.
- If intubating, don't pause compressions
- Deliver medications during compressions
- Consider insertion of advanced airway that allows fewer pauses in chest compressions (continuous compressions with asynchronous ventilations)

Intramuscular Injections

Indications: (EMT, A, I, P)

- **NOTE:** The only IM medication for EMTs is epinephrine via an EpiPen
- Patients needing medication delivery where IM is the preferred route
- Patients needing medication deliver where IV may be difficult or delayed

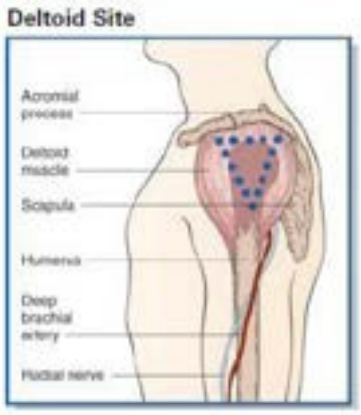
Precautions:

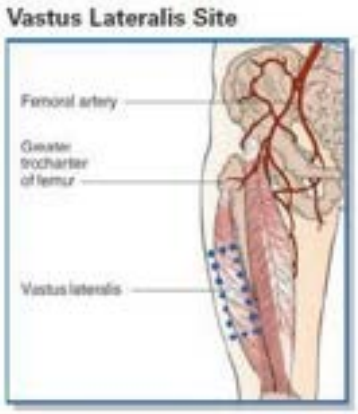
- **DO NOT** administer more than **2 mL** in the deltoid (arm) muscle
- **DO NOT** administer more than **5 mL** in the vastus lateralis (thigh) or dorsogluteal (hip) muscles

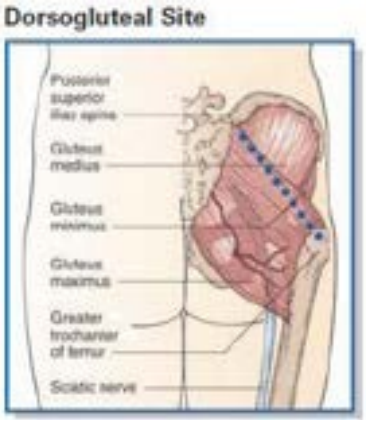
Procedure:

- Identify the need for IM medication delivery
- Take standard precautions
- Explain the procedure to the patient
- Cleanse the area for the administration using aseptic technique
- Stretch the skin and insert needle at a 90° angle
- Pull back on the plunger to aspirate for blood
- If blood present, remove needle, discard syringe, and prepare a new syringe
- If no blood present, dispense the medication and dispose of needle
- Rub area in a circular motion

Injection Sites Needle Selection:







*** Intramuscular (IM) Injection Guideline for Needle Length, Gauge and Volume on next page***

Intramuscular Injections

Intramuscular (IM) Injection Guideline for Needle Length, Gauge and Volume				
Age	**Location**	**Needle Length**	**Needle Gauge**	**Ideal Volume**
Newborns (0-28 days)	anterolateral thigh	5/8 – 1”	22-25G	1/2 mL
Infants (1-12 months)	anterolateral thigh	1’		1 mL
Toddler (1-2 years)	anterolateral thigh or deltoid muscle (arm)	1 - 1 1/4” 5/8 – 1”		1 mL
Children and Teens (3-18 years)	deltoid muscle (arm) or Anterolateral thigh	5/8 – 1” 1 - 1 1/4”		1 mL
Adult (19 years +)	deltoid muscle (arm) or dorsogluteal (hip) or anterolateral thigh	1 – 2”		1 mL 3 mL 3 mL

Tidewater EMS Council, Inc.

Intranasal Medication Delivery

INDICATIONS: (EMT, A, I, P)

- Patients needing medication delivery where IN is the preferred route
- Patients needing medication delivery where IV may be difficult or delayed

PRECAUTIONS:

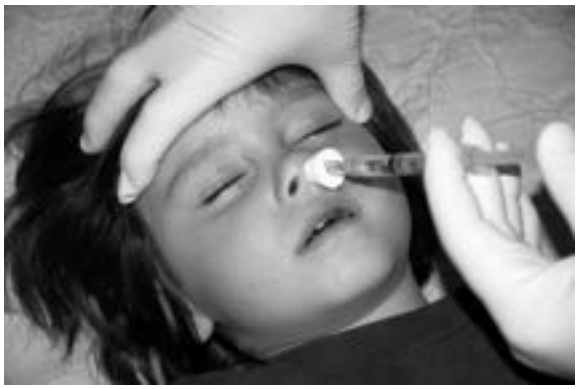
- **DO NOT** Administer more than 1 mL of medication per nostril within a 10–15-minute period

CONTRAINDICATIONS:

- **DO NOT** administer Intranasal (IN) medications with any nasal/nose trauma or bleeding from the nose

PROCEDURE

- Identify the need for IN medication delivery
- Prepare the delivery device and medication according to the manufacturer's recommendation
- Explain the procedure to the patient
- To administer, use a ***firm, rapid push*** to atomize the medication into fine particles so the maximal nasal mucosal surface is covered, and minimal volume runs out the nose or into the throat
- Utilize both nostrils to double the surface area for absorption and halve the volume delivered per nostril
- Deliver medication in the nostril, DO NOT exceed more than 1mL per nostril in any 10-15 minute period
- Document time of medication delivery, which nostril(s) used to deliver medication and response
- Drugs which can be given by intranasal route (IN) in the TEMS Region:
    - Midazolam (Versed), Naloxone (Narcan), Fentanyl, Ketamine



Tidewater EMS Council, Inc.

Intraosseous Access

Clinical Indications:

- Cardiac Arrest **(A, I, P)**
- Patient in extremis with immediate need for delivery of medications and/or fluid **(A, I, P)**
    - Profound hypovolemia with altered mental status
    - Immediate need for IV medications /fluids

Contraindications:

- Fracture of the targeted bone
- Previous, significant orthopedic procedures at insertion site (e.g., prosthetic limb or joint)
- IO in the targeted bone within the past 48 hours
- Inability to determine anatomical landmarks due to excessive tissue at insertion site
- Infection at/adjacent to proposed site
- Severe osteoporosis or other degenerative bone disorder
- Ability to administer IM or IN medication for condition
    - Patients with suspected opiate overdose, seizures and/or hypoglycemia are relative contraindications
    - All efforts to use IM/IN medications and attempt IV/EJ access should be exhausted prior to considering an IO in these patients

Procedure:

- Identify the need for IO access (Consider EJ or IV access or IM/IN medications)
- Identify site:
    - Proximal Humerus (Standing Order Adult Only), Proximal Tibia (Standing Order) or Distal Tibia ***(Physician Order only),*** Distal Femur ***(Physician Order Pediatric Only)***. See Intraosseous Access Sites for more detail
    - Insert IO needle, remove stylet, attach tubing and aspirate
    - Flush with 5-10 mL of saline (2-5 mL saline for pediatrics)
    - Connect fluids to the IO needle and consider a pressure infuser for patients 8 years and older to maintain flow rates
    - Stabilize IO needle and monitor patient for extravasation
    - Document procedure, time, and result on patient care report

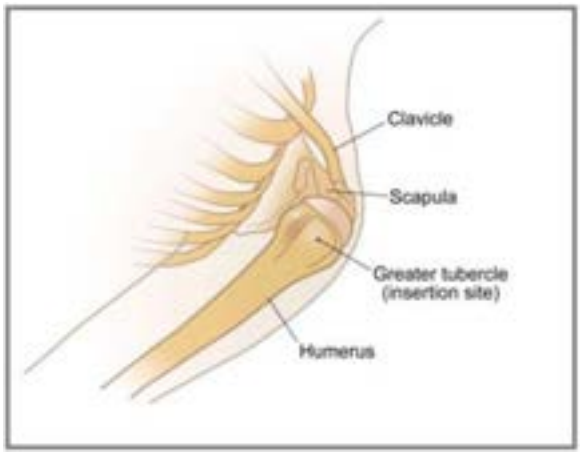
Notes:

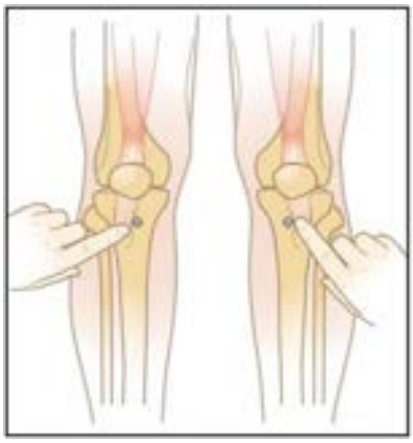
- IO's are inappropriate for prophylactic access
- If the patient is responsive to pain associated with an IO infusion may treat as follows:
    - Advanced EMT
        - Adult: Slowly infuse Lidocaine 40 mg IO over 120 seconds and do not flush for 60 seconds
        - Pediatric (Less than 15yo): Slowly infuse Lidocaine 0.5 mg/kg IO (max 40 mg) over 120 seconds and do not flush for 60 seconds *May repeat with half of original dose for on-going discomfort
    - Intermediate/Paramedic
        - Adult: Ketamine 0.25 mg/kg IO (max 50 mg)
        - Pediatric (Less than 15yo): Slowly infuse Lidocaine 0.5 mg/kg IO (max 40 mg) over 120 seconds and do not flush for 60 seconds *May repeat with half of original dose for on-going discomfort

Intraosseous Access

Proximal Humerus (***Standing Order Adult only***)

- The insertion site is on the most prominent aspect of the greater tubercle, 1 to 2 cm above the surgical neck
- It will feel like a golf ball on a tee – the spot where the "ball" meets the "tee" is the surgical neck





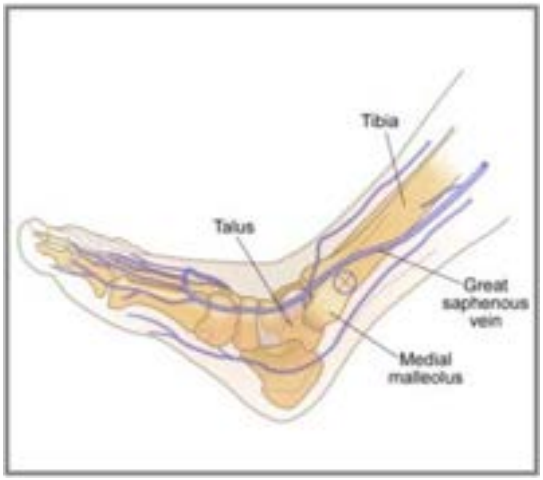
Proximal Tibia (**Standing Order**)

- **ADULT** insertion site is approximately 2 cm medial to the tibial tuberosity, or approximately 3 cm (two finger widths) below the patella and approximately 2cm medial, along the flat aspect of the tibia

- **PEDIATRIC** insertion site is approximately 1 cm medial to the tibial tuberosity, or just below the patella (approximately 1 cm or one finger width) and slightly medial (approximately 1cm or one finger width), along the flat aspect of the tibia

Distal Tibia ***(Physician Order only)***

- **ADULT** insertion site is located approximately 3 cm proximal to most prominent aspect of the medial malleolus
- **PEDIATRIC** insertion site is located approximately 1-2 cm proximal to the most prominent aspect of the medial malleolus
- Palpate the anterior and posterior borders of the tibia to assure insertion site is on the flat center aspect of the bone



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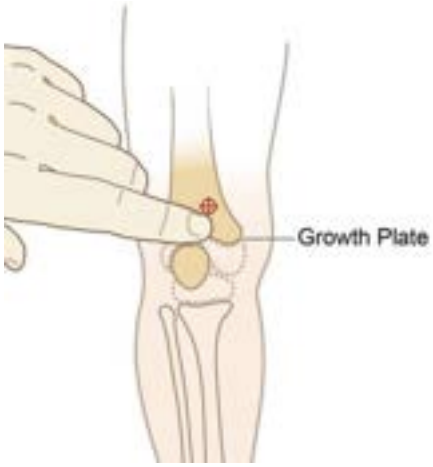

Distal Femur ***(Physician Order Pediatric only)***

• Secure the leg outstretched to ensure the knee does not bend. Identify the patella by palpation. The insertion site is just proximal to the patella (maximum 1cm) and approximately 1-2 cm **medial** to midline

Tidewater EMS Council, Inc.

LifeVest (Zoll)

Patients might be discharged from the hospital with a wearable defibrillator (vest and battery pack). It must be worn at all times except while bathing. It constantly monitors a patient's heart rhythm via electrodes. If it detects a shockable rhythm, it alerts the patient to determine if the patient is conscious. If the vest defibrillation is not stopped by the user, the vest releases blue gel and defibrillates the patient. Please click here for the EMS poster instructions.

Alarms/Alerts:

- Silent:
  - Device is monitoring patient. Check the monitor screen and follow instructions if given.
  - Perform standard assessments and treatments. Remove only if in the way of EMS procedures.
- Single Tone/Gong:
  - Device is monitoring patient. Check the monitor screen and follow instructions if given.
  - Perform standard assessments and treatments. Remove only if in the way of EMS procedures.
  - Voice prompt of "Treatment has been given. Call your doctor." indicates a defibrillation may have been administered.
- Two Tone/Siren with voice prompt of "If patient is not responsive, call for help. Perform CPR."
  - The device cannot detect a heart rhythm and/or the device has delivered the maximum amount of defibrillations.
  - Perform CPR and treatment as needed. When AED/monitor is available, remove the vest/disconnect the device.
- Two tone/Siren with voice prompt of "Press response buttons to delay treatment."
  - The device has detected a ventricular arrhythmia and is preparing to deliver a defibrillation within 25-60 seconds. Only the patient should press the response button if they are conscious.
  - If the patient is unconscious, allow the vest to perform its shock and prepare to start CPR and apply AED/monitor when it is done.
  - Do not touch the patient until you hear the alert stop or a voice prompt of "If patient is not responsive, call for help. Perform CPR."
- Two tone/Siren with voice prompt of "Bystanders, do not interfere".
  - The device has detected a ventricular arrhythmia and is preparing to deliver a defibrillation within 25-60 seconds.
  - If the patient is unconscious, allow the vest to perform its shock and prepare to start CPR and apply AED/monitor when it is done.
  - Do not touch the patient until you hear the alert stop or a voice prompt of "If patient is not responsive, call for help. Perform CPR."

Notes:

- CPR may be performed if the device is not stating "Bystanders, do not interfere" or "Press response buttons to delay treatment."
- Any blue gel should be left in place while patient is wearing the vest. If vest is removed, the gel can be wiped away with water if needed.
- **If Removal is necessary - remove battery from monitor and then remove vest.**
- **If EMS/manual defibrillation is necessary – disconnect/unplug the monitor from the vest prior to defibrillation.**
- If transporting to the hospital - bring charger, extra battery, and hotspot.

Zoll 24-hour technical support: 1-800-543-3267

Tidewater EMS Council, Inc.

Medication Delineation

The following medications are authorized for technicians functioning in the Tidewater EMS region *with the approval* of their agency's Operational Medical Director and in accordance with the Regional Medical Protocols.

✓ – Procedure is approved M – Medical Control Needed

Medication	EMT	Advanced	Intermediate	Paramedic	Notes
Acetaminophen		✓	✓	✓	
Adenosine			✓	✓	
Albuterol	✓	✓	✓	✓	*Continuous if wheezing present
Amiodarone			✓	✓	
Aspirin	✓	✓	✓	✓	
Atropine			✓	✓	
Atrovent	✓	✓	✓	✓	
Calcium Chloride			✓	✓	*Physician Order for I/P in Dialysis
Cyanokit		✓	✓	✓	
Dexamethasone	✓	✓	✓	✓	*EMT Oral Route Only (Adult) *Physician Order – Pediatric (A/I/P)
Dextrose (D10)		✓	✓	✓	
Diphenhydramine		✓	✓	✓	
Epinephrine (Anaphylaxis)		✓	✓	✓	
Epinephrine (Autoinjector)	✓	✓	✓	✓	
Epinephrine (Cardiac)		✓	✓	✓	*AEMT: Cardiac Arrest Only
Epinephrine (Drip)			✓	✓	
Epinephrine (HHN)			M	M	
Epinephrine (Push Pressor)			✓	✓	
Etomidate				✓	*RSI Medic Only
Fentanyl		✓	✓	✓	*AEMT: non-cardiac pain management only
Furosemide (Lasix)			✓	✓	*Physician Order - Pediatric
Glucagon		✓	✓	✓	
Haldol			✓	✓	
Ketamine			✓	✓	*Approved for all pain
Lidocaine		✓	✓	✓	*AEMT only for IO Pain
Magnesium Sulfate		✓	✓	✓	*AEMT: Breathing Difficulty Protocol Only *Physician Order – Pediatric Breathing Difficulty Protocol
Midazolam (Versed)		✓	✓	✓	
Morphine		✓	✓	✓	*AEMT: non-cardiac pain management only
Narcan	✓	✓	✓	✓	
Nitroglycerin (SL/TD)	M	✓	✓	✓	
Normal Saline		✓	✓	✓	*EMT can maintain pre-existing IV
Norepinephrine (Levophed)			✓	✓	
Ondansetron (Zofran) IV/IM		✓	✓	✓	
Ondansetron (Zofran) ODT	✓	✓	✓	✓	*EMT only for patient > 5yo
Oral Glucose	✓	✓	✓	✓	
Rocuronium				✓	*RSI Medic Only
Sodium Bicarbonate			✓	✓	
Solu-Medrol		✓	✓	✓	*Physician Order - Pediatric

Tidewater EMS Council, Inc.

Nasogastric / Orogastric Tube Insertion

INDICATIONS: (A, I, P)

- Gastric decompression in intubated patients

CONTRAINDICATIONS:

- Sinusitis (for nasogastric)
- Esophageal Varices
- Recent nasal surgery (for nasogastric)
- Maxillofacial trauma (for nasogastric)

PROCEDURE:

- Estimate insertion length by superimposing the tube over the body from the nose to ear to xiphoid process
- Liberally lubricate the distal end of the tube and pass through the patient's nostril along the floor of the nasal passage. Do not orient the tip upward into the turbinates. This increases the difficulty of the insertion and may cause bleeding. The use of a tongue depressor may be helpful during insertion
- In the setting of an unconscious, intubated patient or a patient with facial trauma, oral insertion of the tube may be considered or preferred
- Continue to advance the tube gently until the measured distance is reached
- Confirm placement by injecting 30-50 cc of air with a Toomey Syringe (catheter tip) and auscultate for the swish or bubbling of the air over the stomach
- Secure the tube
- Decompress the stomach of air and food either by connecting the tube to suction or manually aspirating with the large catheter tip syringe. Set suction to the lowest setting that will effectively decompress the patient's stomach

Pain Rating Scale

In assessing any patient complaining of pain, utilize the appropriate scale as shown below. These can be extremely useful in the pediatric population, as well as any patient that there may be a communication barrier.

Wong-Baker FACES Pain Rating Scale

Brief Instructions: Point to each face using the words to describe pain intensity. Ask the patient to choose face that best describes own pain and document the appropriate number on your PPCR.

Original instructions: Explain to the person that each face is for a person who fells happy because he has no pain (hurt) or sad because he has some or a lot of pain. **Face 0** is very happy because he doesn't hurt at all. **Face 1** hurts just a little bit. **Face 2** hurts a little more. **Face 3** hurts even more. **Face 4** hurts a whole lot. **Face 5** hurts more than you can imagine, although you don't have to be crying to feel this bad. Ask the person to choose which face that best describes how he is feeling.

From Hockenberry MJ, WilsonD, Winkelstein ML: Wong's Essentials of Pediatric Nursing, ed. 7, St. Louis, 2005, p. 1259. Used with permission. Copyright Mosby.

Adult Non-Verbal Pain Scale

1. **Assess** patient according to the observation categories
2. **Assign** points based on criteria
3. **Total** Points
4. **Apply** point total as 1-10 scale
5. **Reassess** to determine changes in pain scale

Observation	Criteria	Points
Emotion	Smiling	0
	Anxious/Irritable	1
	Almost in tears	2
Movement	None	0
	Restless, slow decreased movement	1
	Immobile, afraid to move	2
Verbal Cues	States no pain	0
	Whining, whimpering, moaning	1
	Screaming, crying out	2
Facial Cues	Relaxed, calm expression	0
	Drawn around mouth & eyes	1
	Facial frowning, wincing	2
Positioning/Guarding	Relaxed body	0
	Guarding, tense	1
	Fetal position, jumps when touched	2

Pain Rating Scale

CRIES Scale

	0	1	2
Crying	None	High-pitched	Inconsolable
Requires O_2	None	<30% FiO_2 needed	>30% FiO_2 needed
Increased vital signs	Normal HR & BP	Increased HR & BP <20%	Increased HR & BP >20%
Expression	Normal	Grimace	Grimace & grunt
Sleeplessness	None	Wakes frequently	Awake constantly

The CRIES scale is used for infants ≥ than 38 weeks of gestation. Characteristics of crying, oxygen requirement, changes in vital signs, facial expression, and sleep state are scored. A maximal score of 10 is possible. If the CRIES score is > 4, further pain assessment should be undertaken.

Pediatric Quick Reference Chart

Age	Heart Rate	Respiratory Rate	Systolic BP	Weight (kg)	Laryngoscope Blade	ET Tube	Suction Catheter
Preemie	120-170	40-70	55-90	2 kg	0 Straight	2.0 Uncuffed	6 Fr
Newborn to 4 months	100-160	30-60	60-100	4-6 kg	1 Straight	3.0 Cuffed	6-8 Fr
6 months	110-160	24-38	70-100	8 kg	1 Straight	3.0 Cuffed	6-8 Fr
1 year	90-150	22-30	75-105	10 kg	1-1.5 Straight	3.5 Cuffed	10 Fr
2 years	85 – 140	22 – 30	75-110	12 kg	2 Straight	4.0 Cuffed	10 Fr
3 years	85-140	22-30	76-115	15 kg	2 Straight	4.5 Cuffed	10 Fr
4 years	75-120	22-26	78-115	17 kg	2 Straight	4.5 Cuffed	10 Fr
5/6 years	70-115	20-24	80-120	20/22 kg	2 Curved 2 Straight	5.0 Cuffed	10 Fr
7 years	70-110	16-22	84-120	25 kg	2 Curved 2 Straight	5.5 Cuffed	10 Fr
8 years	70-110	16-22	86-120	27 kg	2 Curved 2 Straight	6.0 Cuffed	10 Fr
9 years	65-105	16-22	88-120	30 kg	3 Curved 3 Straight	6.5 Cuffed	10-12 Fr
10 years	60-100	16-22	90-120	35 kg	3 Curved 3 Straight	6.5 Cuffed	10-12 Fr
11-13 years	60-100	16-22	90-120	40-60 kg	3 Curved 3 Straight	7.0 Cuffed	14 Fr
14-18 years	60 - 100	12 - 16	90-120	*Adult* ≥ 75 kg	3 Curved 3 Straight	7.0-8.0 Cuffed	14 Fr

*Reference Handtevy for additional information

**Ensure cuffed inflation pressure is 20-25 verifiable by manometer, if available

Tidewater EMS Council, Inc.

Prehospital Skills Delineation

The following skills are authorized for technicians functioning in the Tidewater EMS region *with the approval* of their agency's Operational Medical Director and in accordance with the Regional Medical Protocols.

✓ – Procedure is approved

O - Optional Skill, Agency OMD Approval Needed

Skill	EMT	Advanced	Intermediate	Paramedic
Airway				
Endotracheal Intubation				
• Oral ≥12 y/o of age			✓	✓
• Oral <12 y/o of age				O
• Nasal				✓
• Magill use		O	✓	✓
Capnography	O	✓	✓	✓
CPAP/BiPAP	O	O	O	O
Cricothyrotomy (Needle/Kit)				✓
Chest Decompression (Needle/Kit)			✓	✓
Gastric Decompression (OG/NG)				
• Adult with advanced airway		✓	✓	✓
• Pediatric with BLS/ALS airway		O	✓	✓
Mechanical Ventilator			O	O
Supraglottic	O	✓	✓	✓
Circulatory Support				
Defibrillation				
• Automatic	✓	✓	✓	✓
• Manual			✓	✓
External Jugular Cannulation			✓	✓
Glucometry	✓	✓	✓	✓
Intraosseous Cannulation		✓	✓	✓
Pacing			✓	✓
Peripheral IV		✓	✓	✓
Synchronized Cardioversion			✓	✓
Ultrasound				O
Medications (Skill Only)				
Inhaled Medication - Nebulizer	✓	✓	✓	✓
Intramuscular Medication	✓ (Epi Autoinjector)	✓	✓	✓
Intranasal Medication	✓	✓	✓	✓
Patient Assisted Medications (PAM)	✓	✓	✓	✓
Patient Restraint – Medicated			O	O
PO (Prescript Orally) Medication	✓	✓	✓	✓
Rectal Medication			✓	✓
Sublingual Medication	✓	✓	✓	✓
Transdermal Medication		✓	✓	✓

Tidewater EMS Council, Inc.

Prehospital Stroke Exams

A variety of prehospital stroke exams are available to help providers evaluate whether or not a patient is having a stroke. It is important to remember that strokes can occur in a variety of locations in the brain. BEFAST is the primary stroke screen process utilized by the TEMS region. TEMS does not use the Cincinnati Prehospital Stroke Scale due to it only identifying anterior strokes.

1. BE FAST:
   - Balance loss: Sudden loss of balance or coordination, dizziness
   - Eyes blur: Sudden trouble seeing or blurred vision in one or both eyes, diplopia (double vision)
   - Facial drooping (ask patient to smile or show their teeth)
     - Abnormal: one side of the face droops or is numb
     - Facial droop can be caused by other disorders as well (such as Bell's Palsy); in the absence of arm drift or abnormal speech, stroke is less likely
   - Arm drift (ask patient to close eyes and hold both arms (palms up) straight out for 10 seconds)
     - Sudden weakness or numbness of an arm or leg, especially on one side of the body
     - Dystaxia (moderate lack of control over voluntary movement)
   - Speech difficulty – Dysarthria (ask the patient to say "you can't teach an old dog new tricks")
     - Sudden confusion, trouble speaking or understanding speech
     - Dysphagia (difficulty swallowing)
   - Time
     - Time patient was last seen or known to be normal
     - Rapid transport to the hospital

2. RACE (Rapid Arterial oCclusion Evaluation): Score >1 indicates a stroke is likely. Score >4 indicates Large a Large Vessel Occlusion is likely. **TRANSPORT DESTINATIONS SHOULD NOT BE BASED ON THIS SCORE.**

Item	Instruction		RACE score
Facial palsy	Ask the patient to show teeth	Absent (symmetrical movement)	0
		Mild (slightly asymmetrical)	1
		Moderate to severe (completely asymmetrical)	2
Arm motor function	Extending the arm of the patient 90 degrees (if sitting) or 45 degrees (if supine)	Normal to mild (limb upheld more than 10 seconds)	0
		Moderate (limb upheld less than 10 seconds)	1
		Severe (patient do not rise the arm against gravity)	2
Leg motor function	Extending the leg of the patient 30 degrees (in supine)	Normal to mild (limb upheld more than 5 seconds)	0
		Moderate (limb upheld less than 5 seconds)	1
		Severe (patient do not rise the leg against gravity)	2
Head and gaze deviation	Observe eyes and cephalic deviation to one side	Absent (eye movements to both sides were possible and no cephalic deviation was observed)	0
		Present (eyes and cephalic deviation to one side was observed)	1
Aphasia (if right hemiparesis)	Ask the patient two verbal orders - "close your eyes" - "make a fist"	Normal (performs both tasks correctly)	0
		Moderate (performs one task correctly)	1
		Severe (performs neither tasks)	2
Agnosia (if left hemiparesis)	Asking: - "Who is this arm" while showing him/her the paretic arm (asomatognosia) - "Can you move well this arm?" (anosognosia)	Normal (no asomatognosia nor anosognosia)	0
		Moderate (asomatognosia or anosognosia)	1
		Severe (both of them)	2
RACE Score total			0-9

Tidewater EMS Council, Inc.

Prehospital Trauma Triage Criteria

Indications: Trauma patients who meet any of the following criteria shall be transported to the closest appropriate trauma center within a 30-minute ground transport time. Trauma patients who are not within 30 minutes ground transport time of a trauma center should be transported to the closest hospital if they cannot be delivered to an appropriate facility more rapidly by air ambulance.

Physiologic Criteria

- Glasgow Coma Scale less than 14, or
- Systolic blood pressure of less than 90 mm/Hg, or
- Respiratory rate of less than 10 or greater than 29 breaths per minute (less than 20 breaths per minute in infants less than 1 year old)

Anatomic Criteria

- Penetrating injuries to head, neck, torso and extremities proximal to elbow or knee
- Flail Chest
- 2 or more proximal long bone fractures
- Crushed, degloved or mangled extremity
- Amputation proximal to wrist or ankle
- Pelvic fractures
- Open or depressed skull fractures
- Paralysis

Mechanism of Injury

- **Falls**
  - Adults – greater than 20 feet
  - Children less than 15 years old – greater than 10 feet, or 2-3 times the child's height
- **High-risk auto crash**
  - Intrusion- more than 12 inches to the occupant site or more than 18 inches to any site
  - Ejection (partial or complete) from automobile
  - Death in the same passenger compartment
  - Vehicle telemetry data consistent with high risk of injury
- **Auto versus pedestrian / bicyclists**- thrown, run over or with significant (greater than 20 mph) impact
- **Motorcycle crash** at speed greater than 20 mph
- **Special Considerations**
  - **Burns** (with or without other trauma) – absent other trauma, burns that meet Burn Center criteria should be transported to a burn center
  - **Pregnancy**- Injured women who are more than 20 weeks pregnant should be considered for transport to a trauma center or a hospital with obstetrical resources
  - **Age** – greater than 55 years of age
  - **Anticoagulation or Bleeding Disorders** – EMS should contact medical control and consider transport to trauma center
  - **Time- Sensitive Extremity Injury** – open fracture(s) or fracture(s) with neurovascular compromise

EMS Provider Judgment – EMS provider, based on experience and expertise, may always exercise clinical judgment regarding atypical patient presentations

Tourniquet Application

Use commercial devices whenever possible. An inappropriate improvised device can cause more damage than assistance.

INDICATIONS: (EMT, A, I, P)

- **LIFE THREATENING** hemorrhage from an extremity which cannot be controlled by direct pressure.

PROCEDURE:

- Completely expose the wound and determine if a tourniquet is needed
- Preferred tourniquet placement is 2” proximal to the wound
- Consider alternate tourniquet placement as high on the extremity as possible during tactical situations, when exposing the wound is not feasible, or if a second tourniquet is required
- Do not place on a joint or open fracture site (preferably on a single bone structure)
- The band will be around the affected extremity
- Follow manufacturer’s instructions for applying device
- Record the date and time of tourniquet both in documentation and with “TK (Date/Time)” on tape attached to the tourniquet
- Leave the tourniquet site exposed: tourniquets should never be covered
- Consider pain management
- Do not use a tourniquet for neck or facial wounds
- Medical control order is needed to remove a tourniquet

IF ORDERED TO REMOVE THE TOURNIQUET:

- Do NOT remove a tourniquet that has been in place for more than 6 hours unless close monitoring and lab capability are available
- While the tourniquet is still engaged, dress the wound with a pressure dressing.
- Place the patient in supine position and elevate the extremity
- Release the tourniquet slowly
    - If the bleeding restarts and is not controlled by the pressure dressing, reengage the tourniquet and expedite transfer to the hospital
    - If bleeding does not restart, leave the tourniquet unengaged but in place and monitor closely for bleeding to restart once blood pressure normalizes

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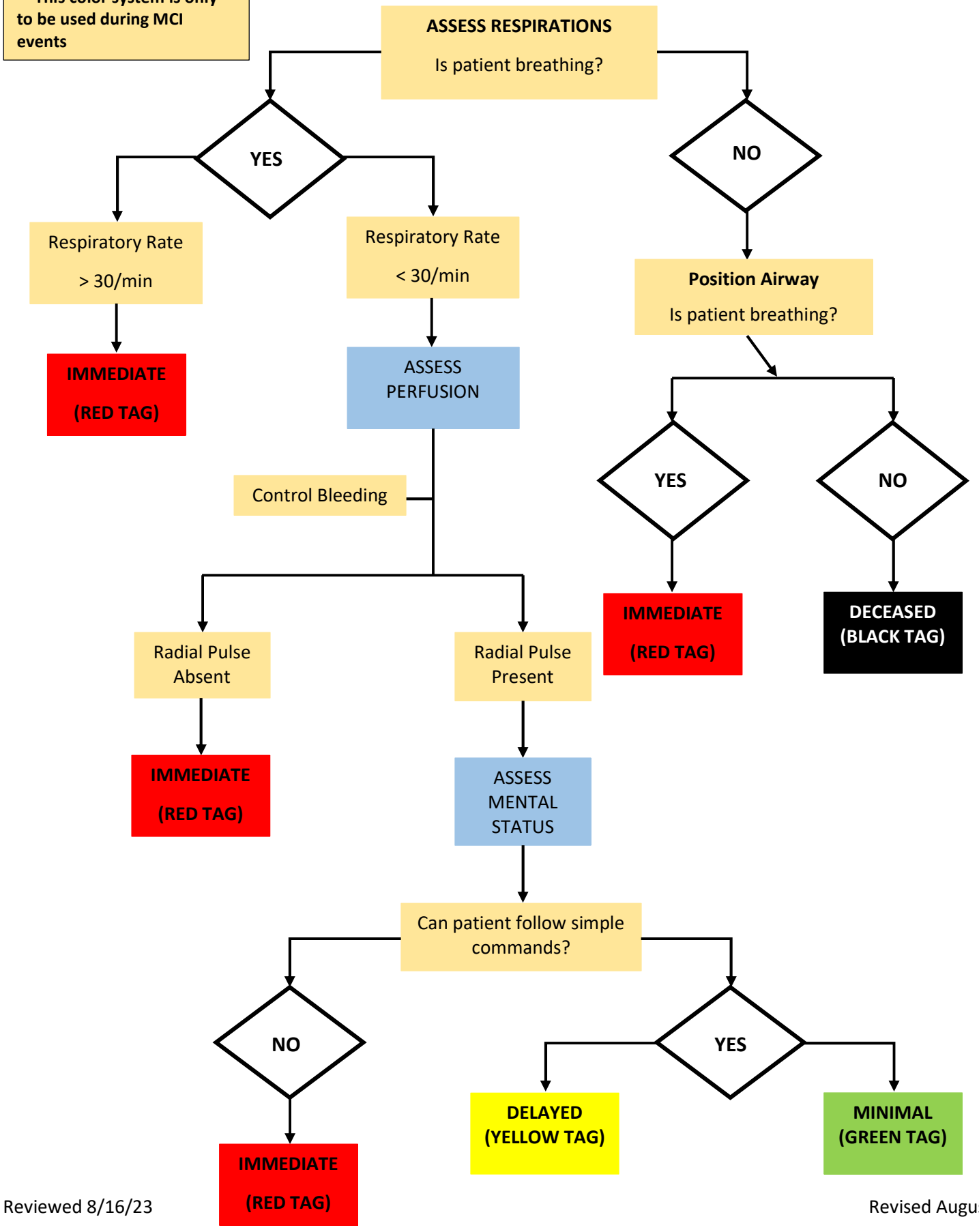
Triage: S.T.A.R.T. - Adult

****This color system is only to be used during MCI events**

Remember RPM: Respirations, Perfusion, Mental Status



Reviewed 8/16/23

Revised August 2022

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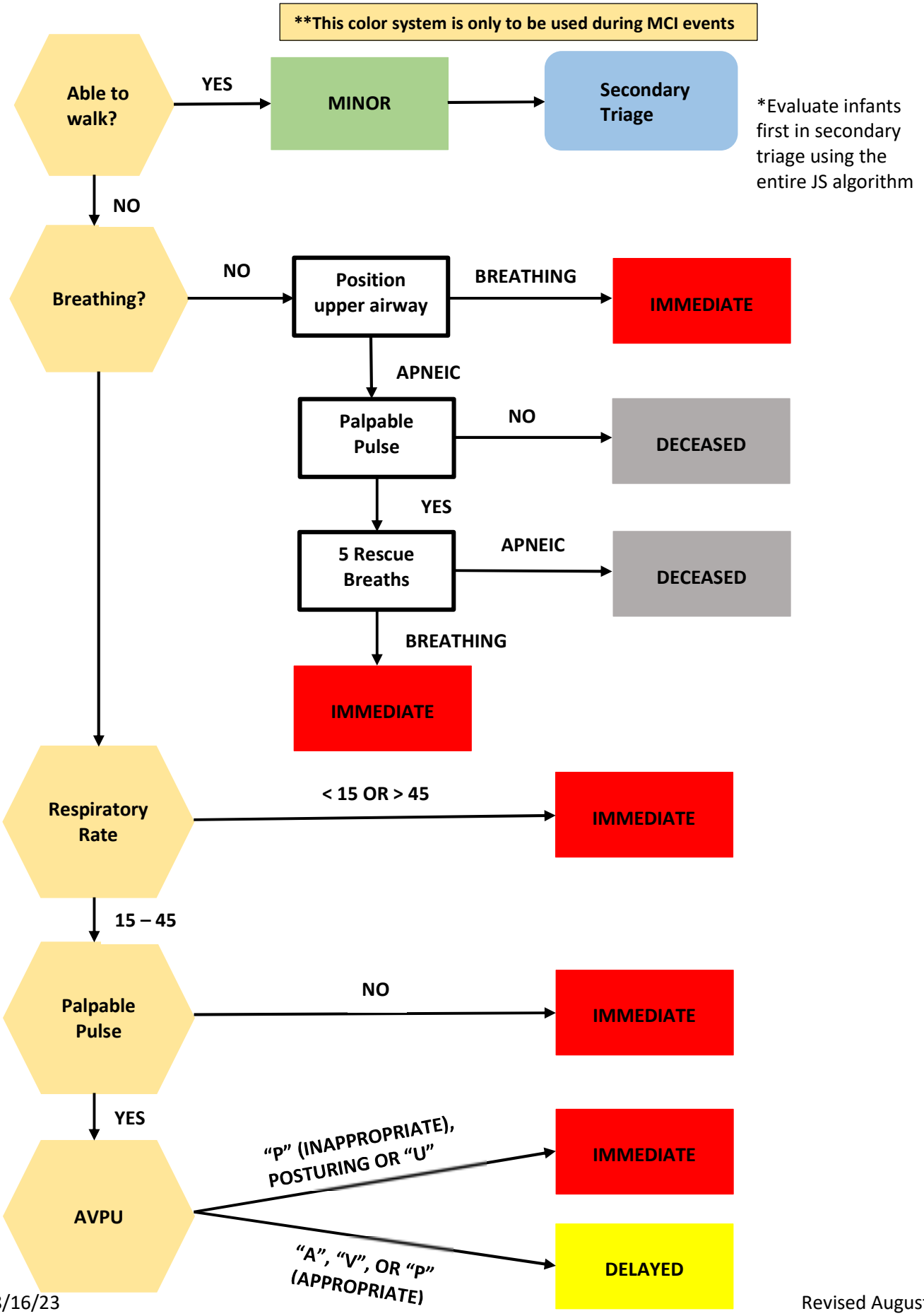
Triage: JumpSTART – Pediatric



Ultrasound

Indications: (Paramedics Only)

- Note: This procedure is for patients ≥ 15 years old
- Cardiac (Cardiac Arrest/Termination of Resuscitation, Pericardial Effusion)
    - Apical four chamber or parasternal long axis view
    - Subxyphoid when LUCAS is present during cardiac arrest
- Lung (tension pneumothorax, lung slide, breathing difficulty)
    - A Lines, B Lines, C Lines and with M Mode
- Trauma (hemorrhage)
    - eFAST: hepatorenal/coronal view – right flank, splenorenal/coronal view – left flank, Pelvis, Cardiac and Lungs

Precautions:

- **DO NOT** delay scene time for critical patients
- **DO NOT** take pictures with a cell phone

Procedure:

- Power on the ultrasound machine and plug in the Torso-One probe
- Take standard precautions
- Explain the procedure to the patient
- Scan the patient using AI confirmation for either the eFAST, Lungs or Cardiac based on patient presentation
- Record the scan or image
- Upload/Document image(s) to the Electronic Patient Care Report

Notes:

- Ultrasound providers must become credentialed technicians through their agency prior to utilizing this tool

Venous Access (Peripheral and EJ)

Clinical Indications:

- Patient with immediate or probable need for delivery of medications and/or fluid. **(A, I, P)**
- External Jugular access should be considered for critically ill patients (over age 8) if peripheral vein access is not obtainable. EJ may be used in a life-threatening situation if no obvious peripheral site is noted. **(I, P)**
- If patient is in or has potential for cardiopulmonary failure, requires immediate fluids or medications, consider intraosseous access after three (3) unsuccessful IV attempts. **(I, P)**

Procedure:

- Identify the need for IV/EJ access, identify site and choose appropriate catheter size.
    - Try to use an antecubital vein and large bore catheters for critically ill patients (i.e., hypotension, shock, cardiac arrest and trauma, positive stroke scale)
    - Do not use 14g needle for IV/EJ access
- Connect fluids and open IV/flush to ensure patency and adjust rate to situation and patient.
- All IV/IO medications administered should be followed by an appropriate flush of saline at the same rate as the medication was administered
    - Post medication flush: 5mL if close to insertion site and 20-30 mL if higher in tubing and/or medication precipitates
- Saline locks may be used at the discretion of the ALS provider
- Secure IV and monitor the IV site for extravasation
- Document procedure, time, and outcome on patient care report

Notes:

- Fluid Management for hypoperfusion, shock, burns, etc
    - Adult: 250 mL bolus, reassess status and lung sounds, can repeat up to 1000mL
    - Pediatric: 20 mL/kg
    - Newly born: 10 mL/kg pushed over 20 minutes using syringe/stopcock
- IV is preferred over IO. If IV fails, then OK to proceed with IO
- IO's and EJ's are inappropriate for prophylactic access
- Do not use 14 g needles for IV's. They are intended for chest decompressions and needle cricothyrotomy only.
- EMT level providers may transport a patient with an IV if the IV was started by a doctor's office, nursing home, etc. and the patient requires BLS transport. The IV bag may not contain any medications. The sending facility should set the drip rate and the provider should monitor only

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Ventricular Assist Devices

Ventricular Assist Devices (VAD) can be for left, right or bilateral assistance

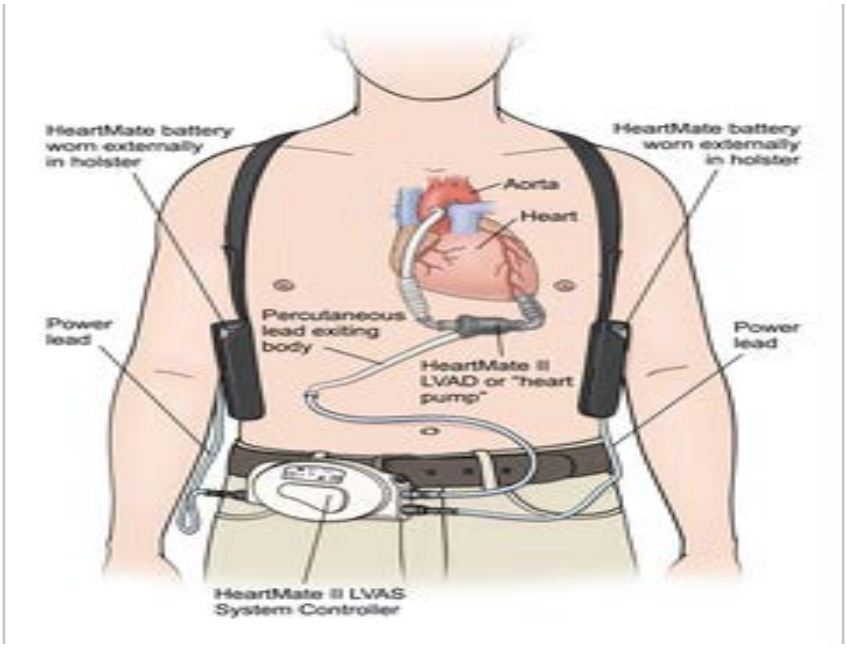
- VADs may be Pulsatile (First Generation) or nonpulsatile (mostly Left Ventricular Assist Device-LVAD)

INDICATIONS: (EMT, A, I, P)

- Patient with an implanted VAD presenting with:
- Bleeding, thrombosis, infection, dysrhythmias or any other device caused issue

PROCEDURE:

- Always consider and assess for non-VAD injuries, issues and complications.
- Assessment considerations:
  Overt and covert bleeding, thrombosis, infection, right ventricular dysfunction, left ventricular collapse, VAD overdrive, cavitation, device failure or malfunction, dysrhythmias, hypertension, hypotension, depression, anxiety, and portability
- First line therapy is volume replacement.
- Follow protocol to administer the necessary electrical therapy. The provider does NOT need to contact the VAD coordinator, VAD physician or online medical control first. A VAD patient in Ventricular Fibrillation (VF) may still be conscious and talking to you as the pump is still forcing blood to the brain.
- **DO NOT** use mechanical CPR devices
- Pulse oximetry may be unreliable
- **DO NOT** get distracted by the VAD for non-VAD issues
- **DO NOT** disconnect both batteries at once
- **Your best resource in the event of a VAD issue is the VAD Coordinator or the patient's family/caregiver. Allow the caregiver to remain with the patient. Transport all VAD equipment with the patient.**
- **For known VAD patients it is beneficial to preplan**



*SHH VAD Coordinator: Mindy Seigh, mjseigh@sentara.com

Reviewed 3/19/25

Revised June 2023

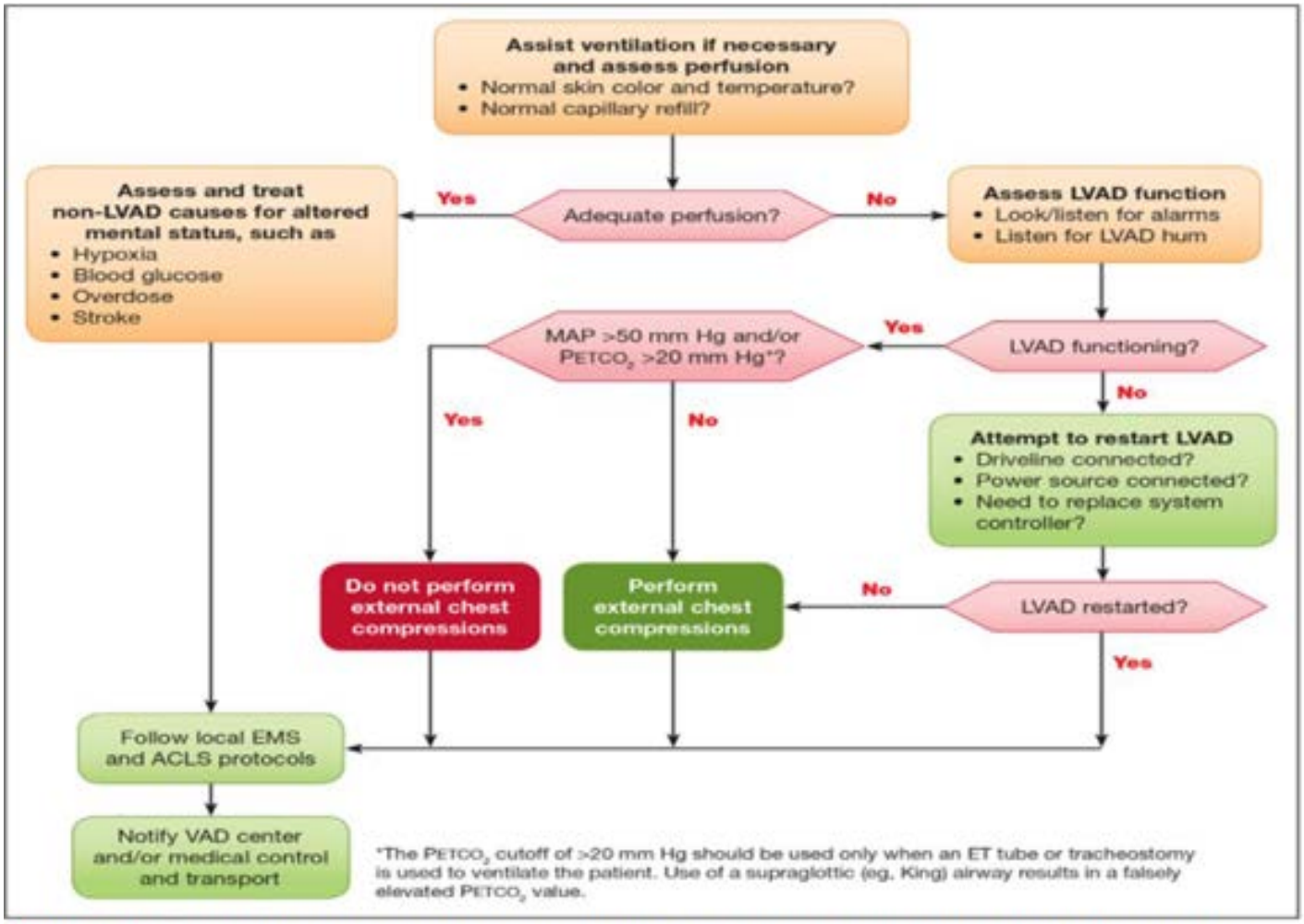


Figure 6. Algorithm showing response to a patient with a left ventricular assist device (LVAD) with unresponsiveness or other altered mental status.
ACLS indicates advanced cardiovascular life support; EMS, emergency medical services; ET, endotracheal tube; MAP, mean arterial pressure; P_{ETCO_2}, partial pressure of end-tidal carbon dioxide; and VAD, ventricular assist device.

Cardiac Protocols

Bradycardia-Adult

GOALS

- Prompt assessment and treatment of a patient in bradycardia
- Maintain adequate oxygenation, ventilation, and perfusion

TREATMENT

- Atropine may be ineffective in 2nd degree Type II and 3rd degree heart blocks. Prepare for immediate pacing
- Patients may deteriorate due unnecessary delays in pacing
- Identify and treat underlying causes including H's and T's

SPECIAL CONSIDERATIONS

- Failure to recognize both electrical AND mechanical capture may lead to patient deterioration
- Assessment of a carotid pulse may prove difficult due to muscle movement
- Severely hypothermic patients should not be paced. Consult medical control

PEDIATRICS

Atropine and pacing are preferred over epinephrine if the patient has a cardiac history. Contact medical control.

Atropine 0.02 mg/kg IV/IO up to max dose of 1.0 mg

- Doses too small may produce paradoxical bradycardia. Minimum dose of 0.1 mg needed

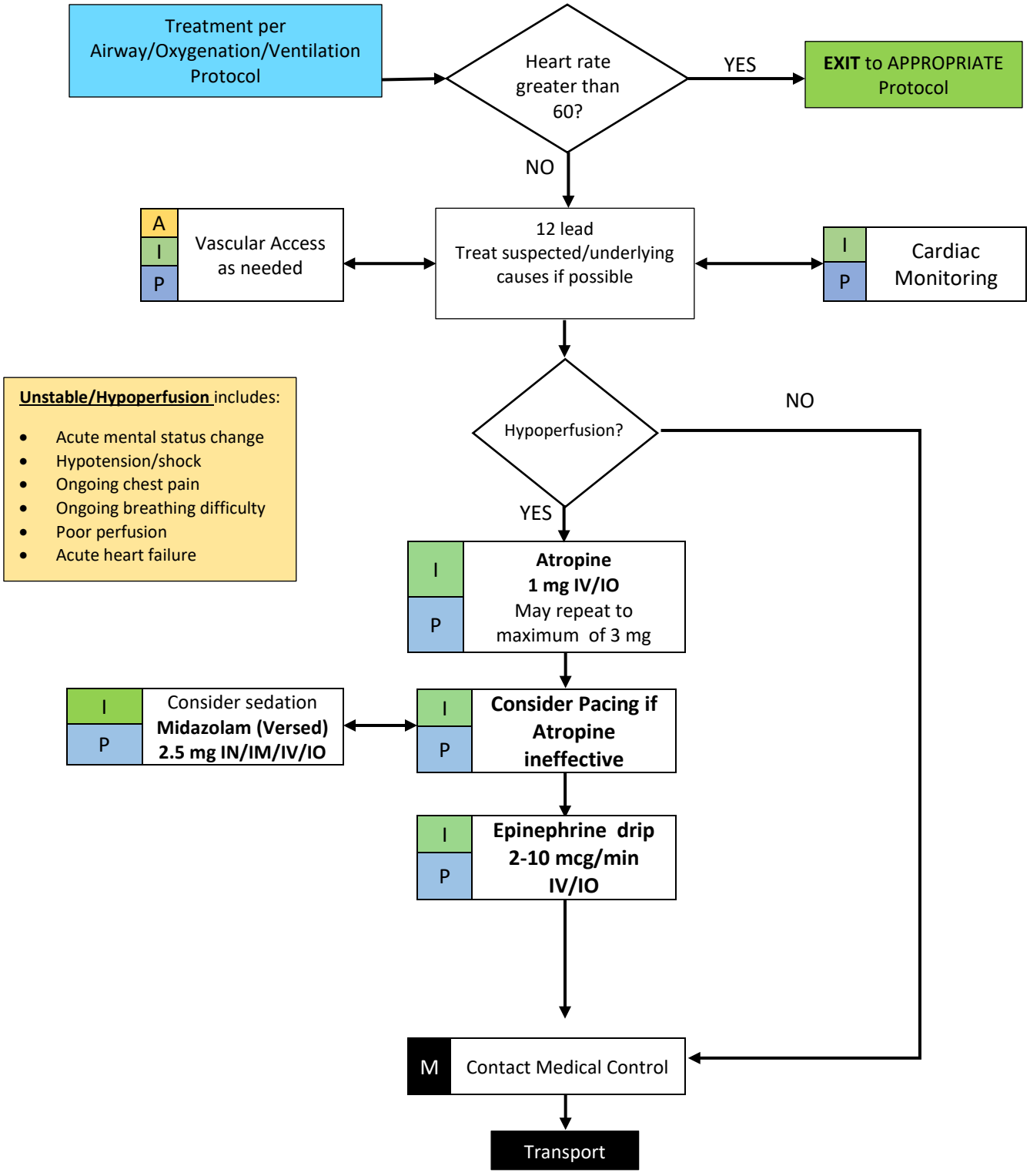
Epinephrine 0.01 mg/kg IV/IO every 3-5 minutes

- Use 1 mg/10 mL concentration

Pacing

- Set rate to 100 bpm
- Increase milliamps until electrical capture. Verify mechanical capture
- Final mA setting should be set slightly higher than electrical capture noted

Bradycardia-Adult



Bradycardia-Pediatric

GOALS

- Prompt assessment and treatment of a patient in bradycardia
- Maintain adequate oxygenation, ventilation, and perfusion

TREATMENT

- Atropine may be ineffective in 2nd degree Type II and 3rd degree heart blocks. Prepare for immediate pacing
- Patients may deteriorate due unnecessary delays in pacing
- Identify and treat underlying causes including H's and T's

SPECIAL CONSIDERATIONS

- Failure to recognize both electrical AND mechanical capture may lead to patient deterioration
- Assessment of a carotid pulse may prove difficult due to muscle movement
- Severely hypothermic patients should not be paced. Consult medical control

PEDIATRICS

Atropine and pacing are preferred over epinephrine if the patient has a cardiac history. Contact medical control

Atropine 0.02 mg/kg IV/IO up to max dose of 1.0 mg

- Doses too small may produce paradoxical bradycardia. Minimum dose of 0.1 mg needed

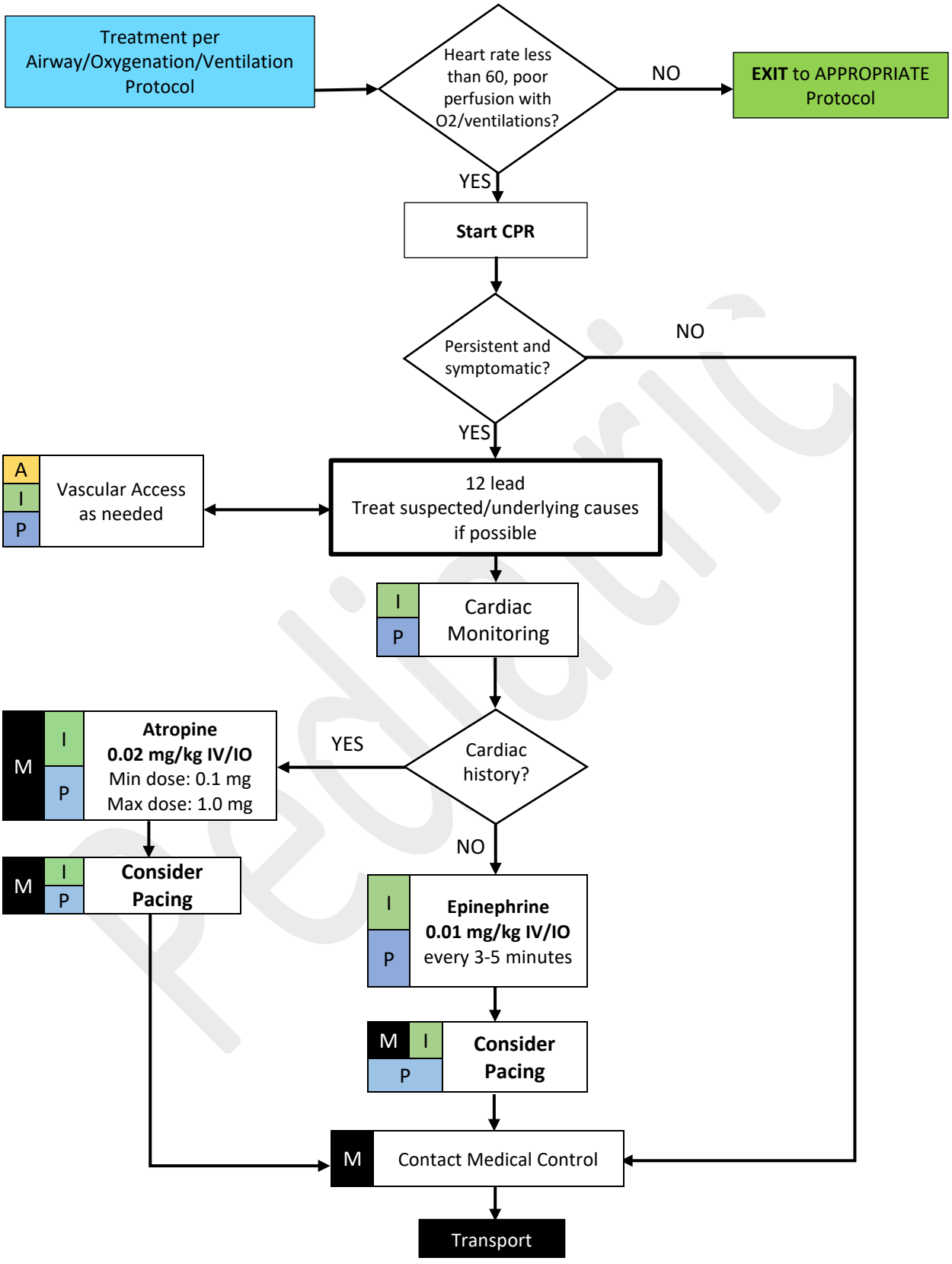
Epinephrine 0.01 mg/kg IV/IO every 3-5 minutes

- Use 1 mg/10 mL concentration

Pacing

- Set rate to 100 bpm
- Increase milliamps until electrical capture. Verify mechanical capture
- Final mA setting should be set slightly higher than electrical capture noted

Bradycardia-Pediatric



Tidewater EMS Council, Inc.

Cardiac Arrest

GOALS

- Early recognition and appropriate treatment of cardiac arrest patients
- High quality CPR with minimal interruptions and early defibrillation
- Preservation of neurologic function and ROSC

TREATMENT

- H's and T's should be addressed AFTER first line medications such as epinephrine and amiodarone and can be added into the cardiac arrest cycle as indicated
- Utilize manual defibrillator as soon as trained provider arrives
- If BLS airway is adequate, priority is vascular access and medication administration

Secondary Anti-Arrhythmic: Administer **lidocaine 1 mg/kg IV/IO**. Can repeat once at 0.5 mg/KG IV/IO
Renal/Dialysis Patient with suspected hyperkalemia: Incorporate **calcium chloride 1 gram IV/IO** over 3 minutes and s**odium bicarbonate 1 mEq/kg IV/IO** after first line meds on standing order. Flush well after administration.
Torsades: **Magnesium sulfate 2 grams IV/IO in 100 mL NS** over 5 minutes is the preferred anti-arrhythmic.

SPECIAL CONSIDERATIONS

- Once ALS airway in place, give continuous compressions and adequate breaths, avoid excessive ventilation
- CPR may still be required in the presence of an organized cardiac rhythm
- A moving vehicle may introduce artifact during AED analysis and may lead to inappropriate defibrillation
- Do not place defibrillation pads over transdermal patches and devices such as AICD, pacer, med ports, etc.
- Patients undergoing resuscitation who are pregnant > 20 weeks gestation should be transported rapidly due to potential for fetal viability

High Quality CPR - Push hard and fast at, 100-120/min, ensure full chest recoil and minimize interruption in compressions, rotate compressors every 2 minutes and check rhythm during switch and minimize time from last compression to defibrillation
Contraindications to CPR/AED - Rigor Mortis, Lividity, Injuries incompatible with life, DNR

PEDIATRICS

- Perform CPR if the HR is less than 60 with poor perfusion
- CPR for infants should be performed with the two-thumb encircling technique
- Defibrillation pads should not touch. Use anterior/posterior if needed
- Endotracheal administration of medications should ONLY be used if IV/IO access cannot be obtained

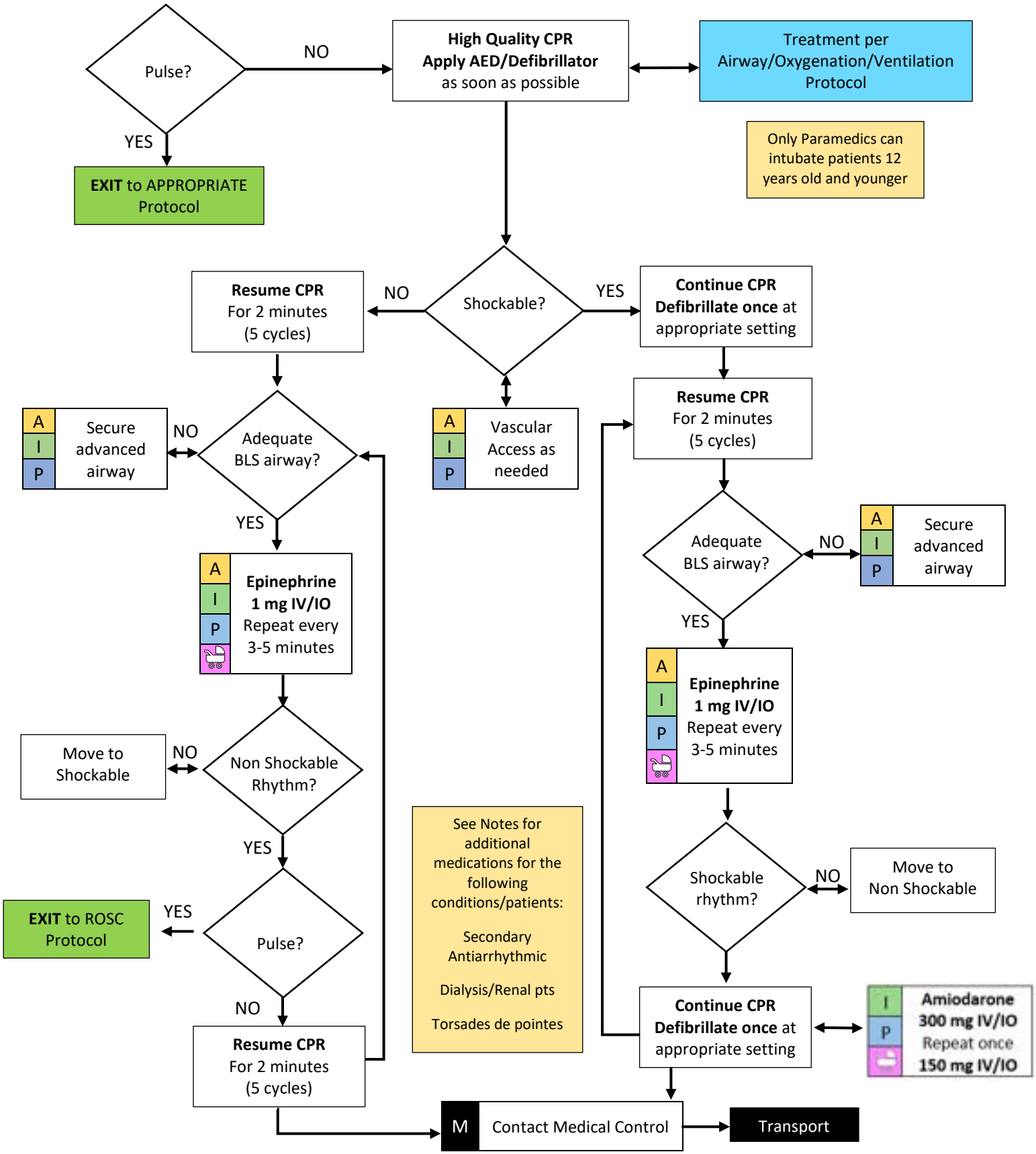
AED: Pediatric pads for children less than 8 years is preferred but if unavailable, use adult AED
Defibrillation: 2 J/kg initial and subsequent at 4 J/kg
Epinephrine 0.01 mg/kg IV/IO up to max dose of 1 mg every 3-5 minutes

- Endotracheal dose 0.1 mg/kg ETT of 1 mg/1 mL concentration (dilute in 2-5 mL NS)

Amiodarone 5mg/kg IV/IO up to a max dose of 300 mg and may repeat once
Secondary Anti-Arrhythmic: Administer **Lidocaine 1 mg/kg IV/IO**. Can repeat once at 0.5 mg/KG IV/IO
Renal/Dialysis Patient with suspected hyperkalemia: Incorporate **Calcium chloride 20 mg/kg IV/IO** over 3 minutes max dose 1 gram and **Sodium bicarbonate 1 mEq/kg IV/IO**. Flush well after administration
Torsades: Administer **Magnesium sulfate 50 mg/kg IV/IO in 100 mL NS** over 5 minutes max dose 2 grams

Tidewater EMS Council, Inc.

Cardiac Arrest



Reviewed 4/17/24

Revised 2024

Tidewater EMS Council, Inc.

CPR Induced Consciousness (CPR-IC)

GOALS

- Effectively manage a patient in cardiac arrest that displays some level of responsiveness during CPR due to increased cerebral and coronary perfusion
- Provide additional interventions outside of routine cardiac arrest management in this uncommon situation to promote the best possible patient outcome

TREATMENT

- **Ensure on-going resuscitation including high quality CPR, ventilation, defibrillation, vascular access and cardiac medications per protocol at all times during the cardiac arrest event**
- Do not attempt to forcefully overcome signs of CPR-IC since this may cause complications to the patient and chance of success is low
- Administration of Versed is intended to provide general sedation
- DO NOT administer Versed with the intention of facilitating an advanced airway as that is strictly prohibited
- Follow RSI procedures if facilitation of an advanced airway is needed during cardiac arrest
- Manage with cardiac arrest protocols if the patient is in cardiac arrest but does not show signs of CPR-IC
- Manage with general protocols if the situation does not involve cardiac arrest or ROSC

SPECIAL CONSIDERATIONS

- CPR-IC is often associated with the following situations, but is not limited to: minimal downtime, immediate or high-quality CPR, CPR performed by LUCAS or other mechanical device
- If ROSC is achieved, manage with the ROSC, AOV, and other appropriate protocols
- Minimum resuscitation time of 30 minutes (higher viability) if patient has exhibited any CPR-IC
- Do NOT transport a patient with on-going CPR-IC to a free-standing ED.

PEDIATRICS

CPR-IC:

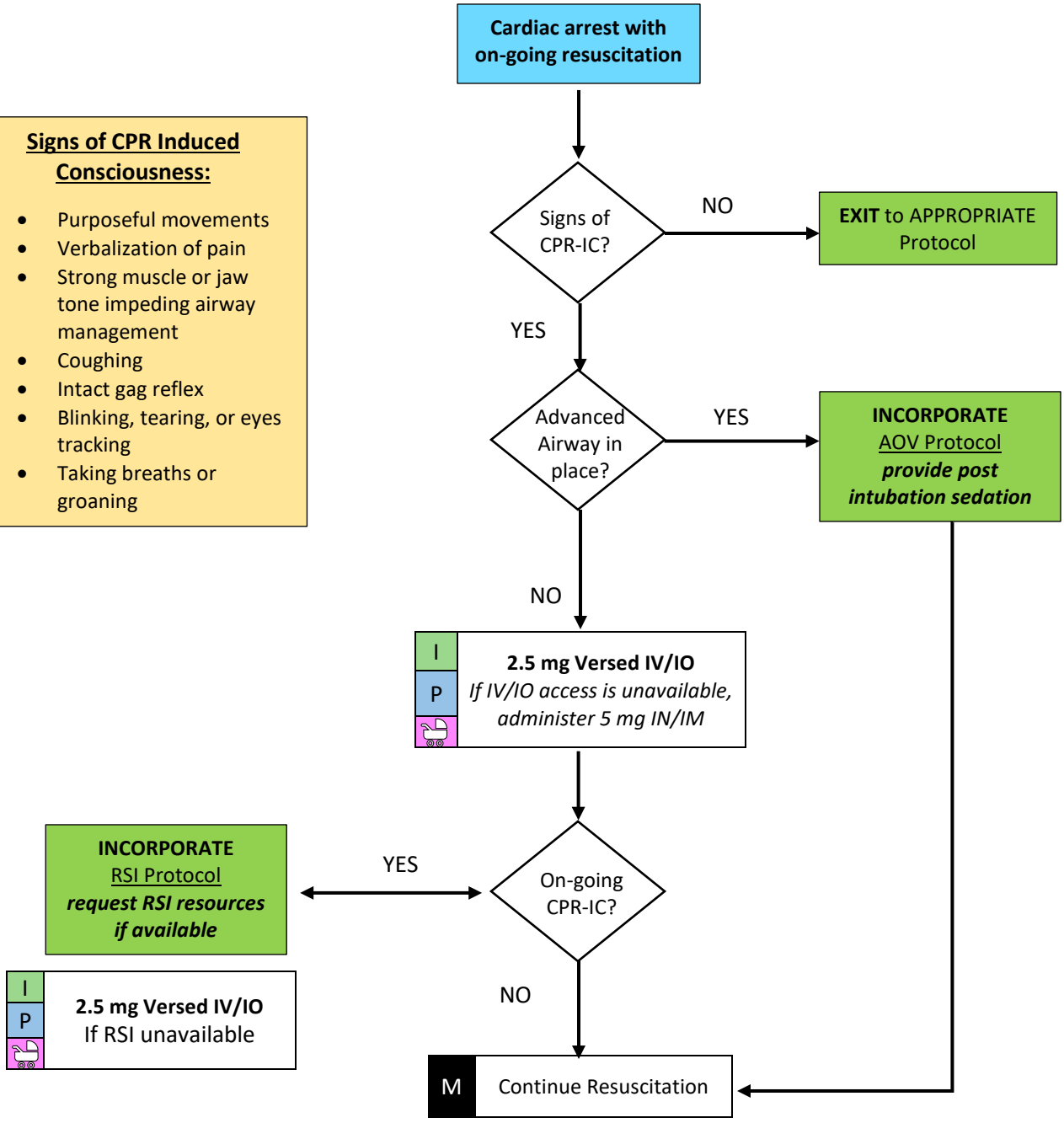
- Administer Midazolam (Versed) 0.1 mg/kg IV up to a max single dose of 2.5 mg
- May repeat once for on-going CPR-IC if RSI is unavailable

Tidewater EMS Council, Inc.

CPR Induced Consciousness (CPR-IC)

Signs of CPR Induced Consciousness:

- Purposeful movements
- Verbalization of pain
- Strong muscle or jaw tone impeding airway management
- Coughing
- Intact gag reflex
- Blinking, tearing, or eyes tracking
- Taking breaths or groaning



Tidewater EMS Council, Inc.

Return of Spontaneous Circulation (ROSC)

GOALS

- Optimize neurologic and other function after ROSC in a cardiac arrest

TREATMENT

- Incorporate other protocols as indicated
- Avoid hyperventilation and hyperthermia
- Monitor patient closely for loss of pulse
- Obtain 12 lead within 20 min of ROSC
- Search for and treat contributing factors (H's and T's)
- For recurrent VF/Pulseless VT:
    - Medical Control may order **Amiodarone (Cordarone) 150 mg in 100 mL** over 10 min
    - Flush line well after medications and do not mix. Consider second IV

SPECIAL CONSIDERATIONS

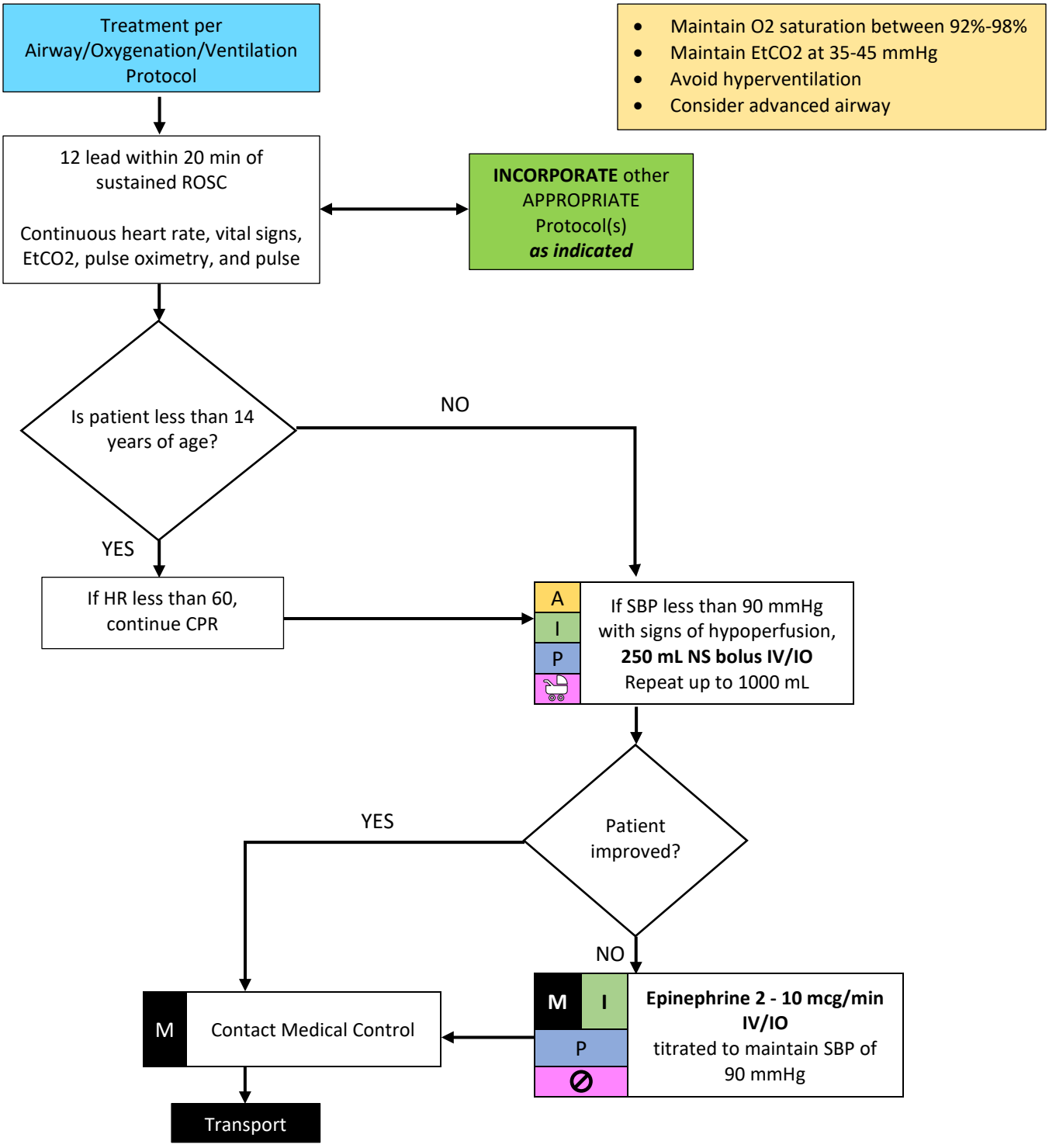
- Consider taking ROSC patients to a STEMI center even if 12 lead does not indicate STEMI
- ROSC patients who had an initial rhythm of VF/VT should be taken to a STEMI receiving center
- Amiodarone is contraindicated in patients with: bradycardia, heart block, hypotension, pulmonary edema, and cardiogenic shock
- Do NOT transport a patient in sustained ROSC to a free-standing ED

PEDIATRICS

<u>Treatment</u>

- Perform CPR if heart rate is less than 60 with hypoperfusion
- Pediatric patients should receive **20 mL/kg NS bolus IV/IO** up to 1000 mL
- Newborns or patients with cardiac history should receive **10 mL/kg NS bolus IV/IO** up to 1000 mL
- SBP should be age specific. Hypotension can be considered for the following:
    - 0-30 days: SBP less than 60
    - 1 month-1 year: SBP less than 70
    - 1-10 years: SBP less than 70 + (2 x age in years)

Return of Spontaneous Circulation (ROSC)



Tidewater EMS Council, Inc.

Tachycardia - Adult

GOALS

- Early recognition and treatment of tachycardic rhythms
- Maintain adequate oxygenation, ventilation, and perfusion

TREATMENT

Polymorphic Ventricular Tachycardia and Torsades can deteriorate very quickly to VFib

- Attempt synchronized cardioversion at the highest energy setting (per pt) once
- If unable to sync or cardioversion is ineffective, defibrillate at the highest energy setting and contact medical control

Sinus Tachycardia

- Do not cardiovert. Treat underlying causes (pain, hypotension, anxiety, medications, hypoxia, etc.)

Atrial Fibrillation

- May require higher synchronized cardioversion settings (biphasic-120-200J, monophasic 200J)
- Monitor and contact medical control/transport stable patients without hypoperfusion

Ventricular Tachycardia

- Can occur with heart rates less than 150. Consult medical control

SPECIAL CONSIDERATIONS

- Do not place defib pads over patient devices such as med ports, AICD, pacer, etc.
- If unable to obtain synchronization, you may deliver unsynchronized shock
- If the patient has VTach or SVT with signs of hypoperfusion, do not delay cardioversion to administer sedation.

PEDIATRICS

- Consider tachycardia caused by congenital cardiac conditions, drug toxicity, etc. Consult medical control

Adenosine

- Administer **0.1 mg/kg IV** up to max dose of 6 mg
- Repeat dose **0.2 mg/kg IV** up to max dose of 12 mg
- May be ordered by medical control if SVT with aberrant conduction is suspected

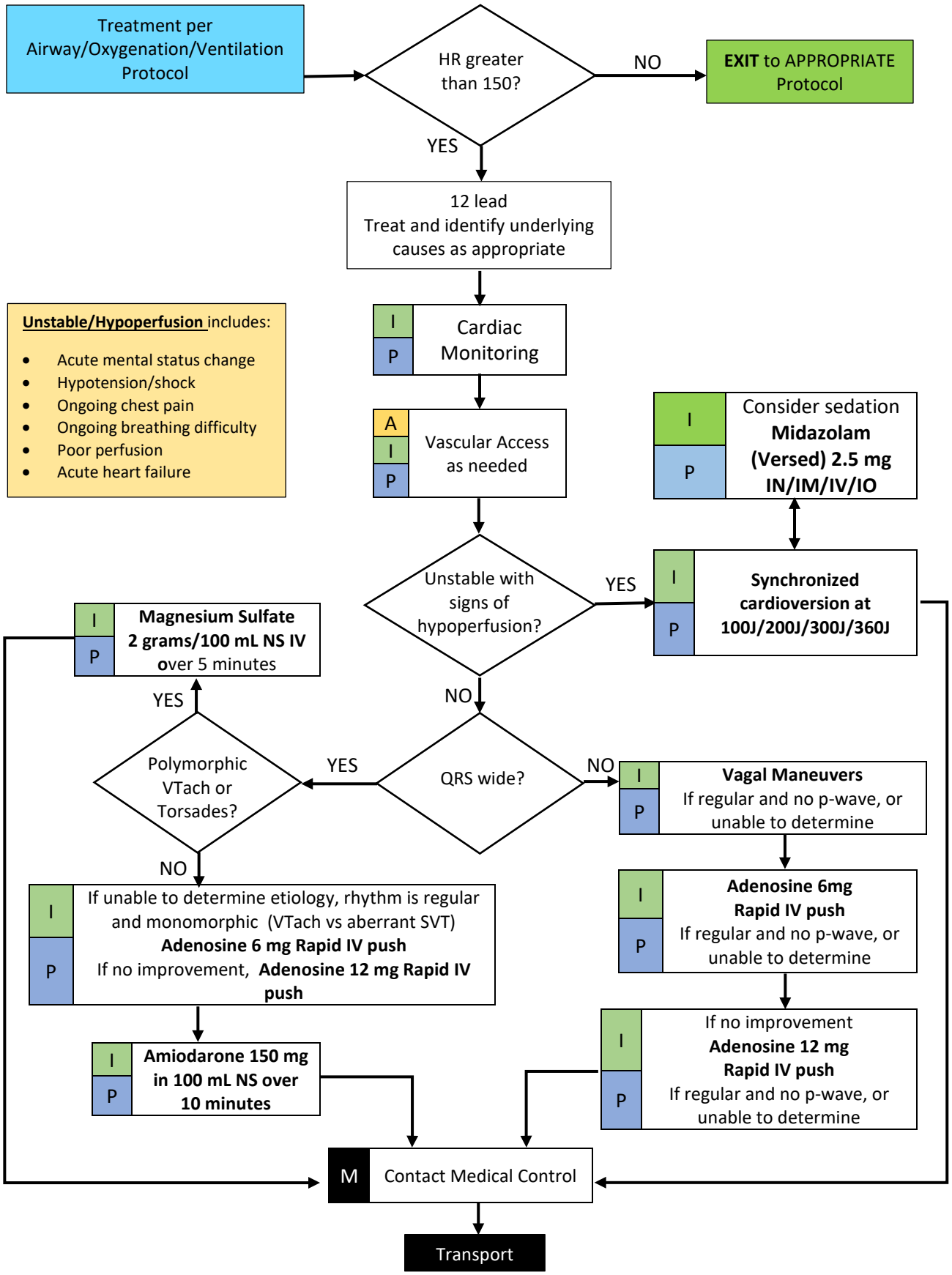
Amiodarone (Cordarone)

- Medical control may order for VTach with pulse
  - Patients less than 10 kg: **5 mg/kg IV/IO in 50 mL NS** over 20 minutes up to max dose of 150 mg
  - Patients greater than 10 kg: **5 mg/kg IV/IO in 100 mL NS** over 20 minutes up to max dose of 150 mg

Vagal Maneuvers

- Do not obstruct infant's airway or use ocular pressure or carotid massage while performing
- Infants-apply ice to forehead, eyes, and bridge of nose
- Older children-blow through obstructed straw, bear down as if having a bowel movement, hold breath while applying ice to forehead, eyes, and bridge of nose

Tachycardia - Adult



Tidewater EMS Council, Inc.

Tachycardia (Stable) - Pediatric

GOALS

- Early recognition and treatment of tachycardic rhythms
- Maintain adequate oxygenation, ventilation, and perfusion

TREATMENT

Polymorphic Ventricular Tachycardia and Torsades can deteriorate very quickly to VFib

- Attempt synchronized cardioversion at the highest energy setting (per pt) once
- If unable to sync or cardioversion is ineffective, defibrillate at the highest energy setting and contact medical control

Sinus Tachycardia

- Do not cardiovert. Treat underlying causes (pain, hypotension, anxiety, medications, hypoxia, etc.)

Atrial Fibrillation

- May require higher synchronized cardioversion settings (biphasic-120-200J, monophasic 200J)
- Monitor and contact medical control/transport stable patients without hypoperfusion

Ventricular Tachycardia

- Can occur with heart rates less than 150. Consult medical control

SPECIAL CONSIDERATIONS

- Do not place defib pads over patient devices such as med ports, AICD, pacer, etc.
- If unable to obtain synchronization, you may deliver unsynchronized shock
- If the patient has VTach or SVT with signs of hypoperfusion, do not delay cardioversion to administer sedation.

PEDIATRICS

- Consider tachycardia caused by congenital cardiac conditions, drug toxicity, etc. Consult medical control

Adenosine

- Administer **0.1 mg/kg IV** up to max dose of 6 mg
- Repeat dose **0.2 mg/kg IV** up to max dose of 12 mg
- May be ordered by medical control if SVT with aberrant conduction is suspected

Amiodarone (Cordarone)

- Medical control may order for VTach with pulse
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  - Patients greater than 10 kg: **5 mg/kg IV/IO in 100 mL NS** over 20 minutes up to max dose of 150 mg

Vagal Maneuvers

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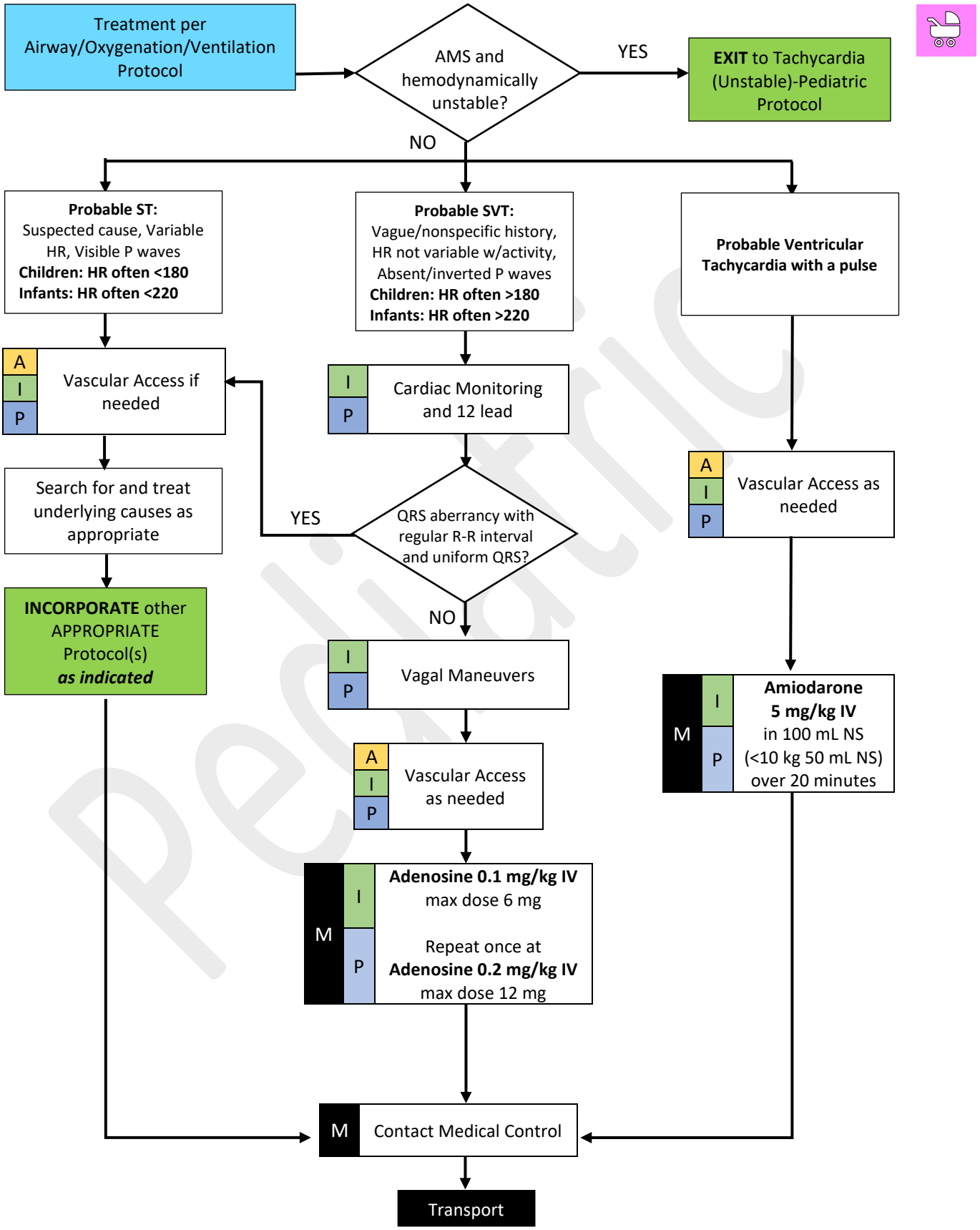
- Older children-blow through obstructed straw, bear down as if having a bowel movement, hold breath while applying ice to forehead, eyes, and bridge of nose

Tidewater EMS Council, Inc.

Tachycardia (Stable) - Pediatric



Tidewater EMS Council, Inc.

Tachycardia (Unstable) - Pediatric

GOALS

- Early recognition and treatment of tachycardic rhythms
- Maintain adequate oxygenation, ventilation, and perfusion

TREATMENT

Polymorphic Ventricular Tachycardia and Torsades can deteriorate very quickly to VFib

- Attempt synchronized cardioversion at the highest energy setting (per pt) once
- If unable to sync or cardioversion is ineffective, defibrillate at the highest energy setting and contact medical control

Sinus Tachycardia

- Do not cardiovert. Treat underlying causes (pain, hypotension, anxiety, medications, hypoxia, etc.)

Atrial Fibrillation

- May require higher synchronized cardioversion settings (biphasic-120-200J, monophasic 200J)
- Monitor and contact medical control/transport stable patients without hypoperfusion

Ventricular Tachycardia

- Can occur with heart rates less than 150. Consult medical control

SPECIAL CONSIDERATIONS

- Do not place defib pads over patient devices such as med ports, AICD, pacer, etc.
- If unable to obtain synchronization, you may deliver unsynchronized shock
- If the patient has VTach or SVT with signs of hypoperfusion, do not delay cardioversion to administer sedation.

PEDIATRICS

- Consider tachycardia caused by congenital cardiac conditions, drug toxicity, etc. Consult medical control

Adenosine

- Administer **0.1 mg/kg IV** up to max dose of 6 mg
- Repeat dose **0.2 mg/kg IV** up to max dose of 12 mg
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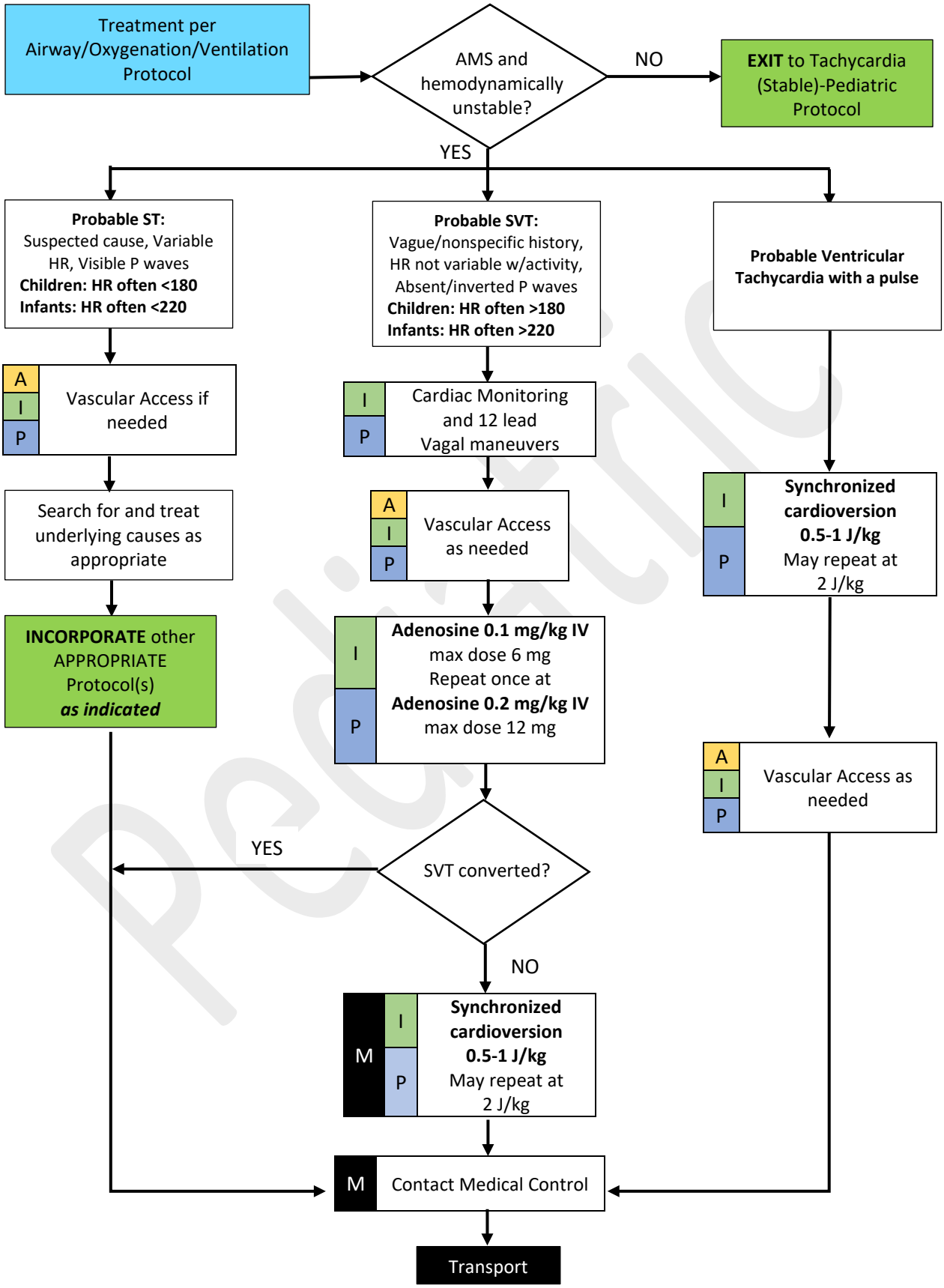
Tachycardia (Unstable) - Pediatric



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Termination of Resuscitation (Scene Use Only)

GOALS

- Cessation of resuscitation efforts when initiated inappropriately
- Establish criteria for pronouncement of death when efforts become futile.

TREATMENT

- Resuscitation must continue while you are evaluating the patient and situation.
- Address suspected underlying causes including ACLS H's and T's
- Contact medical control if viability is unclear
- Once resuscitation is discontinued, leave all expendable ALS supplies in place (IV, ETT, electrodes, etc.)

SPECIAL CONSIDERATIONS

- Environmental causes may warrant a longer resuscitation
- Ultrasound confirmation can only be performed by certified ultrasound providers

Tidewater EMS Council, Inc.

Termination of Resuscitation (Scene Use Only)

Cease Efforts Criteria
- Valid DNR/POST
- Rigor Mortis or Lividity
- Injuries Incompatible with Life
  Ex. Decapitation, Body Transection

Any Cease Efforts Criteria **AND** No ALS procedures initiated?

YES → Discontinue Resuscitation

NO → Continue Resuscitation
Identify and treat reversible causes

Higher viability or environmental causes?

YES → Cumulative BLS & ALS resuscitation for **at least 30 min**

Higher Viability
- Witnessed arrest
- Bystander CPR
- Initial shockable rhythm

NO → Cumulative BLS & ALS resuscitation for **at least 20 min**

Any ROSC during resuscitation?

YES → **EXIT** to APPROPRIATE Protocol

NO →

Contraindications for Termination of Resuscitation:
- Neurological activity
- Respiratory effort
- Suspected Hypothermia

Contraindications to termination of resuscitation?

YES → Transport

NO →

P — Obtain Ultrasound confirmation, if available → M (A I P) — Obtain guidance for discontinuation of resuscitation

If resuscitation will be terminated, pronouncement of death must include evaluation of:
- Neurological status – Pupillary check, no response to painful stimuli and corneal reflex
- Respiratory Status – Absence of breath sounds determined by auscultation of the chest with a stethoscope
- Circulatory Status – Absence of pulse by palpation of the carotid artery and absence of heart sounds by auscultation of the chest with a stethoscope. Also confirm cardiac activity incompatible with life, if ultrasound is available

General Protocols

Tidewater EMS Council, Inc.

Agitated/Combative Patient

GOALS

- Maximize and maintain patient and provider safety
- Identify the underlying cause and provide medical care to agitated, violent or combative patients

TREATMENT

- Provide patient care and treatment as required for individual including underlying conditions
- If giving Versed and Haldol, medication should be given in two separate injections. *Do not mix medications*.
- Complete patient record for all encounters including non-transports
- If patient is competent to refuse, documentation should include patient's mental state, status, rationale, treatments attempted and provided as well as other factors
- Use verbal de-escalation techniques
- Patients should receive the least amount of medication needed to allow for safe transport and evaluation.
- Patients with severe agitation require physical restraints
- If patient exhibits signs of an acute dystonic reaction due to haloperidol (Haldol), administer **Diphenhydramine (Benadryl) 50 mg IM/IV** on standing order for I/P
- Can administer **Midazolam (Versed) 2.5 mg IV/IO** over 1 minute
- Patients 70 and older should receive half doses of medication
- Patients with severe agitation: If the patient develops cardiac arrest, incorporate **Sodium bicarbonate 50 mEq IV** into the cardiac arrest protocol
- Maximum total dose of 5 mg Versed, and 5 mg Haldol may be given on standing order; **additional doses require physician order**
- IM Haldol is safer than IV Haldol; administer Haldol very slowly if using IV route

SPECIAL CONSIDERATIONS

- Behavioral emergency cases can rapidly deteriorate. Monitor situation closely and incorporate combative patient protocols as needed
- Contact police, retreat, and/or stage prior to entry if there is any question of provider safety
- Mental capacity issues are complex. Consult with police, medical control and supervisors as needed
- Benzodiazepines can cause respiratory depression and/or bradycardia. All patients receiving these medications should have cardiac monitoring, SpO2, and EtCO2 monitoring and vital reassessment every 5 minutes
- **Haloperidol (Haldol)** is not appropriate for patients with a history of seizures, prolonged QT intervals, or on multiple medications known to prolong the QT interval
- If agitated patients suddenly become calm, reassess, and monitor closely
- Ensure patients are transported in a way that does not impact the patient's respiratory status
- Patients who are physically restrained and continue to be combative should generally have chemical sedation administered to prevent further patient injury (hyperkalemia, hyperthermia, rhabdomyolysis, apnea, cardiac arrest)
- Suspected Traumatic Head Injury: This protocol may be considered if RSI is unavailable or not indicated

PEDIATRICS

Midazolam (Versed) 0.2 mg/kg IN/IM

- Administer up to max dose of 2.5 mg (or 5 mg for severe agitation)

Haloperidol (Haldol) 0.05 mg/kg IM

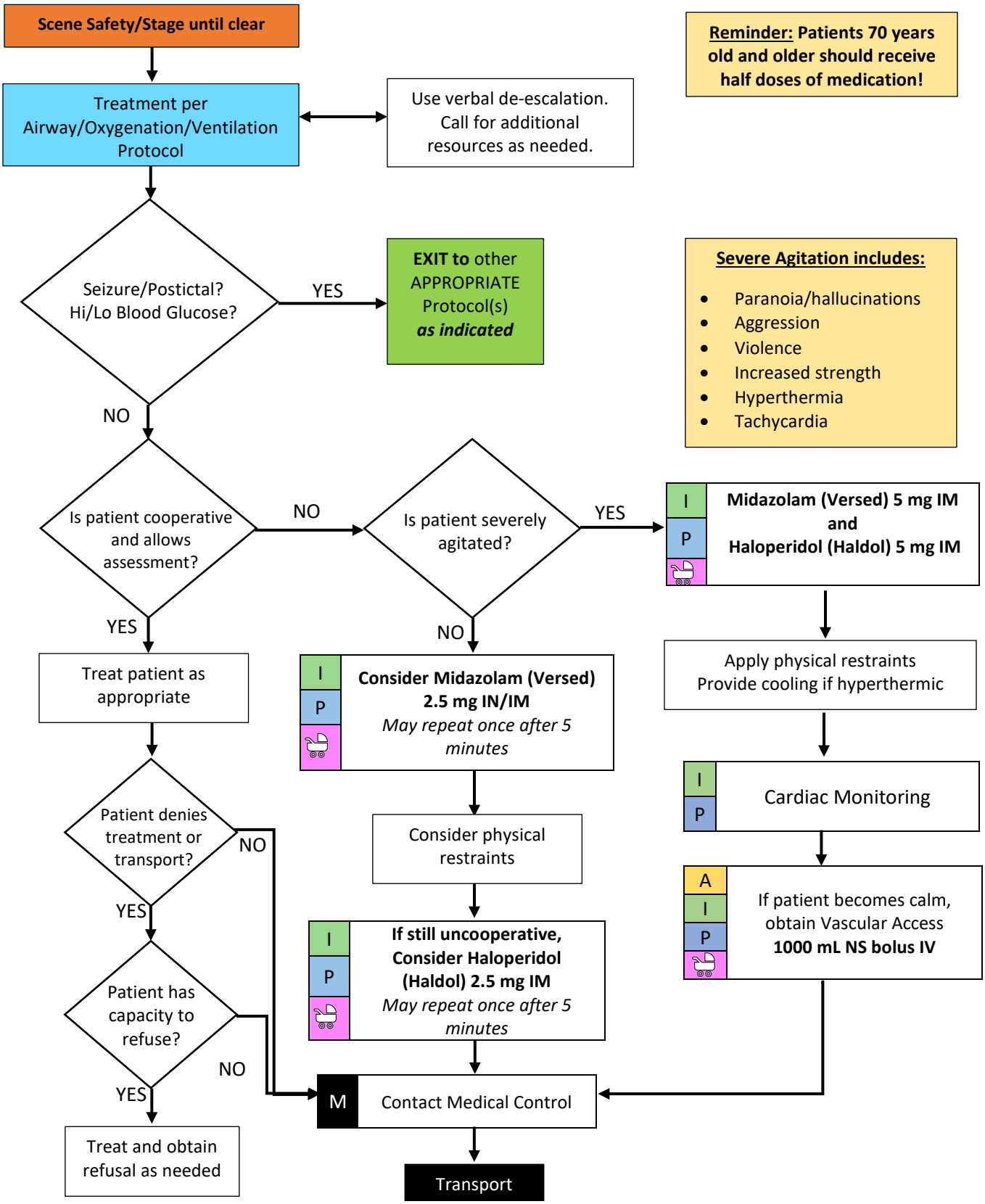
- May consider up to max dose of 2.5 mg
- **Not** indicated for patients less than 5 years

Contact medical control for additional doses

- Include parents/caregivers in treatment decisions

Tidewater EMS Council, Inc.

Agitated/Combative Patient



Tidewater EMS Council, Inc.

AOV (Airway/Oxygen/Ventilation)

GOALS

- Provide effective oxygenation and ventilation
- Rapid assessment and management of airway concerns

TREATMENT

- Target oxygen saturation is between 94% and 99%. Lower SPO2 may be normal for some patient conditions.
- Consider oxygen therapy for patients with smoke inhalation, hypoperfusion, respiratory distress, sickle cell crisis, altered mental status regardless of oxygen saturation
- Attempt to obtain room air saturation prior to applying oxygen but do not delay treatment
- OPA/NPA will make BVM ventilation more effective.
- When using the BVM, ventilate with minimal volume-enough to make chest rise. (Approximately 6-7 mL/kg ideal body weight).
- Pain should be managed in conjunction with sedation
- Maintain EtCO2 at 35-45 mmHg

SPECIAL CONSIDERATIONS

Patients with chronic hypoxia such as COPD may routinely have a normal oxygen saturation less than 94%

Ventilation Rates

- **Adult**: 10 breaths/minute (1 every 6 seconds)

BLS Airway/BVM

- Every attempt to use two providers should be made. If one provider, use "E-C" technique
- Avoid excessive pressure and volumes. Consider OG/NG for gastric decompression

Advanced Airway (IGel, King, ET)

- **If medication is necessary to facilitate advanced airway, incorporate RSI protocol**
- Monitor all patients with SPO2, waveform capnography, and cardiac monitor **[I and P ONLY]**
- Verify initial airway placement, secure tube with commercial device, place c-collar, and recheck placement every 5 min or with patient movement. Consider OG/NG for gastric decompression

Chest Needle Decompression

- Use at least a 14-gauge catheter that is 3.25 inches long or largest available

PEDIATRICS

Ventilation Rates

- **Child/Infant**: 20-30 breaths/minute (1 every 2-3 seconds) when patient has pulse
  - If advanced airway in place: 20-30 breaths/minute (1 every 2-3 seconds)

Orotracheal Intubation

- For patients 12 and under--may only be performed by a Paramedic per OEMS

Chest Needle Decompression (**PO for Intermediate, SO for Paramedic**)

- Use 18-gauge catheter unless child is larger

Needle Cricothyrotomy **(SO for Paramedic)**

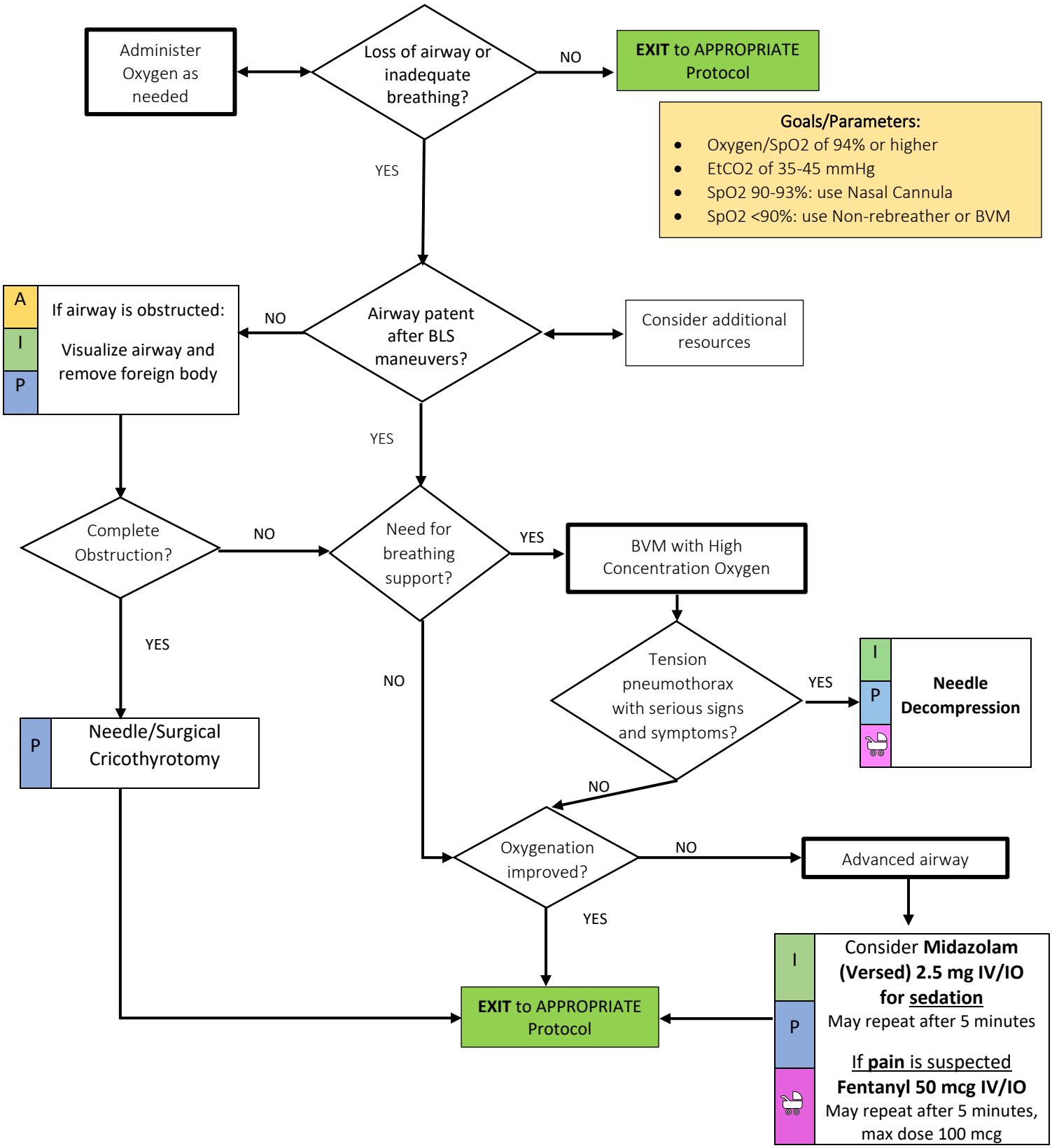
- May be performed on peds ages 3-12 years IF cricothyroid membrane can be palpated.

Post Intubation Sedation (**PO for Intermediate, SO for Paramedic**)

- **Midazolam (Versed) 0.1mg/kg IV/IO** max single dose of 2.5mg
- **Morphine 0.1 mg/kg IV/IO**

Tidewater EMS Council, Inc.

AOV (Airway/Oxygen/Ventilation)



Reviewed 12/19/23

Revised November 2024

Tidewater EMS Council, Inc.

Allergic Reaction/Anaphylaxis

GOALS

- Preventing shock and cardiorespiratory collapse by providing treatment for reactions to known/suspected allergens
- Alleviate symptoms for known/suspected allergens

TREATMENT

- Anaphylaxis is characterized by severe signs and symptoms including respiratory and cardiovascular compromise and two or more organ systems
- All Levels may use Epi Autoinjector on standing orders
- **If Epi Auto Injector is unavailable, then draw and administer Epinephrine (A/I/P)**
  - 0.01 mg/kg IM max dose 0.5 mg (Epinephrine 1 mg/mL)
  - Adult dosage recommended for ages 9yo and up
- **Epi "Push pressor"**
  - Make push pressor: mix 1 mL (0.1 mg) Epi 1:10,000 concentration in 9 mL saline (100 mcg/10 mL)
  - Push 0.5 mL (5 mcg) IV/IO at a time
  - Push slowly and after BP checks (every 1 – 5 minutes) to titrate a systolic BP of 90 mmHg
- **Dexamethasone**
  - Preferred medication over Solumedrol
  - IV/IO route preferred if patient is in extremis
  - EMT may give PO route only
- **Methylprednisolone (Solumedrol)**
  - 125 mg IV/IO (A/I/P) may be used as alternative to Dexamethasone

SPECIAL CONSIDERATIONS

- Use caution administering epinephrine to patients 40 or over or with a cardiac history. Consider contacting medical control
- Medication induced angioedema from ACE inhibitors may not respond to epinephrine, diphenhydramine, dexamethasone, or methylprednisolone and aggressive airway management may be required
- Rapidly progressing signs and symptoms should be treated as anaphylaxis

PEDIATRICS

Dexamethasone 0.5 mg/kg (max 10mg) IV/IO/IM/PO (A/I/P)

Solumedrol is not indicated in the management of pediatric allergic reaction/anaphylaxis in the prehospital setting

Diphenhydramine (Benadryl) 1 mg/kg IM/IV up to max dose of 50 mg. May be repeated once

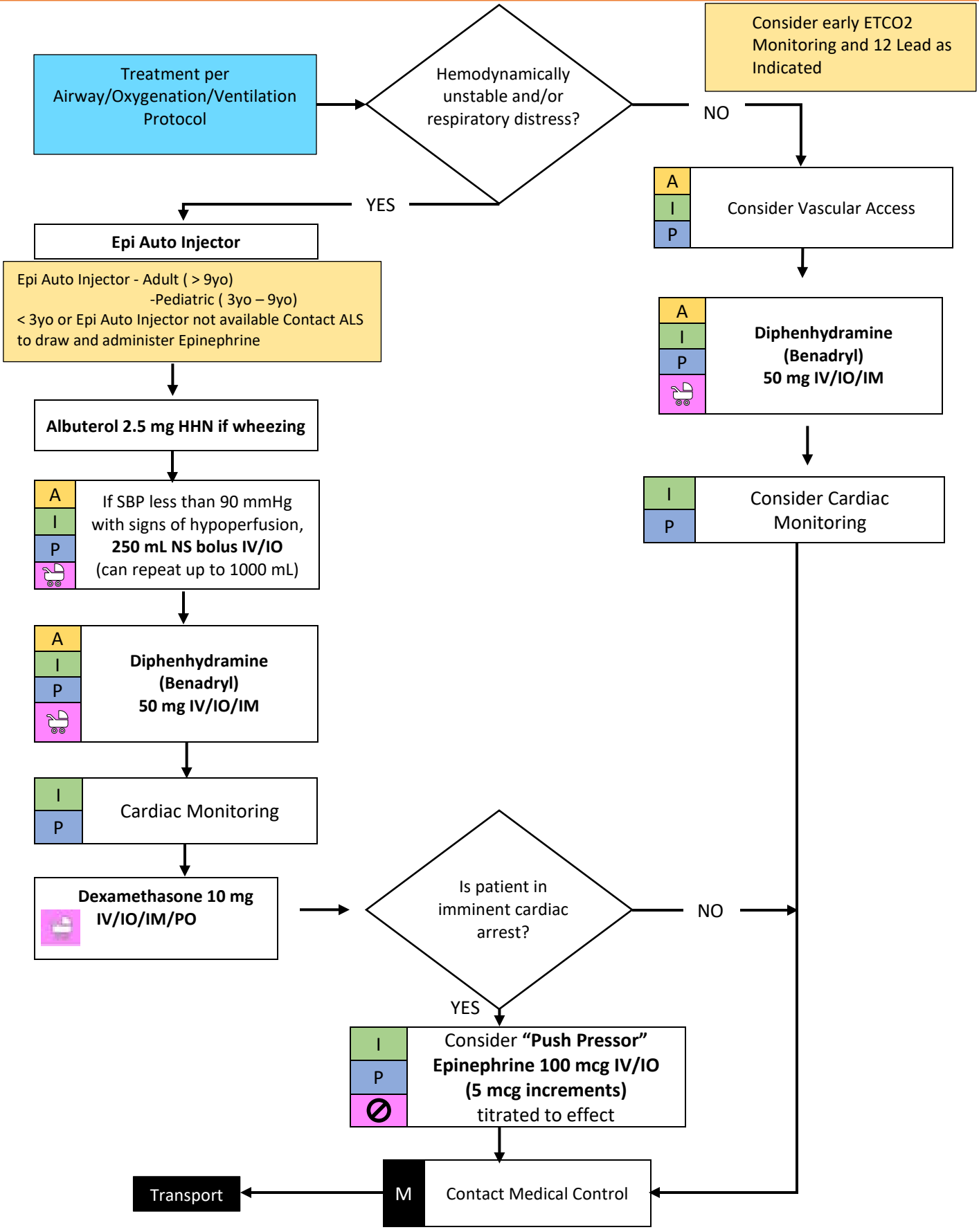
Pediatric Epi Autoinjector

- Recommended for ages 3yo-9yo
- < 3yo – **DO NOT USE AUTOINJECTOR** - draw and administer Epinephrine (A/I/P)

Normal Saline 20 mL/kg IV/IO up to max dose of 1000 mL

Tidewater EMS Council, Inc.

Allergic Reaction/Anaphylaxis



Reviewed 1/19/23

Revised April 2025

Bites and Stings

GOALS

- Patient and provider safety
- Safely identify the source of the bite or sting
- Rapid assessment and management of life-threatening injuries

TREATMENT

- All bites/stings can lead to infection over time especially in those patients with compromised immune systems.

Jelly fish/Man-O-War

- Carefully remove tentacles and avoid rinsing to avoid spreading nematocysts to new areas

Snake

- Do not apply ice or cold packs
- Do not apply tourniquet to snake bites as it may worsen local tissue damage
- Envenomation can be variable depending on snake and bite

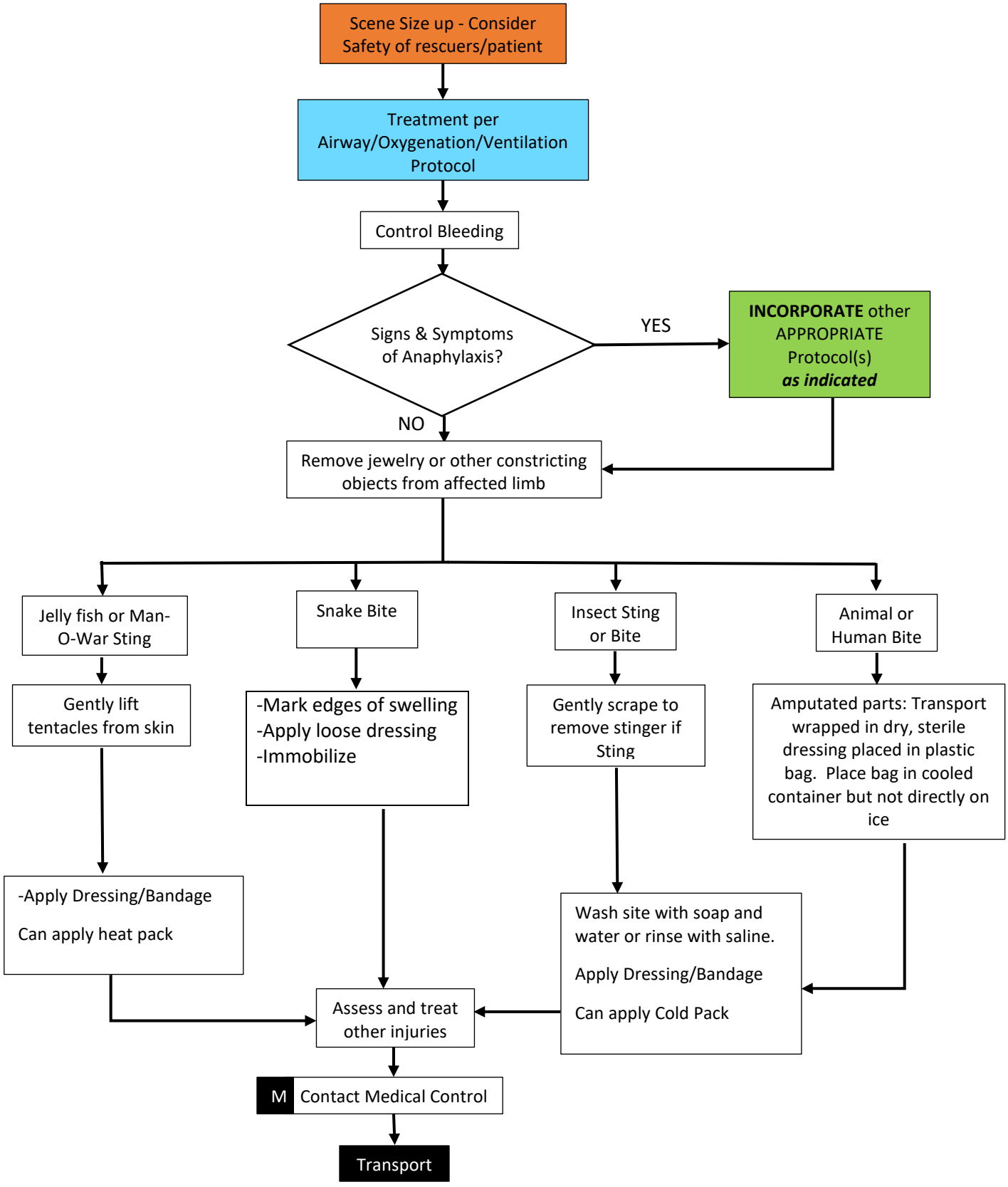
Spider

Signs and symptoms typically develop over hours to days

SPECIAL CONSIDERATIONS

- Ensure scene safety and consider contacting animal control for management of the animal
- Do not attempt to capture or kill the animal or insect inflicting the bite/sting
- DO NOT bring animals, insects, snakes to the hospital but can attempt to take a picture if safe to do so

Bites and Stings



Tidewater EMS Council, Inc.

Bleeding Control

GOALS

- Minimize blood loss and avoid hemorrhagic shock

TREATMENT

- Expose the wound and determine if a tourniquet is needed
- Preference for tourniquet placement is 2" proximal to the wound
- Consider alternate tourniquet placement as high on the extremity as possible during tactical situations, when exposing the wound is not feasible, or if a second tourniquet is required
- Reassess frequently to ensure bleeding has not restarted
- Consider tightening or placing an additional tourniquet if bleeding persists or a distal pulse is present
- If wound is located in area where tourniquet cannot be placed (such as junctional injuries), pack tightly with hemostatic gauze/agent and apply direct pressure
    - Standard gauze is effective if hemostatic gauze is not available
- Consider pain management if tourniquet placed

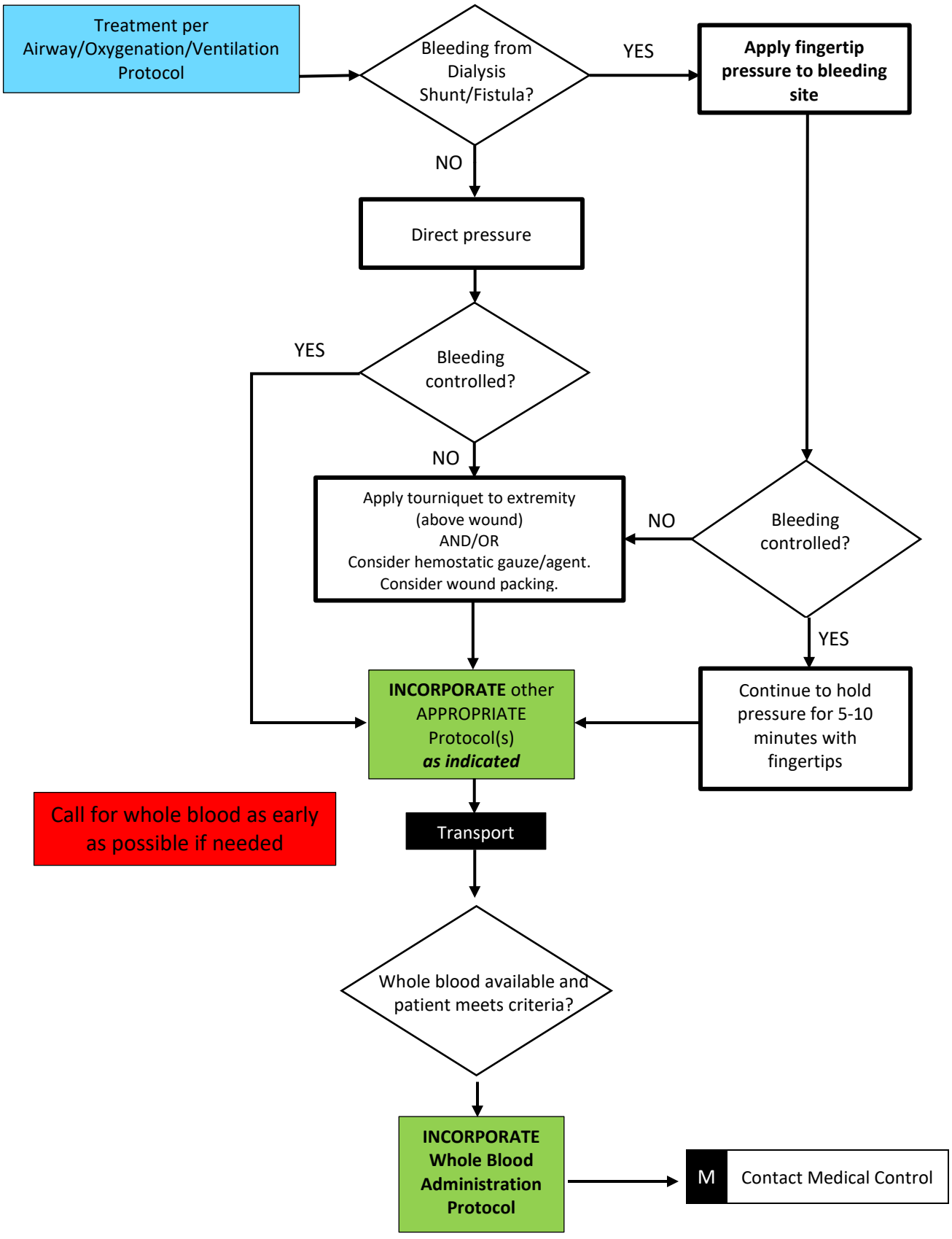
Locations contraindicated for wound packing:

- Neck wound packing for a non-intubated airway, direct pressure is usually effective

SPECIAL CONSIDERATIONS

- Dialysis Shunt/Fistula
    - Wipe the site with gauze to help locate the specific point of bleeding and occlude the hole with direct firm fingertip pressure
    - If the bleed is not controlled with firm fingertip pressure, a tourniquet must be placed proximal to the dialysis shunt/fistula. Do NOT apply a tourniquet directly on top of a shunt/fistula
- Do not remove tourniquet or dressing to reassess bleeding control
- Transport patients with vascular compromise immediately
- If unable to control bleeding with tools available, consider closest facility, not necessarily a trauma center
- Expose the area and check for additional wounds
- Large abdominal wounds could benefit from being packed if the provider maintains a count of how many pieces were inserted in the body
- Consider Whole Blood with severe hemorrhage and BP < 70 or other serious signs/symptoms:
    - Identify and call for whole blood resources EARLY if patient meets criteria
    - Obtain an accurate set of vital signs, including manual BP
    - Treat all life threats first, control all major bleeds, and manage the airway if needed
    - DO NOT delay transport for whole blood administration

Bleeding Control



Tidewater EMS Council, Inc.

Breathing Difficulty-Adult

GOALS

- Alleviate respiratory distress and work of breathing
- Maintain oxygenation

TREATMENT

Treatment notes:

- If asthma patients have not responded to home medications, you may start with Albuterol/Atrovent as a first line treatment
- Patients with clear lung sounds or unilateral crackles should be transported with no medications
- Albuterol can be continuously administered if wheezing is still present

BiLevel/CPAP

- Can be applied as a first line treatment, may worsen hypotension, and should only be applied to patients maintaining an airway and with an adequate respiratory drive. It can be considered in asthma patients with severe distress when intubation is being considered.
- In CHF, administer 1 SL NTG prior to application of the mask and remove mask briefly for additional dosing

Dexamethasone

- Preferred medication over Solumedrol
- IV/IO route preferred if patient is in extremis
- EMT May only administer PO route

Methylprednisolone (Solumedrol)

- 125 mg IV/IO (A/I/P) may be used as alternative to Dexamethasone

For severe asthma/COPD, medical control may order:

Epinephrine

- 0.01 mg/kg IM max dose of 0.5 mg (physician order for A/I/P only)

SPECIAL CONSIDERATIONS

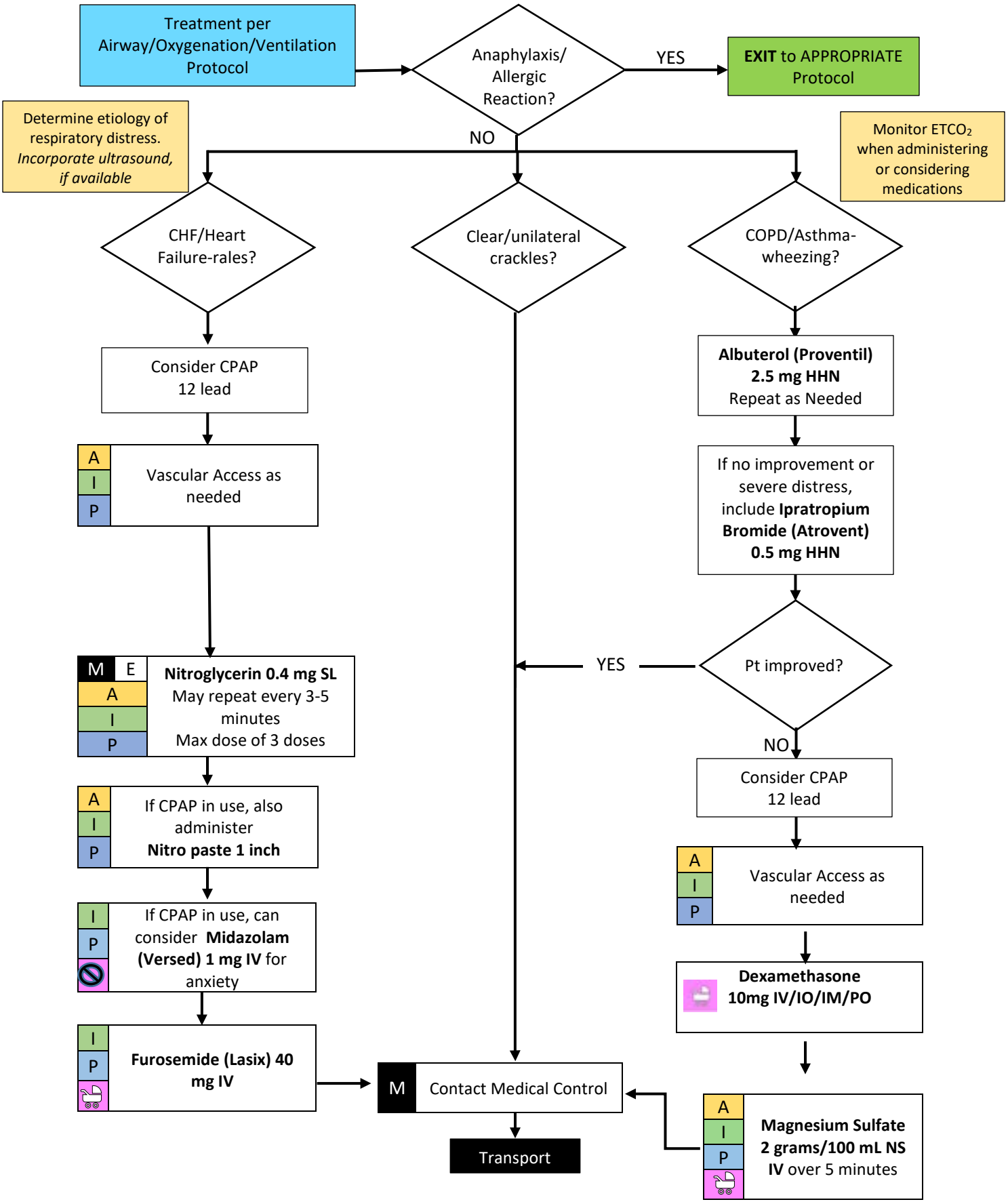
- In severe asthma or COPD, wheezing may not be present due to insufficient tidal volume
- Overdoses on some medications such as beta blockers, tricyclic antidepressants and calcium channel blockers may produce pulmonary edema
- Patients experiencing significant breathing difficulty or patients with multiple comorbidities should have EtCO2 monitoring
- If bronchoconstriction and wheezing is present with CHF/pulmonary edema, albuterol is indicated
- CHF is primarily a cardiac event and treatment should focus on reducing preload and afterload
- Do NOT give Magnesium Sulfate to dialysis patients in this protocol

PEDIATRICS

- See Breathing Difficulty Pediatric

Tidewater EMS Council, Inc.

Breathing Difficulty-Adult



Reviewed 9/20/24

Revised April 2025

Breathing Difficulty-Pediatric

GOALS

- Alleviate respiratory distress and work of breathing
- Maintain oxygenation

TREATMENT

Treatment notes:

- If asthma patients have not responded to home medications, you may start with Albuterol/Atrovent as a first line treatment
- Patients with clear lung sounds or unilateral crackles should be transported with no medications
- Albuterol may be continuously administered if wheezing is still present

CPAP/BiLevel

- Can be applied as a first line treatment, may worsen hypotension, and should only be applied to patients maintaining an airway and with an adequate respiratory drive. It can be considered in asthma patients with severe distress when intubation is being considered
- In CHF, administer 1 SL NTG prior to application of the mask and remove mask briefly for additional dosing.

For severe asthma/COPD, medical control may order:

- **Epinephrine 0.01 mg/kg IM** max dose of 0.5 mg (physician order for A/I/P only)

SPECIAL CONSIDERATIONS

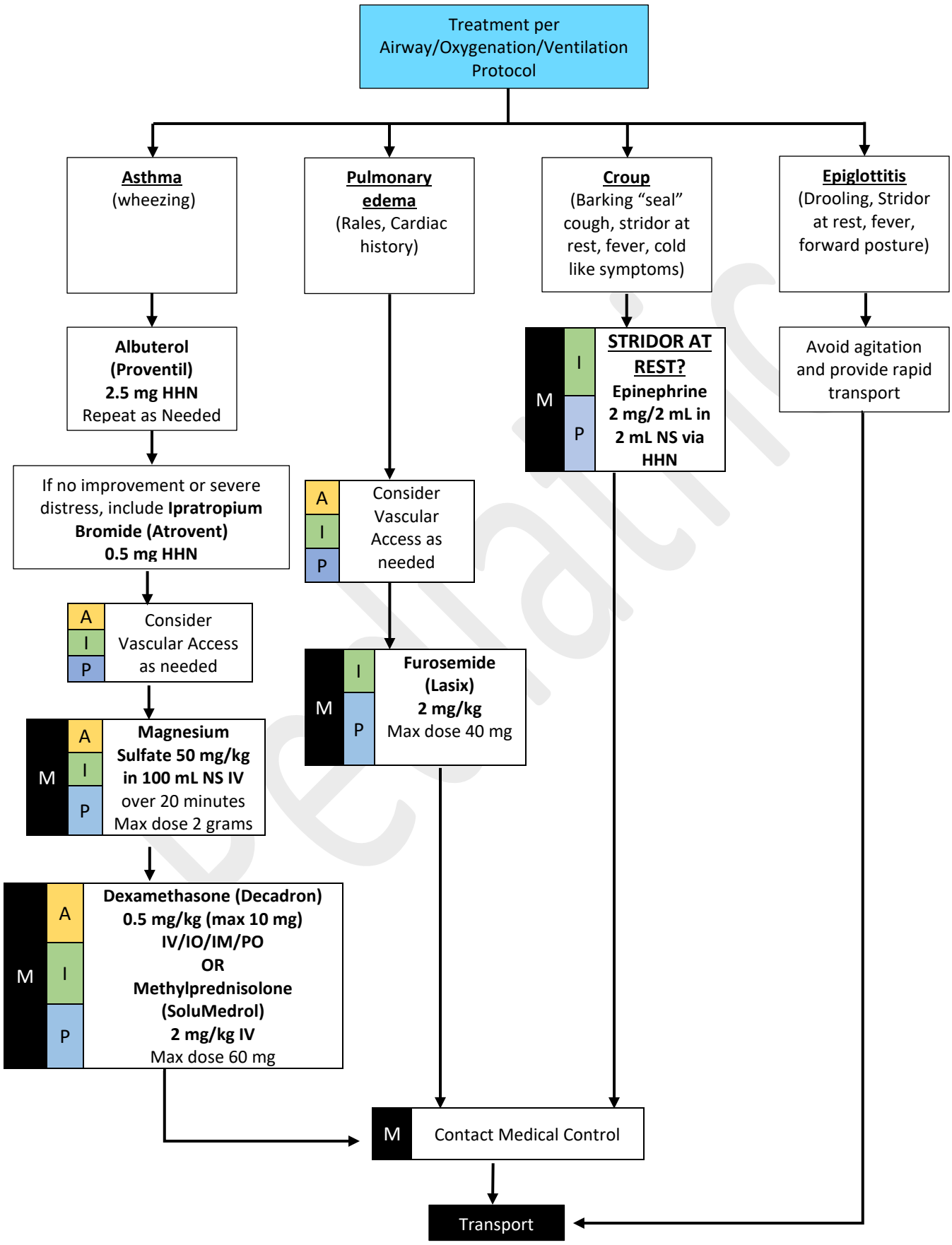
- In severe asthma or COPD, wheezing may not be present due to insufficient tidal volume
- Overdoses on some medications such as beta blockers, tricyclic antidepressants and calcium channel blockers may produce pulmonary edema
- Patients experiencing significant breathing difficulty or patients with multiple comorbidities should have EtCO2 monitoring
- If bronchoconstriction and wheezing is present with CHF/pulmonary edema, albuterol is indicated
- CHF is primarily a cardiac event and treatment should focus on reducing preload and afterload
- Do NOT give magnesium sulfate to dialysis patients in this protocol

PEDIATRICS

- In the patient with stridor, drooling and forward posture, let the patient maintain a position of comfort if they are maintaining their own airway

- For severe asthma, medical control may order:
  - **Dexamethasone (Decadron) 0.5 mg/kg** (max 10 mg) IV/IO/IM/PO (A/I/P)
    OR
  - **Methylprednisolone (SoluMedrol) 2 mg/kg IV** max dose of 60 mg
    - Should not routinely be administered but may be considered for long transports of 30 minutes or more with physician order
  - **Magnesium Sulfate 50 mg/kg in 100 mL NS IV** over 20 minutes max dose of 2 grams
  - **Epinephrine 0.01 mg/kg IM** max dose of 0.5 mg

Breathing Difficulty-Pediatric



Burns

GOALS

- Minimize tissue damage, treat patient, and reduce morbidity

TREATMENT

- Exposure to air increases pain from burns. Cover with dry sterile dressings. Small burns can be covered with moist dressings for comfort and pain relief
- Avoid hypothermia and keep patients warm
- Implement pain management as needed
- Not all patients with burns need an IV

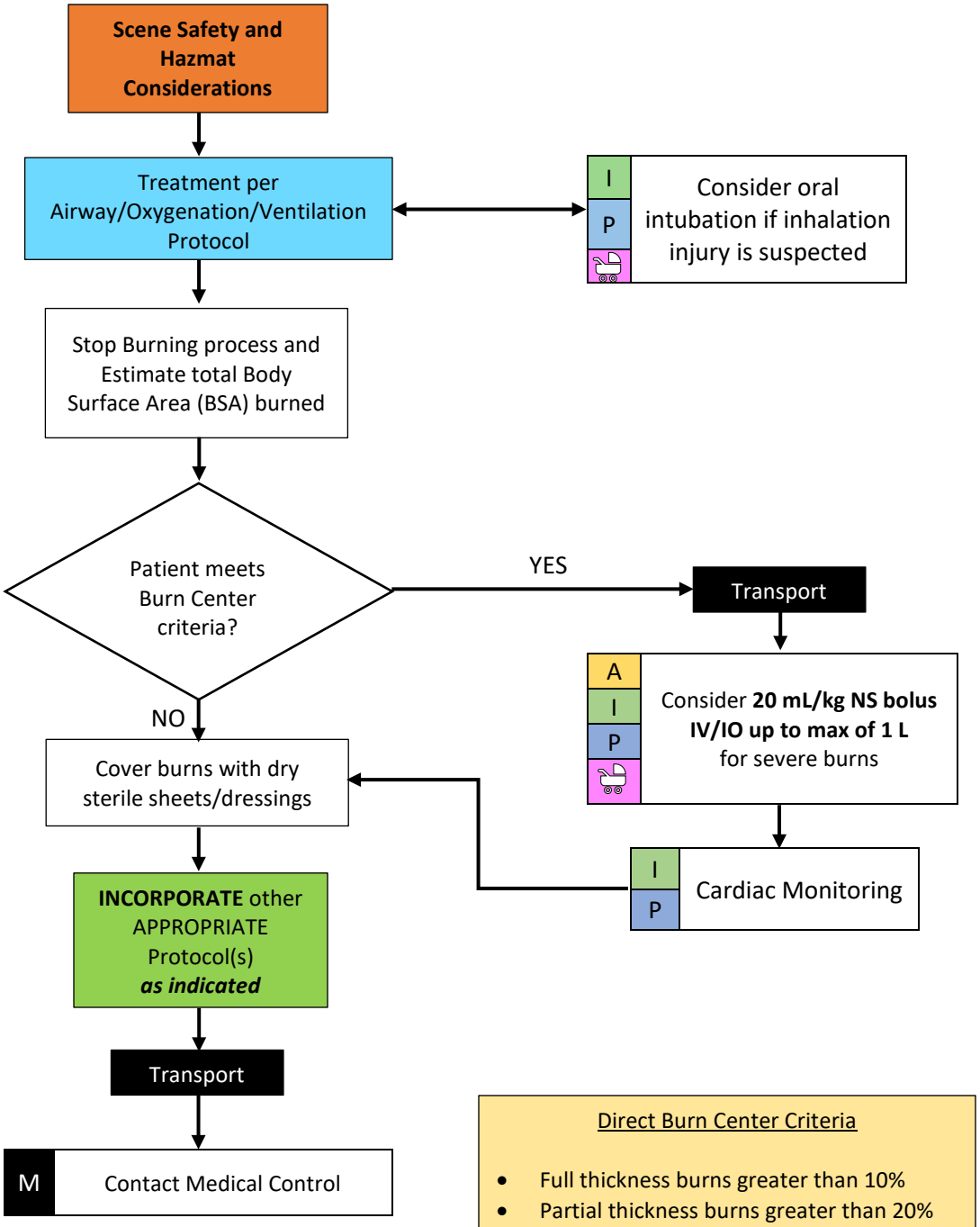
SPECIAL CONSIDERATIONS

- Do not delay transport for non-lifesaving procedures
- Remove clothing carefully. If stuck to skin, cut around it instead of pulling away

PEDIATRICS

- Intubation may only be performed by Paramedics in pediatrics 12 and under per OEMS
- CHKD is a pediatric burn center

Burns



Direct Burn Center Criteria

- Full thickness burns greater than 10%
- Partial thickness burns greater than 20%
- Partial/Full thickness burns greater than 15%
- Burns to feet, hands, genitals, face, joints
- Age extremes
- Inhalation, electrical or chemical burns
- Other traumatic injuries
- Pre-existing conditions that complicate treatment

Tidewater EMS Council, Inc.

Carbon Monoxide/Cyanide

GOALS

- Remove victim from toxic environment
- Assure adequate oxygenation, ventilation, and correction of hypoperfusion

TREATMENT

- In obtunded fire victims, consider Cyanide treatment protocol
- Continue high flow oxygen regardless of pulse ox readings
- Serum cyanide levels cannot be tested in the field, treatment for suspected cyanide poisoning shall be initiated based on clinical suspicion, suspected exposure, and any of the following:
    - Hypotension not attributed to other obvious causes
    - Altered mental status/unconsciousness
    - Seizures
    - Respiratory/Cardiac Arrest

SPECIAL CONSIDERATIONS

- Fetal hemoglobin has a greater attraction for CO than maternal hemoglobin. Females who are known to be or possibly pregnant should be advised that EMS-measured SpCO levels reflect the adult's level, and that fetal COHb levels may be higher. Recommend hospital evaluation for any CO exposed pregnant person
- Symptoms present with lower CO levels in pregnancy, children, and the elderly
- The differential list for CO Toxicity is extensive. Attempt to evaluate other correctable causes when possible
- Chronic CO exposure is clinically significant; therefore advice on smoking cessation is important medical instruction
- Consider CO and Cyanide with any product of combustion. Normal environmental CO level does not exclude CO poisoning. The absence (or low detected levels of) of COHb is not a reliable predictor of firefighter or victim exposure to other toxic byproducts of fire.

PEDIATRICS

- Pediatric patients should receive Hydroxocobalamin using ideal body weight or the age-appropriate dose

Hydroxocobalamin 70 mg/kg IV infused over 15 minutes max dose of 5 grams

Equipment needed to prepare the Hydroxocobalamin (aka - Cyanokit) Infusion:

1. 50/60mL syringe
2. 250cc bag of 0.9% NaCl
3. Cyanokit

Preparation and Administration of the Cyanokit To Pediatric Patients:

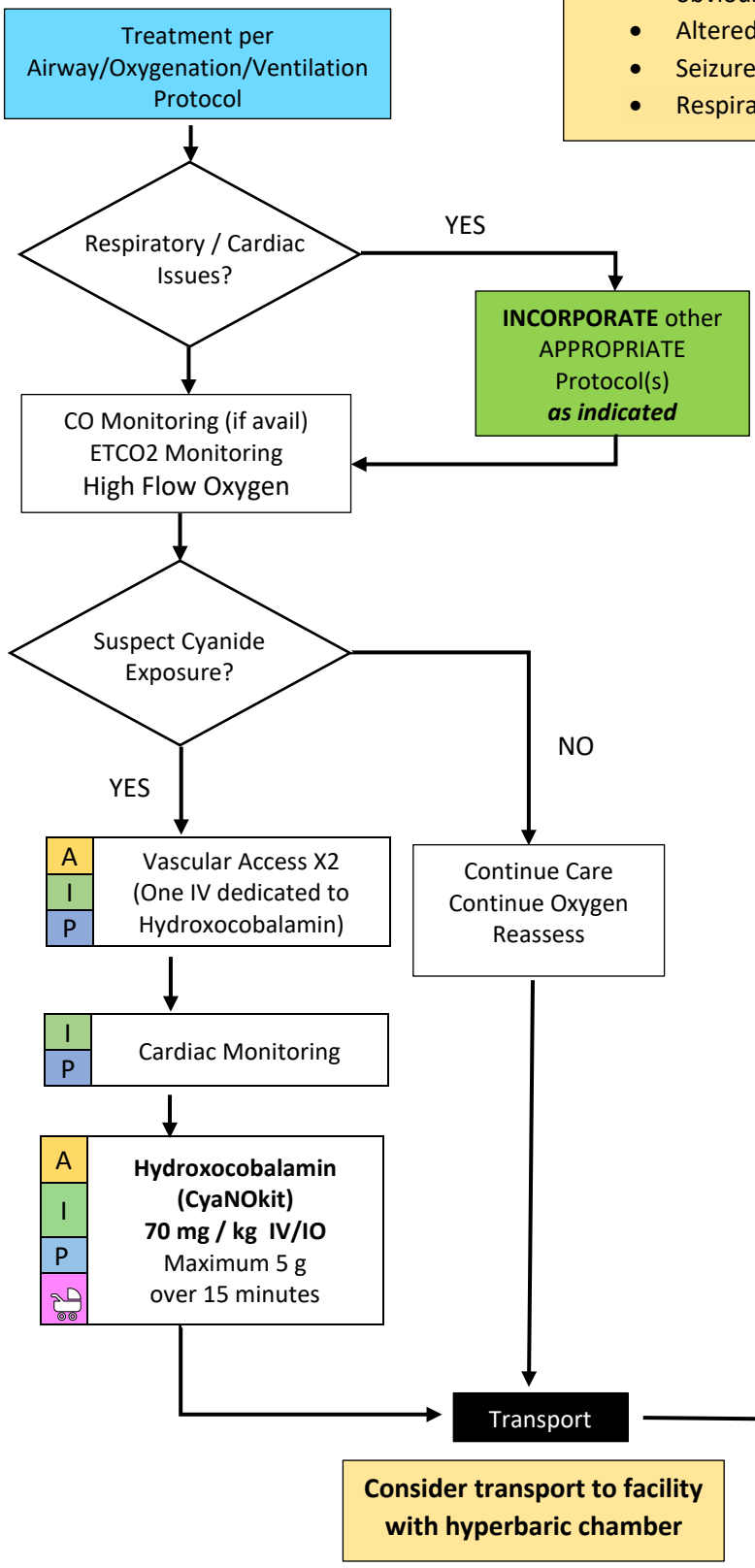
1. Using a 50/60cc syringe, remove 50cc of Normal Saline from the 250cc bag.
2. Follow the manufacturer's directions provided with your Cyanokit to reconstitute the Hydroxocobalamin in the glass jar(s) provided. Retain the empty 250cc IV bag for use after the medication is reconstituted.
3. Determine the correct dose by referencing Handtevy or the age-based chart provided in the TEMS Carbon Monoxide protocol.
4. Using an appropriately sized syringe, remove the correct mL dose from the Cyanokit glass jar and place the reconstituted medication dose back into the empty 250mL bag. Use a 60 gtts/mL set to administer the medication over 15 minutes

Tidewater EMS Council, Inc.

Carbon Monoxide/Cyanide

Suspect Cyanide exposure if patient has:

- Hypotension not attributed to other obvious causes
- Altered mental status/unconsciousness
- Seizures
- Respiratory/Cardiac Arrest



Age	Weight	Volume	Dose
Newborn	2 KG	6 mL	150 mg
4 Mo	4 KG	12 mL	300 mg
6 Mo	6 KG	17 mL	425 mg
1 Year	10 KG	28 mL	700 mg
2 Year	12 KG	34 mL	850 mg
3 Year	15 KG	42 mL	1050 mg
4 Year	17 KG	48 mL	1200 mg
5 Year	20 KG	56 mL	1400 mg
6 Year	22 KG	62 mL	1550 mg
7 Year	25 KG	70 mL	1750 mg
8 Year	27 KG	76 mL	1900 mg
9 Year	30KG	84 mL	2100 mg
10 Year	35 KG	98 mL	2450 mg
11 Year	40 KG	112 mL	2800 mg
12 Year	50 KG	140 mL	3500 mg
13 Year	60 KG	168 mL	4200 mg
14 Year	70 KG	196 mL	4900 mg
Adult	71 KG	200 mL	5000 mg

Tidewater EMS Council, Inc.

CBRNE/HAZMAT Exposure

GOALS

- Maintain patient and provider safety by identifying ongoing threats.
- Remove patient from hazardous material environment.
- Decontaminate to remove continued sources of exposure, absorption, ingestion, inhalation, or injection.
- Rapid identification of situation, intoxicating agent.
- Assess risk for organ impairments (heart, brain, kidney).
- Treat signs and symptoms in effort to stabilize patient.

TREATMENT

Assessment

- Each toxin or event has unique characteristics which must be considered in individual protocols.
- Identification and treatment of life-threatening injuries and medical problems takes priority over decontamination in some situations.
- Patients with pre-existing conditions may be prone to more severe effects.

SPECIAL CONSIDERATIONS

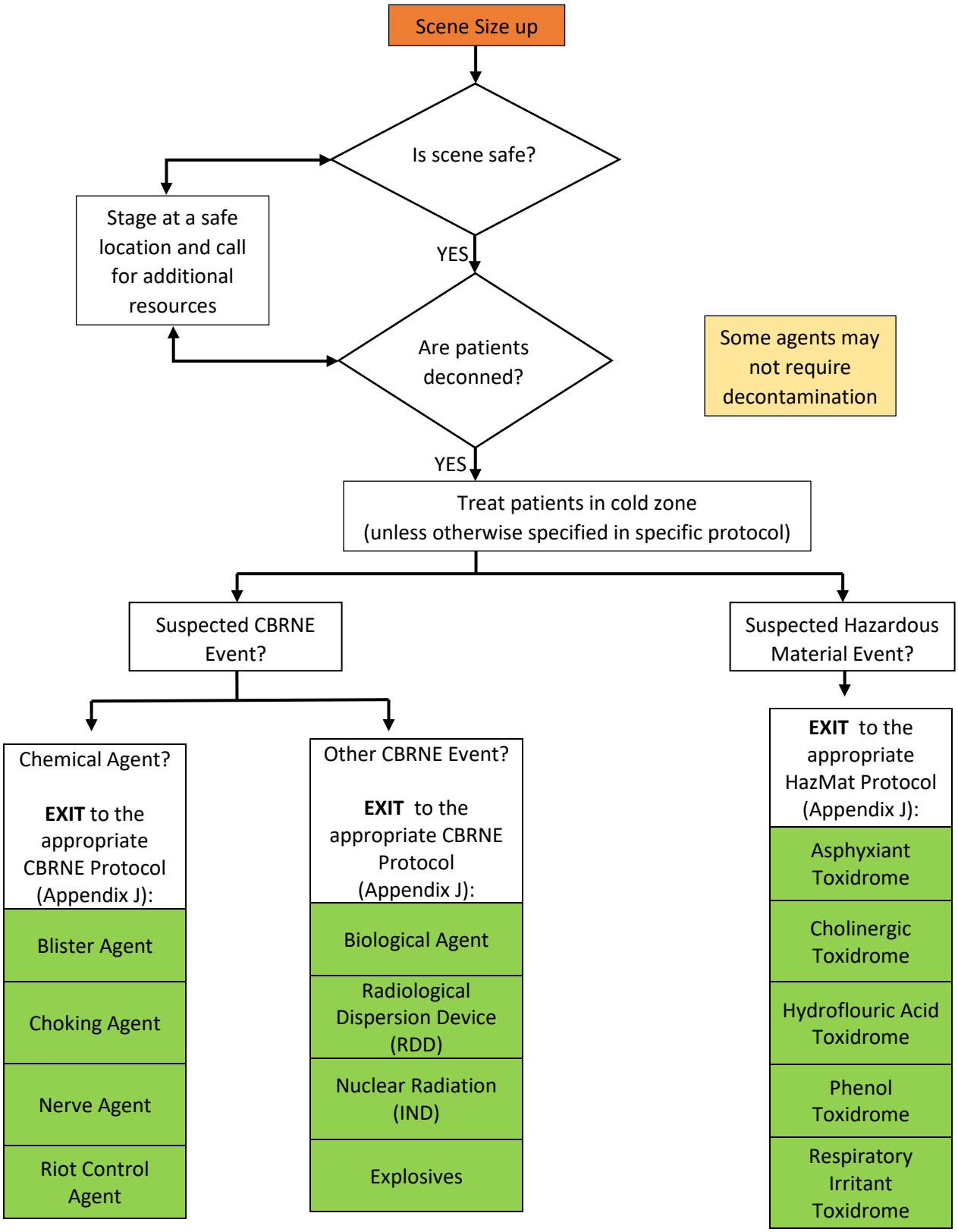
- Scene safety is of paramount importance.
- Contact the receiving facility and closest hospitals as early as possible.
- Many gases are heavier than air and will build up in low lying areas.

PEDIATRICS

Treatment

- Treatment and dosing as appropriate.

CBRNE/HAZMAT Exposure



Chest Pain/ACS

GOALS

- Identify STEMI and early activation of system of care
- Transport to appropriate facility
- Identify ACS patients with the following symptoms: chest pain/ACS symptoms (which may include chest pain or discomfort in other areas of the body of suspected cardiac origin, shortness of breath, abdominal pain, sweating, nausea/vomiting, syncope/near-syncope, upper back pain (non-muscular), dizziness, weakness, and atypical or unusual symptoms)

TREATMENT

Aspirin

- Maximum dose of 324 mg within 12 hours
- Contraindications: history of GI bleeding, bleeding disorders, surgery in past 14 days, allergy
- May administer ASA to patients taking Antiplatelets; Contact medical control for patients taking anticoagulants
    - Anticoagulants include: Heparin, Lovenox, Coumadin, Eliquis, Xarelto, Pradaxa, etc.
    - Antiplatelets include: Plavix, Effient, Aggrenox, Ticlid, etc.

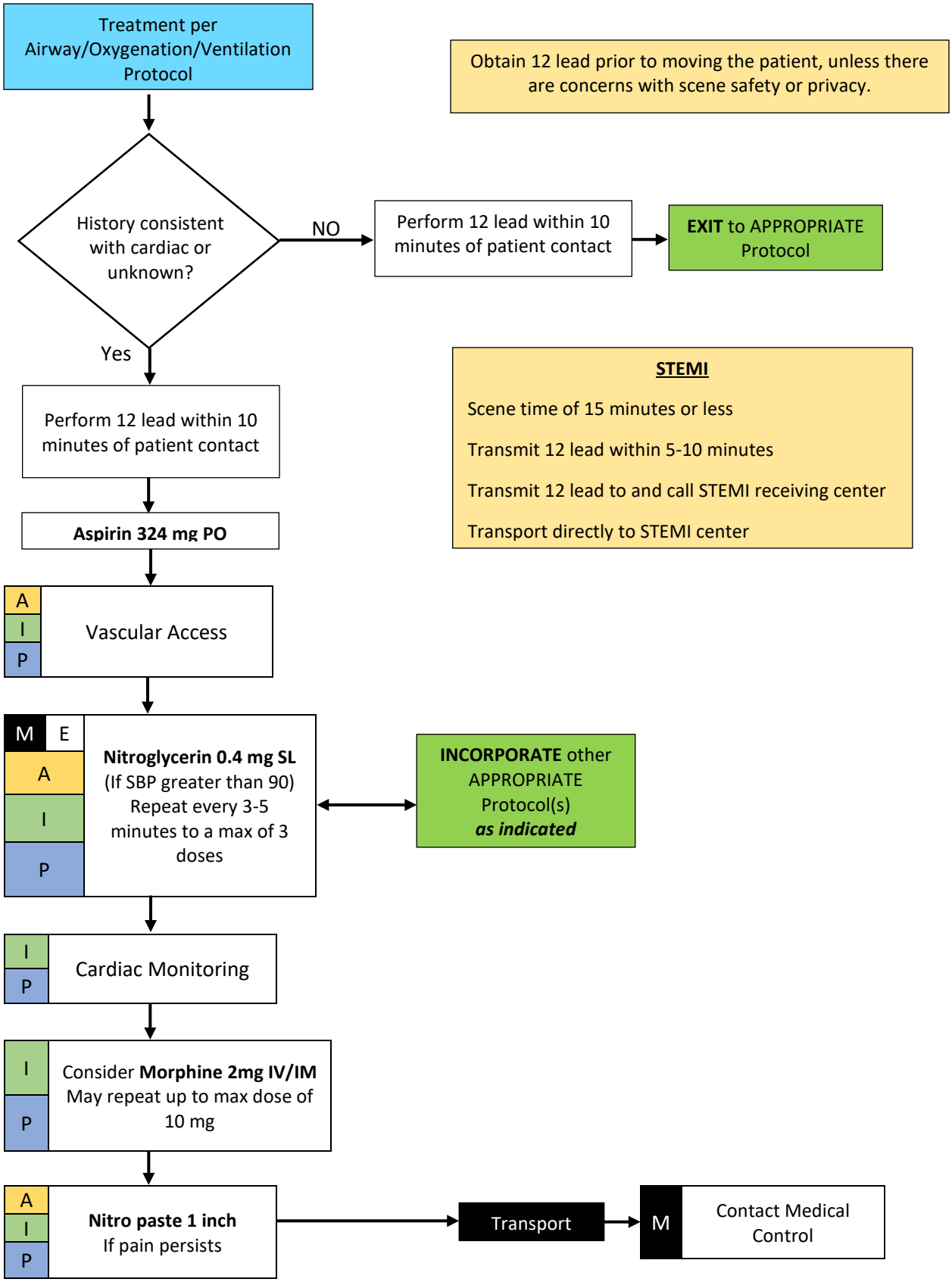
Nitroglycerin

- Do not administer NTG to patients with a SBP less than 90 mmHG or patients who have taken sexually enhancing medications within 72 hours (Viagra, Levitra, Cialis, etc.)
- Be cautious with NTG administration when SBP falls 30 mmHG or more
- Can be given to patients without IV if SBP is 110 mmHg or greater
- Consult medical control for additional doses
- Consider transdermal if patient can't tolerate SL or if long transport

SPECIAL CONSIDERATIONS

- NONE

Chest Pain/ACS



Tidewater EMS Council, Inc.

Crush Syndrome

GOALS

- Identify traumatic crush injuries and mechanism
- Minimize systemic crush effects

TREATMENT

- Do not delay transport to perform non-lifesaving interventions on scene
- Apply EKG monitor and ETCO2 early
- Administer medications simultaneously
- Coordinate medication administration with extrication effort. Medications need to be given BEFORE compression mechanism is released

SPECIAL CONSIDERATIONS

- For prolonged extrication or high-level compression, consider requesting a physician to the scene with additional medications and tools
- Ensure IV lines are flushed well after medication administration
- Contact medical control early

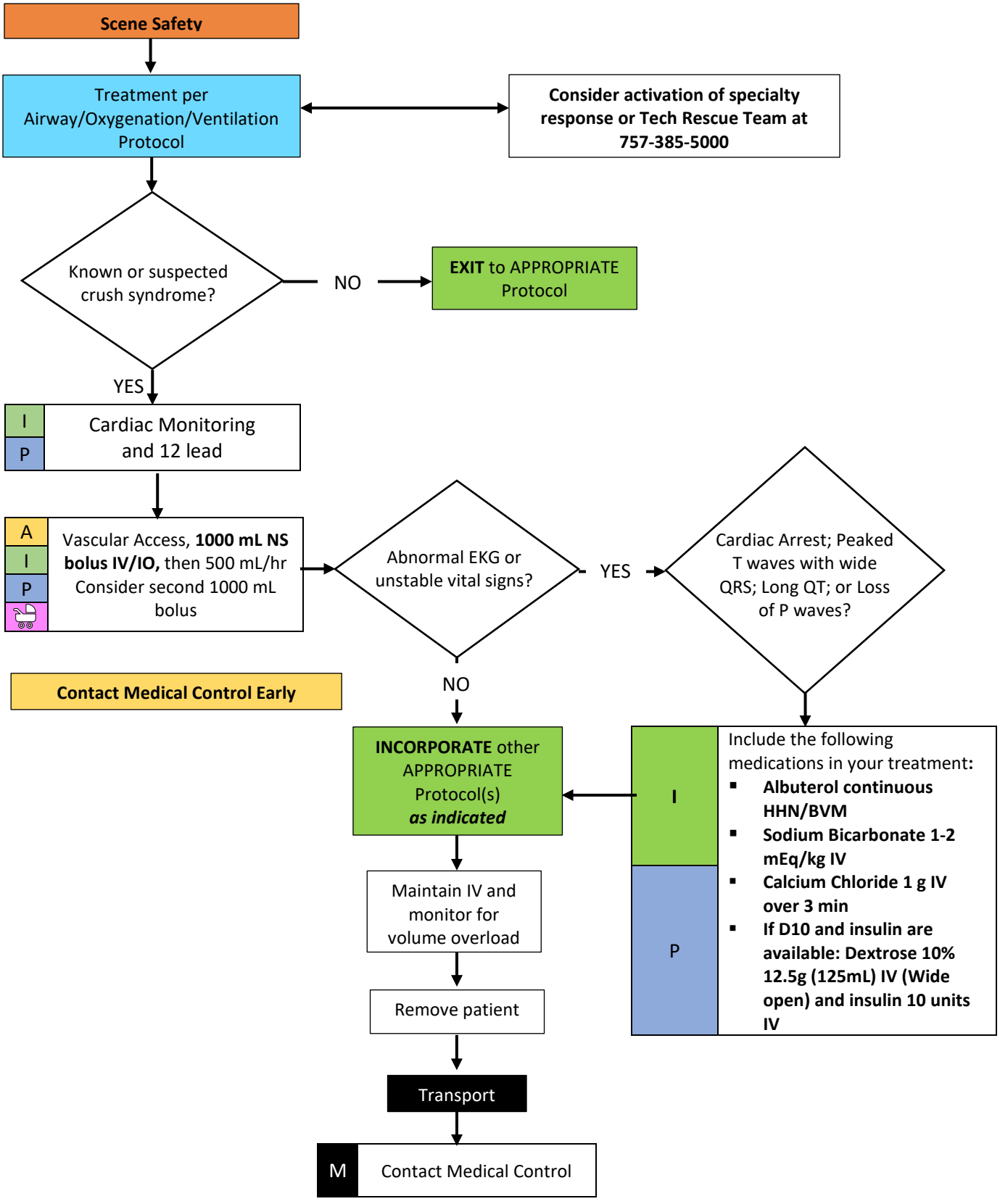
PEDIATRICS

- CHKD is a level 1 trauma center for patients under 15 years of age

Treatment

- Pediatric patients should only receive **20 mL/kg NS bolus IV/IO**
- SBP should be age specific. Hypotension can be considered for the following:
  - 0-30 days: SBP less than 60
  - 1 month-1 year: SBP less than 70
  - 1-10 years: SBP less than 70 + (2 x age in years)

Crush Syndrome



Delivery/OB/Vaginal Bleeding

GOALS

- Recognize imminent birth and assist with delivery of newborn

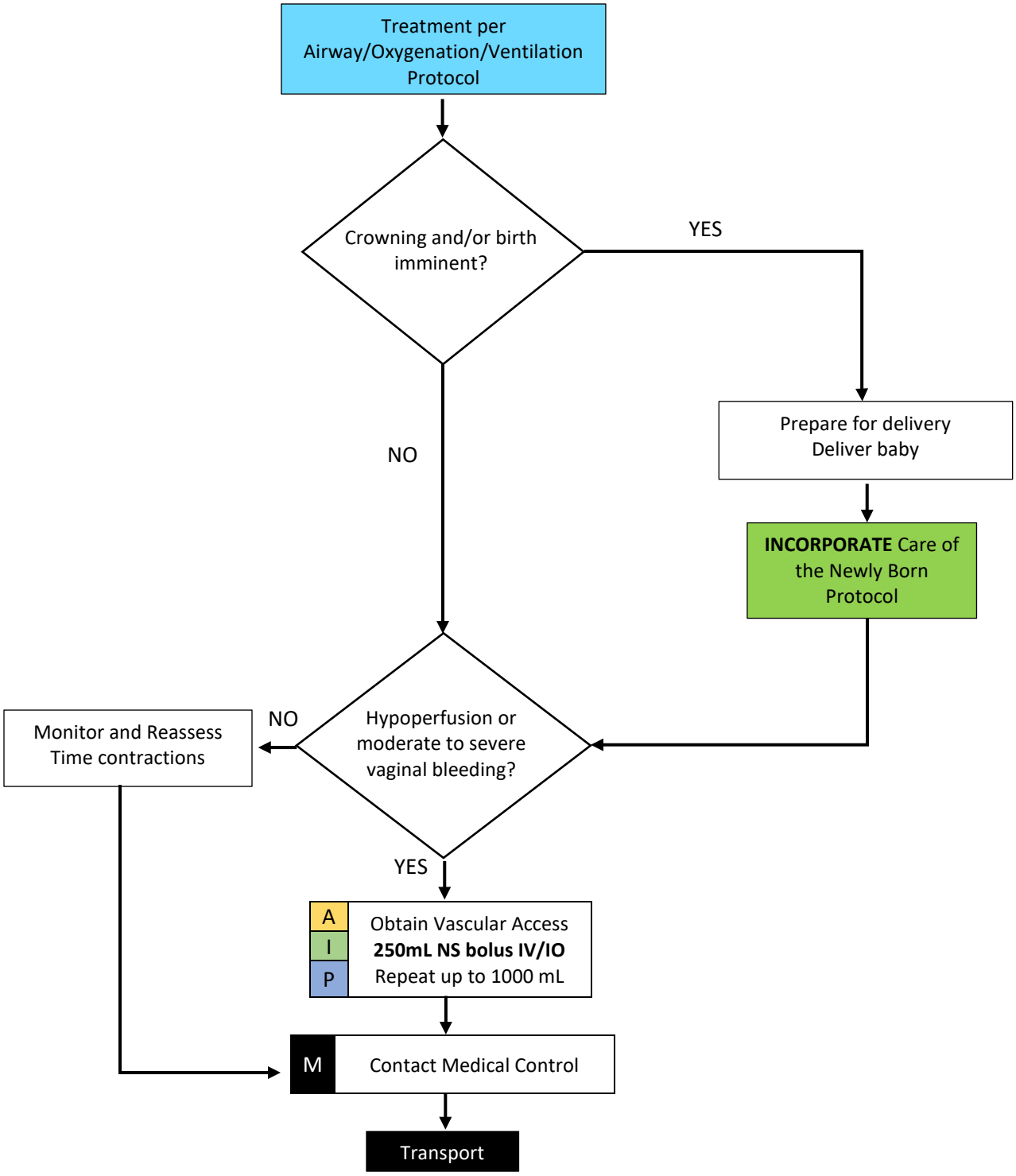
TREATMENT

- Transport patients in the left lateral recumbent position
- Consider additional resources to care for both the patient and newborn
- Attempt to transport both mother and baby together
- Complete a separate PCR for the newborn and mother
- Moderate to severe vaginal bleeding: loss of 500 mL or more blood or 1 full pad per hour
- After delivery, massaging the uterus (lower abdomen) will promote uterine contraction and help to control post-partum bleeding. Having the mother nurse will also assist

SPECIAL CONSIDERATIONS

- Manual assessment of cervical dilation is not within the scope of protocol
- Third trimester bleeding is never normal and can be life-threatening to the mother and fetus
- Patients who are 20 weeks or greater should be transported directly to a facility with OB/L&D capability
- Imminent Delivery:
    - contractions occurring every 2 minutes or less
    - expulsion of the mucus plug
    - breakage of the amniotic sac
    - crowning
    - the patient has impending defecation/an urge to push

Delivery/OB/Vaginal Bleeding



Tidewater EMS Council, Inc.

Dialysis/Renal Failure

GOALS

- Evaluation and treatment of life-threatening electrolyte imbalance common to renal patients on dialysis

TREATMENT

- Do not take a BP or start an IV in the extremity with a dialysis shunt/fistula

SPECIAL CONSIDERATIONS

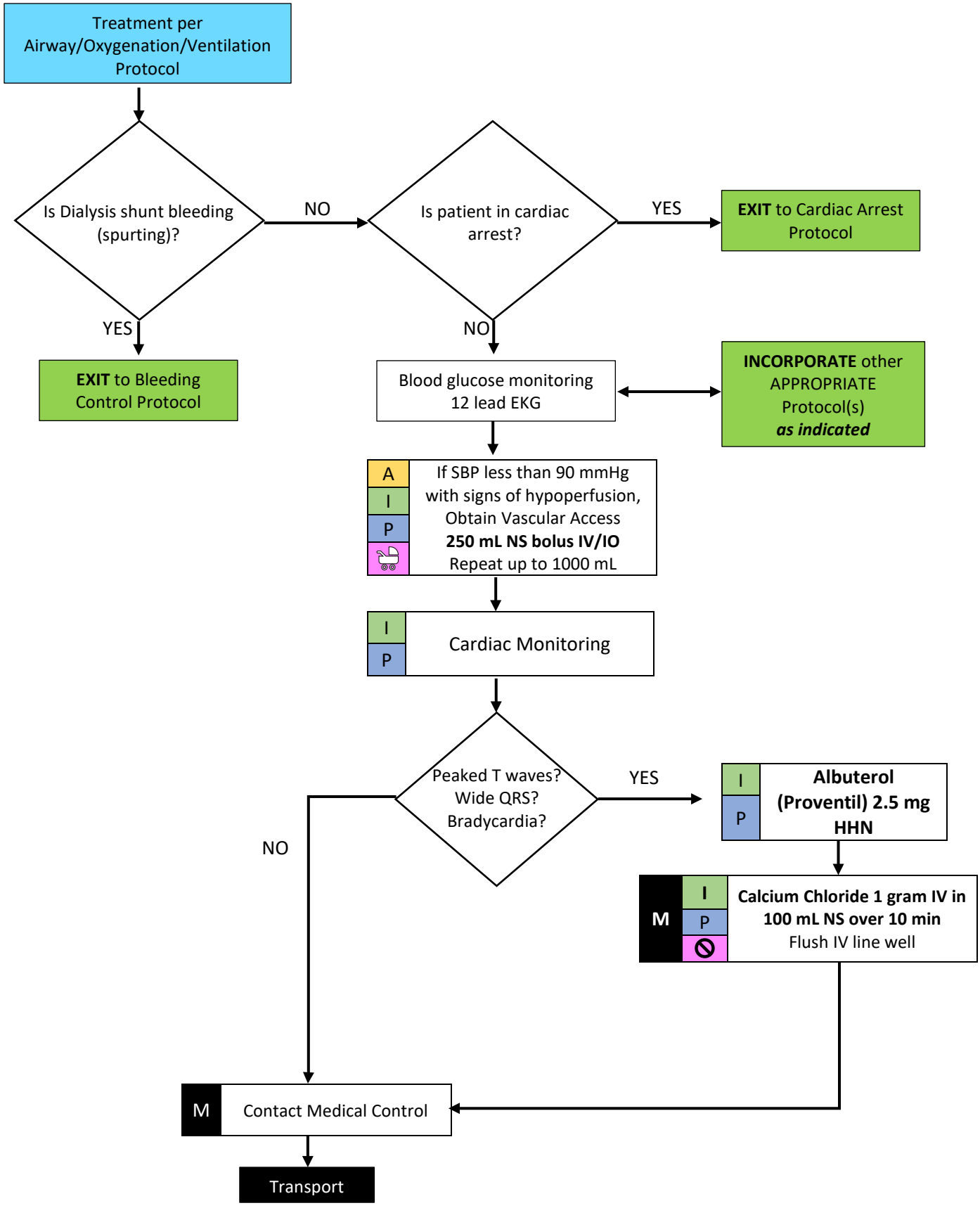
- Do not administer magnesium sulfate to renal failure patients
- Patients currently receiving dialysis should be removed from the machine prior to implementing the chest pain protocol
- Ensure IV lines are flushed well after medication administration and consider separate IV lines
- Consider transporting patient to hospital with dialysis capability

PEDIATRICS

- Pediatric patients should only receive **20 mL/kg NS bolus IV/IO**
- SBP should be age specific. Hypotension can be considered for the following:
    - 0 -> 30 days: SBP less than 60
    - 1 month -> 1 year: SBP less than 70

1-10 years: SBP less than 70 + (2 x age in years)

Dialysis/Renal Failure



Tidewater EMS Council, Inc.

Drowning/Submersion

GOALS

- Assure adequate oxygenation, ventilation, and correction of hypoxia for patients experiencing respiratory impairment (any respiratory symptom) from submersion/immersion in a liquid
- Identify and reverse hypothermia

TREATMENT

- Foam may be present in airway and may be copious, DO NOT waste time attempting to suction. Ventilate with BVM through foam or place extraglottic airway (suction water and vomit only when present)
- Drowning patient typically has <1 – 3 mL/kg of water in lungs (does not require suction), Primary treatment is reversal of hypoxia
- Spinal motion restriction is usually unnecessary. When indicated it should not interrupt ventilation, oxygenation and / or CPR
- If resistance met with BVM ventilations, use gentle BVM pressure to overcome laryngospasms

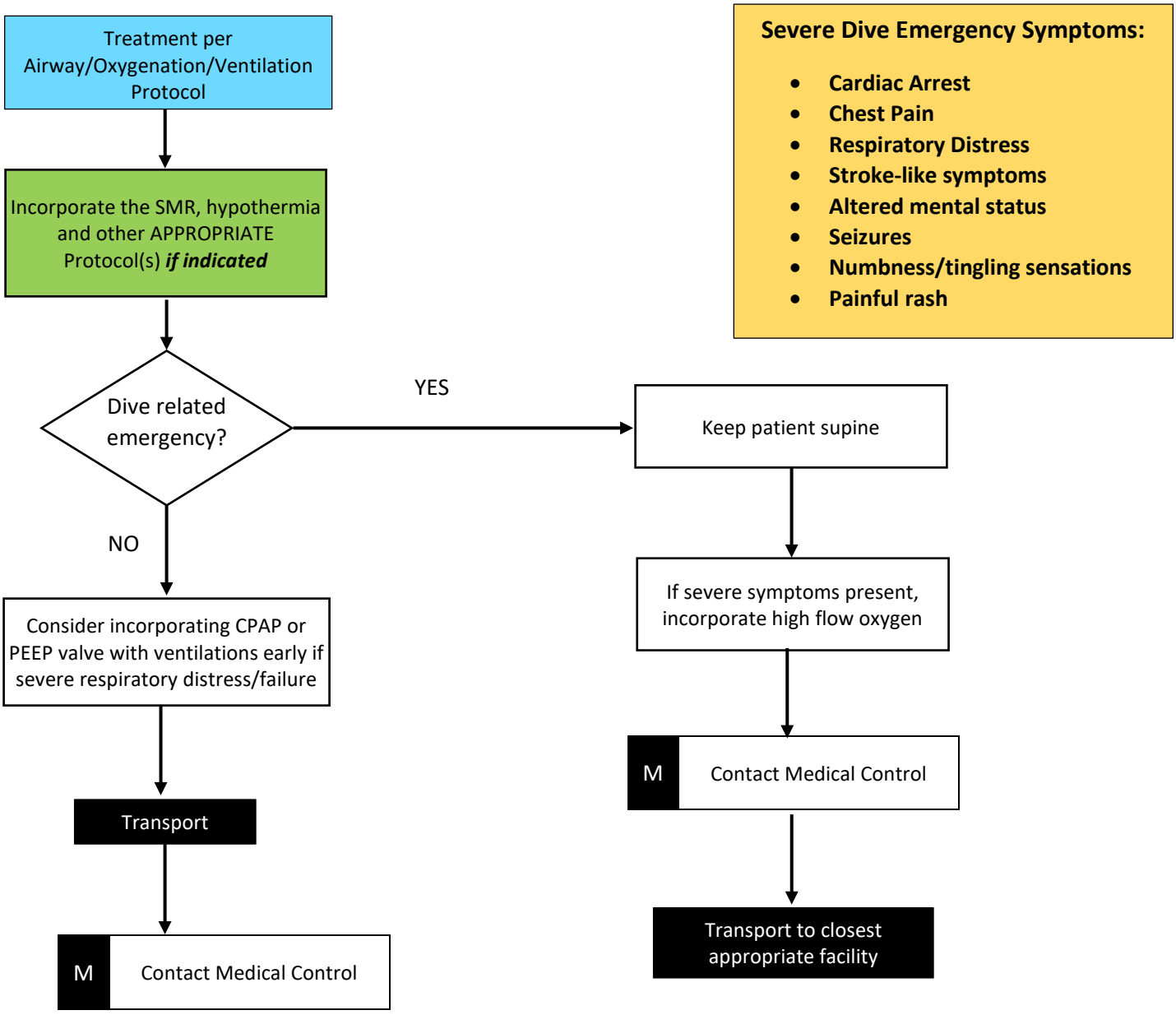
SPECIAL CONSIDERATIONS

- Regardless of water temperature – resuscitate all patients with known submersion time of ≤ 25 minutes
- Encourage transport of all near drowning patients regardless of symptoms due to potential deterioration up to the next 24 hours
- Symptoms may include cough, foam, dyspnea, abnormal lung sounds, hypoxia
- Hypothermia is often associated with drowning and submersion injuries even with warm ambient conditions
- Unless hyperbaric availability confirmed prior to a planned dive, transport the patient to the closest facility or follow medical control advice
- Dive patients can suffer from barotrauma, circulatory, or neurological emergencies
    - Take symptoms seriously and transport to appropriate facilities to treat symptoms
- Keep dive emergency patients supine

PEDIATRICS

- Ventilatory rate for patients with a pulse:
    - Newly Born - 40-60
    - Infants – 30
    - Toddlers/School Age – 20
    - Adolescents/Adult – 12 -20 per minute
- Maintain EtCO2 between 35 and 45 and avoid hyperventilation

Drowning/Submersion



Electrical/Lightning Injury

GOALS

- Prevent further harm to patient and ensure crew safety
- Identify and treat life threats including cardiac rhythm disturbances
- Treat for trauma and transport to trauma center

TREATMENT

- Incorporate burn, cardiac, and trauma protocols as needed
- Monitor EKG and obtain 12 lead
- If defibrillation is required, use the highest setting for the patient

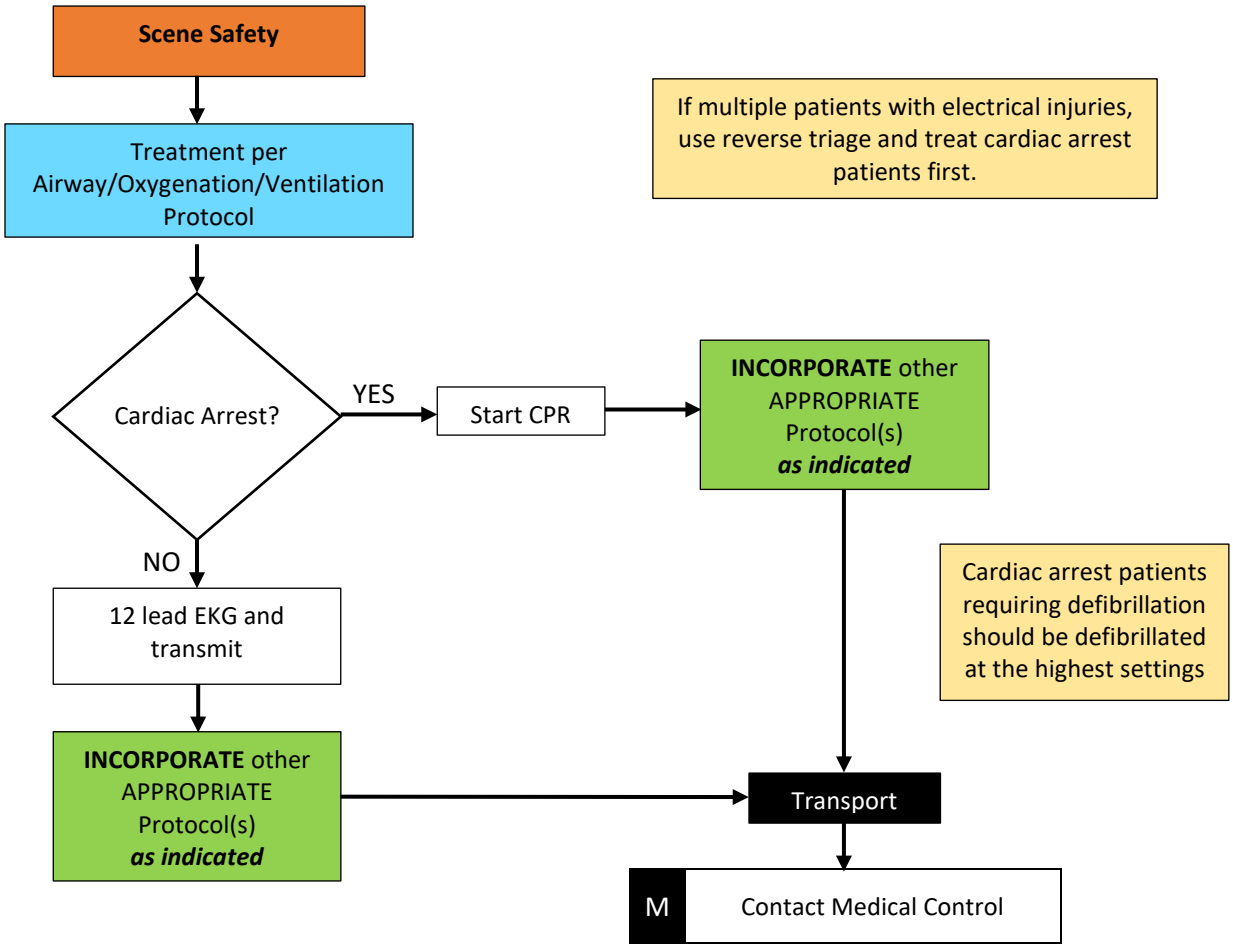
SPECIAL CONSIDERATIONS

- Maintain provider safety
- Use reverse triage with multiple victims-treat cardiac arrest patients first
- Transport patients to burn/trauma center

PEDIATRICS

- Intubation may only be performed by Paramedics in pediatrics 12 and under per OEMS
- CHKD is a pediatric burn center

Electrical/Lightning Injury



Extraordinary Measures

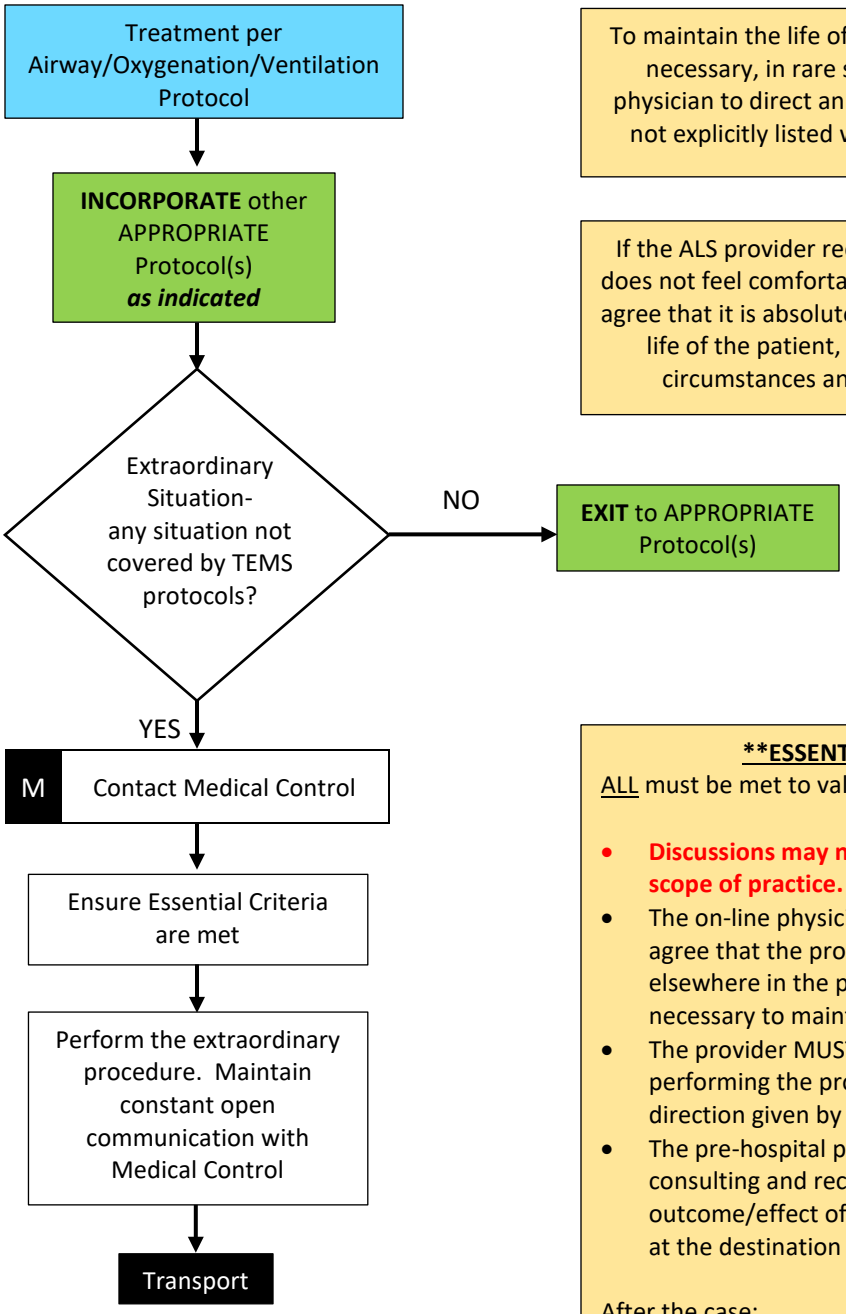
GOALS

- Provide life saving measures to treat the patient and reduce morbidity for a single patient with a situation/condition not covered elsewhere in the TEMS protocols

SPECIAL CONSIDERATIONS

- Crews should attempt to transport the patient, use existing protocols, call for specialty resources and/or have a physician respond to the scene in lieu of using this protocol

Extraordinary Measures



To maintain the life of a specific patient, it may be necessary, in rare situations, for the on-line physician to direct an ALS provider to render care not explicitly listed within the TEMS protocols.

If the ALS provider receives a physician order but does not feel comfortable with the order or doesn't agree that it is absolutely necessary to maintain the life of the patient, they must document the circumstances and reasoning in the PCR.

****ESSENTIAL CRITERIA****

ALL must be met to validate the use of this protocol

- **Discussions may not exceed the OEMS state scope of practice.**
- The on-line physician and the provider MUST agree that the procedure is not addressed elsewhere in the protocols and is absolutely necessary to maintain the life of the patient.
- The provider MUST feel capable of correctly performing the procedure based on the direction given by the on-line physician.
- The pre-hospital provider MUST inform the consulting and receiving physician of the outcome/effect of the treatment upon arrival at the destination hospital.

After the case:

- The receiving physician and primary pre-hospital provider must both submit a TEMS Trauma Triage/Non-Trauma Quality Improvement form
- The Agency Medical Director, specialty physician, attending physician, and primary pre-hospital provider must conduct a review of the incident for the purposes of quality improvement.

Tidewater EMS Council, Inc.

Hyper/Hypoglycemia

GOALS

- Restore the patient to a normal mental status if altered
- Assure adequate oxygenation, ventilation, and correction of hypoglycemia

TREATMENT

Assessment

- Recommended exam: Mental Status, Skin, Respiratory rate and effort
- Be sure to monitor the airway in the unconscious hypoglycemic patient

Treatment

- Do not administer oral glucose to patients that are not able to swallow or protect their airway
- Oral Glucose may be administered by EMT on standing orders
- If premixed Dextrose 10% is not available:
    - Draw 50 mL normal saline from a 250 mL bag and discard
    - Add 25 g of D50 to the bag and mix thoroughly

SPECIAL CONSIDERATIONS

- Patients with prolonged hypoglycemia may not respond to glucagon
- Response to Glucagon can take 15-20 minutes. Consider the entire clinical picture when treating hypoglycemia, including a patient's overall clinical condition and other vital signs. It may be safe to wait for some time for Glucagon to work instead of pursuing the more aggressive course of action
- Diabetics may have poor wound healing and IO access may present a greater risk for infection or poor wound healing
- If the patient still has symptoms of hypoglycemia consult medical control
- If extravasation occurs, discontinue the IV immediately
- Dextrose - Pregnancy category C, administer if indicated

PEDIATRICS

Dextrose 10% Dose

- 0-7 Years – **Dextrose 10% 5 mL/Kg IV** max dose of 12.5 Grams or 125 mL
- 7 Years and older – **Dextrose 10% 12.5 Grams IV** or 125 mL

Normal Saline Dose

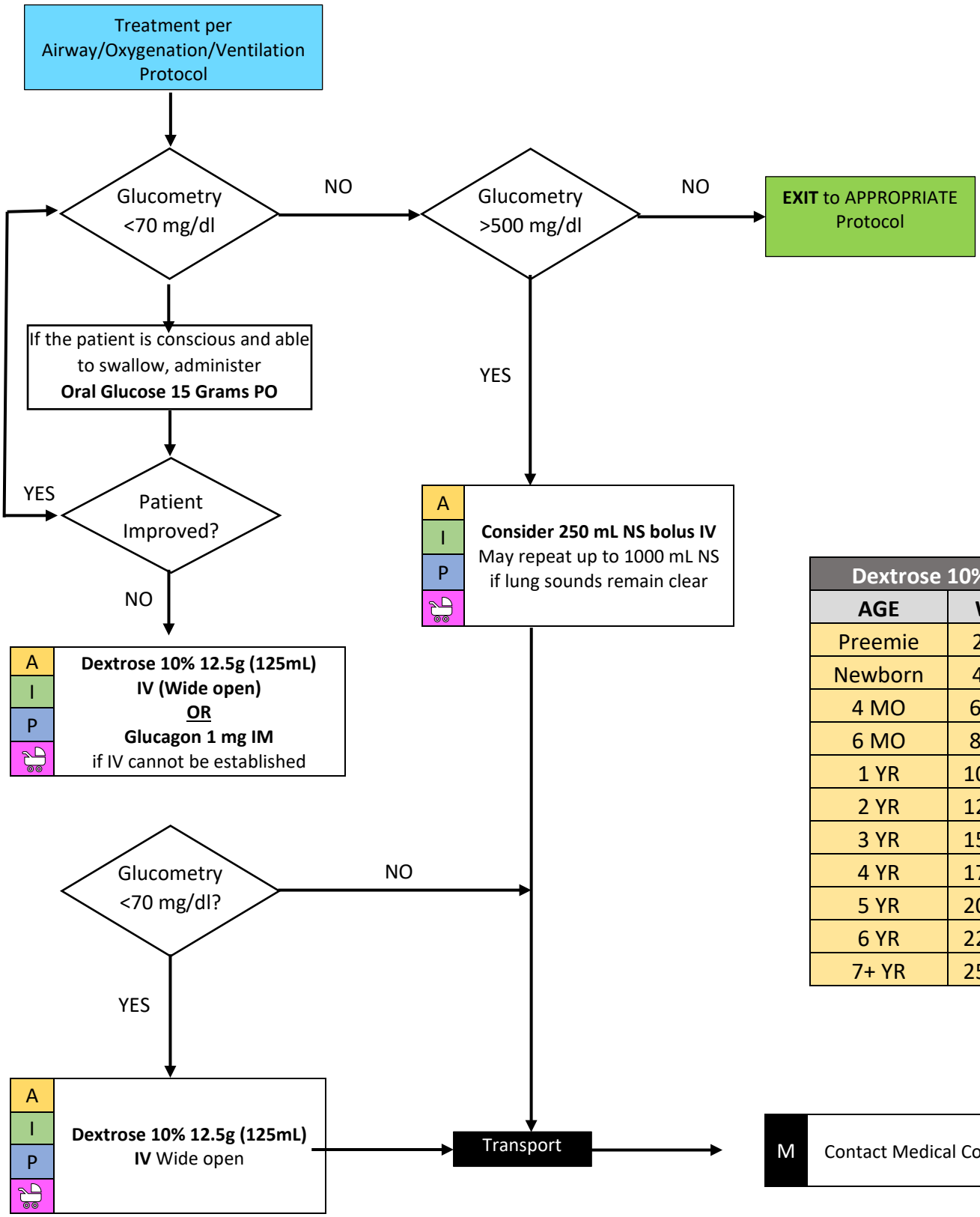
- **Normal Saline 10 mL/kg IV/IO** Bolus
- Initial bolus **Normal Saline 1 liter IV/IO** (maximum) during transport
- Consider DKA, goal 10 mL/kg over the first hour (max of 1 liter)

Glucagon Dose

- Up to Age 5 years – **Glucagon 0.5 mg IM**
- 5 years and older **- Glucagon 1 mg IM**

Tidewater EMS Council, Inc.

Hyper/Hypoglycemia



Dextrose 10% Dose Chart		
AGE	**WT**	**DOSE**
Preemie	2KG	**10 mL**
Newborn	4KG	**20 mL**
4 MO	6 KG	**30 mL**
6 MO	8 KG	**40 mL**
1 YR	10 KG	**50 mL**
2 YR	12 KG	**60 mL**
3 YR	15 KG	**75 mL**
4 YR	17 KG	**85 mL**
5 YR	20 KG	**100 mL**
6 YR	22 KG	**110 mL**
7+ YR	25 KG	**125 mL**

Hyperthermia

GOALS

- Provide cooling and rehydration
- Monitor and prevent decompensation, agitation

TREATMENT

- Promote evaporative cooling by removing clothing, fanning, and/or misting exposed skin
- Oral fluids should be sipped and should be cool, not cold
- Withhold oral fluids for patients with serious S&S
- Include air conditioning, ice/cold packs

SPECIAL CONSIDERATIONS

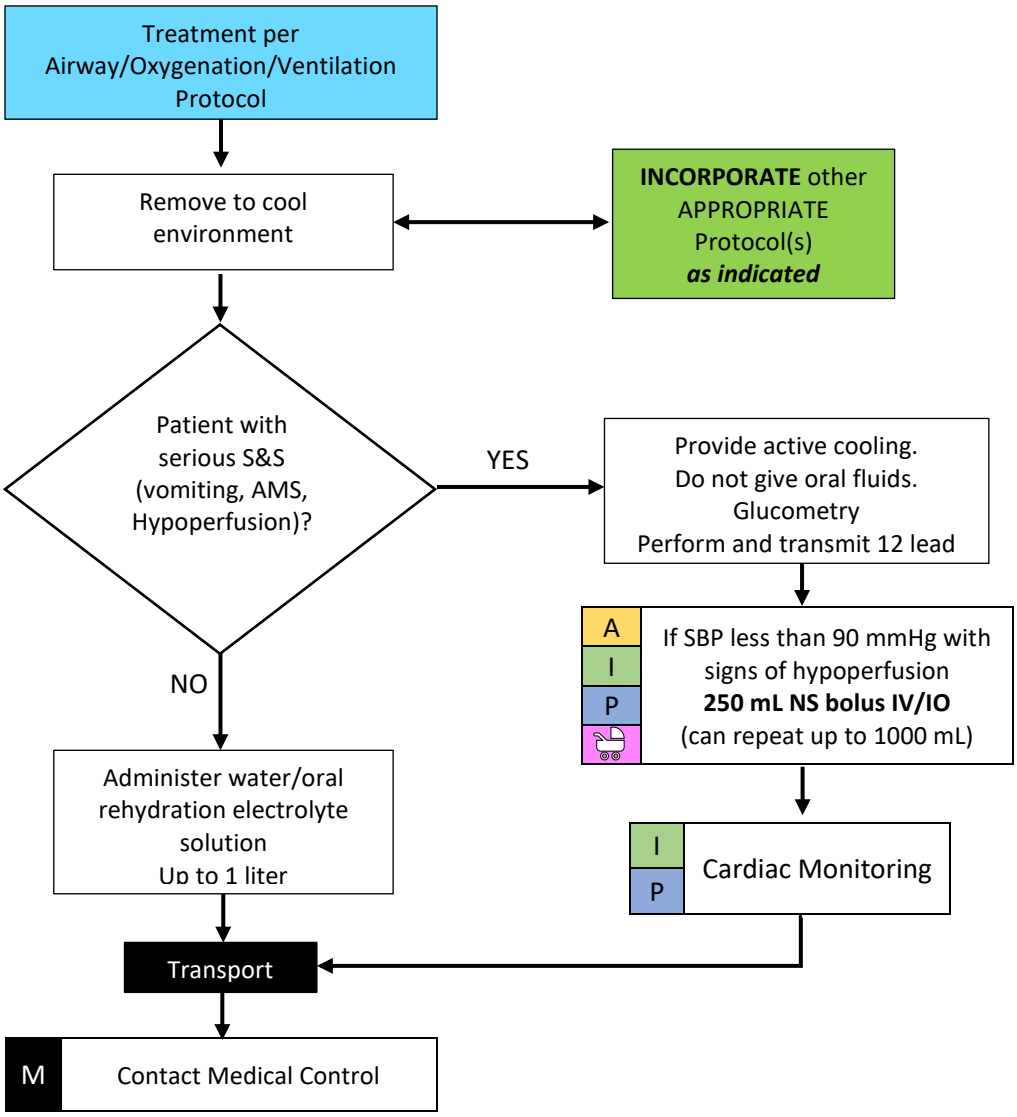
- Heat stroke is life threatening-Do not delay transport for non-life-saving procedures

PEDIATRICS

Normal Saline Dosing

- **Normal Saline 20 mL/kg IV/IO** up to max dose of 1000 mL
- Assume children left in a warm car with AMS and who are hot to the touch have hyperthermia

Hyperthermia



Hypothermia

GOALS

- Prevent further heat loss and rewarm patient safely
- Prevent and/or treat hypothermia induced cardiac arrest

TREATMENT

- Handle hypothermia patient gently and minimize movement to prevent cardiac arrhythmias
- Keep patient supine as much as possible
- Check a manual pulse for 60 seconds to determine if present
- Use passive rewarming-remove cold, wet clothing, apply blankets, turn up heat and prevent further heat loss

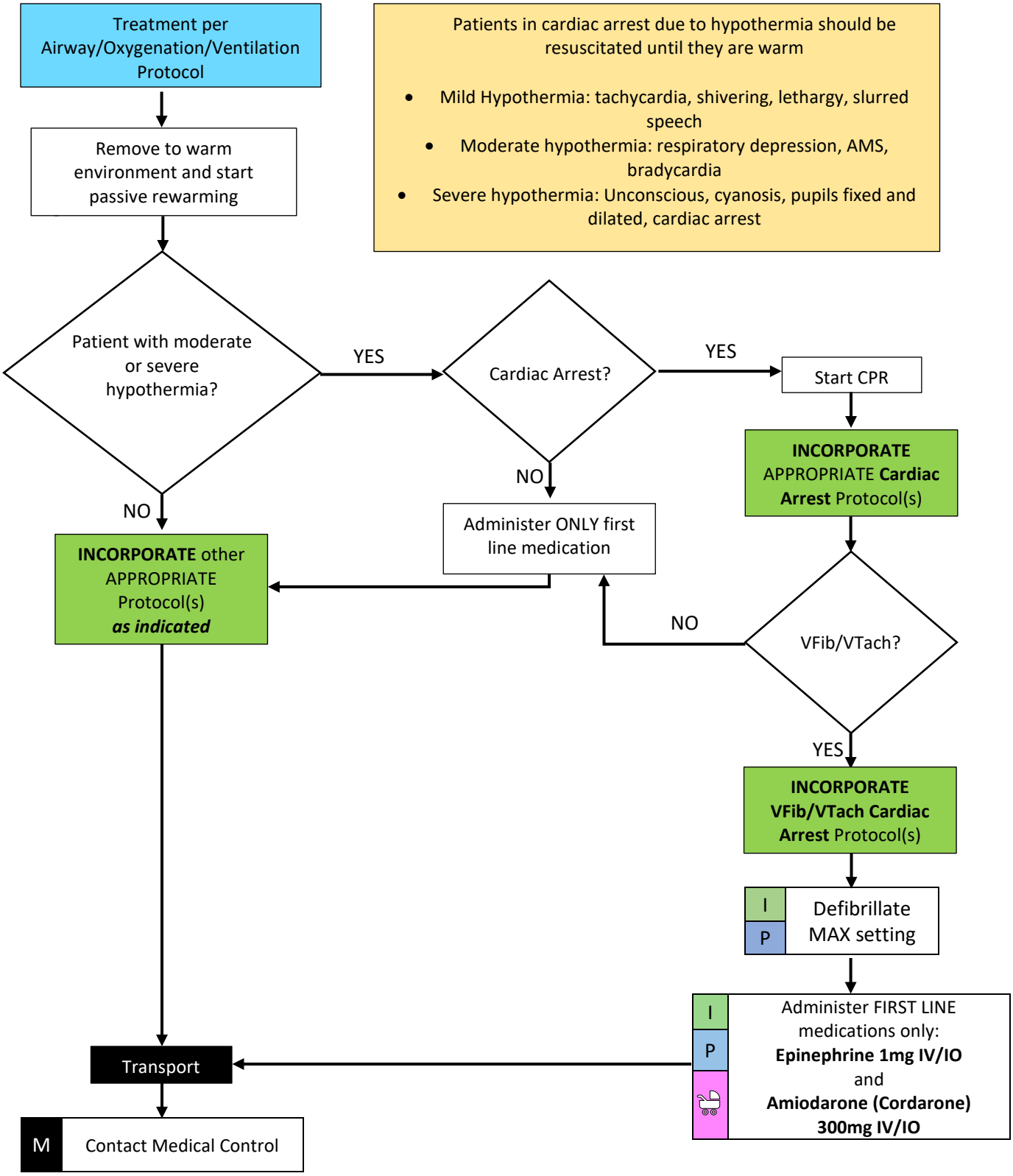
SPECIAL CONSIDERATIONS

- Do not delay transport for non life-saving procedures
- Providers should attempt resuscitation in cardiac arrest unless there is clear evidence of irreversible death such as traumatic injuries, decomposition, etc
- Patients should be resuscitated until they are warm in cardiac arrest

PEDIATRICS

- Intubation may only be performed by Paramedics in pediatrics 12 and under per OEMS
- Defibrillation: Max dose is 4 J/kg
- **Epinephrine 0.01 mg/kg IV/IO** to max dose of 1 mg
- **Amiodarone 5 mg/kg IV/IO** to max dose of 300 mg

Hypothermia



Tidewater EMS Council, Inc.

LVAD (Left Ventricular Assist Device)

GOALS

- Rapid identification of cardiovascular compromise and/or VAD related malfunctions
- Rapid treatment and intervention for cardiovascular compromise and VAD complications

TREATMENT

Assessment

- *Assess for: overt and covert bleeding, thrombosis, infection, right ventricular disfunction, left ventricular collapse, VAD overdrive, cavitation, device failure or malfunction, dysrhythmias, hypertension, depression, anxiety, and portability.*
- Assess pump for alarms, power, and proper connections
- Auscultate lower left chest for pump "hum"
- Use ETCO2 and a 12 lead to aid in monitoring patient status.
- Patients with LVAD's may not have palpable pulses, a BP, or accurate pulse oximetry
    - Obtain BP by Doppler if able, but automated cuff *may* work
- Signs of hypoperfusion include pallor, diaphoresis, altered mental status, ETCO2 less than 20
- *VAD patients often take Sildenafil (Viagra) for pulmonary hypertension. Administration of nitrates to those patients may result in profound hypotension.*

Treatment

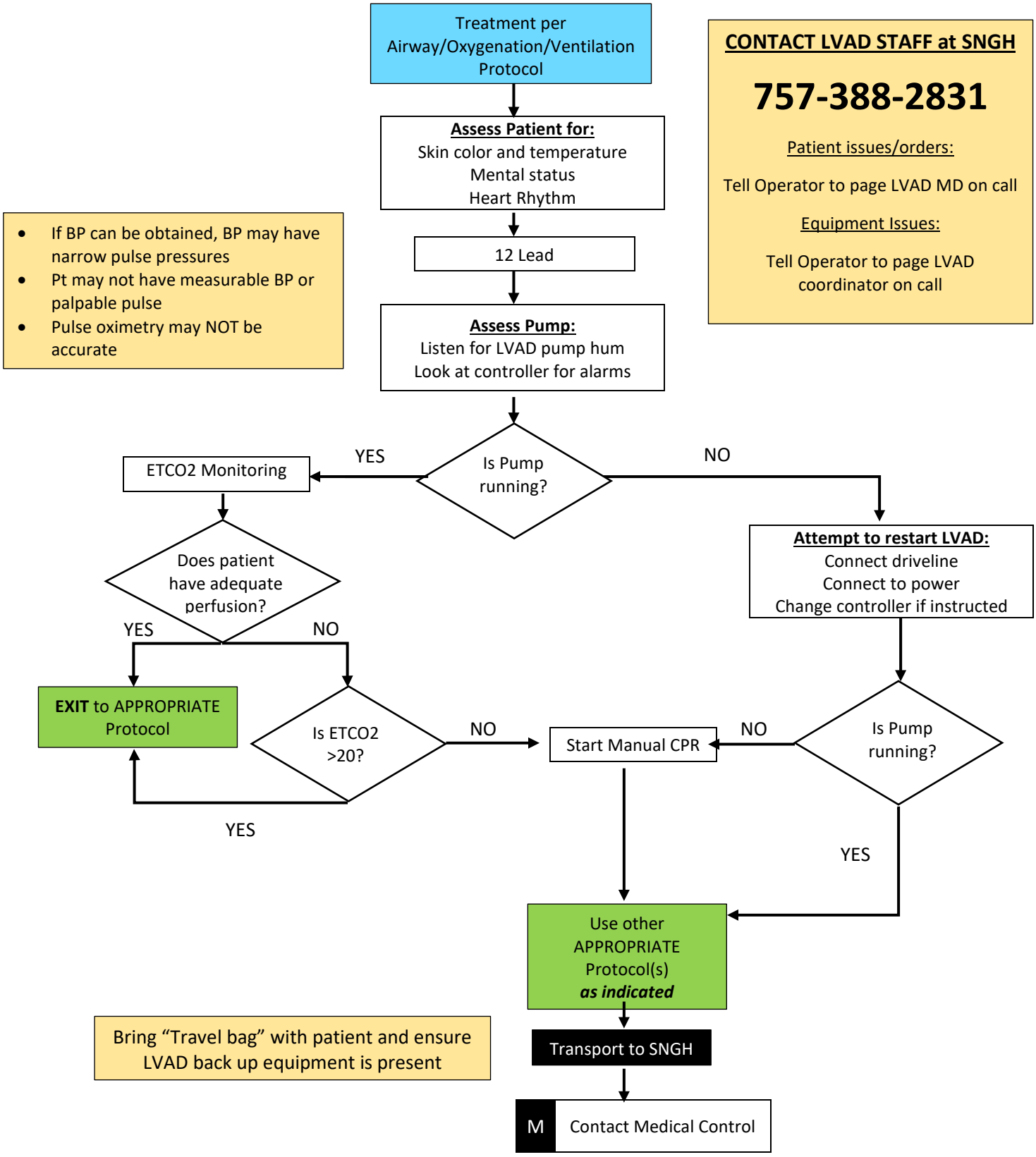
- Assess for and treat *non-VAD injuries, issues, and complications* (blood glucose, stroke, etc.)
- *Treat hypoperfusion initially as hypovolemic shock*
- *LVAD patients are preload dependent. Fluid boluses often reverse hypoperfusion*
- All ACLS medications can be administered per protocol
- If required*, CPR*, defib, cardioversion, and pacing can be performed.

SPECIAL CONSIDERATIONS

- Patients with LVADs will be transported to SNGH
- Contact SNGH LVAD staff early for treatment considerations at 757-388-2831:
    - *For patient issues/orders*-ask for LVAD MD on call
    - *For equipment issues*-ask for LVAD coordinator on call
- Allow the caregiver to remain with the patient.
- Patients may be in Vfib/VTach or other common ventricular rhythms on a normal basis – *if perfusing – contact LVAD MD for guidance prior to treatment*
- Strokes are a common complication as are bleeding and infection
- The most common alarms are due to low power
- Do not use a mechanical CPR device if CPR is required
- Always bring the patient's travel bag with extra controller and batteries/power
- DO NOT disconnect both batteries at once
- For known VAD patients it is beneficial to preplan

Tidewater EMS Council, Inc.

LVAD (Left Ventricular Assist Device)



Reviewed 3/20/24

Revised November 2024

Nausea/Vomiting

GOALS

- Decrease patient discomfort

TREATMENT

- Nausea/vomiting is not life threatening and is a symptom of an illness
- Consider treating nausea/vomiting for patients in which vomiting could cause any airway concerns such as back boarded patients
- ALS Providers may administer Ondansetron (Zofran) via ODT or IV/IM

SPECIAL CONSIDERATIONS

- Suction should be readily available for patients with severe nausea or vomiting
- Use cautiously in patients on Amiodarone or haloperidol due to increased risk of arrhythmia and prolonged Q-T interval
- **Ondansetron (Zofran) ODT is contraindicated in stroke**

PEDIATRICS

- **Ondansetron (Zofran) ODT**
  - **Under 5yo: If patient can follow directions, 2 mg ODT (A/I/P only) Standing Order**
    ***Provider will need to break tablet in half**
- **Ondansetron (Zofran) 0.15 mg/kg to max dose of 4 mg**
  - Administer over 2-5 minutes
  - Consult Medical Control for further dosing
- **Normal Saline 20 mL/kg NS bolus IV/IO**
  - **For newborns and patients with cardiac history: 10 mL/kg NS bolus IV/IO**
  - Consider patient history prior to administering fluid bolus if vomiting could be caused by increased ICP such as VP shunt issues, ICH, tumors, etc.
  - SBP should be age specific. Hypotension can be considered for the following:
    - 0-30 days: SBP less than 60
    - 1 month-1 year: SBP less than 70
    - 1-10 years: SBP less than 70 + (2 x age in years)

Tidewater EMS Council, Inc.

Nausea/Vomiting

Treatment per Airway/Oxygenation/Ventilation Protocol

Rule out STEMI by performing a 12-Lead

INCORPORATE other APPROPRIATE Protocol(s) ***as indicated***

Ondansetron (Zofran) cautions:
Use cautiously in patients on Amiodarone or haloperidol due to increased risk of arrhythmia and prolonged Q-T interval

Patient with active vomiting or profoundly nauseous?

NO

YES

A I P

If SBP less than 90 mmHg with signs of hypoperfusion
250 mL NS bolus IV/IO
(can repeat up to 1000 mL)

Ondansetron (Zofran) ODT
> 5yo 4 mg (1 tablet)
< 5yo ALS ONLY (see Pediatric Notes)

May repeat once after 10 minutes with no improvement

OR

A I P

Ondansetron (Zofran) 4 mg IM/IV
IV dose over 2-5 minutes
(May Repeat Once after 10 min with no improvement)
Repeat doses Physician Order AEMT or Ped

M Contact Medical Control

Transport

Reviewed 10/18/24

Revised April 2025

Newly Born

GOALS

- Provide care for newly born and prevent heat loss
- Rapidly identify and provide treatment for distressed newly born infant

TREATMENT

- Resuscitation should focus on warming, stimulation, airway management, and breathing
- Vascular access is generally not needed
  - IO may be indicated and generally requires less pressure during insertion than adults
  - Umbilical vein cannulation should not be routinely utilized
- APGAR scores are performed at 1 minute and 5 minutes
- CPR rate for newly born: 3:1 for a rate of 120/minute

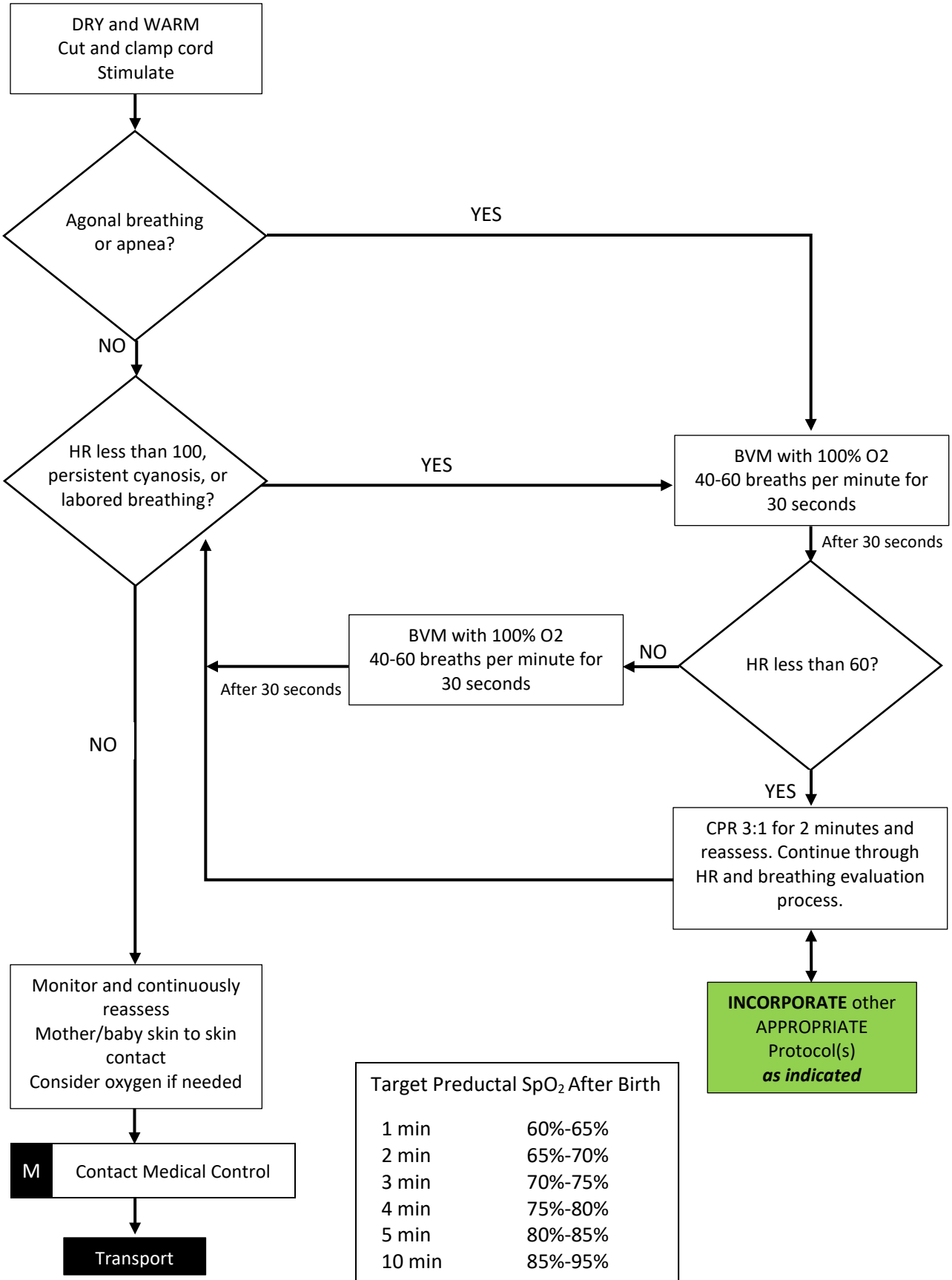
SPECIAL CONSIDERATIONS

- Avoiding hypothermia in the newly born is very important
- Naloxone (Narcan) is contraindicated for neonates of opiate addicted mothers
- Routine suctioning for meconium is no longer recommended. Tracheal suctioning should only be performed by a Paramedic and only in the presence of thick meconium and a distressed newborn
- Peripheral cyanosis/mottling is normal. Central cyanosis is not
- Palpating a pulse on a neonate can be difficult. Attempt to palpate at the umbilical stump. Otherwise, a stethoscope over the chest to count heartbeats if necessary

PEDIATRICS

- Depressed newly born or premature infants are at risk for hypoglycemia
  - Check blood glucose (heel stick) in the following:
    - Patient has sudden change in responsiveness or perfusion
    - Patient is severely cold stressed
    - Diabetic mother
    - Large for gestational age
    - Transport time is greater than 30 minutes
  - Implement Hyper/Hypoglycemia protocol if indicated

Newly Born



Target Preductal SpO_2 After Birth

1 min	60%-65%
2 min	65%-70%
3 min	70%-75%
4 min	75%-80%
5 min	80%-85%
10 min	85%-95%

Best obtained on right hand

Overdose/Poisoning

GOALS

- Prompt recognition of intoxicating agent
- Prevention of respiratory and/or cardiac arrest

TREATMENT

Naloxone (Narcan) 2 mg. Repeat once up to max dose of 4 mg for opiate overdoses with ineffective respiratory drive

- Can be administered IV, IN, IM and goal is adequate respiratory rate/drive
- Titrate to effect (adequate respirations) to total max dose of 4 mg (layperson meds do not need to count towards max dosing)
- Patient does not need to be conscious to have an effective dose
- Pre-measured/auto-injector doses may range from 2-4 mg per dose. EMT must deliver entire pre-measured dose
- Can be used as a reversal to Clonadine overdose – contact medical control for orders

Sodium Bicarbonate 1 mEq/kg IV/IO up to max dose of 50 mEq for tricyclic overdose with wide QRS > 0.12 seconds

- Administer over 2 minutes
- Examples of tricyclics include: Amitriptyline, Doxepin, Nortriptyline, Amoxapine, Clomipramine, etc.

SPECIAL CONSIDERATIONS

- Naloxone can cause withdrawal symptoms. Can also precipitate seizures in seizure patients or cardiac dysrhythmia in patients with cardiac history
- Ensure IV lines are flushed well after medication administration
- For cardiac arrests, naloxone should be addressed AFTER first line medications such as Epinephrine and Amiodarone and can be added into the medication cycle, as needed

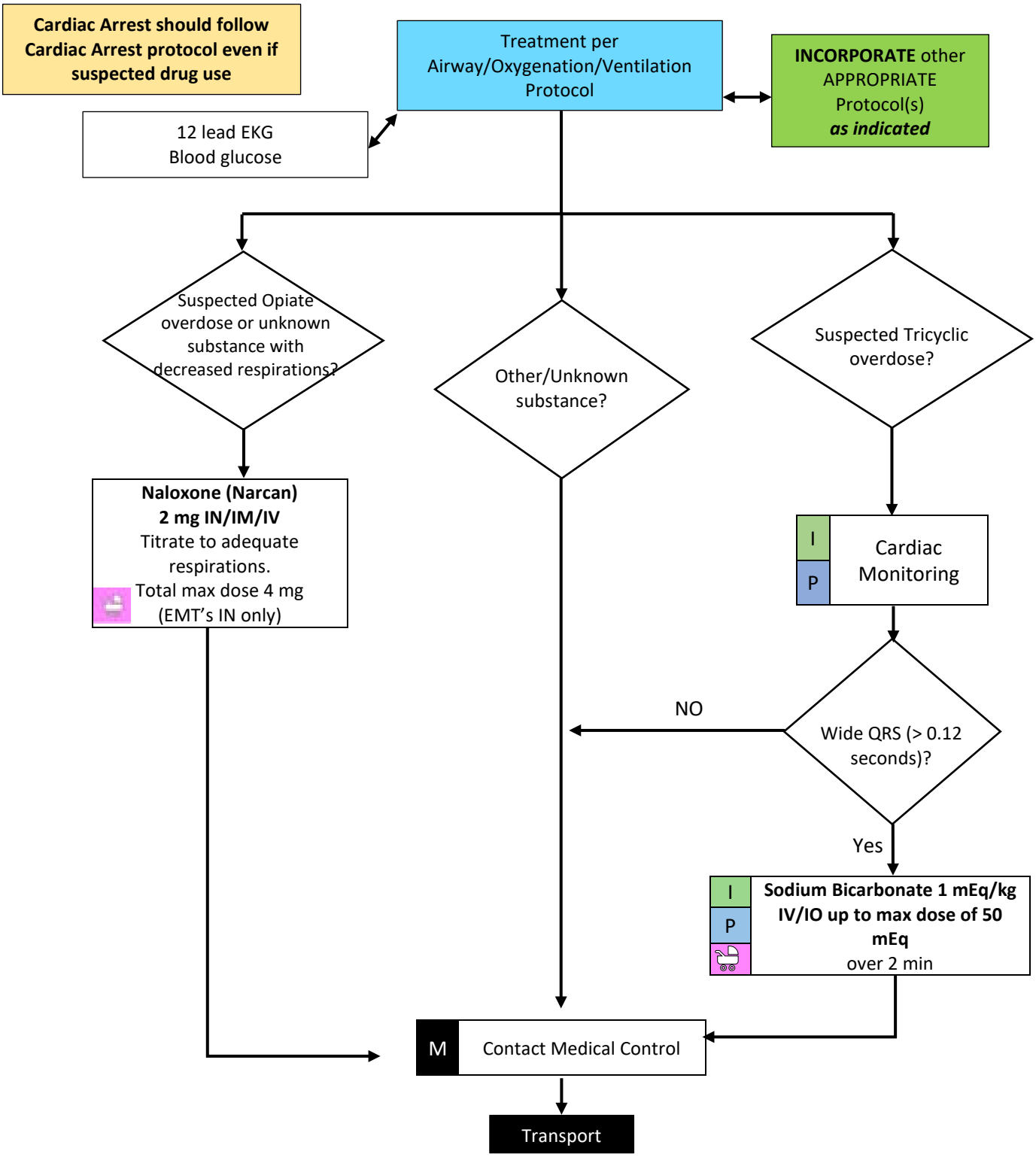
PEDIATRICS

Naloxone (Narcan) 0.1 mg/kg IN up to max dose of 2 mg per dose for opiate overdoses with ineffective respiratory drive (A/I/P)

- Can be administered IV, IN, IM and goal is adequate respiratory rate/drive
- EMT may not administer weight based pediatric dosing

Sodium Bicarbonate 1 mEq/kg IV/IO up to max dose of 50 mEq over 2 minutes

Overdose/Poisoning



Tidewater EMS Council, Inc.

Pain Management (Non-Cardiac)

GOALS

- Assess and treat acute pain
- Reduce narcotic use when feasible

TREATMENT

Medications to consider:

Acetaminophen 1 g IV/IO

- Preferred medication for most non-cardiac pain unless more advanced pharmacological intervention is needed through use of opioids or a dissociative agent
- Administered over 15 minutes
- May not be repeated
- Contraindicated if patient has taken Acetaminophen within the past 4 hours, has liver disease or hepatic impairment, or chronic alcohol use
- Do not administer any Acetaminophen orally in case patient requires surgery

Fentanyl 50 mcg IN/IM/IV/IO

- Should be administered slowly, over 2 minutes
- Can be repeated once on Standing Order up to max dose of 100 mcg

Morphine 5 mg IM/IV

- Should be administered slowly, over 2 minutes
- Can be repeated once on Standing Order up to max dose of 10 mg

Ketamine 0.5 mg/kg IN or 0.25 mg/kg IV

- IV/IO administration should be performed slowly (over 1-2 minutes)
- IV dose can be repeated once on Standing Order up to a max dose of 50 mg – **DO NOT** repeat IN dose or exceed total dose of 50 mg by any route.

SPECIAL CONSIDERATIONS

- Providers may incorporate multiple types of pain medication in the treatment plan as needed.
- This protocol should not be used for headaches/migraines.
- Rapid administration of Fentanyl can result in an inability to ventilate.
- Do not administer Ketamine to pregnant patients or patients with altered mental status.
- Do not administer opioids to hypotensive patients.
- Ensure IV lines are flushed well after medication administration.
- Do not establish an IO for pain management.
- Document an initial pain score, after medication administration and every 5 min.
- Morphine is the preferred analgesic for patients experiencing a sickle cell crisis.
- Ketamine is the preferred analgesic for IO pain (I/P only).

PEDIATRICS

Do not administer any pain medication if the patient is less than 2 years old

Fentanyl

- May consider **1 mcg/kg IN** up to max dose of 50 mcg over 2 minutes
- May repeat once after 10 minutes (max 100 mcg)
- Do not administer Fentanyl via IV route to pediatric patients

Morphine

- May consider **0.1 mg/kg IV/IO** up to max dose of 5mg over 2 minutes
- May repeat once after 10 minutes (max 10 mg)

Acetaminophen

- May consider **15 mg/kg IV** up to max dose of 1 g over 15 minutes
- Do not repeat
- Contraindicated if patient has taken Acetaminophen within the past 4 hours

Tidewater EMS Council, Inc.

Pain Management (Non-Cardiac)

Treatment per Airway/Oxygenation/Ventilation Protocol

Non-Cardiac related pain?

NO → **EXIT** to APPROPRIATE Protocol

YES

Pain management on standing order can be considered for all patients:

- Isolated extremity injury
- Sickle Cell crisis
- Kidney Stones
- Cancer
- Burns
- Significant trauma

Patients 15 years or older include:

- Abdominal pain

Provide BLS pain control: splinting, traction, ice, position of comfort, etc. ↔ **INCORPORATE** other APPROPRIATE Protocol(s) ***as indicated***

GCS ≥13 AND Pain Requires Intervention?

NO

WAIT AT LEAST 5 MIN BETWEEN ADMINISTERING DIFFERENT TYPES OF PAIN MEDICATION

YES

Determine treatment plan

Non-Opioid Analgesic

- Age ≥ 4mo
- Less severe pain

A, I, P

Acetaminophen
1 g IV/IO
over 15 minutes
(Do not repeat)
(If Available)

Opioid (Narcotic)

- Age ≥ 4mo
- BP ≥ 90 mmHg

A, I, P

Fentanyl 50 mcg IN/IM/IV/IO
may repeat once
(max 100mcg)
OR
Morphine 5 mg IM/IV/IO
May repeat once
(max 10 mg)

INCORPORATE Nausea/Vomiting Protocol ***as indicated***

Dissociative Agent

- Age ≥ 15yo
- Anxiety assoc. w/pain

I, P, ⊘

Ketamine 0.5 mg/kg IN
(Max 50mg)
OR
0.25 mg/kg IV/IO
May repeat once
(max 50 mg)

M Contact Medical Control

Transport

Patient Monitoring
Opioid: SPo2, ETCO2, and vitals signs every 5 min
Dissociative: All of the above plus cardiac monitor

Reviewed 7/2/24

Revised May 2025

Pregnancy (Pre) Eclampsia

GOALS

- Protect mother and unborn child from hypoxic events
- Reduce stimuli and prevent seizures in pre-eclamptic patients
- Appropriately treat eclamptic patients

TREATMENT

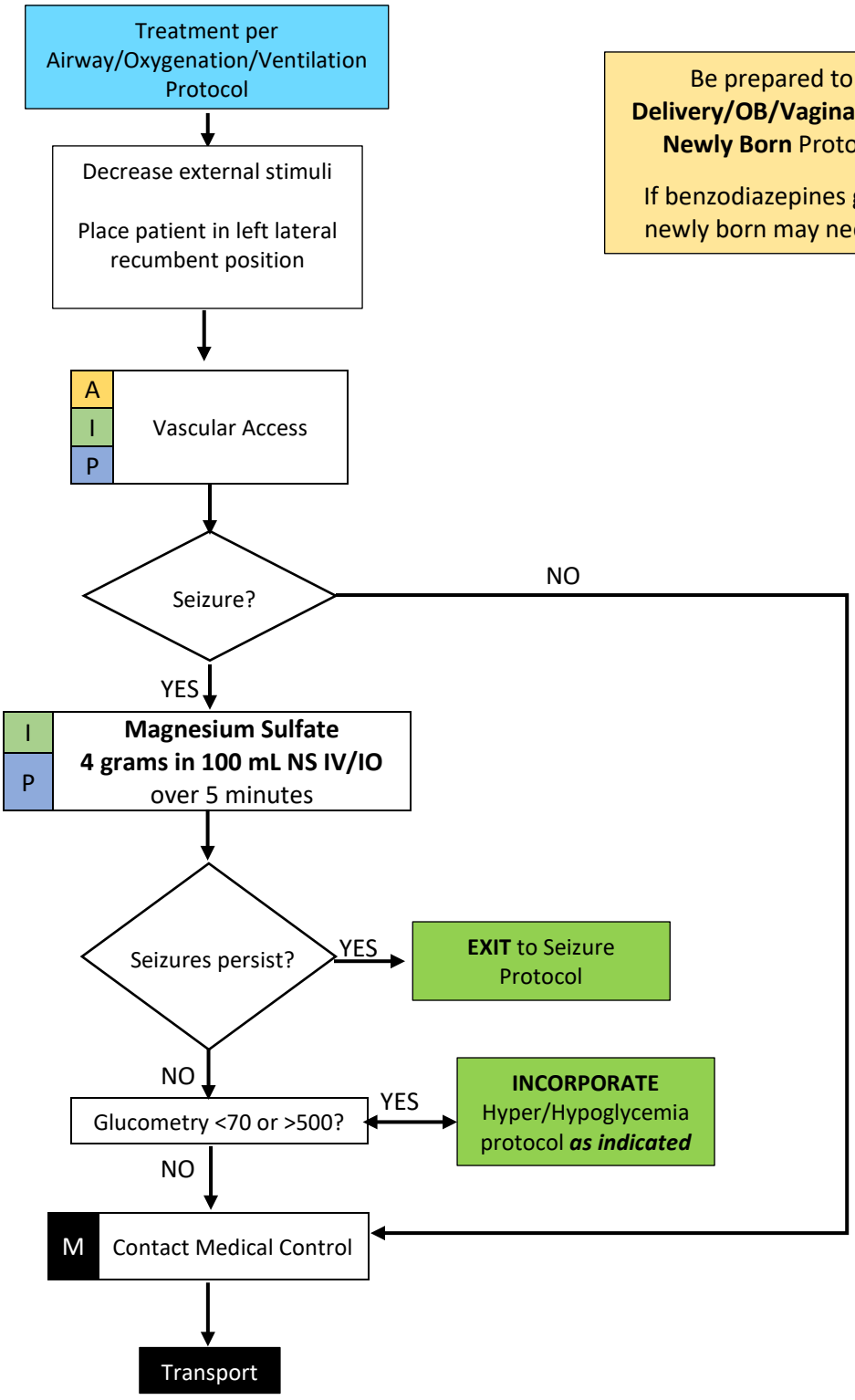
Assessment

- Pre-eclampsia may occur for up to 6-8 weeks post-partum. Signs and symptoms include:
  - Blood pressure- systolic > 140 mmHg and/or diastolic > 80 mmHg
  - General edema, particularly upper extremities, or face
  - Frontal headaches
  - Vision disturbances
  - Altered mental status
  - Abdominal pain
- **Magnesium sulfate** is the primary treatment for control of eclampsia
  - Dose **4 g in 100 mL NS** over 5 minutes
  - Consider contacting medical control prior to seizure for order for magnesium sulfate
- Transport pregnant patient in left lateral recumbent position to the appropriate facility
- In case of imminent delivery, transport patient to the closest facility
- Medical control continues to serve as a resource in cases of uncertainty

SPECIAL CONSIDERATIONS

- Use caution in administering magnesium sulfate to patients in renal failure
- Benzodiazepines have the potential to cause respiratory depression and bradycardia. For that reason, patients receiving Magnesium Sulfate should be on cardiac and SPO2 monitor with vital sign reassessment every 5 minutes
- Flush IV lines thoroughly after medication administration

Pregnancy (Pre) Eclampsia



Be prepared to incorporate **Delivery/OB/Vaginal Bleeding** and/or **Newly Born** Protocol as needed.

If benzodiazepines given to mother, newly born may need AOV support.

Tidewater EMS Council, Inc.

Rapid Sequence Induction (RSI)

GOALS

- Facilitate airway management with the use of sedatives and paralytics

TREATMENT

- Providers should administer both sedative and paralytic
- At least 1 trained RSI paramedic and an additional ALS provider (I/P) must be present to implement
- Patients must be monitored with EtCO2, cardiac monitor, and SpO2
- Intubated patients must be packaged appropriately to prevent dislocation

SPECIAL CONSIDERATIONS

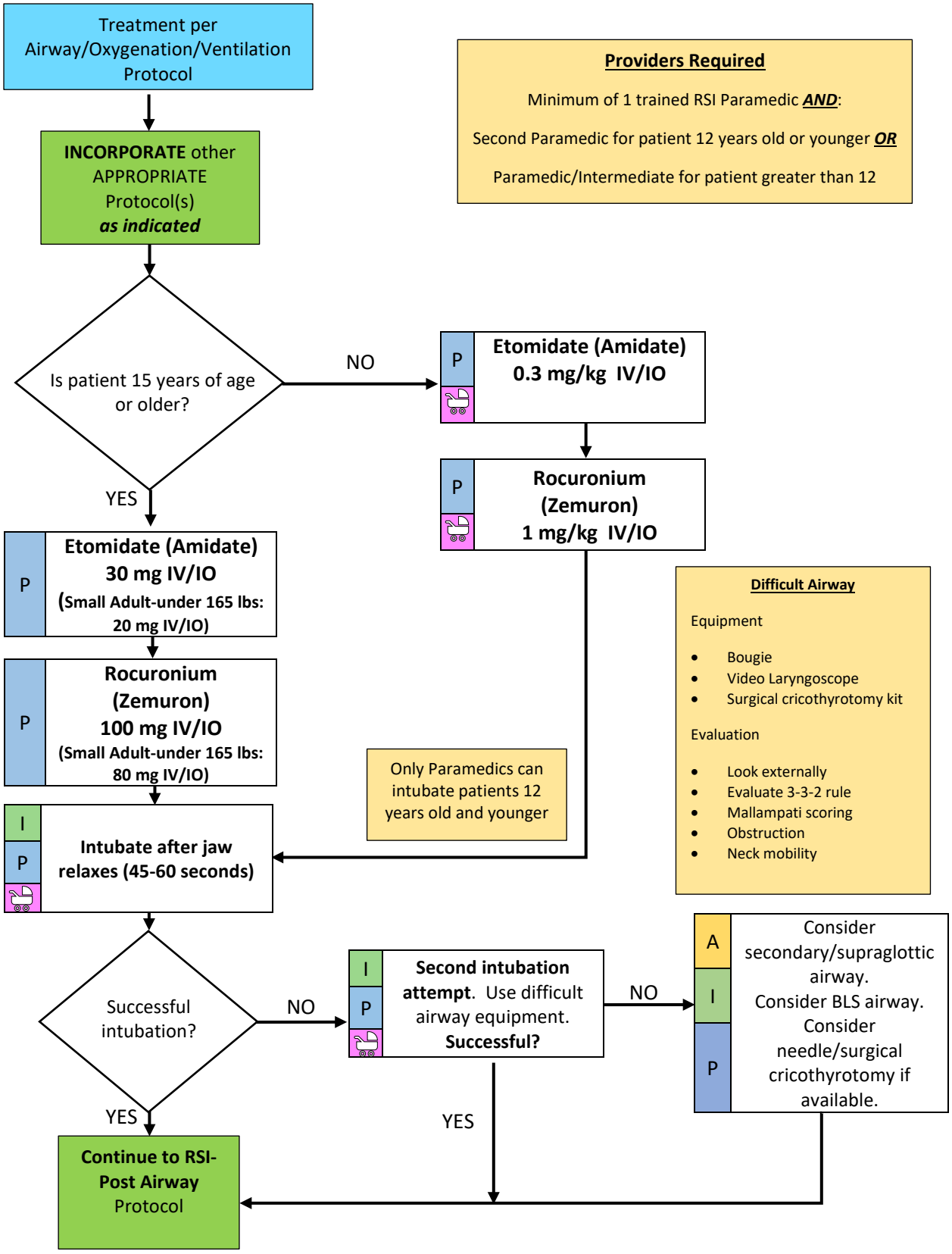
- Individual and/or agency use requires OMD approval and successful completion of an OMD approved course
- It is not advisable to intubate in a moving vehicle due to the risk of causing laryngeal tissue damage
- Patients in severe respiratory distress may deteriorate rapidly after RSI, due to loss of muscle tone
- Consider withholding RSI procedures when Shock Index > 1 unless the patient cannot be ventilated effectively by other means
    - Shock Index = Heart Rate (HR) / Systolic Blood Pressure (SBP)

PEDIATRICS

- Intubation may only be performed by Paramedics for patients 12 and under, per OEMS
- TEMS considers pediatric patients **under the age of 15** years old
- **Etomidate 0.3 mg/kg IV/IO** up to 30 mg
- **Rocuronium 1 mg/kg IV/IO** up to 100 mg

Tidewater EMS Council, Inc.

Rapid Sequence Induction (RSI)



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Rapid Sequence Induction (RSI)-Post Airway

GOALS

- Facilitate airway maintenance through the use of sedatives and paralytics

TREATMENT

- Providers will administer sedation after RSI
- Patients must be monitored with EtCO2, SpO2 and cardiac monitoring
- Intubated patients must be packaged appropriately to prevent dislocations
- Pain should be managed in conjunction with sedation
- Consider additional paralytics for longer transports

SPECIAL CONSIDERATIONS

- Individual and/or agency use requires OMD approval and successful completion of a TEMS OMD committee approved course
- Decreased sedation means that the patient may be paralyzed without sedation
- Do not wait for signs of decreasing sedation to administer sedatives

PEDIATRICS

- Intubation may only be performed by Paramedics in pediatrics 12 and under, per OEMS
- TEMS considers pediatric patients **under the age of 15 years** old, for medication administration
- **Midazolam (Versed) 0.1 mg/kg IV/IO** up to single max dose of 2.5 mg for sedation
- **Morphine 0.1 mg/kg IV/IO** for pain control
- **Rocuronium 1 mg/kg IV/IO** up to 100 mg

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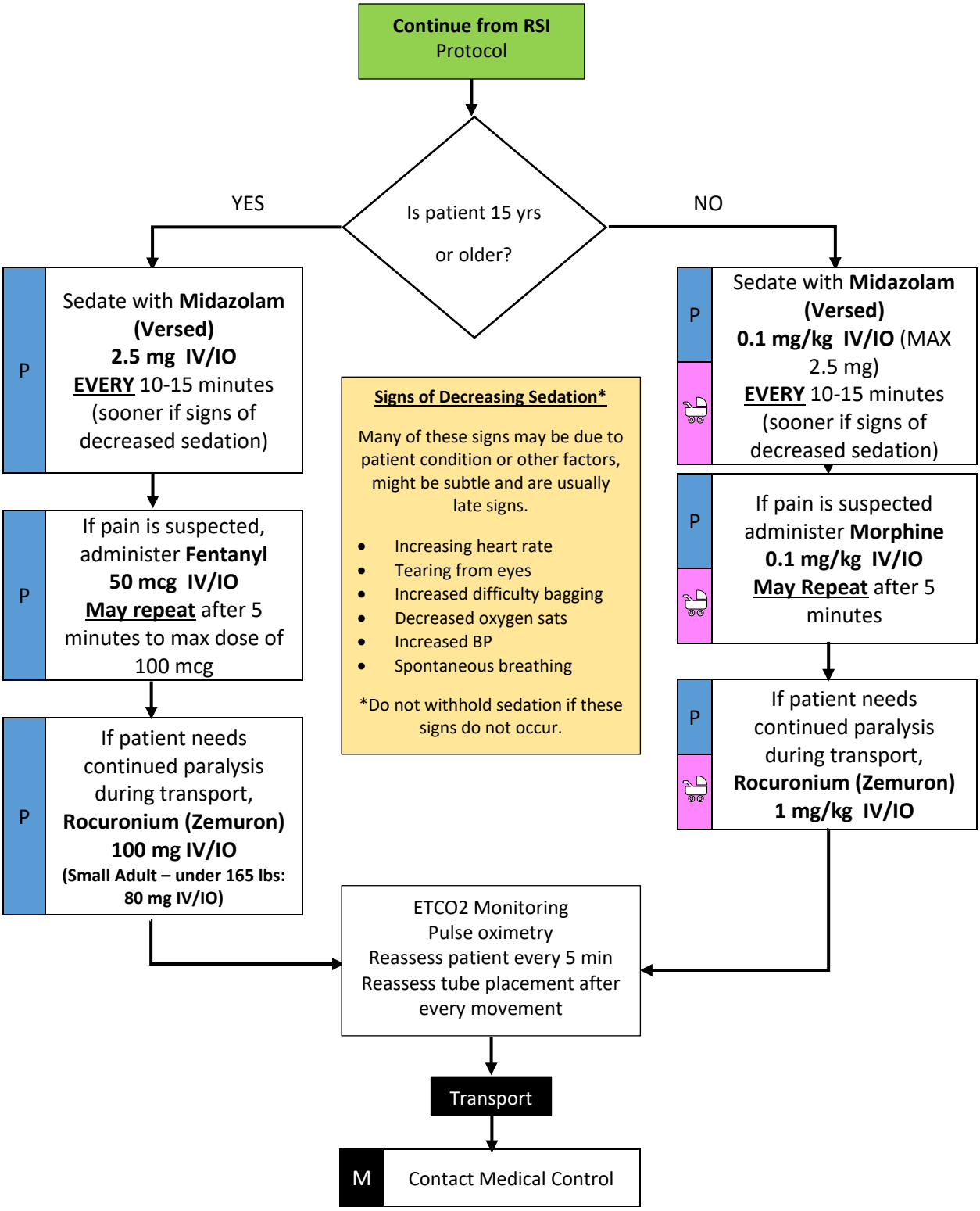
Rapid Sequence Induction (RSI)-Post Airway



Rehabilitation

GOALS

- To provide rest, rehydration, and medical evaluation to responders involved in extended or extreme weather incident scene operations

TREATMENT

Definition

- Active Cooling
  - Cooling vest, chair, or other direct cooling device
  - Place arms in ice water
  - Allow providers to cool off gradually prior to moving to an air-conditioned environment
- Passive Cooling
  - Remove protective gear
  - Rest in shaded and/or air-conditioned environment
  - Cool water misters

Assessment

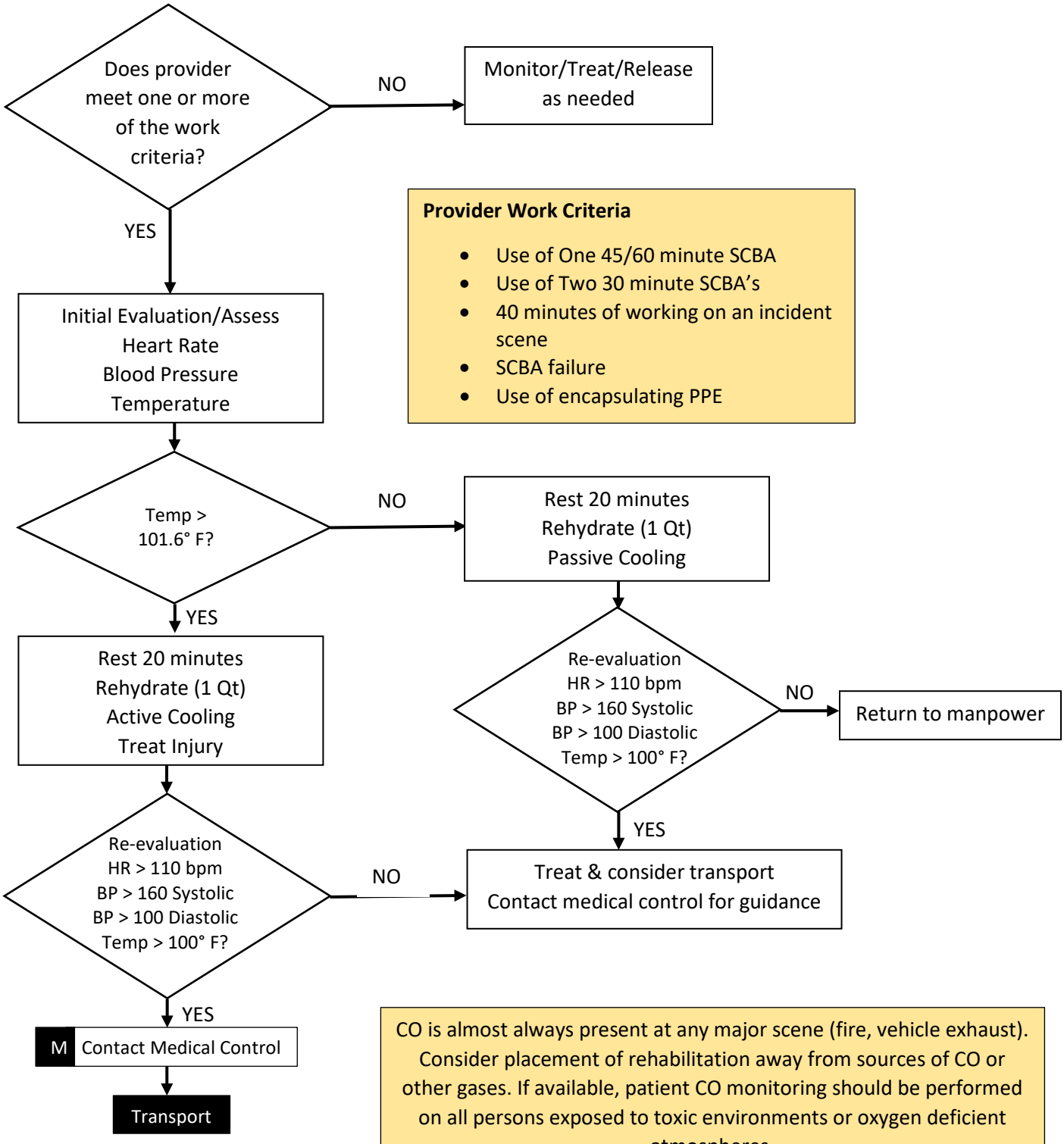
- Rehydration
  - Should be with water in the first hour of an incident, sports drink thereafter
  - Powdered sports drink should be mixed at half strength
  - Single serve sports drinks should be full strength
- Patients removed from the incident or transported to a medical facility warrant PCR documentation
- Providers should be mindful of temperature extremes (heat/cold) and adjust rehabilitation as necessary

SPECIAL CONSIDERATIONS

- Patients with signs/symptoms of heat stroke (see hyperthermia protocol) should be transported immediately with active cooling enroute

Reference: Technical Committee on Fire Service Occupational Safety and Health (NFPA 1584 revision)

Rehabilitation



CO is almost always present at any major scene (fire, vehicle exhaust). Consider placement of rehabilitation away from sources of CO or other gases. If available, patient CO monitoring should be performed on all persons exposed to toxic environments or oxygen deficient atmospheres.

Seizures

GOALS

- Prompt cessation of and minimize recurrence of seizures

TREATMENT

- Patients seizing for 5 minutes or longer should receive medication

Midazolam (Versed)

- IN administration should be split into two doses (one in each nare)

SPECIAL CONSIDERATIONS

- Benzodiazepines can cause respiratory depression and/or bradycardia. All patients receiving these medications should monitor SpO2 and EtCO2, and complete a vital reassessment every 5 minutes
- Ensure IV lines are flushed well after medication administration

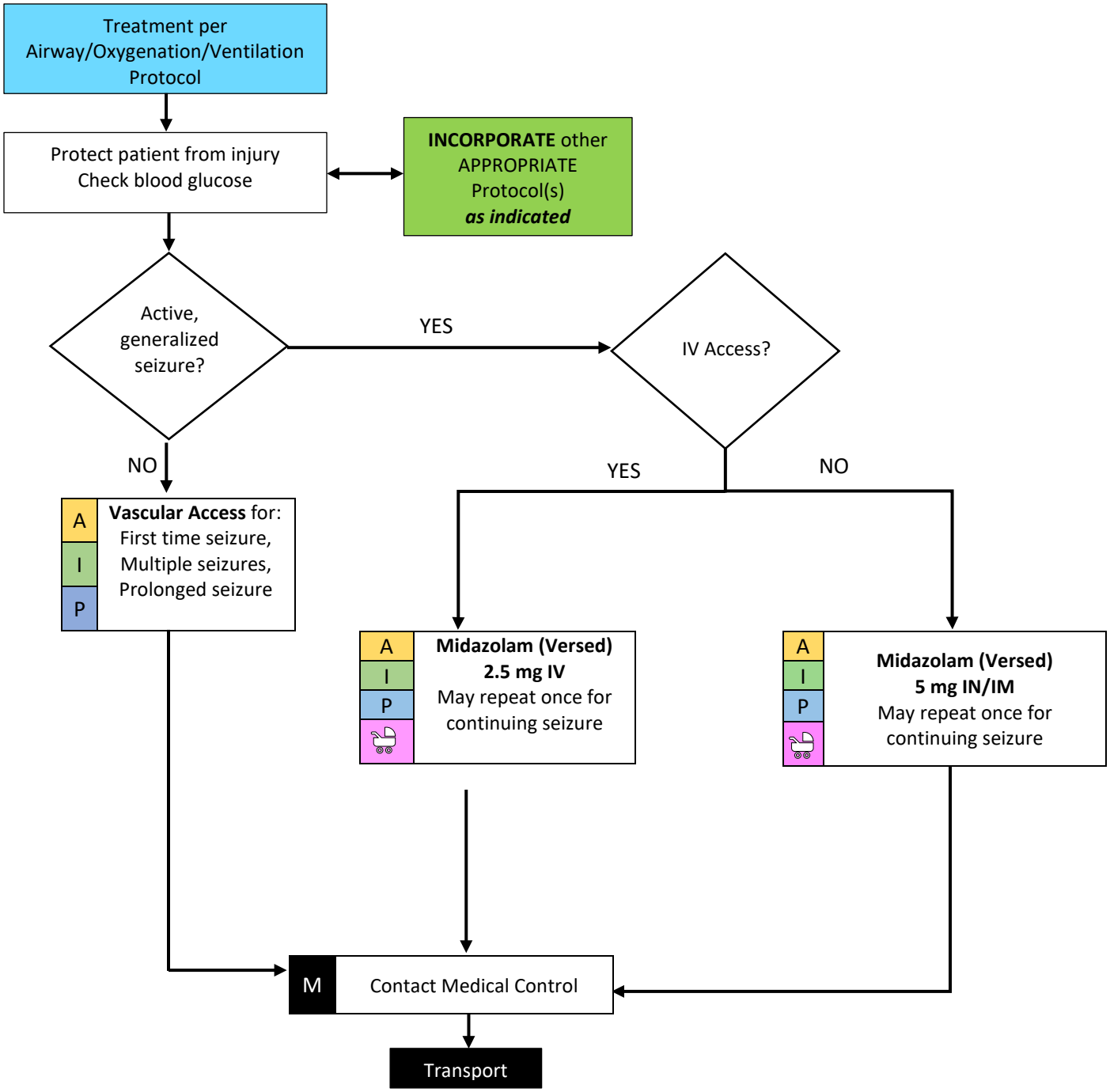
PEDIATRICS

- If patient is febrile and or seizing for less than 5 minutes, contact medical control prior to administering medications

Midazolam (Versed)-preferred medication

- Administer **0.2 mg/kg IN/IM** up to max dose of 5 mg-preferred route
- May consider **0.1 mg/kg IV** up to max dose of 2.5 mg

Seizures


Treatment per Airway/Oxygenation/Ventilation Protocol
Protect patient from injury
Check blood glucose
INCORPORATE other APPROPRIATE Protocol(s) as indicated
Active, generalized seizure?
YES
IV Access?
NO
YES
NO
A
I
P
Vascular Access for: First time seizure, Multiple seizures, Prolonged seizure
A
I
P
Midazolam (Versed) 2.5 mg IV May repeat once for continuing seizure
A
I
P
Midazolam (Versed) 5 mg IN/IM May repeat once for continuing seizure
M
Contact Medical Control
Transport

Tidewater EMS Council, Inc.

Sepsis

GOALS

- Initiate early fluid resuscitation and vasopressors to maintain/restore adequate perfusion to vital organs

TREATMENT

- After first liter of NS, additional fluid boluses-up to 30 mL/kg can be considered

Medication

- **Norepinephrine (Levophed)**:
  - Monitor BP, EKG, respirations, pulse, pulse ox and ETCO2 every 5 min
  - Monitor IV site very closely and STOP if infiltration is suspected
- **Epi "Push pressor":**
  - Make push pressor: mix 1 mL (0.1 mg) Epi 1:10,000 in 9 mL saline (to make 100 mcg/10 mL)
  - Push 0.5 mL (5 mcg) IV/IO at a time
  - Repeat slowly and after BP checks to titrate a systolic BP of 90 mmHg approximately every 1-5 minutes

Assessment

- Low ETCO2 levels (less than 26) in the sepsis patient can indicate metabolic acidosis. This indicates organ hypoperfusion and anaerobic metabolism. ETCO2 values of 25 can be associated with serum lactate values higher than 4 mmol/L
- Mean Arterial Pressure (MAP) should ideally be greater than or equal to 65 mmHg

SPECIAL CONSIDERATIONS

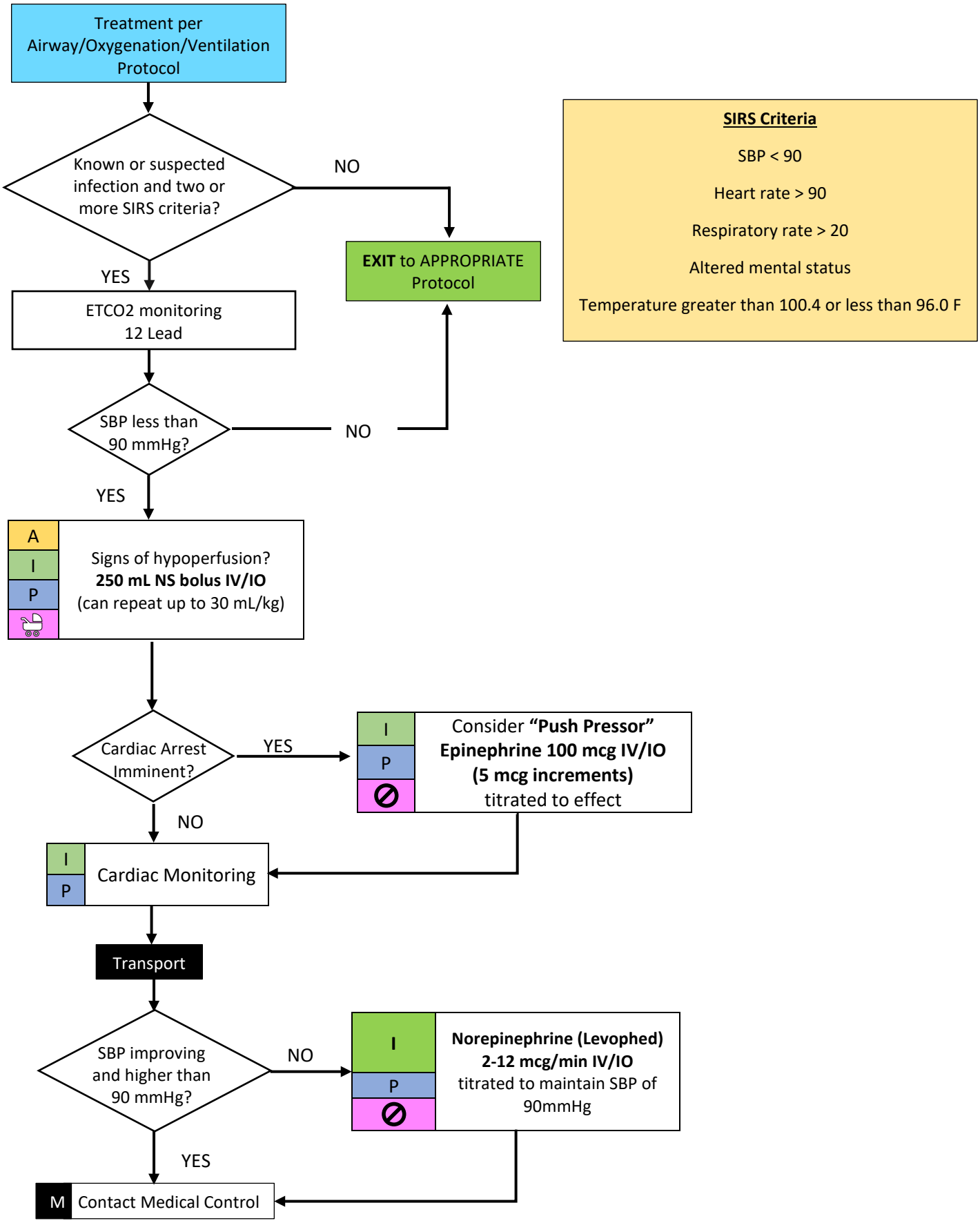
- Sepsis and septic shock patients are at a higher risk for pulmonary edema. When administering IV fluids, monitor breath sounds closely and frequently. STOP IV fluids in presence of pulmonary edema
- Medications such as beta blockers may affect heart rate-consider entire patient presentation and history

PEDIATRICS

Treatment

- Pediatric patients should only receive **20 mL/kg NS IV/IO** bolus.
- SBP should be age specific. Hypotension can be considered for the following:
  - 0-30 days: SBP less than 60
  - 1 month-1 year: SBP less than 70
  - 1-10 years: SBP less than 70 + (2 x age in years)

Sepsis


Treatment per Airway/Oxygenation/Ventilation Protocol
Known or suspected infection and two or more SIRS criteria?
NO
EXIT to APPROPRIATE Protocol
YES
ETCO2 monitoring
12 Lead
SBP less than 90 mmHg?
NO
YES
A
I
P
Signs of hypoperfusion?
250 mL NS bolus IV/IO
(can repeat up to 30 mL/kg)
Cardiac Arrest Imminent?
YES
I
P
Consider "Push Pressor"
Epinephrine 100 mcg IV/IO
(5 mcg increments)
titrated to effect
NO
I
P
Cardiac Monitoring
Transport
SBP improving and higher than 90 mmHg?
NO
I
P
Norepinephrine (Levophed)
2-12 mcg/min IV/IO
titrated to maintain SBP of 90mmHg
YES
M
Contact Medical Control
SIRS Criteria
SBP < 90
Heart rate > 90
Respiratory rate > 20
Altered mental status
Temperature greater than 100.4 or less than 96.0 F

Tidewater EMS Council, Inc.

Shock (Non-Traumatic)

GOALS

- Initiate early fluid resuscitation and vasopressors to maintain/restore adequate perfusion to vital organs
- Differentiate between possible underlying causes of shock in order to promptly initiate additional therapy

TREATMENT

Medication

- **Norepinephrine (Levophed)**:
  - Monitor BP, EKG, respirations, pulse, pulse ox and ETCO2 every 5 min
  - Monitor IV site very closely and STOP if infiltration is suspected
- **Epi "Push pressor":**
  - Make push pressor: mix 1 mL (0.1 mg) Epi 1:10,000 concentration in 9 mL saline. This will bring the concentration to 100 mcg/10 mL
  - Push 0.5 mL (5 mcg) IV/IO at a time
  - Repeat slowly and after BP checks to titrate a systolic BP of 90 mmHg approximately every 1-5 minutes

Assessment

- Hypotension indicates uncompensated shock
- Tachycardia is an early sign of compensated shock in adults but a late sign in pediatrics

SPECIAL CONSIDERATIONS

- If patient condition deteriorates after fluid administration or rales develop, then consider cardiogenic shock and withhold further fluid administration
- Tension pneumothorax can cause hypotension. Needle decompression should be performed prior to fluid boluses
- Consider Whole Blood with severe hemorrhage and BP < 70 or other serious signs/symptoms:
  - Identify and call for whole blood resources EARLY if patient meets criteria
  - Obtain an accurate set of vital signs, including manual BP
  - Treat all life threats first, control all major bleeds, and manage the airway if needed
  - DO NOT delay transport for whole blood administration

PEDIATRICS

Treatment

- Pediatric patients should only receive **20 mL/kg NS bolus IV/IO**
- SBP should be age specific. Hypotension can be considered for the following:
  - 0-30 days: SBP less than 60
  - 1 month-1 year: SBP less than 70
  - 1-10 years: SBP less than 70 + (2 x age in years)

Tidewater EMS Council, Inc.

Shock (Non-Traumatic)

Treatment per Airway/Oxygenation/Ventilation Protocol

Traumatic Injuries?

YES → **EXIT** to APPROPRIATE Protocol

NO

Call for whole blood as early as possible if needed

Hemorrhage of Medical Etiology?

YES → Whole blood available and meets criteria?

YES → Transport

NO → **INCORPORATE Whole Blood Administration Protocol**

NO

Medical Patients who may experience hemorrhage:

- GI Bleed
- Vaginal Bleed
- OBGYN Emergencies
- Bleeding from Dialysis Shunt
- Bleeding from recent major surgery
- Severe hemorrhage from other medical related causes

12 lead EKG

A I P — If SBP less than 90 mmHg with signs of hypoperfusion, **250 mL NS bolus IV/IO**

↔ **INCLUDE** other APPROPRIATE Protocol(s) ***as indicated***

Distributive Shock? (Sepsis, Anaphylaxis)

YES → **EXIT** to APPROPRIATE Protocol

NO → Transport

Hypovolemic (Dehydration, GI Bleed)

A I P — Additional **250 mL NS bolus IV/IO** up to total of 1000 mL to maintain SBP 90mmHg

Cardiogenic (STEMI, CHF)

I P — Cardiac Monitoring

I P — If Cardiac Arrest imminent, consider **"Push Pressor" Epinephrine 100 mcg IV/IO (5 mcg increments)** titrated to effect

I P — **Norepinephrine (Levophed) 2-12 mcg/min IV** titrated to maintain SBP of 90 mmHg

Obstructive (PE, Tamponade)

I P — Cardiac Monitoring

M Contact Medical Control

Reviewed 12/01/2024

Revised April 2025

Tidewater EMS Council, Inc.

Spinal Motion Restriction

GOALS

- Minimize secondary spinal injury
- Perform appropriate level of immobilization

TREATMENT

- Unconscious trauma patients require full immobilization
- Reliable Patients are calm, cooperative, have not been using alcohol or drugs, are without distracting injuries and are awake and coherent
- Unreliable patients should have either full immobilization or SMR

SPECIAL CONSIDERATIONS

- Patients that meet trauma center transport criteria typically meet criteria for either full immobilization or SMR
- Low risk mechanisms and medical patients can result in spinal injuries
- Higher Risk Criteria identifies situations that indicate a higher risk for spinal injury. If any criteria are present, provide SMR even if the patient does not present with neck pain or mid-line c-spine tenderness

PEDIATRICS

- Age extremes and inability to communicate may require additional SMR.

Tidewater EMS Council, Inc.

Spinal Motion Restriction

Higher Risk Criteria
Based on mechanism/injury pattern

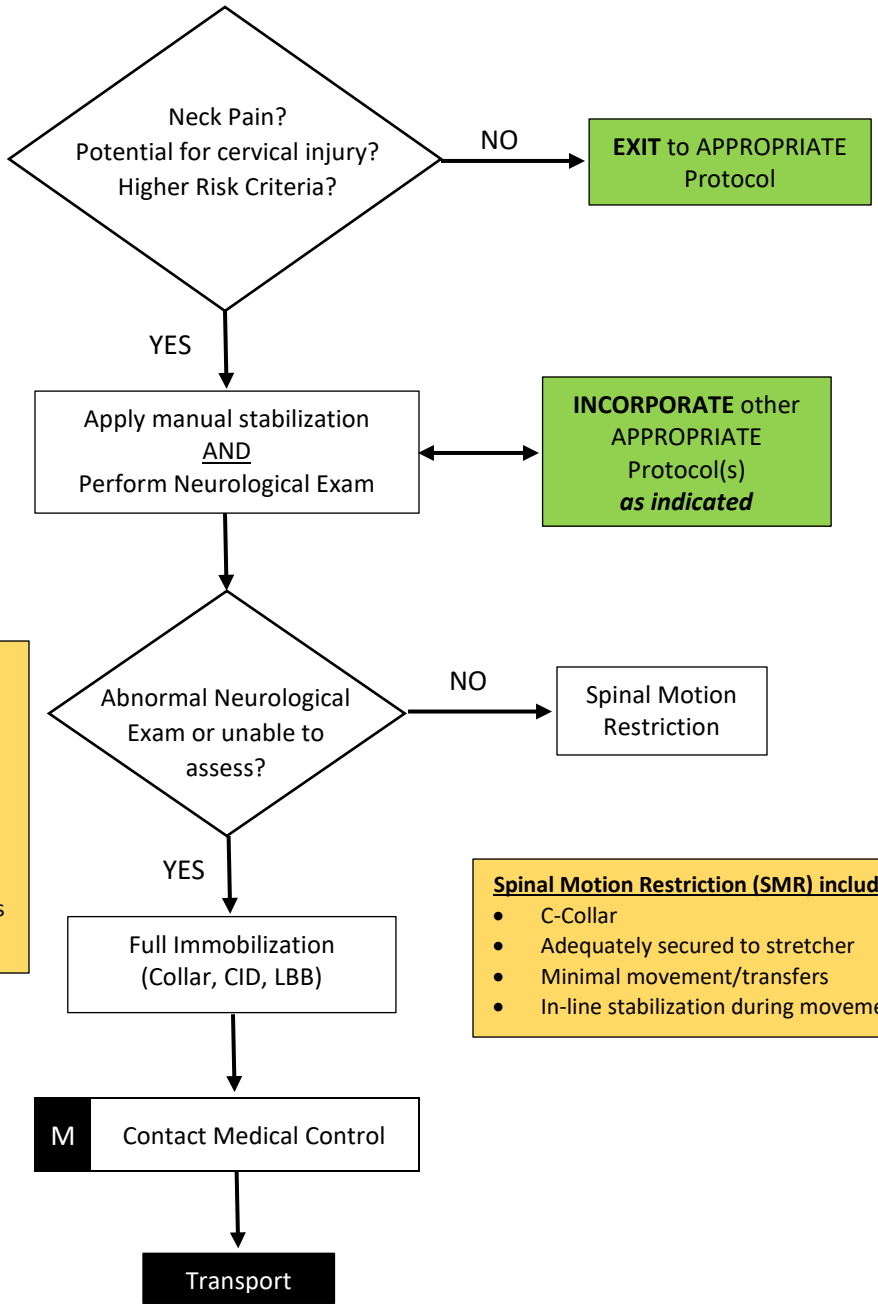
Any one or more of the following:

- Age Extreme (<5 or >65)
- Use of alcohol or drugs
- Indication that patient is intoxicated, impaired, or unreliable
- High Speed MVC
- High mechanism of injury
- Evidence of high energy impact
- Axial load injuries
- Diving incidents
- Fall more than 3x the patient's height
- Blunt trauma on/near the spine
- Sports injuries to head/neck
- Any other criteria or situation determined by provider judgment

Neurological Exam

Assess for:

- Numbness or tingling
- Unconscious or Unresponsive
- AMS and/or inability to follow commands
- Weakness, paralysis, incontinence
- Dizziness or balance issues
- Decreased/absent/abnormal peripheral pulses
- Abnormal pupils or pupillary response



Spinal Motion Restriction (SMR) includes:

- C-Collar
- Adequately secured to stretcher
- Minimal movement/transfers
- In-line stabilization during movement

Stroke/CVA

GOALS

- Determine neurological loss and deficits within 10 minutes of First Medical Contact (FMC)
- Assure adequate oxygenation, ventilation
- Transport patient to appropriate destination and provide early notification of Stroke Alert

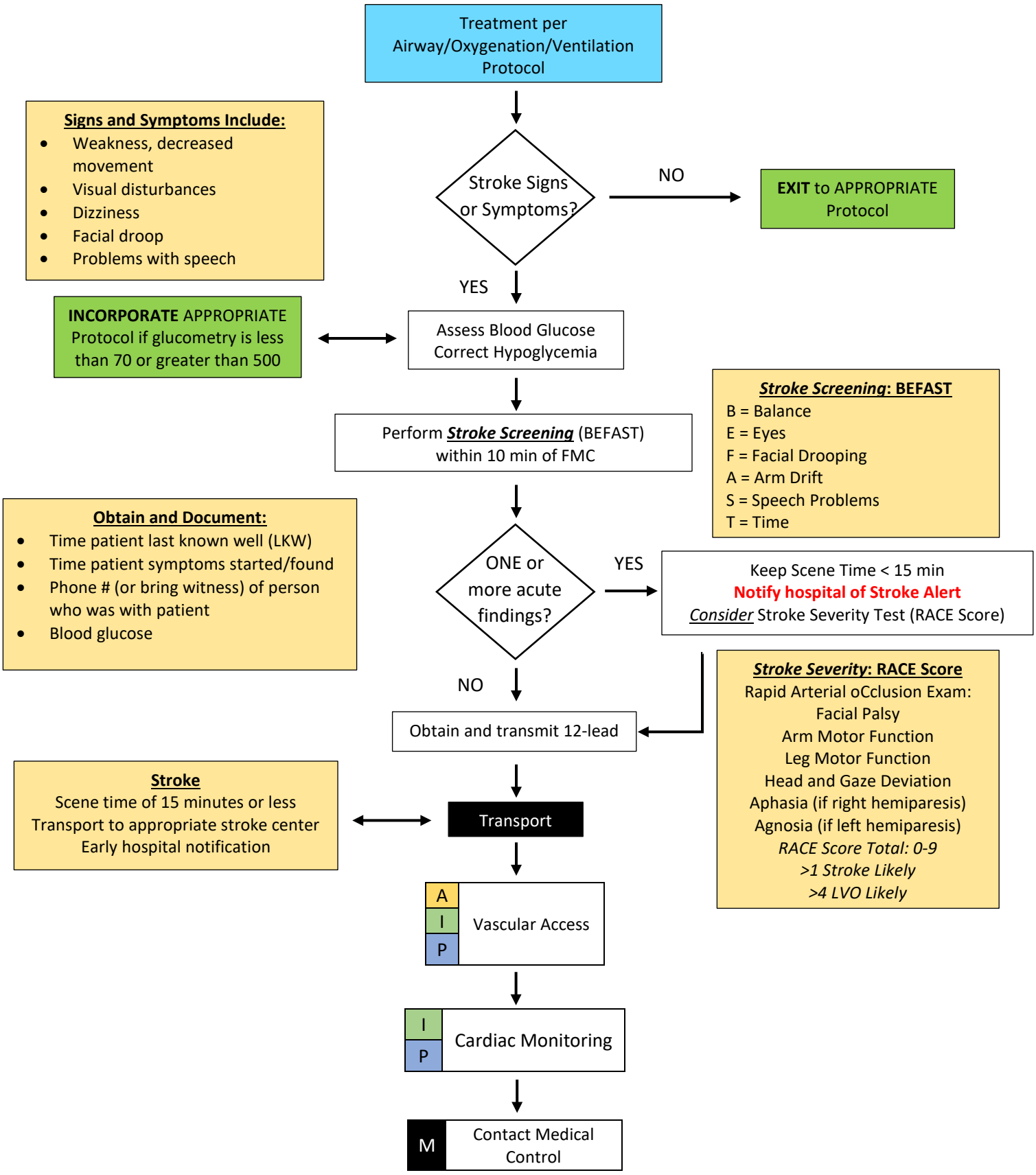
TREATMENT

- Perform Stroke Screening (BEFAST) if stroke signs/symptoms are present
  - One or more acute findings indicates a positive stroke screening
- *Consider* performing Stroke Severity (RACE Score) if Stroke Screening is positive
  - Transport destinations should not be based on Stroke Severity scores
- Do not delay transport for non-life-saving procedures
- Notify the hospital of any blood thinners:
  - Anticoagulants include: Heparin, Lovenox, Coumadin, Eliquis, Xarelto, Paradaxa, etc.
  - Antiplatelets include: Aspirin, Plavix, Effient, Aggrenox, Ticlid, etc.

SPECIAL CONSIDERATIONS

- Stroke victims are at high risk for airway compromise
- Hypoxemia will worsen stroke outcomes
- Patients with resolution of stroke symptoms should still be transported
- Refer to the TEMS Stroke Triage Plan for more information
- If vascular access will be obtained in the field, hospital preference is at least a 20g or larger in the right antecubital (AC)

Stroke/CVA


Treatment per Airway/Oxygenation/Ventilation Protocol
Signs and Symptoms Include:
Weakness, decreased movement
Visual disturbances
Dizziness
Facial droop
Problems with speech
Stroke Signs or Symptoms?
NO
EXIT to APPROPRIATE Protocol
YES
INCORPORATE APPROPRIATE Protocol if glucometry is less than 70 or greater than 500
Assess Blood Glucose Correct Hypoglycemia
Perform Stroke Screening (BEFAST) within 10 min of FMC
Stroke Screening: BEFAST
B = Balance
E = Eyes
F = Facial Drooping
A = Arm Drift
S = Speech Problems
T = Time
Obtain and Document:
Time patient last known well (LKW)
Time patient symptoms started/found
Phone # (or bring witness) of person who was with patient
Blood glucose
ONE or more acute findings?
YES
Keep Scene Time < 15 min
Notify hospital of Stroke Alert
Consider Stroke Severity Test (RACE Score)
Stroke Severity: RACE Score
Rapid Arterial oCclusion Exam:
Facial Palsy
Arm Motor Function
Leg Motor Function
Head and Gaze Deviation
Aphasia (if right hemiparesis)
Agnosia (if left hemiparesis)
RACE Score Total: 0-9
>1 Stroke Likely
>4 LVO Likely
NO
Obtain and transmit 12-lead
Stroke
Scene time of 15 minutes or less
Transport to appropriate stroke center
Early hospital notification
Transport
A
I
P
Vascular Access
I
P
Cardiac Monitoring
M
Contact Medical Control

Traumatic Injury

GOALS

- Rapid assessment and treatment of life-threatening injuries
- Rapid transport to the appropriate destination

TREATMENT

- Trauma treatment should follow the MARCH Pneumonic
  - Massive Hemorrhage, Airway, Respiration, Circulation, and Hypothermia
- Do not delay transport to perform non-lifesaving interventions on scene. Ambulance scene time should be limited to 15 minutes or less
- The goal of IV fluid administration is to maintain a systolic BP of 90 mmHg. Unless the patient has a head injury and a GCS less than 8, then maintain a systolic BP of 110 mmHg
- Amputated parts should be wrapped in dry, sterile dressing and placed in a plastic bag. Bag should be placed in a cooled container, not directly on ice

SPECIAL CONSIDERATIONS

- If a patent airway cannot be established, CPR is in progress or bleeding is uncontrolled, transport to the closest facility
  - If trauma facility is within 10 minutes of closest non-trauma facility, transport to the trauma facility
- Chest Needle Decompression: Use at least a 14-gauge catheter that is 3.25 inches long or largest available
- Consider Whole Blood with severe hemorrhage and BP < 70 or other serious signs/symptoms:
  - Identify and call for whole blood resources EARLY if patient meets criteria
  - Obtain an accurate set of vital signs, including manual BP
  - Treat all life threats first, control all major bleeds, and manage the airway if needed
  - DO NOT delay transport for whole blood administration

PEDIATRICS

- CHKD is a level 1 trauma center for patients under 15 years of age and preferred for patients meeting trauma center criteria.

<u>Treatment</u>

- Pediatric patients should only receive **20mL/kg NS bolus IV/IO**
- SBP should be age specific. Hypotension can be considered for the following:
  - 0-30 days: SBP less than 60
  - 1 month-1 year: SBP less than 70
  - 1-10 years: SBP less than 70 + (2 x age in years)

<u>Chest Needle Decompression (**SO for Intermediate** and **Paramedic in cardiac arrest**)</u>

  - 18-gauge (consider adult size for adolescent or larger children)

Traumatic Injury

Treatment per Bleeding Control Protocol

Treatment per Airway/Oxygenation/Ventilation Protocol

INCORPORATE other APPROPRIATE Protocol(s) ***as indicated***

Perform bilateral chest decompression in traumatic cardiac arrest if thoracic injuries are suspected.

Meets Trauma Triage Criteria?

NO

M Contact Medical Control

Transport to closest appropriate facility

YES

Transport to a Trauma Facility

M Contact Medical Control

A I P Vascular Access X2

Call for whole blood as early as possible if needed

Whole blood available and patient meets criteria?

YES

INCORPORATE Whole Blood Administration Protocol

NO

A I P If SBP less than 90 mmHg with signs of hypoperfusion, **250 mL NS bolus IV/IO**
For patients with head injury and GCS <8 aim for SBP 110 mmHg

Cover exposed patient
Initiate passive warming as indicated

Direct Trauma Center Transport Criteria
(Keep scene time at 15 minutes or less)

Status - GCS < 14; SBP < 90; Resp rate <10 or >29

Injury - Penetrating injury to head, neck, torso, proximal extremities; Flail chest; Two or more proximal long bone fractures; Pelvic fracture; Open/depressed skull fracture; Paralysis; Crushed, degloved, or mangled extremity; High voltage electrical burns

Mechanism – Adult fall greater than 20 ft; Peds fall greater than 2-3 times height; intrusion greater than 12 inches on occupant side and/or greater than 18 inches anywhere; Ejection including partial; Death in same passenger compartment; Auto vs pedestrian or bicycle thrown, run over or greater than 20 mph; Motorcycle crash greater than 20 mph; Automatic crash notification data indicating High risk injury

*****If a patent airway cannot be established, CPR is in progress or bleeding is uncontrolled, transport to closest facility.*****

Tidewater EMS Council, Inc.

Whole Blood w/ARC Administration (Adult)

GOALS

- Initiate early resuscitation with whole blood to provide rapid correction of anemia, coagulopathy, acidosis, and hypothermia
- Use warmed whole blood to replace the loss of the oxygen carrying capabilities due to hemorrhage and treat all four parts of the **Death Diamond of Trauma: Coagulopathy, Acidosis, Hypothermia, Hypocalcemia**
- Provide direct replacement of all blood components at once with administration of whole blood, minimizing complications and complexity of component therapy

TREATMENT

- Indications for medical etiology may include: GI Bleed, OBGYN emergencies (ruptured ectopic pregnancy, severe vaginal bleeding, etc.), vascular emergencies (uncontrolled bleeding from shunt, fistula, etc.), hemorrhage secondary to recent major surgery, or other medical hemorrhage situations
- Keep trauma patients covered, well oxygenated, and stop active hemorrhage
- Any trauma patient with concern for hemorrhage and a systolic blood pressure ≤ 70 mmHg may receive Whole Blood administration
- Patients still showing signs of shock after the administration of 1 unit of Whole Blood may receive 1 additional unit of Whole Blood if available, with Medical Control Order only
- Large bore IV/IO 20g or higher is required for blood transfusion
- Do not give medications through the whole blood IV/IO set
- Utilize alternate access for medication administration via IV/IO while blood products are being administered
- Clinical criteria for whole blood may include anticoagulant medications (not anti-platelet):
    - Anticoagulants include: Heparin, Lovenox, Coumadin, Eliquis, Xarelto, Paradaxa, etc.
    - Antiplatelets include: Aspirin, Plavix, Effient, Aggrenox, Ticlid, etc.
- **Contraindications** to ARC Bundle: Suspected TBI, Time of Injury > 1 hr, Hemorrhage from Medical Etiology

SPECIAL CONSIDERATIONS

- Individual and/or agency use requires OMD approval and successful completion of a TEMS OMD committee approved course
- Transport should not be delayed for the administration of Whole Blood
- Transport to the closest appropriate facility based on trauma center criteria and TEMS trauma triage plan
- Stop the transfusion immediately if a patient shows signs of an adverse reaction at any point, monitor the patient closely, and incorporate other appropriate protocol(s) as needed
- If whole blood is immediately available, consider attempting resuscitation and incorporating this protocol on patients experiencing cardiac arrest from penetrating trauma with minimal downtime, pseudo PEA, etc.
- Pre-hospital providers should transfer trauma patients with uncontrolled airway, uncontrolled hemorrhage, or if there is CPR in progress to the closest hospital for stabilization and transfer
- An existing catheter can be utilized as alternative site to administer Whole Blood when IV or IO access is unsuccessful or inappropriate

PEDIATRICS

- See Whole Blood Protocol (Pediatric) for age range 5-13yo
- Not indicated for age < 5yo

Reviewed 04/09/2024

Revised April 2025

Tidewater EMS Council, Inc.

Whole Blood w/ARC Administration (Adult)

Clinical Criteria for Whole Blood:

Systolic Blood Pressure ≤ 70

OR

Penetrating Trauma Any 1 below:
Blunt Trauma or Medical Etiology Any 2 below:

- Systolic Blood Pressure ≤ 90
- Narrow Pulse pressure ≤ 45
- Heart Rate >120
- Shock Index (HR/SBP) ≥ 1.2
- ETCO2 < 25
- AMS without obvious head trauma
- Anti-coagulant use (not anti-platelet)
- Obvious significant external hemorrhage

Treatment per Bleeding Control Protocol

Patient ≥ 14yo with Hemorrhage?

NO

YES

Meets **Clinical Criteria for Whole Blood**?

NO

EXIT to APPROPRIATE Protocol

YES

Transport

P — Administer 1-unit Low Titer Type O+ Whole Blood IV/IO

ARC Bundle

2g Tranexamic Acid (TXA) IV/IO
over 1 minute AND
1g Calcium Gluconate IV/IO

Contraindications:
Traumatic Brain Injury (TBI)
Time of Injury > 1 hour
Hemorrhage from Medical Etiology

DO NOT administer in the same IV/IO line as WHOLE BLOOD without flushing thoroughly

Non-Blood Medics (I/P) may administer ARC Bundle at direction of the blood medic only

I/P — Incorporate **ARC Bundle** (if available) for **TRAUMATIC HEMORRHAGE** *if no contraindications*

Monitor for **Adverse Reaction**
Reassess All Vitals Every 5 min:
HR, RR, SPo2, ETCo2, EKG, Temp

HR >120, SBP ≤70, or Shock Index ≥1.2?

NO

YES

Adverse Reactions

Discontinue transfusion IMMEDIATELY if there are signs of an adverse reaction at any time:

- Hives, itching, or wheezing
- Any indication of Anaphylaxis
- Unexplained syncope

Incorporate other associated protocol(s) as needed to treat adverse reactions

M/P — Administer 1-unit Low Titer Type O+ Whole Blood IV/IO

Monitor for **Adverse Reaction**
Reassess All Vitals Every 5 min:
HR, RR, SPo2, ETCo2, EKG, Temp

M — Contact Medical Control

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Whole Blood w/ARC Administration (Pediatric)

GOALS

- Initiate early resuscitation with whole blood to provide rapid correction of anemia, coagulopathy, acidosis, and hypothermia
- Use warmed whole blood to replace the loss of the oxygen carrying capabilities due to hemorrhage and treat all four parts of the **Death Diamond of Trauma: Coagulopathy, Acidosis, Hypothermia, Hypocalcemia**
- Provide direct replacement of all blood components at once with administration of whole blood, minimizing complications and complexity of component therapy

TREATMENT

- Indications for medical etiology may include: GI Bleed, OBGYN emergencies (ruptured ectopic pregnancy, severe vaginal bleeding, etc.), vascular emergencies (uncontrolled bleeding from shunt, fistula, etc.), hemorrhage secondary to recent major surgery, or other medical hemorrhage situations
- Keep trauma patients covered, well oxygenated, and stop active hemorrhage
- Any trauma patient with concern for hemorrhage and a systolic blood pressure ≤ 70 mmHg may receive Whole Blood administration
- Patients still showing signs of shock after the administration of 10 cc/kg of Whole Blood may receive an additional 10 mL/kg administration of Whole Blood if available, with Medical Control Order only
- Large bore IV/IO 20 g or higher is required for blood transfusion
- Do not give medications through the whole blood IV/IO set
- Utilize alternate access for medication administration via IV/IO while blood products are being administered
- Clinical criteria for whole blood may include anticoagulant medications (not anti-platelet):
    - Anticoagulants include: Heparin, Lovenox, Coumadin, Eliquis, Xarelto, Paradaxa, etc.
    - Antiplatelets include: Aspirin, Plavix, Effient, Aggrenox, Ticlid, etc.
- **Contraindications** to ARC Bundle: Suspected TBI, Time of Injury > 1 hr, Hemorrhage from Medical Etiology

SPECIAL CONSIDERATIONS

- Individual and/or agency use requires OMD approval and successful completion of a TEMS OMD committee approved course
- Transport should not be delayed for the administration of Whole Blood
- Transport to the closest appropriate facility based on trauma center criteria and TEMS trauma triage plan
- Stop the transfusion immediately if a patient shows signs of an adverse reaction at any point, monitor the patient closely, and incorporate other appropriate protocol(s) as needed
- If whole blood is immediately available, consider attempting resuscitation and incorporating this protocol on patients experiencing cardiac arrest from penetrating trauma with minimal downtime, pseudo PEA, etc.
- Pre-hospital providers should transfer trauma patients with uncontrolled airway, uncontrolled hemorrhage, or if there is CPR in progress to the closest hospital for stabilization and transfer
- An existing catheter can be utilized as an alternative site to administer Whole Blood when IV or IO access is unsuccessful or inappropriate

PEDIATRICS

- See Whole Blood Protocol (Adult) for age range ≥ 14yo
- Not indicated for age < 5yo

Whole Blood w/ARC Administration (Pediatric)

Clinical Criteria for Whole Blood:

Systolic Blood Pressure ≤ 70

OR

Penetrating Trauma Any 1 below:
Blunt Trauma or Medical Etiology Any 2 below:

- Systolic Blood Pressure ≤ 90
- Narrow Pulse pressure ≤ 45
- Heart Rate >120
- Shock Index (HR/SBP) ≥ 1.2
- ETCO2 < 25
- AMS without obvious head trauma
- Anti-coagulant use (not anti-platelet)
- Obvious significant external hemorrhage

Treatment per Bleeding Control Protocol

Patient 5-13yo with Hemorrhage?

NO

YES

Meets Clinical Criteria for Whole Blood?

NO

EXIT to APPROPRIATE Protocol

YES

Transport to CHKD

P Administer 10 mL/kg Low Titer Type O+ Whole Blood IV/IO

Monitor for Adverse Reaction
Reassess All Vitals Every 5 min:
HR, RR, SPo2, ETCo2, EKG, Temp

HR >120, SBP ≤70, or Shock Index ≥1.2?

NO

YES

M P Administer 10 mL/kg Low Titer Type O+ Whole Blood IV/IO

Monitor for Adverse Reaction
Reassess All Vitals Every 5 min:
HR, RR, SPo2, ETCo2, EKG, Temp

M Contact Medical Control

ARC Bundle

15mg/kg Tranexamic Acid (TXA) IV/IO (max 1g) *over 1 minute*
AND
30mg/kg Calcium Gluconate IV/IO (max 1g)

Contraindications:
Traumatic Brain Injury (TBI)
Time of Injury > 1 hour
Hemorrhage from Medical Etiology

DO NOT administer in the same IV/IO line as WHOLE BLOOD without flushing thoroughly

Adverse Reactions

Discontinue transfusion IMMEDIATELY if there are signs of an adverse reaction at any time:

- Hives, itching, or wheezing
- Any indication of Anaphylaxis
- Unexplained syncope

Incorporate other associated protocol(s) as needed to treat adverse reactions

General Radio and Documentation Guidelines

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Charting Formats

A-CHART Format

ARRIVE ON SCENE SIZE-UP:

CHIEF COMPLAINT:

PERTINENT MEDICAL HISTORY:

HISTORY:

- Who established patient history
- Signs/Symptoms
- Allergies
- Medications
- Past Pertinent Medical History
- Last oral intake
- Events Leading to activating 911 system

ASSESSMENT:

- Assessment: Possible /Probable Position, Location of Patient
- General impression
- ABCD's: Patent Airway, Adequate Breathing, Circulation, Deformities, Major Bleeding
- Additional information
- Patient Vitals: Pulse, Blood Pressure, Respirations Abnormalities
- Blood Oxygen Saturation %: Room Air / O2
- Blood Glucose Level, Capnography, Airway Placement
- Detailed Examination Findings

TREATMENT:

TRANSPORT:

SOAP

This is the general order for treating a patient

- Subjective information (What is the patient telling you?)
- Objective information (What are your observations and tools telling you?)
- Assessment of the patient (What do you think is happening?)
- Plan of action (What are you going to do about it?)

CHEATED

This is a summary of a patient contact, from start to finish.

- Chief Complaint
- History
- Examination
- Assessment
- Treatment
- Evaluation (Did the treatment help?)
- Disposition (What was the final outcome?)

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Documentation Guidelines

All patient care reports should include the following information in the narrative:
Patient Data:

- Chief Complaint
- Mechanism of injury/Nature of illness
- Associated signs and symptoms/pertinent negatives
- Location of patient when first encountered
- Rescue and treatment by bystanders/first responders
- Patient history including meds, allergies, pertinent info to chief complaint
    - The OPQRST history
    - SAMPLE history
- Physical findings not listed in other areas of the PCR

Treatment Data:

- BLS/ALS treatment provided
- Time of treatment
- Response to treatment
- Reason for variation from the protocols
- Any treatment prior to your arrival

REFUSALS

The narrative should include:

- The patient's reason for refusal
- Evidence of decision making capability:
    - Patient alert and oriented x 4 (Person, Place, Time and Event)
    - Patient understands and answers questions appropriately
- The exact ramifications that were explained to the pt. (the worst thing that could happen)
- Alternatives to care (suggest contacting your physician immediately, etc.)
- Signature by patient or legal guardian
    - A wife/husband is not a legal guardian unless the courts have appointed them.
    - Durable Power of Attorney for Health Care
- Document who you spoke with.
- A physical assessment (if the patient refuses these, document it)
- Events leading up to 911 call, mechanism of injury or nature of illness
- Signatures

CHEST PAIN

The narrative should include:

- What patient was doing at onset of the pain
- If anything makes the pain worse or better
    - Should include whether pain increases with palpation and/or breathing
- If the pain radiates, where it radiates
- A description of the pain
    - Sharp, dull, cramping, etc.
- The severity of the pain on a scale of 1-10 when you first see pt. and after any & all treatment
- What time the pain started
- Pertinent physical exam findings & pertinent negatives
- Any medical history related to this episode
- Any abnormal findings
- Response to each treatment

- The OPQRST history
  - This should include whether pain increases with palpation or breathing
- Any treatment prior to your arrival
- Treatment given and response to treatment
- Medications that the patient is taking that are pertinent to current complaint/condition
- Any deformities
- Any medical history related to this episode
- Anything unusual related to the run
- Pertinent physical exam findings

ABDOMINAL PAIN

The narrative should include:

- What the patient was doing at the time the symptoms started
- If anything makes the pain worse or better (movement, palpation, vomiting)
- A description of the pain (sharp, dull, cramping, intermittent, etc.)
- Any radiation of the pain and where it radiates
- Severity of pain on 1-10 scale before and after any and all treatment
- What time the pain started
- Any associated signs and symptoms
  (nausea, # of times vomited & color, # of time diarrhea & color, color & amount of bleeding, etc.)
- Any pertinent negatives
- Menstrual history (if applicable)
- Any pertinent medical history and treatment prior to arrival
- Any abnormal findings
- Response to each treatment

BURNS

The narrative should include:

- Location and severity of burned areas
- Total body surface area involved
- Mechanism of injury
- Any respiratory system involvement
- Pertinent negatives
- What time the pt. was burned
- The source of the burn (fire, chemical, etc.)
- Pertinent patient medical history and medications
- Rating of pain on scale of 1-10 before and after treatment
- Treatment given and response to treatment
- Any changes in patient condition
- Anything unusual
- Any treatment prior to arrival

MVC/MVA

The narrative should include:

- Description of the accident
  - Location of patient in vehicle and restraints used
  - Whether the air bag deployed

  - Damage to vehicle, if head-on, etc.
  - Approximate speed
  - Treatment prior to arrival
- Pt. complaint
  - Location and description of pain/deformities
  - Severity rating on scale of 1-10 for each injury
- Location of bleeding and whether bleeding was controlled
- Any and all treatment and response to treatment
- Distal motor, sensory and circulatory status of injured areas before and after treatment
- Whether the patient lost consciousness and a neuro-check
- Any pertinent history and medication
- Pertinent negatives
- Where you found patient upon your arrival

CARDIAC ARREST

The narrative should include:

- Location and position of patient on arrival
- Events leading to arrest
- Approximate down-time and whether CPR was initiated prior to your arrival and when
- Anything unusual on scene
- Treatment given that is not included elsewhere on the run report
- Blood Glucose Level
- Confirmation of ET tube placement
  (c-collar and CID should be applied to help keep the ET tube in place)
- # of attempts for ET and IV
- # of cm at lips for ET tube
- Response to each treatment
- Pertinent negatives
- Pertinent medical history and medications
- Any deformities
- Changes in skin condition with treatments
- Confirmation of ET tube placement on arrival to the emergency room
- Any complications during treatment

CVA/STROKE

The narrative should include:

- Time of last seen normal
- Exact time of onset of symptoms
- What the patient was doing at onset of symptoms
- Location and onset of pain, any radiation of pain
- Rating of pain on scale of 1-10 before and after treatment
- Signs and symptoms pt. complaining of
- Neuro-check
- Blood Glucose Level
- Pertinent negatives
- Any treatment prior to arrival
- Any pertinent medical history and medications

- Any treatment given and response to treatment
- Any changes in patient condition
- Anything unusual
- If patient has previous history of CVA, list known deficits from that CVA

ALTERED LOC

The narrative should include:

- Patient complaint, description of altered LOC
- What the patient was doing at onset of symptoms
- Anything that makes symptoms worse or better
- Exact time of onset of symptoms
- Anything unusual
- Any possible contributing factors (drugs, alcohol, poisoning, etc.)
- Neuro-check
- Blood Glucose Level
- Any treatment prior to arrival
- Any deformities
- Any pertinent medical history and medications
- Any unusual odors, etc.
- Treatment given and response to each treatment

SEIZURES

The narrative should include the following:

- Length, duration and body areas involved
- Any injuries sustained
- Events leading up to seizure
- Level of consciousness upon your arrival, any postictal state
- Any changes in LOC
- Any medical history and medications
- Compliance with medications
- Neuro check
- Blood Glucose Level
- Any treatment given and response to each treatment
- Anything unusual
- Rating of pain if present
- Any contributing factors

RESPIRATORY COMPLAINTS

The narrative should include the following:

- What patient was doing at onset of complaint
- Anything that makes complaint worse or better
- Description of pain if present, any radiation of pain
- Severity on scale of 1-10 for DIB and for pain (if present)
- Time complaint started
- Any associated symptoms (chest pain, fever, cough, etc.)
- Any treatment prior to your arrival
- Any treatment given and response to each treatment

- Any pertinent medical history and medications
- Any pertinent negatives
- If patient has been intubated in the past for this condition
- Location where you initiate treatment

FALLS

In addition to the normal information documented, the narrative should include:

- Mechanism of injury:
  - How fall occurred, what the pt. was doing before the fall
  - How far patient fell
  - If patient hit anything on the way down
  - What type of surface the pt. fell onto
- Patient positioning upon your arrival
- Any loss of consciousness and the duration of unconsciousness
- Patient complaint and any deformities
- Nature of any bleeding and if bleeding was controlled
- Location and description of each deformity
- Distal motor, sensory and circulatory status of each injured area before and after treatment
- Severity rating on scale of 1-10 for each injured area before and after treatment
- Any and all treatment given and response to each treatment
- Neuro check
- Blood Glucose Level
- Any pertinent history and medications
- Pertinent negatives
- Anything unusual on scene
- Any treatment prior to your arrival
- Any changes in patient condition

POISONING/OVERDOSE

In addition to the normal information documented, the narrative should include:

- Events
  - Name of poison/drug
  - Amount exposed to or taken
  - Time of exposure or ingestion
  - How exposed or reason for taking med
  - Route of exposure
  - Length of time of exposure or ingestion
  - Treatment before your arrival
- Airway and breathing status
- Signs and symptoms pt. exhibiting
- Pertinent negatives
- Neuro check
- Blood Glucose Level
- Pupil size and response
- Any abnormal findings
- Treatment given and response to each treatment
- Any changes in patient condition

- If patient vomiting, color, amount, evidence of pills/poison in vomit
- Patient's psychological state
  - Eye contact
  - Behavior (combative, agitated, cooperative, etc.)

PATIENT RESTRAINTS

Minimum Documentation Requirements:

- In what manner was the patient violent? Record patient's comments *verbatim.*
- Did you feel threatened? Why?
- Were you concerned about the patient's outcome without emergency medical interventions? Why?
- Could you treat your patient appropriately without the use of restraints?
- What Law Enforcement Officer was present?
- What physician provided the order? Who was on-line medical control?
- Document the frequency of respiratory and mental status change assessments. Proof of constant evaluation of the patients' airway status is extremely important
- What kind of restraints were used and location of where the restraints were placed?

Key Documentation and Performance Indicators

All EMS agencies within the TEMS region are to complete a **Prehospital Patient Care Report (PPCR)** on all patients transported within the following categories:

- Advanced Life Support Calls
- Inter Hospital Calls
- Any transport to a hospital

The appropriate copy of the PPCR is to be left at the receiving facility at the time of transport. In cases of call overload, the PPCR should be completed as soon as possible (within 12 hours) and returned to the receiving facility for inclusion in the patient's record.

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Key Documentation and Performance Indicators

Allergy/Anaphylaxis Patient

- Physician orders
- Medications and response
- Treatments and response
- Patient monitoring and vital signs
- Patient signs and symptoms
- Time of meds and treatments

Behavioral Emergency/Combative Patient

- Patient and provider safety
- Patient mental capacity
- Transport or refusal decision making process
- Patient is transported/referred to appropriate place
- Alternative causes
- Physician orders
- Airway assessment
- De-escalation prior to physical restraint
- Use of chemical restraint
- Patient monitoring and vital signs
- Patient and crew arrive safely
- Description of patient actions
- Patient rechecks
- Etiology of behavior
- Medication and treatments administered

Bites and Stings

- Patient and provider safety
- Identification or photo of creature causing bite/sting
- Transport or refusal decision making process
- Appropriate packaging of amputated part(s)

Carbon Monoxide/Cyanide

- Patient and provider safety
- Transport or refusal decision making process
- Patient is transported/referred to appropriate place
- Patient monitoring and vital signs
- Patient and crew arrive safely
- Time exposed
- CO levels if available

CBRNE/Hazmat

- Patient and provider safety
- Identification of substance
- Appropriate decontamination
- Appropriate destination

Dialysis/Renal Failure

- Last dialysis treatment
- Signs and Symptoms
- 12 lead and EKG
- Medication and treatments administered

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Key Documentation and Performance Indicators

Drowning/Submersion	
• Patient and provider safety	• Treatments prior to arrival
• Length of submersion time	• Barotrauma history
• Is there trauma or suspicion of trauma?	• Depth of submersion
• Type of water	• Type of gas used if diving
• Water temperature	• Time of symptom onset
• Lung sounds	

Electrical/Lightning injury	
• Patient and provider safety	• Injury description
• Electrical current characteristics	• 12 lead and EKG

Extraordinary Measures	
• Patient and provider safety	• Detailed situational description
• Online Medical control orders by ED physician	• Medication and treatments administered

Electrical/Lightning injury	
• Patient and provider safety	• Injury description
• Electrical current characteristics	• 12 lead and EKG

Hyperglycemia/Hypoglycemia	
• Transport or refusal decision making process	• Last meal eaten
• Initial Blood glucose reading	• Patient recent activity level
• Post treatment blood glucose readings	• Patient medications and compliancy
• Symptom onset-gradual or rapid	

Hyperthermia/Hypothermia	
• Transport or refusal decision making process	• 12 lead EKG
• Patient monitoring and vital signs	• Total fluid volumes infused
• Cooling/warming methods used	• Air/water temperature

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Key Documentation and Performance Indicators

LVAD	
• Alarms	• Vitals signs obtained
• Consultation with SNGH	• IV fluids and/or medications

Nausea/Vomiting	
• Medications administered	• Cause/suspected cause
• Patient monitoring and vital signs	• Total fluid volumes infused

Overdose/Poisoning	
• Type of substance, if known/suspected	• Vital signs every 5 minutes
• Time of symptom onset	• Medication and treatments administered
• Total fluid volumes infused	• Time of ingestion
• Airway and mental status	• Amount/doses of ingestion

Pain	
• Pain scale before and after treatments	• Medication and treatments administered
• Patient monitoring and vital signs	• Total fluid volumes infused

Pregnancy/Delivery/Vaginal Bleeding/Newly Born	
• Pregnancy history	• Medication and treatments administered
• Patient monitoring and vital signs	• Total fluid volumes infused
• Fundal height	• Due date
• Complications of pregnancy	• Total blood loss
• Time of delivery	• Gender of baby
• APGAR at 1 min and 5 min	• Meconium
• Separate report for newborn	• Contraction timing and length
• Delivery complications	

Rehabilitation	
• Activity level	• Vitals signs obtained
• Ambient temperature	• IV fluids and/or fluid intake
• Cooling methods used	• Medication and treatments administered

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Key Documentation and Performance Indicators

RSI	
• Numeric End tidal CO2 readings	• Indications for RSI
• Pulse oximetry	• Medications used including post intubation sedation
• Oxygenation prior to RSI	• Patient packaging
• Airway status prior to RSI	• Physician Orders
• Patient monitoring and vital signs	• ETT confirmation and rechecks

Seizure	
• Length and frequency of seizure(s)	• Medication and treatments administered
• Description of seizure	

Sepsis	
• Source of infection, if known/suspected	• Numeric End tidal CO2 readings
• Time of symptom onset	• Temperature if available
• Total fluid volumes infused	• SIRS criteria
• Medication and treatments administered	

Shock	
• Time of symptom onset	• Breath sounds before every bolus
• Total fluid volumes infused	• Vital signs every 5 minutes
• Numeric End tidal CO2 readings	• Medication and treatments administered
• Type of shock suspected	• Suspected cause

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Key Documentation and Performance Indicators

Cardiac Arrest

- Time of arrest
- What patient was doing at onset
- Who initiated CPR? What time?
- Initial rhythm
- Number of defibrillations
- Time of defibrillations
- Physical exam and vital signs
- Treatments prior to arrival
- All Medications given
- Patient history
- Attach EKG's to patient report
- Any ROSC? Time of ROSC
    - 12 lead
- Was arrest witnessed? Heard? When?
- Presumed etiology
- All interventions performed
- Termination (ordered by and time)
- Reasons if CPR not initiated

Cardiac Arrhythmias

- Onset of symptoms
- Pacing/Cardioversion and times performed
- Physical exam and vital signs and LOC
- Treatments prior to arrival
- All Medications given
- Patient history
- Attach EKG's to patient report
- 12 lead
- All interventions performed and patient response

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Key Documentation and Performance Indicators

Chest Pain

- Time pain started
- What patient was doing at onset
- Does pain radiate? Where to?
- What makes pain worse? Better?
- Description of pain (sharp, dull, pressure)
- Location of pain
- History of same or similar pain?
- Physical exam and vital signs
- Time of 12 lead and other procedures
- Treatments prior to arrival
- Medications
- Patient history
- Attach EKG's to patient report
- Sexually enhancing drug use documented
- 12 lead within 10 min of patient contact
- Time of 12 lead transmission
- Aspirin administration
- Pain reduction
- Vital signs after each medication

STEMI-Time Sensitive Emergency

- STEMI scene time of 15 minutes or less
- Transmit STEMI 12 lead within 10 minutes
- STEMI's to STEMI receiving facility
- Notify hospital as early as possible

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Key Documentation and Performance Indicators

All Patient Reports should include the following information (at a minimum):

- Initial Impression
  - How and where patient is found
  - Chief complaint and status
- History
  - Mechanism of Injury/Nature of Illness
  - Actions and pertinent treatments prior to EMS arrival
  - Patient history including OPQRST and SAMPLE
- Assessment
  - Signs and Symptoms
  - Physical exam findings and pertinent negatives
  - At least 1-2 full sets of vital signs including pain scale if there is pain
- Treatments
  - All procedures performed, medications administered and treatments provided
  - Time, dose, route, location, by whom, response, size, etc. as appropriate
  - Responses and reassessments after treatments
- Other Items
  - Other items not included that are pertinent to your patient
  - Reasons if variations of protocols are used or not used
  - Orders given and received

Airway/Breathing Difficulty

- Time of symptom onset
- Initial and ongoing Pulse oximetry
- Initial and ongoing numeric end tidal CO2
- Vital Signs
- Patient History
- What makes symptoms better or worse?
- Oxygenation route, dose
- Patient status after treatments
- Treatments prior to arrival
- Physical exam including pertinent negatives
- Time of procedures
- Medications
- 12 lead EKG
- Initial and ongoing Breath sounds
- CPAP-oxygen and mmHg

Intubation

- Include all “Airway” items
- Time of intubation
- Airway status prior to intubation
- Rescue/Secondary airway used and reasons
- History of intubations?
- Oxygenation methods prior to intubation
- Total number of attempts
- Intubation confirmation
  - Initial and after movement
- Cervical collar placed
- Sedation post intubation
- Medication prior to intubation
- BLS methods used
- Patient packaging

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Key Documentation and Performance Indicators

Stroke

- Time of new symptom onset
- Stroke assessment (BEFAST and RACE)
- Time patient last seen without symptoms (LKW)
- What patient was doing at onset of symptoms?
- Blood glucose
- 12 lead EKG
- Is patient under the influence of medications/alcohol?
- Did patient lose consciousness?
- Physical exam including pertinent negatives
- Vital signs
- Time of procedures
- Was start of symptoms witnessed?
- Medications
- Patient history
- If previously had stroke, previous deficits.
- Vital signs after each medication
- Scene delays, if any
- Airway, breathing, circulation patency/issues

Stroke-Time Sensitive Emergency

- Scene time of 15 minutes or less
- Transport to Stroke center
- Vital signs every 5 minutes
- Do not delay transport for procedures unless issues with ABC's
- Notify hospital as early as possible

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Key Documentation and Performance Indicators

Trauma

- Time of injury
- What patient was doing at onset
- Is patient under the influence of medications/alcohol?
- Did patient lose consciousness?
- Mechanism of injury
  - Height or Speed (patient vehicle and object/other vehicle)
  - Safety devices used/not used
  - Patient location in and Impact on vehicle (location, intrusion)
  - Surface patient struck
- Physical exam including pertinent negatives
- Vital signs
- Time of procedures
- Sensory and motor exams
- Treatments prior to arrival
- Medications
- Patient history
- Pain reduction/management
- Vital signs after each medication
- Reasons for ruling in or out spinal motion restriction
- Total amount of fluids administered
- Scene delays, if any
- Bleeding control methods and effectiveness
- Amount of blood loss
- Reason for destination determination
- Airway, breathing, circulation patency/issues

Trauma Center Criteria-Time Sensitive Emergency

- Scene time of 10-15 minutes or less
- Transport to Trauma center
- Pediatric trauma to CHKD
- Vital signs every 5 minutes
- Do not delay transport for procedures unless issues with ABC's

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Patient Information & History

Name: _____

SS#_____-_____-_____

DOB:_____

Gender: ☐ Male ☐ Female

Address:_____ _____

_____

Incident Location: _____

Chief Complaint: _____

_____

PMH: _____

_____

Meds: _____

_____

Allergies: _____

_____

_____

Initial Vital Signs:

BP _____/_____HR _____

RR _____SaO2 _____

Initial GCS: _____

Blood Sugar: _____

Interventions (Circle all that apply)

Airway: Patent OPA NPA ETT King LMA Other _____

Breathing: Adequate Inadequate

O2 via: NC NRB BVM CPAP other _____ at____ L/min

Needle decompression site: N/A R chest L chest

Circulation: CPR performed: Yes No

IV site #1: _____ Gauge _____ NS/LR at _____ml/Hr

IV site #2: _____ Gauge _____ NS/LR at _____ml/Hr

IV site #3: _____ Gauge _____ NS/LR at _____ml/Hr

Fluid bolus: _____ml Total volume administered: _____

Additional Vital Signs

Time	BP	HR	RR	SaO2

Medications:

Time	Medication	Dosage	Route

Additional Treatment:

_____

_____

_____

_____

_____

Glasgow Coma Score		Time	
Eye Opening			
Spontaneous	4		
To speech	3		
To Pain	2		
No Response	1		
Verbal response			
Oriented (Coos, babbles)	5		
Confused (consolable cry)	4		
Inappropriate Words (persistent cries, screams)	3		
Incomprehensible Sounds (Grunts, Restless)	2		
No Response	1		
Motor Response			
Obeys (spontaneous)	6		
Localizes Pain	5		
Withdraws pain	4		
Flexes to pain	3		
Extends to pain	2		
No Response	1		
Total (E+V+M)			

Report Giving to: _____

Turned over to bed #: _____

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Radio Reports Guidelines

Each local EMS agency and hospital should establish its own routine policy on whether EMS should call (notify) the receiving hospital on BLS cases.

1. All ALS cases should be called in to the receiving hospital using the following format:
    - Identification of caller
    - Unit's identification and level of service (ALS or BLS)
    - Age and sex of patient
    - Statement of primary problem, medical history, and results of physical examination
    - Patient's mental status and distress level (none, moderate or severe)
    - Treatment already rendered
    - Request for further treatment
    - Acknowledgment of additional orders received
    - Estimated time of arrival
    - A summary and update on the patient should be communicated directly to personnel at the receiving medical facility

2. The following practices should be avoided:
    - Stating patient's name
    - Use of personal identification numbers
    - Stating patient's race or ethnic origin (unless pertinent)

3. When transporting BLS patients the proper format for calling in the radio report will be as follows:
    - Agency/Unit identification
    - Chief Complaint
    - ETA (estimated time of arrival)

Technicians need not report any other information unless specifically requested by the receiving facility.

Professionalism is paramount. Mentally compose your report before transmitting. If you are asking your medical control base for orders, you are more likely to obtain those orders if your request sounds informed and reasoned.

Hospitals radio reports should be about 30-60 seconds in length and give enough patient information for the hospital to determine the appropriate room, equipment and staffing needs.

Tidewater EMS Council, Inc.

Tidewater EMS Emergency Department/Hospital Radio Network

Tidewater EMS Emergency Department/Hospital Radio Network HEAR (Hospital Emergency Administrative Radio) VHF and COR (Coronary Observation Radio) UHF

HOSPITAL	HEAR CTCSS (Hz)	HEAR DIAL & DTMF	CALL SIGN	TELEPHONE	FAX	COR (MED) CHANNELS
Bon Secours Harbour View	114.8	172-4322		(757) 673-6065	(757) 638-1020	1
Bon Secours Maryview Medical Center	173.8	172-4822	KVC500	(757) 398-2427	(757) 398-2162	7
Chesapeake Regional Medical Center	85.4	172-4622	KXV695	(757) 312-6128	(757) 312-6181	2
Children's Hospital of the King's Daughters	79.7	172-4222	WPKC842	(757) 668-8000	(757) 668-7753	N/A
Portsmouth Naval Medical Center	136.5	170-9822		(757) 953-1365	(757) 953-5527	8
Riverside - Shore Memorial Hospital	123.0	182-4822	KNDG602	(757) 302-2302	(757) 789-0615	5
Riverside - Smithfield Hospital	123.0		WQGV802			5
Sentara Belle Harbour Hospital	127.3	N/A		(757) 983-0075	(757) 983-0024	4
Sentara Independence	74.4	172-5622	WPGZ470	(757) 983-1055	(757) 363-6175	7
Sentara Leigh Memorial Hospital	131.8	172-5022	KJR400	(757) 261-1377	(757) 233-1006	6
Sentara Norfolk General Hospital	100	172-4022	KNGA812	(757) 730-5050	(757) 388-3239	5
Sentara Obici Hospital	110.8	172-4722	KYO241	(757) 934-4815	(757) 934-4265	6
Sentara Princess Anne Hospital	82.5	N/A		(757) 507-9518	(757) 507-0026	4
Sentara Virginia Beach General Hospital	141.3	172-4522	WNCF438	(757) 395-3023	(757) 395-6382	1
Southampton Memorial Hospital	192.8	172-5922	KXX440	(757) 569-6150	(757) 516-1058	N/A

HEAR System	
Ambulance to Hospital Frequency:	155.400 MHz
Hospital to Hospital Frequency:	155.280 MHz

HEAR All Call Tidewater Region: 1-3336
HEAR All Call TEMS & PEMS Regions: 1-3333

COR System	Base (MHz)	Mobile (MHz)
Med 1	463.000	468.000
Med 2	463.025	468.025
Med 3	463.050	468.050
Med 4	463.075	468.075
Med 5	463.100	468.100
Med 6	463.125	468.125
Med 7	463.150	468.150
Med 8	463.175	468.175
Med 9 (Call 1)	462.950	467.950
Med 10 (Call 2)	462.975	467.975

Reviewed 6/16/2021

Revised June 2025

Appendices

TIDEWATER EMERGENCY MEDICAL SERVICES COUNCIL, INC.
REGIONAL MEDICAL PROTOCOLS, Version: July 1, 2025

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Appendix A: Other Policies and Procedures

The following are policies, procedures and directives relating to patient care approved by the Operational Medical Directors Committee:

1. It is the responsibility of EMS personnel to ensure that **any contaminated materials and used supplies, particularly needles, have been removed from IV and drug containers**. It is to be understood that the provider is responsible for their cleanliness.

   Approved: August, 1991 Revised: September, 2023 Revised February 2025

2. **Disposal of Unused Controlled Medications** - Partial doses of controlled medications (i.e. morphine and Valium) that are not administered to the patient will be discarded (wasted) by disposal into an appropriate medication disposal device/system (e.g. RXDestroyer). *An Advanced, EMT-I, Paramedic, licensed registered nurse, or pharmacist must witness that action*. The individual witnessing the disposal must sign the PPCR on a line where the AIC has clearly indicated the medication and dose that was wasted. The AIC may use the narrative section or the "...agency's use" section to document wastage of controlled medications.

   Approved: December 10, 1996
   Revised: March 20, 2003 Revised: September 2022 Revised: February 2025

3. All EMS agencies within the TEMS region are to complete a **Prehospital Patient Care Report (PPCR)** on all patients transported within the following categories:
   - Advanced Life Support Calls
   - Inter Hospital Calls
   - Any transport to a hospital

   The appropriate copy of the PPCR is to be left at the receiving facility at the time of transport. In cases of call overload, the PPCR should be completed as soon as possible (within 12 hours) and sent to the receiving facility for inclusion in the patient's record.

   Approved: February, 1991; Revised: February 2013 Revised: February 2025

4. Notification of transport to receiving hospitals:
   - Each local EMS agency and hospital should establish its own routine policy on whether EMS should call (notify) the receiving hospital on BLS cases.
   - All ALS cases should be called in to the receiving hospital using the following format:
     - Identification of caller, EMS Agency, and ambulance number
     - Age and sex of patient
     - Statement of primary problem, medical history, and results of physical examination
     - Level of distress of patient (e.g., none, moderate, or severe)
     - Treatment already rendered
     - Request for further treatment
     - Acknowledgment of additional orders received
     - Statement of destination and estimated time of arrival
     - A summary and update on the patient should be communicated directly to personnel at the receiving medical facility

- The following practices should be avoided:
  - Stating patient's name
  - Use of personal identification numbers
  - Stating patient's race or ethnic origin (unless pertinent)
- When transporting BLS patients the proper format for calling in the radio report will be as follows:
  - Agency/Unit identification
  - Chief Complaint
  - ETA (estimated time of arrival)

Technicians need not report any other information unless specifically requested by the receiving facility.
Approved: December 1, 1998 Revised: March 20, 2003 Revised: September 2, 2009
Revised September 2023 Revised: February 2025

Appendix B: DuoDote Antidote Kit Policy

MMRS DUODOTE ANTIDOTE KIT INVENTORY & STORAGE

Inventory

To ensure accountability for the DuoDote Antidote Kit inventory system, the following policy is adopted:

1. All licensed ALS agencies will perform an inventory of all DuoDote Antidote Kits located within their systems on a quarterly basis. This inventory will be done on the **third Wednesday** of each March, June, September, and December, and will be completed by **4:30 p.m.** Once completed, a copy of the inventory, including the box number(s) will be forwarded to the TEMS office ASAP.
2. The TEMS staff, on a quarterly basis will review the antidote kit inventory and accountability system to ensure compliance by all agencies. Any agency not in compliance will be reported immediately to their operational medical director and the MMRS program manager. Inventory and storage conditions will be compiled on a quarterly basis and reviewed by the TEMS Staff.
3. The TEMS staff or its appointee will perform a visual audit of all DuoDote Antidote Kits no less than annually.

Storage

1. Must be stored in a locked cabinet or room. Kits will have a tamper evident, breakable, numbered security lock.
2. Must be stored at controlled room temperature, defined as 68-77 °F with excursions between 59-86 °F.
3. Must be readily accessible 24 hr/day, 7 days/week. Must be able to transport immediately to an incident.

Appendix C: Special Resources

Adult Protective Services

To report suspected adult abuse, neglect, or exploitation, call Virginia Adult Protective Services 24/7 at **(888) 832-3858**

Or contact your local department:

Accomack Department of Social Services	(757) 787-1530
Brunswick County Department of Social Services	(434) 848-2142
Chesapeake Department of Social Services	(757) 382-2000
Dinwiddie Department of Social Services	(804) 469-4524
Franklin City Department of Social Services	(757) 562-8520
Greensville/Emporia Department of Social Services	(434) 634-7400
Isle of Wight Department of Social Services	(757) 365-0880
Norfolk Department of Human Services	(757) 664-6000
Northampton County Department of Social Services	(757) 678-5153
Portsmouth Department of Social Services	(757) 405-1800
Southampton County Department of Social Services	(757) 653-3080
Suffolk Department of Social Services	(757) 514-7450
Surry Department of Social Services	(757) 294-5240
Virginia Beach Department of Human Services	(757) 385-3200

Barotrauma/Diving Accidents

Medical control will designate transport destination

Hyperbaric chambers:

- Sentara Leigh Hospital ED (757) 261-6804 Hyperbaric (757) 261- 4325
  Is the only 24-hour facility
- Chesapeake Regional Medical Center (757) 312-6149 Hyperbaric (757) 312-6510
- Sentara Obici ED (757) 983-4815 Hyperbaric (757) 934-4953

Child Protective Services

- https://vacps.dss.virginia.gov

Appendix C: Special Resources

Diver Alert Network

- (919) 684-9111

Trench Collapse, Confined Space Rescue, High Angle Rope Rescue, Technical Helicopter Operations, Specialty Physician and other Specialized Rescue

- Tidewater Regional Technical Rescue Team
- Contact Virginia Beach Dispatcher: (757) 385-0020

Critical Incident Stress Management

- Tidewater CISM Team:
- Weekdays (757) 963-0632
- Nights, Weekends and Holidays (757) 622-1309

Air Ambulances

- Nightingale Air Ambulance (Norfolk):
  (800) 572-4354
- LifeEvac III (Mattaponi, Middle Peninsula)
  (877) 902-7779
- LifeEvac I (Richmond area)
  (877) 902-7779
- MedFlight I (Richmond area)
  (800) 468-8892 (Virginia EOC)
- PHI Air Medical (Richmond area)
  (800) 321-9522
- HCA Air Care Eagle (ACE) (Chippenham Hospital)
  (855) 823-2453

Specialized Vehicles

- Children's Hospital of The King's Daughters Transport Team:
  (757) 668-7777 or (757) 473-1823
- Mass Casualty – Virginia Beach EMS
  (757) 385-5000
- Mass Casualty and Rehabilitation Unit - Chesapeake Fire Department:
  (757) 382-6211 or (757) 382-6161
  Non-emergency (757) 382-2489
- Mass Casualty and Rehabilitation Unit – Nansemond-Suffolk Vol. Rescue Squad:
  (757) 539-6870 or (757) 923-2350
- Highly Infectious Disease Specialized Transport - Midwest Medical Transport:
  (757) 671-8911

Poison Control

- Virginia Poison Control Center (MCV Hospital in Richmond):
  (800) 552-6337 (This number is provided for informational purposes only.)
- Children's Hospital of The King's Daughters Physician Resource Center:

  (757) 668-7180

Appendix C: Special Resources

U. S. Coast Guard

- Group Hampton Roads Command Center:
  (757) 483-8567 *(For Small Boat Requests)*
- Fifth District & the Atlantic Area Command Center:
  (757) 398-6231 *(For Helicopter Requests)*

Hazardous Materials Response

- Southside Regional Hazardous Materials Team–Contact Portsmouth Fire Dispatcher:
  (757) 393-5300

Appendix E: DDNR

Information provided by the Virginia Office of EMS

A Durable Do Not Resuscitate Order or "Durable DNR Order is a written physician's order issued in a form authorized by the Virginia State Board of Health to withhold cardiopulmonary resuscitation from an individual in the event of cardiac or respiratory arrest. Acceptable Other Durable DNR Orders shall also include:

- Alternate Durable DNR jewelry *as approved by the Virginia Office of EMS
- Physician Order for Scope of Treatment (POST)
- Medical Order for Scope of Treatment (MOST)
- Physician Order for Life Sustaining Treatment (POLST)
- Medical Order for Life Sustaining Treatment (MOLST)
- Out of State DNR Orders
- EMS Transfer Orders by sending Physician can include a written DNR order and does not require the patient, or a person authorized to consent for the patient, signature on the order itself.
- Verbal Order from a physician who is physically present and willing to assume responsibility or from on-line medical control.

Durable or Other DNR Order must be in ENGLISH. They do not expire and remain in effect until the patient or someone designated to act on the patient's behalf revokes the order. Durable DNR Orders are now downloadable and can be printed on any color paper.

EMS providers shall comply with the following general procedures when caring for a patient who is in cardiac or respiratory arrest and who is known or suspected to have a Durable DNR Order in effect.

1. Determine the presence of an approved Durable DNR Order of any type or Other DNR Order. Legible copies may be accepted.
2. If the patient is within a qualified health care facility or in transit between qualified health care facilities, any qualified health care personnel may honor a written physician statement.
3. Determine that the Durable DNR form or Alternate DNR jewelry is not altered.
4. Verify, through driver's license or other identification with photograph and signature OR by positive identification by a family member or other person who knows the patient, that the patient in question is the one for whom the Durable or Other DNR Order was issued.
5. If the Durable or Other DNR Order is intact, unaltered, and verified as issued for the patient, qualified health care personnel may consider it valid.

    - Resuscitative measures to be withheld or withdrawn in the event of cardiac or respiratory arrest of a patient with a valid Durable or Other DNR Order are cardiopulmonary resuscitation (CPR) unless otherwise directed by a physician physically present at the patient location. CPR shall include:
        - Cardiac compressions
        - Artificial ventilations
        - Defibrillation
        - Endotracheal Intubation or other advanced airway management device including extra-glottic devices, or other devices that pass beyond the oral pharynx.
        - Administration of related procedures or cardiac resuscitation medications as set by protocols.

- In order to provide comfort care or to alleviate pain for a patient with a valid Durable or Other DNR Order the following interventions may be provided, depending on the needs of the particular patient:
    - Airway management, including positioning, nasal or pharyngeal airway placement,
    - Suctioning,
    - Supplemental oxygen delivery devices,
    - Pain medications or intravenous fluids,
    - Bleeding control,
    - Patient positioning, or
    - Other therapies deemed necessary to provide comfort care or to alleviate pain.

6. If the patient is being transported, keep the Durable or Other DNR Order with the patient.

Revocation

1. If a patient is able to, and does, express to an EMS provider the desire to be resuscitated in the event of cardiac or respiratory arrest, such expression shall revoke the provider's or authority to follow a Durable or Other DNR Order**. In no case shall any person other than the patient have authority to revoke a Durable or Other DNR Order executed upon the request of and with the consent of the patient himself.**
2. If the patient is a minor or is otherwise incapable of making an informed decision and the Durable or Other DNR Order was issued with the consent of the person authorized to consent on the patient's behalf, then the expression by said person to an EMS provider of the desire that the patient be resuscitated shall so revoke the provider's authority to follow a Durable DNR Order or Other DNR Order.

General considerations.

1. If there is misunderstanding with family members or others present at the patient's location or if there are other concerns about following the Durable or Other DNR Order, contact the patient's physician or EMS medical control for guidance.
2. If there is any question about the validity of a Durable or Other DNR Order, resuscitative measures should be administered until the validity of the Durable or Other DNR Order is established.

For more information on the Virginia Durable DNR Order program, visit the Office of EMS Web site: https://www.vdh.virginia.gov/emergency-medical-services/other-ems-programs-and-links/durable-do-not-resuscitate-program/

This Web site includes:

- Authorized Durable DNR Form and Instructions
- How to Purchase DDNR Bracelets and Necklaces
- DDNR Fact Sheet (Revised 12 – 2017)
- The Code of Virginia and Durable DNRNational POLST Paradigm
- Virginia POST
- CentreLearn E-0216 – DNR-POST Palliative Care EMSAT
- Authority of Licensed Nurse Practitioners to write Do Not Resuscitate Orders
- Authority of Physician Assistants to write Do Not Resuscitate Orders (DNR Orders)
- Other Do Not Resuscitate Order (March 18, 2022)

Appendix E: DDNR

Applicable Virginia State Statutes:

Virginia Administrative Code Title 12 – Agency 5 - Department of Health; Chapter 66- Regulations Governing Durable Do Not Resuscitate Orders

Definitions: 12VAC5-66-10
https://law.lis.virginia.gov/admincode/title12/agency5/chapter66/section10/

Authority for regulation: 12VAC5-66-20
https://law.lis.virginia.gov/admincode/title12/agency5/chapter66/section20/

Purpose for regulation: 12VAC5-66-30
https://law.lis.virginia.gov/admincode/title12/agency5/chapter66/section30/

The Durable Do Not Resuscitate Order Form: 12VAC5-66-40
https://law.lis.virginia.gov/admincode/title12/agency5/chapter66/section40

Authorized alternate Durable DNR jewelry: 12VAC5-66-50
https://law.lis.virginia.gov/admincode/title12/agency5/chapter66/section50/

Other DNR Order: 12VAC5-66-60
https://law.lis.virginia.gov/admincode/title12/agency5/chapter66/section60/

Issuance of a Durable DNR Order Form or Other DNR Order: 12VAC5-66-70
https://law.lis.virginia.gov/admincode/title12/agency5/chapter66/section70/

Durable DNR Order Form Implementation procedures: 12VAC5-66-80
https://law.lis.virginia.gov/admincode/title12/agency5/chapter66/section80/

Forms: 12VAC5-66
https://law.lis.virginia.gov/admincode/title12/agency5/chapter66/section9998/

Virginia's do not resuscitate order, passed by the Virginia General Assembly, allows emergency medical services providers to honor a patient's request for humane comfort measures, while avoiding resuscitation in the event of cardiac or respiratory arrest. Emergency Durable DNR Regulations, passed in 1999, became final on March 27, 2002. Anyone, including minors, is eligible for a Virginia Durable DNR Order.

**All websites updated 10/19/2022 from the site developed by the Division of Legislative Automated Systems (DLAS)

Tidewater EMS Council, Inc.

Appendix F: Policy for Ambulance Restocking by Hospitals

Regional Emergency Department Supply Replacement Form

❒ Patient Not Transported ❒ Not Able to Get Supplies

EMS Agency:_____Unit #:_____PPCR #: _____

Patient Name:_____Bed #:_____Date: _____

Please fill in information requested below and return to hospital personnel. Place a ☑ in the box next to the item you take. If you take more than one, please insert the number Failure to properly use this form may result in your not being able to re-stock supplies. Hospital staff may cross reference your patient care report if they have a question about supplies. Not all items listed on this form will be available at all facilities.

Airway: #

- ❒ Nasal Cannula: Adult / Ped
- ❒ Non-Rebreather: Adult / Ped
- ❒ Hand-Held Nebulizer
- ❒ ET Tube: Size_____ET Holder_____
- ❒ ET Stylette: Adult / Ped
- ❒ Bag Valve Mask: Adult / Ped / Infant
- ❒ Suction Catheter: 14Fr / 8Fr / Rigid
- ❒ Suction Tubing
- ❒ i-Gel: Size ____
- ❒ EtCO2 Senor:
  - Inline ET Tube / Cannula (Adult / Ped)
- ❒ MAD 300 Device

First Aid Supplies:

- ❒ Non-Sterile 4x4's
- ❒ Roller Bandages (Kling): 4" 6"
- ❒ Cervical Collar: PED / ADULT
- ❒ Disposable Emesis Bag

Linens:

- ❒ Sheets ❒ Pillowcases
- ❒ Blankets ❒ Towels

IV Supplies: #

- ❒ 0.9% NS Solution:
  - 1000mL
  - 250mL
  - 100mL
- ❒ Dextrose 10% 250mL
- ❒ IV Admin Set: 60 gtts / 10 gtts
- ❒ IV Extension Set w/3 or 4 way Stopcock
- ❒ IV Cath (16g – 24g Safety Needles)
  - 16g Angiocath, 1-1/4" or shorter
  - 18g Angiocath, 1-1/4" or shorter
  - 20g Angiocath, 1-1/4" or shorter
  - 22g Angiocath, 1-1/4" or shorter
  - 24g Angiocath, 1-1/4" or shorter
  - 10g Angiocath, 3" or longer (Non-safety)
- ❒ Needles: 22g / 25g Safety
- ❒ Blunt Needle 18g
- ❒ EZ-IO Needle:
  - 45mm Yellow / 25mm Blue / 15mm Pink
- ❒ NS Injectable 10mL Syringe (NS Prefilled)
- ❒ IV Start Kit
- ❒ "J" Loop w/ext (Saline Locks)
- ❒ Syringe: 1mL / 5mL / 10mL / 50mL
- ❒ Medication Labels

Cardiac Monitoring:

- ❒ EKG Electrodes: Adult Ped
- ❒ Defib/Pacer Pads

EMS Provider Name: _____

EMS Provider Signature: _____

Hospital Staff: _____

Report restocking incidents to TEMS at tidewater@vaems.org or (757) 963-0632

Reviewed 11.20.24 Revised Nov 24

Tidewater EMS Council, Inc.

Appendix F: Policy for Ambulance Restocking by Hospitals

SCOPE: This policy pertains to all participating, licensed EMS agencies and all licensed BLS and ALS vehicles operated by those agencies, and all participating hospitals within the Tidewater EMS Region. This policy is referenced by the *Ambulance Restocking Agreement - Hospital* and the *Ambulance Restocking Agreement - EMS Agency*.

PURPOSE: To provide a means of maintaining essential emergency medical supplies on regional EMS ambulances through a one-for-one exchange system with area hospital emergency departments.

POLICY ELEMENTS:

1. Hospitals will exchange, on a one-for-one basis, certain supplies used by participating EMS agencies on patients transported to the hospital.
   a. Supplies are designated on the *Regional Emergency Department Supply Replacement Form*. Hospitals will exchange designated supplies with all licensed EMS agency ambulances on a one-for-one (one item used, one replacement item provided) basis.
   b. Additionally, it is specifically noted that this one-for-one exchange policy also applies where an EMS agency might expend exchangeable supplies on emergency calls not resulting in patient delivery to the exchanging hospital under the following circumstances:
      i. The patient directs the EMS agency to transport him or her to a specific exchanging hospital, but the patient is not delivered to any hospital or other receiving facility;
      ii. The EMS agency intends to transport a patient to a specific exchanging hospital, but the patient is not delivered to any hospital or receiving facility;
      iii. The patient is transported to a hospital or other receiving facility, but that receiving facility does not have the supplies to be exchanged due to a shortage, and that the receiving facility has provided an attestation to that effect to the agency.
      iv. The patient is transported by means other than the original EMS agency that has expended supplies (e.g., helicopter transport after initial treatment by ground EMS agency crew); or
      v. The patient is not transported after the EMS agency has expended supplies (e.g., termination of resuscitation or patient refusal for transport).

2. Ambulance personnel will utilize the *Regional Emergency Department Supply Replacement Form,* or a substitute form provided by a hospital or agency to document and facilitate the exchange of supplies. Ambulance personnel will utilize the *Prehospital Patient Care Report* (PPCR, or its equivalent) to document the exchange of IV supplies. Other locally required inventory control forms are also permitted. As required by the Centers for Medicare and Medicaid Services and Virginia EMS Regulations all records related to the exchange and restocking will be maintained for five (5) years.

3. Problem solving and evaluation of the exchange system by hospital E.D. managers, local agency EMS managers and Tidewater EMS Council staff will be conducted periodically. Non-compliance reports will be reviewed by EMS Council staff and reported, as appropriate, to the Virginia Office of EMS.

4. Program revisions and updates by E.D. managers, agency EMS managers, Operational Medical Directors and the Tidewater EMS Council committee structure will be implemented as indicated and as approved by participants. The Council will provide written notice of any such changes to all participating EMS agencies and participating hospitals

Tidewater EMS Council, Inc.

Appendix G: Tidewater Regional Hospital Closure Policy

Hospital Closure Policy – Summary and Criteria

At times this policy may be needed in the event of any one of the following:

- Utility Failure (power, water, sewer, etc.)
- Hospital Evacuation
- Life Threat (Fire, Bomb Threat, Active Shooter)
- Structural Damage to Facility

Hospital Closure Policy - Procedure

The following are steps the ED must follow to move into a closed status:

1. Follow formal internal hospital disaster plan and declare a "DISASTER"
2. Contact Midwest Medical Transport Dispatch Center at (757) 962-6814 or 1-800-322-3451 and provide the information requested. Midwest Medical Transport Dispatch will then notify all agencies to include prehospital and hospital.
3. Hospitals in closure status ***may*** still receive critical patients as defined in the appendix of this policy (see Critical Patient definition below).
4. After a hospital closure is initiated, that hospital status will remain "CLOSED" till updated "OPEN".
5. When a closure is called, designated trauma centers ***may*** continue to receive trauma patients that meet Regional Trauma Triage Criteria (refer to the current *Tidewater Regional Trauma Triage Plan*).
6. When a closure is called, designated stroke centers ***may*** continue to receive stroke patients that meet Regional Stroke Triage Criteria (refer to the current *Tidewater Regional Stroke Triage Plan*).
7. When a closure is called, designated STEMI centers ***may*** continue to receive STEMI patients that meet Regional STEMI Triage Criteria (refer to the current *Tidewater Regional STEMI Triage Plan*).
8. In all cases, EMS supervisors should take an active role to balance the distribution of ambulance patients.
9. Update the VHAAS reporting system. The emergency department closing will update the VHHA website (www.vhha-mci.org) to show their status as "CLOSED." When closure is over the emergency department will update status to "OPEN" and Notify Medical Transport of the status change.

EMS Agency Notification – Procedure

Midwest Medical Transport, LLC will receive all requests for hospital closures in the Tidewater EMS (TEMS) region. After collecting the required information will notify all EMS agencies' supervisors by means of an email ListServ, which is supported by the TEMS Council. All EMS/Hospital agencies shall provide to the TEMS Council the email(s) that they wish to receive the notification of hospital closures. EMS agencies must ensure that their units in the field are informed of the closure of hospitals for their service area so that patients can be routed to the most appropriate facility. It is up to each EMS agency to determine what they will do with closure requests, in consultation with their operational medical director and local emergency department(s), and further communicate their operational plans to their local emergency department(s). It is also the responsibility of each EMS agency to maintain up-to-date contact information with the TEMS Council to facilitate closure notification.

Quality Assurance - Procedure

After a closure request has been mitigated, that hospital shall submit a Performance Improvement Form (www.tidewaterems.org/pi). Please make note of all issues and problems associated with system processes and they will be referred to the EMS Performance Improvement Committee.

Definition of a "Critical Patient"

These are guidelines and are not meant to be comprehensive and apply to this Hospital Closure Policy:

A "critical patient" is any patient:

- Currently undergoing cardiopulmonary resuscitation (CPR) or has undergone successful CPR.
- Who required prehospital endotracheal intubation and continues to deteriorate.
- Who required prehospital ventricular pacing.
- Whose vital signs are acutely deteriorating.
- Who, despite prehospital treatment:
  - a) is in severe respiratory distress, resulting in severe hypoxemia as manifested by cyanosis or $SpO_2 < 88\%$
  - b) is severely hypotensive accompanied by or resulting in acutely altered level of consciousness
  - c) is in persistent malignant cardiac dysrhythmia, such as ventricular tachycardia or symptomatic bradycardia
- Who, in the judgment of prehospital personnel, in consultation with on-line medical control, is in such a condition that cardiopulmonary failure is impending or bypassing the nearest hospital jeopardizes their condition.

Tidewater EMS Council, Inc.

Appendix H: Ambulance Patient Destination Policy

SCOPE: This policy pertains to licensed EMS agencies providing Basic and Advanced Life Support and specialized ambulance transportation. The policy does not apply to inter-hospital transportation.

PURPOSE: To provide for a defined, consistent policy for the destination of ambulance patients consistent with quality patient care and regional medical protocol.

POLICY ELEMENTS:

1. All ambulance patients (resulting from 911-initiated or other emergency requests for assistance which result in transport) will normally be transported to the closest appropriate hospital emergency department unless redirected by the Medical Control Physician as described in the Tidewater Regional Hospital Closure Policy. The "closest appropriate hospital" is defined as the hospital closest to the location of the patient that can provide the level of care needed by the patient. The "Medical Control Physician" is defined as the attending emergency department physician at the hospital closest to the location of the patient. **911 initiated requests for assistance which result in patient transports** by emergency medical services (EMS) personnel are to be transported to hospital- based emergency departments only or freestanding 24-hour emergency departments that meet the requirements adopted by the Operational Medical Directors Committee defined by element 3.

2. Stable patients may be transported to the patient's hospital of choice if allowed by local EMS agency policies and available resources, or as directed by Medical Control Physician.

3. Patients may be transported to a free-standing ED, provided that the free-standing facility meets the following criteria:

   a. Provides 24-hour operations
   b. Staffed with ABEM / AOBEM Board Certified Emergency Medical Physicians
   c. On site pharmacy
   d. On site advanced imaging capabilities
   e. On site laboratory
   f. Ability to provide up to 23-hour observation of patients
   g. Identify what ambulance staffing and equipment requirements exist and may be required for interfacility transfer of critical care patients (specialty care transport) and that there should be written plans for patient transfer to another hospital.

4. Patients that meet certain criteria such as severe trauma patients, as defined in the Tidewater Regional Trauma Triage Plan, will normally be transported directly to a Level I or Level II Trauma Center unless redirected by the Medical Control Physician as defined in the trauma triage plan.

   Transporting Adult and Pediatric Trauma Patients: SNGH and CHKD Trauma Directors have agreed to the following protocol for situations which involve both adult and pediatric patients who are related, most likely a child/parent relationship.

   a. Both adult and child are determined to be trauma patients and traveling in separate ambulances
      - Transport of adult to SNGH Trauma Center
      - Transport of child to CHKD Trauma Center

b. Child is determined to be trauma patient, but adult/parent does not meet criteria as a trauma patient, but may have some injuries and requests to remain with their child;
   - Transport child to CHKD Trauma Center
   - Transport adult, with the child, to CHKD for assessment as any adult who may present to the ED.

c. Adult/parent is determined to be trauma patient, but child does not meet criteria as trauma patient;
   - Transport adult to SNGH Trauma Center
   - Transport child, with adult, to SNGH for assessment

2. All other critical patients will be transported to the closest appropriate hospital. Critical patients are defined in Appendix G Tidewater Regional Hospital Closure Policy.

3. Individual EMS agencies are responsible for determining operational policies related to the most effective ambulance deployment and utilization patterns. This may include policy allowing transport of stable patients to hospitals of the patient's choice.

4. In mass casualty incident (MCI) situations, the current Tidewater Management Plan for Mass Casualty Incidents will be employed regarding patient transports. During an MCI, routine ambulance- to-hospital communication procedures are suspended. The transportation unit leader or designee will communicate patient information to the designated RHCC. Patient distribution will be a decision of the Transportation Unit Leader in concert with available hospital and transportation resources.

5. Other policies and protocols related to patient transport and ambulance-to-hospital communications are defined in the Tidewater Regional Medical Protocols, current edition.

Approved by the Operational Medical Directors Committee, October 12, 1999, Revised January 11, 2006 Amended September 24, 2007, Revised April 21, 2021, Revised December 12, 2024

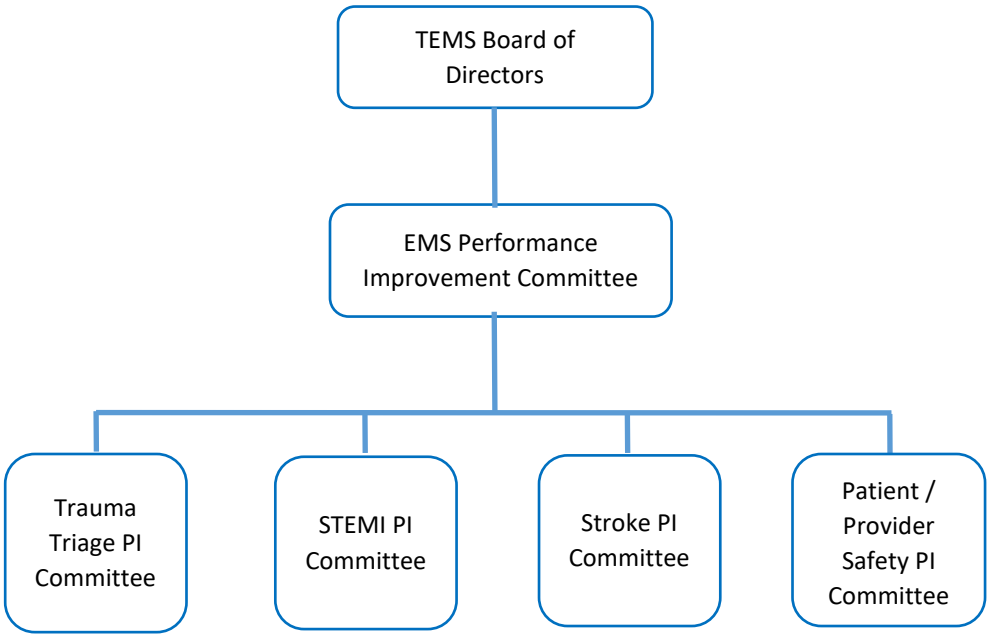
Approved by the Operational Medical Director's Committee, December 2024

Tidewater EMS (TEMS) Regional EMS Performance Improvement (PI) Plan

Vision

The EMS Performance Improvement (PI) Committee, under direction of the Board of Directors (BOD) Committee, is responsible for assuring and improving the quality of pre-hospital care within EMS systems that are served by the TEMS council. This Committee bridges communication between the PI Committees and the BOD.

Performance Improvement Organizational Chart



TEMS Information

The TEMS Region – Includes information regarding the layout, demographics and weather

TEMS Hospital Capabilities – Includes all hospitals TEMS agencies transport patients to for Stroke, STEMI, and Trauma care.

Objectives

Performance Improvement means measuring the output of a particular business process or procedure, then modifying the process or procedure to increase the output, increasing efficiency, or increasing the effectiveness of the process or procedure. Within compliance of the Code of Virginia and EMS Regulations, the objectives of this plan are to:

- Δ Share best practices, provide transparency and discuss issues identified within each PI Committee
- Δ Collect patient care statistics to evaluate system effectiveness and identify trends
- Δ Make evidence based practices recommendations to drive changes in the region
- Δ Promote the development of standardized data collection and analysis and provide data to stakeholders
- Δ Support, oversee and provide constructive feedback and direction to TEMS PI Committees
- Δ Monitor the use of Medical Incident Review (MIR) to continuously study and improve processes, systems, and organizations. Provide solutions to resolve identified patient care issues.
- Δ Broadly analyze the components of community health using data from hospitals and prehospital agencies, so comprehensive care at the right time and at the right place is ensured
- Δ Identify educational needs of EMS providers of the region through benchmarking/highlighting significant findings and through qualitative/quantitative measures
- Δ Performance Improvement request may be submitted by Operating Medical Director's *(OMD)*, Medical Operation Committee *(MOC)*, and Board of Director *(BOD),* or any committee

Performance Indicators

In 2007, performance indicators were added to enhance quality improvement initiatives and facilitate consistency in performance expectation. They are a means of following identified performance benchmarks through the performance improvement process. Obtaining final outcome data from local hospitals to include

diagnosis, significant findings, and discharge status dramatically increases and enhances the quality and performance improvement capabilities throughout the TEMS region. Performance indicators were developed to increase documentation reliability throughout the region and should be used as a template for patient care documentation related to specific protocols. Compliance enables the regional council and local EMS/Fire agencies to obtain a valid snapshot of how any given agency is performing with regards to specific protocols. Ultimately improving the consistency and quality of prehospital patient care.

Membership / Responsibilities

The EMS PI Committee shall be comprised of the Chair and Vice-Chair for each PI Committee (Patient and Provider Safety, STEMI, Stroke, and Trauma) and the Education and Training Committee and is served by TEMS.

1. Members of the EMS PI Committees are charged with the responsibility of assuring that reasonable standards of care and professionalism are met within our EMS system. Members are given the following responsibilities:
   - Maintain active membership, which is defined as 75% attendance by each committee member and/or their designee at all meetings
   - Act as liaison to all local EMS agencies, committees and hospitals
2. The chairperson of the EMS PI Committee shall be responsible for:
   - Final decisions and actions of the PI Committee
   - Be an active member of the STEMI, Stroke, Trauma, or Provider/Patient Safety PI Committee
   - Draft all letters of recommendations to local EMS agencies, hospitals, Operating Medical Director's *(OMD)*, Medical Operation Committee *(MOC)*, or Board of Director *(BOD)*
   - Provide an executive summary to the Operating Medical Director's *(OMD)*, Medical Operation Committee *(MOC)*, and Board of Director *(BOD)*
3. Maintain strict confidentiality of patient, provider, and personnel information. Communication with other entities of the system is essential; specifically, when a problem is identified within the system such as: skills, critical thinking, documentation, equipment, protocol deviation or other general issues. The committee informs the appropriate agency and elicit input for possible solutions while making all reasonable efforts sanitize records and maintain patient anonymity
4. Meetings are held on an 'as needed' basis beginning January 2021

Tidewater EMS (TEMS) Regional STEMI Performance Improvement Plan – 2021

Vision

To develop a STEMI Emergency Care System that decreases cardiac mortality and morbidity in the TEMS region.

TEMS Information

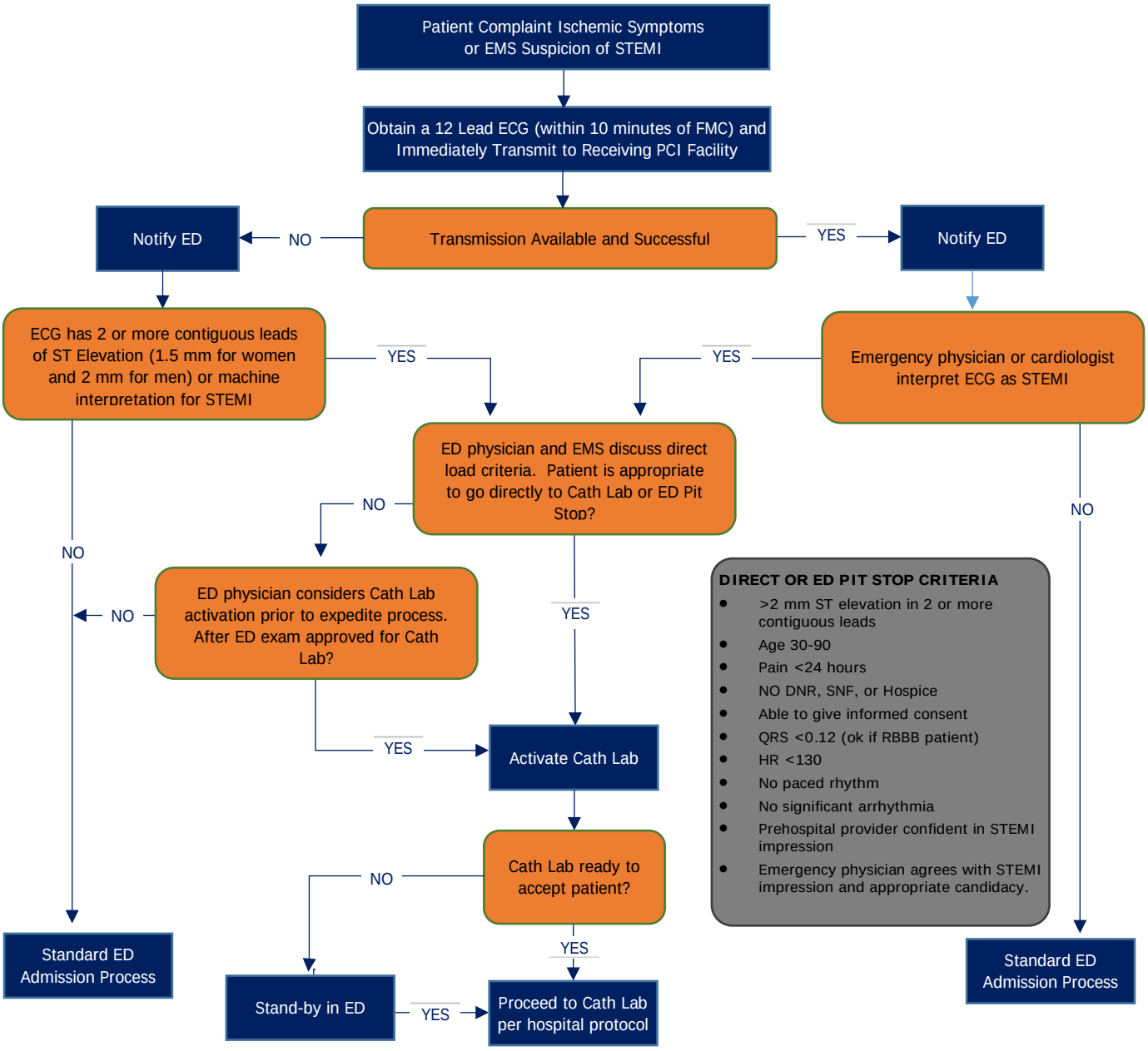
The TEMS Region – Includes information regarding the layout, demographics and weather
STEMI PI Committee Membership – Includes purpose, roles, responsibilities and membership
Hospital Capabilities by Region – Includes easily identified, STEMI receiving hospitals

Goals

This Regional plan is assigned to the STEMI PI Committee for development, updating, monitoring, and working within the STEMI Systems of Care located on www.heart.org. Data has shown both morbidity and mortality are optimized when rapid interventional reperfusion is done within ninety minutes of EMS first medical contact (FMC); therefore, ST-Elevation Myocardial Infarction (STEMI) patients should be recognized as quickly as possible. Within compliance with the Code of Virginia and EMS Regulations, this plan:

- Utilizes 12-lead ECG and pre-hospital notification to the receiving facility in tandem to reduce time to reperfusion
  - If ECG is unable to be transmitted, provider should deliver a hard copy to the ED with the patient
- Patients must receive care in a hospital that has a STEMI treatment program in place, which is capable of providing immediate and comprehensive assessment, resuscitation, intervention, and definitive care
- EMS personnel must be trained to accurately recognize, treat and transport STEMI patients rapidly
- The Tidewater EMS Council must have continuous and effective region-wide coordination of pre-hospital and hospital care resources to ensure an expeditious transport to the closest available interventional center or facility capable of performing percutaneous coronary intervention (PCI)
- Track and monitor the care capabilities by meeting at least quarterly with prehospital providers, emergency physicians, interventional cardiologists, nursing staff, receiving hospital representatives, and other appropriate individuals
- Provide quality EMS service and patient care to the EMS Systems' citizens.
- Review the quality of the process through continuous evaluation of the EMS System based on established STEMI EMS performance measures
- Although physicians in the emergency departments will confirm this diagnosis, pre-hospital care providers are competent to apply STEMI diagnostic criteria by using their 12-lead monitor defibrillators to recognize a STEMI
- ALS providers are proficient in pain management
- Follow the Chest Pain/Acute Coronary Syndrome protocol for Goals, Treatment, Special Considerations and decision scheme and reference the 12-Lead ECG protocol for indications and procedure
- Designates the STEMI PI Committee Membership responsible for execution

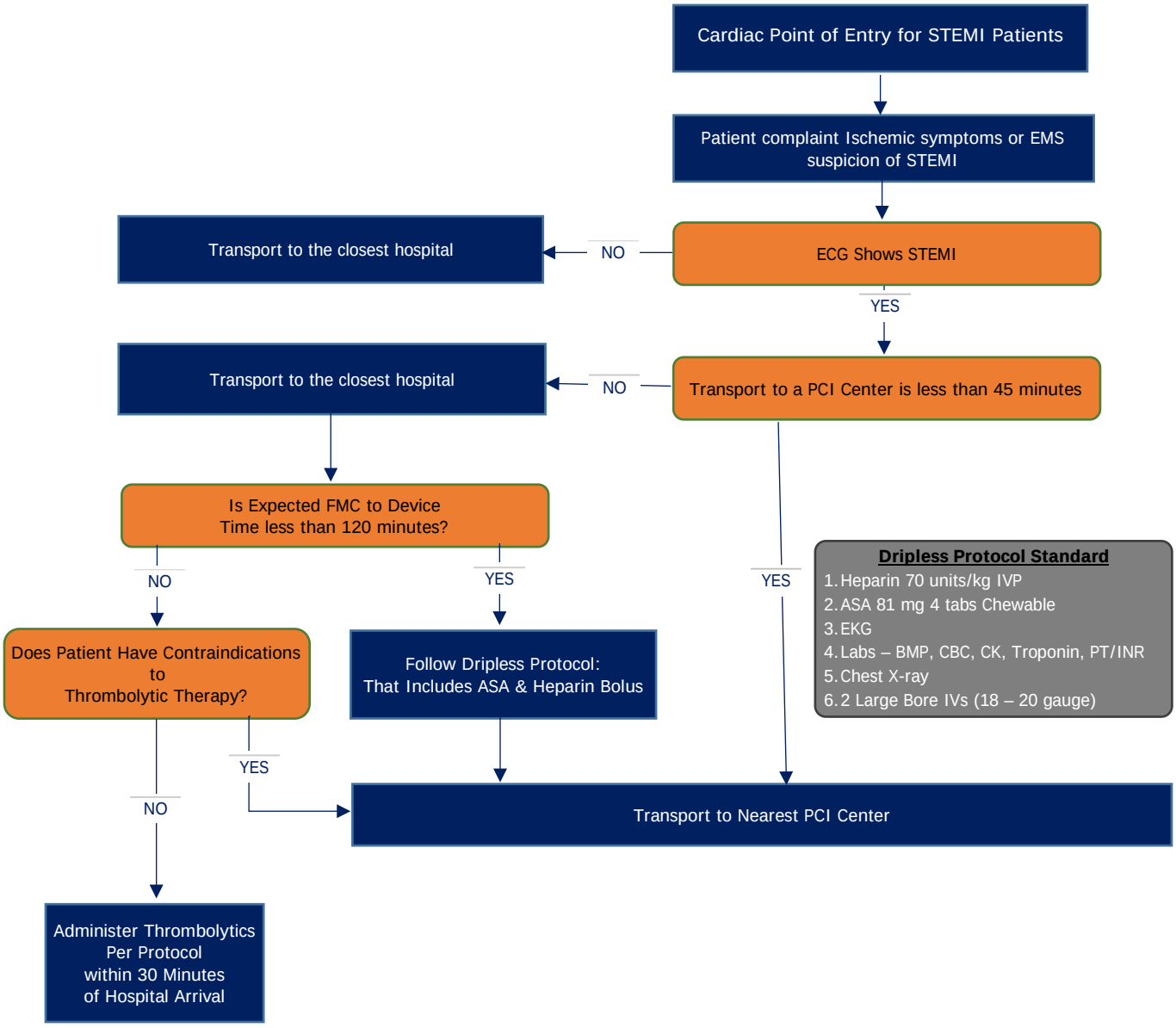
Action Plan: Field Triage Decision Scheme



The purpose of this decision scheme is to:

1. Minimize the time from symptom onset to coronary reperfusion.
2. Rapidly identify potential STEMI patients by performing a timely 12-lead ECG per protocol.
3. Quickly recognize a STEMI by 12-lead ECG either by monitor interpretation for BLS providers or by recognition by ALS providers.
4. Early notification and transmission of 12-lead ECG insures timely Catheter Lab Team activation.
5. Rapidly identify the best Primary PCI Hospital/ STEMI-Receiving Center destination for the patient.
6. Minimize scene time to 15 minutes or less (including obtaining and transmitting a 12-lead ECG)

Non-PCI to PCI Algorithm



Inter-hospital transfer:

- Δ Establish single phone call to activate the interventional team and transportation
- Δ Travel time <45 minutes = Ground; >45 minutes = Helicopter
- Δ Arrival time from dispatch: Ground arrives within 30 minutes; Helicopter arrives within 45 minutes
- Δ Cath lab team is available within 30 minutes of notification

Mission: Lifeline – EMS Measurement Criteria

Each EMS system should maintain a standardized algorithm for evaluating and treating patients with symptoms suggestive of myocardial ischemia. The reporting measures give insight into possible gaps in care that warrant a stronger focus as well as planning for future measures. Current metrics include:

- Δ % non-traumatic chest pain/ACS symptoms in patients ≥ 35 y/o, treated and transported by EMS who:
  - o Received a pre-hospital ECG
  - o % 12-Lead performed ≤10 minutes of FMC (85% target)
  - o Transmission ≤12 minutes of obtaining ECG
  - o Received aspirin: either by EMS or self-administration
- Δ % hospital notifications or 12-lead ECG transmission suggesting a STEMI alert performed ≤10 minutes of first STEMI positive 12-lead ECG in the field
- Δ % patients treated and transported directly to STEMI Receiving Center, with EMS FMC/arrival to device time ≤90 minutes (75% target) and/or EMS FMC/arrival to PCI ≤120 minutes (25% target) when transport time ≥45 minutes and Door to Balloon ≤30 minutes
  - o % EMS FMC to PCI (75% target)
- Δ % STEMI patients treated and transported directly to a STEMI referring hospital, for reperfusion:
  - o With a Door to Needle time of ≤30 minutes – OR –
  - o Initial EMS FMC to PCI of the transfer for PCI patients ≤ 120 minutes
- Δ % of adult Out-Of-Hospital Cardiac Arrest (of suspected etiology), with ROSC in the field, with ROSC maintained to the ED, who has a 12 Lead ECG acquired
  - o 12 lead obtained for sustained ROSC
  - o Sudden Cardiac Arrest survival rate per Utstein parameters

Mission: Lifeline

All hospitals should consider being a part of Get With The Guidelines (GWTG) Mission: Lifeline program established by the American Heart Association, which tracks % ASA, % Beta Blocker; % High Intensity Statin; % ACE/ARB at Discharge; Cardiac Rehabilitation Referral from an Inpatient Setting (75% target for all)
All agencies should follow the STEMI Systems of Care guidelines

- Δ There should be on-going multidisciplinary team meetings that include EMS, non-PCI hospitals/STEMI Referring Centers, and PCI hospitals/STEMI-Receiving Centers to evaluate outcomes and quality improvement data. Operational issues should be reviewed, problems identified, and solutions implemented
- Δ Each STEMI System should include a process for pre-hospital identification and activation, destination protocols to STEMI Receiving Centers, and transfer for patients who arrive at STEMI Referring Centers and are primary PCI candidates, and/or are fibrinolytic ineligible and/or in cardiogenic shock
- Δ Each system should have a recognized system coordinator, physician champion, and EMS medical director
- Δ Each system component (EMS, STEMI Referring Centers and STEMI-Receiving Centers) should meet the appropriate criteria listed above

Destination Protocols

- Δ Bypassing PCI Referring centers when transport is <30 minutes; to achieve primary PCI within 90 minutes
- Δ Emergency transfer by EMS or other agencies to a STEMI-Receiving Center of patients with STEMI who transport themselves to a STEMI Referring Center
- Δ Air transport patients with anticipated long transport times and/or fibrinolytic ineligible and/or in cardiogenic shock

- Δ Administration of fibrinolytic therapy prehospital or in STEMI Referring Center for fibrinolytic eligible patients with time to primary PCI >90 minutes
- Δ Emergency transfer to STEMI Receiving Center of patients who develop STEMI while in a non-PCI hospital

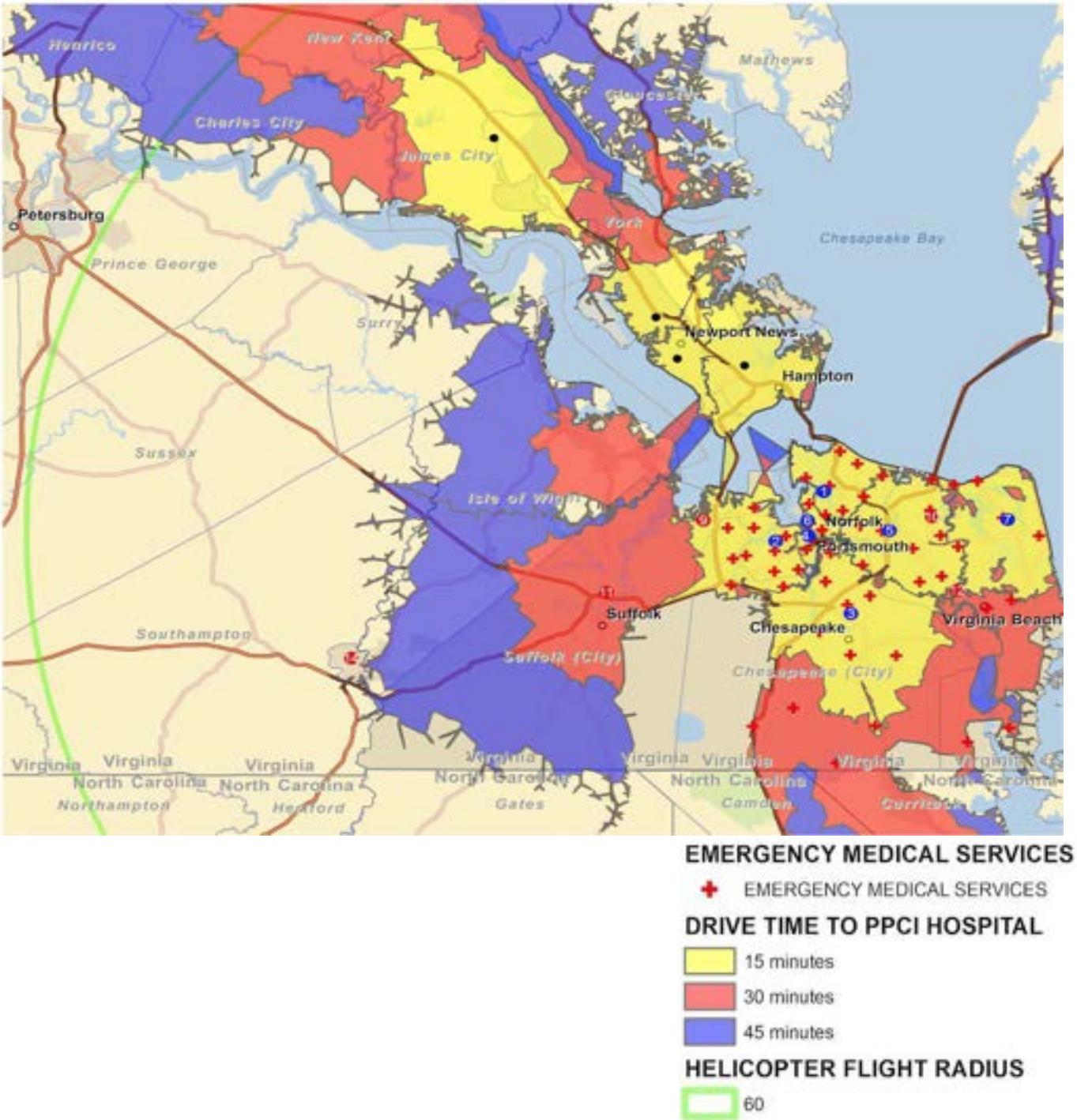
Non-PCI Hospital/ STEMI Referring Center

- Δ Each ED should maintain a standardized reperfusion STEMI care pathway that designates primary PCI as the preferred reperfusion strategy if transfer of patients to a primary PCI hospital/STEMI-Receiving Center can be achieved within times consistent with ACC/AHA guidelines (within 120 minutes from arrival to referring hospital to PCI)
- Δ Each ED should maintain a standardized reperfusion STEMI care pathway that designates fibrinolysis in the ED (for eligible patients) when the system cannot achieve times consistent with ACC/AHA guidelines for primary PCI
- Δ If reperfusion strategy is for primary PCI transfer, a streamlined, standardized protocol for rapid transfer and transport to a STEMI-Receiving Center should be operational
- Δ If reperfusion strategy is for primary PCI transfer, all patients should be transported to the most appropriate STEMI-Receiving Center where the expected first door-to-balloon (first device used) time should be within 90 minutes (considering ground versus air transport, weather, traffic)
- Δ The STEMI Referring Center should have an ongoing quality improvement process, including data measurement and feedback, for the STEMI population and collect and submit Mission: Lifeline required data elements in GWTG
- Δ A program should be in place to track and improve treatment (acutely and at discharge) with ACC/AHA guideline based Class I therapies

Primary PCI Hospital/ STEMI-Receiving Center

- Δ Protocols for triage, diagnosis and Cardiac Catheterization Laboratory (Cath Lab) activation should be established within the primary PCI hospital/STEMI-Receiving Center
- Δ A single activation phone call should alert the STEMI team
- Δ Criteria for EMS activation of the Cath Lab should be established in conjunction with EMS offices
- Δ The STEMI-Receiving Center should be available 24 hours/7 days a week to perform primary PCI
- Δ The Cath Lab staff including interventional cardiologist should arrive within 30 minutes of activation call
- Δ There should be universal acceptance of STEMI patients (no diversion). There should be a plan for triage and treatment for simultaneous presentation of STEMI patients
- Δ Interventional cardiologists should meet ACC/AHA criteria for competence and perform at least 11 primary PCI procedures per year and 75 total PCI procedures per year
- Δ The STEMI-Receiving Center should meet ACC/AHA criteria for volume and perform a minimum of 36 primary PCI procedures and 200 total PCI procedures annually
- Δ The STEMI-Receiving Center should participate in the Mission: Lifeline-approved data collection tool, GWTG
- Δ A program should be in place to track and improve treatment (acutely and at discharge) with ACC/AHA guideline based Class I therapies
- Δ There should be a recognized STEMI-Receiving Center liaison/system coordinator to the system and a recognized physician champion

Tidewater EMS STEMI Region



Definitions

12-Lead electrocardiogram (ECG) – a test using a device that measures the electrical activity of the heartbeat and can help medical personnel determine if a heart attack has occurred and whether the heart attack was a STEMI or non-STEMI event. When a 12-lead ECG is done, 10 wires ("leads") are attached to the arms, legs and chest. These wires each record electrical impulses, but from a different position in relation to the heart.

Acute Myocardial Infarction (AMI) – the medical term for a heart attack, which occurs when the blood supply to part of the heart muscle itself - the myocardium - is severely reduced or stopped.

Angioplasty aka Balloon Inflation – a procedure used to treat patients with a partially or completely blocked artery that restricts blood flow through the heart. A type of percutaneous coronary intervention (PCI), this procedure requires a slender balloon-tipped tube to be threaded from an artery in the groin to a trouble spot in the artery of the heart. The balloon is inflated, which compresses the blockage and widens the narrowed artery to restore blood flow.

Cath Lab – the department in a medical facility that specializes in cardiac catheterization, which is a procedure to examine blood flow to the heart and test how well the heart is pumping.

Cardiogenic shock – inadequate organ perfusion due to low heart output. This condition is frequently a precursor to death, and can be recognized by the presence of hypotension (systolic blood pressure of 90 mmHg or less) in the setting of a myocardial infarction.

Diversion plan – an emergency medical service protocol to divert patients with ST elevation myocardial infarction from the closest non-PCI hospital to a PCI capable hospital. Diversion protocols are particularly useful when patients have a contraindication to fibrinolysis, or first medical contact to device deployment at the PCI hospital can be achieved within 90 minutes on a consistent basis.

Door-to-Balloon Time (D2B) – the amount of time between a heart attack patient's arrival at the hospital to the time he/she receives percutaneous coronary intervention (PCI), such as angioplasty.

Door-to-Needle Time (D2N) – the amount of time between a heart attack patient's arrival at the hospital to the time he/she receives clot-busting medications, referred to in medical terms as fibrinolytics or thrombolytics.

Electrocardiogram (ECG/EKG) – a recorded tracing of the electrical activity of the heart.

Emergency Medical Treatment and Active Labor Act (EMTALA) – a statute that governs when and how a patient may be (1) refused treatment or (2) transferred from one hospital to another when in unstable condition. The EMTALA was passed as part of the Comprehensive Omnibus Budget Reconciliation Act of 1986, and is sometimes referred to as "the COBRA law."

Fibrinolysis – the breakdown of fibrin, usually by the enzymatic action of plasmin. Fibrin is a protein necessary for blood clotting that forms a web-like mesh that traps red blood cells and platelets and holds clots together. In the case of myocardial infarction, the administration of drugs that facilitate fibrin breakdown is referred to as "fibrinolysis."

Fibrinolytic Therapy – the use of pharmaceuticals or injections of medication to break up a blood clot inside an artery or cavity of the heart so that blood flow can be improved or restored. Also called thrombolytics, this type of treatment is widely available at hospitals across the US.

Fibrinolytic – an agent used to facilitate fibrin breakdown by activating plasminogen.

FMC-to-Device Time (FMC2D) – the amount of time between EMS making First Medical Contact (FMC) with a heart attack patient in the pre-hospital system to device activation, or "balloon" time, which is the first attempt to mechanically open the culprit lesion and restore blood flow.

Left Bundle Branch Block – a condition in which ventricular contraction is not completely synchronized due to a block in conduction of an electrical impulse to the ventricles; in LBBB, right ventricular endocardial activation begins before, and is often completed before, initiation of left ventricular endocardial activation; *benign LBBB is rare*; preexisting LBBB in absence of clinical evidence of heart disease is rare.

Percutaneous coronary intervention (PCI) – a procedure used to open or widen narrowed or blocked blood vessels supplying the heart. The blood vessels are accessed through the skin over the leg (femoral) or arm (radial or brachial) arteries. A thin catheter is advanced over a soft-tipped guide-wire through the arterial tree to the base of the heart where the coronary arteries arise. A smaller guide-wire is then advanced into the coronary artery and across the blockage, followed by balloon-dilation catheters, stents, and other artery opening devices as needed.

PCI-Capable Hospital – a hospital that has the equipment, expertise and facilities to administer percutaneous coronary intervention (PCI), a mechanical means of treating heart attack patients.

Point of Entry (POE) – the part of the healthcare community where treatment of a patient begins, such as when emergency medical services arrive on the scene or the patient walks into the emergency department at a hospital.

Reperfusion – the restoration of blood flow to an organ or tissue that has had its blood supply cut off, as after a myocardial infarction.

Reperfusion Therapy – one or more techniques to restore blood flow to part of the heart muscle damaged during a heart attack. It may include clot-dissolving drugs (thrombolysis), balloon angioplasty or surgery.

ST-elevation myocardial infarction (STEMI) – a severe heart attack caused by a prolonged period of blocked blood supply that affects a large area of the heart. These attacks carry a substantial risk of death and disability and call for a quick response by many individuals and systems.

STEMI Alert – a communication from EMS personnel that provides early notification to a PCI Capable Hospital that a patient with a prehospital 12-lead interpretation of STEMI is in route to their institution.

STEMI System – an integrated group of separate entities focused on reperfusion therapy for STEMI within a region that typically includes emergency medical services (EMS) providers, at least one community (non-PCI or STEMI-referral) hospital and at least one tertiary (PCI- capable or STEMI-receiving) hospital. The system may include one or more of the following components: leadership teams of EMS, emergency medicine, cardiology, nursing and administration; standardized communication (i.e., STEMI alert system); standardized transportation; and data collection and feedback. Please note: In some systems, there may be a single hospital with PCI capabilities that has established protocols with EMS providers and contains at least one of the components stated above.

Thrombolytics – the use of pharmaceuticals or injections of medication to break up a blood clot inside an artery or cavity of the heart so that blood flow can be improved or restored. Also called fibrinolytic therapy, this type of treatment is widely available at hospitals across the United States.

VHAC – Virginia Heart Attack Coalition

Tidewater EMS (TEMS) Regional Stroke Triage Performance Improvement (PI) Plan – 2021

Vision

To develop a Stroke Emergency Care System that decreases mortality and morbidity in the TEMS region.

TEMS Information

The TEMS Region – Includes information regarding the layout, demographics and weather
Stroke Committee Membership – Includes purpose, roles, responsibilities and membership
Hospital Capabilities by Region – Includes easily identified stroke center descriptions with names and location

Goals

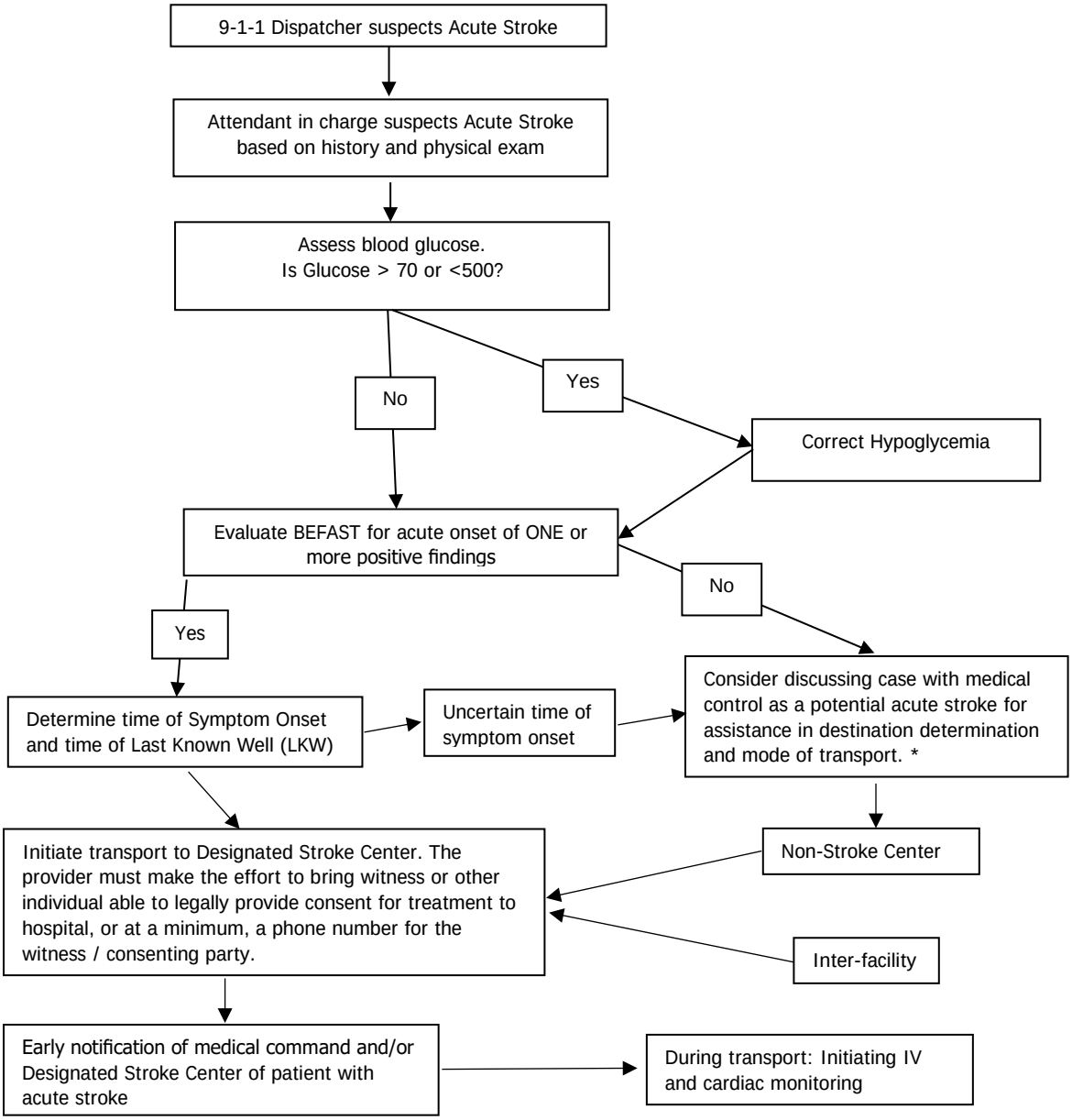
This Regional plan is assigned to the Stroke PI Committee for development, updating and monitoring and provides guidelines to facilitate the early recognition of "Acute Stroke Patients" and expedite transport to a Healthcare Facilities Accreditation Program (HFAP), Den Norske Veritas (DNV), or Joint Commission (JC) "certified" Designated Stroke Center within the specified time frame. Within compliance of the Code of Virginia and EMS Regulations, this plan:

- Establishes a uniform set of criteria for pre-hospital and inter-facility triage and transport of acute stroke patients
- Sets guidelines for rapidly and accurately identifying patients suffering from Stroke-like presentation
- Promotes the transportation of patients to the closest Designated Stroke Center (DSC)
- Provide a plan to transport to a DSC via ground transport, Medevac, or non-designated centers based on the operational criteria for each
- Encourages quality EMS service and patient care provided to the EMS system's citizens
- Continuously evaluate the EMS system based on established EMS performance measures for Stroke and incorporates the minimum reporting standards set by Mission: Lifeline
- Aggregate acute stroke triage findings on an intermittent basis, at a minimum annually, to assist EMS systems and the Virginia Stroke Systems Task Force improve the local, regional and Statewide Stroke Triage Plans
- Follow the Cerebral Vascular Accident (CVA or Stroke) protocol for Goals, Treatment, Special Considerations and decision scheme and reference the Prehospital Stroke Exams protocol for procedure
- Designates the Stroke PI Committee responsible for execution

Stroke Related Resources

- Virginia Stroke System Web page: http://virginiastrokesystems.org/
- Virginia Office of EMS Stroke Web page: http://www.vdh.virginia.gov/OEMS/Trauma/Stroke.htm
- JC: http://www.jointcommission.org/CertificationPrograms/PrimaryStrokeCenters/
- DNV: http://dnvaccreditation.com/pr/dnv/primary-stroke-center-certification.aspx
- HFAP: https://www.achc.org/hfap.html

Action Plan: Field Stroke Triage Decision Scheme



* If time from symptom onset is more than 4 hours, discuss case with on-line medical control as a potential “acute stroke patient” for additional guidance. 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 the helicopter EMS (HEMS) 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).

BEFAST Pre-Hospital Stroke Scale

All patients suspected of having an acute stroke should undergo a formal screening algorithm such as the BEFAST. Use of stroke algorithms has been shown to improve identification of acute strokes by EMS providers up to 30%. ANY, one or more, abnormal (positive) finding which is suspected or known to be acute in onset is considered an indicator of potential acute stroke.

B-(Balance)	BALANCE: Is the person experiencing a sudden loss of balance or coordination? Normal: Patient is free of balance or gait issues. Abnormal: Patient has a sudden or new loss of balance or gait.
E-(Eyes)	EYES: Is person having a sudden change in vision or trouble seeing? Normal: Patient has no change in vision or blindness. Abnormal: Patient has change in vision, blindness in field of vision, or a gaze to one side.
F-(Face)	FACIAL DROOP: Have patient smile or show teeth. (Look for facial asymmetry) Normal: Both sides of the face move equally or movement is normal for patient. Abnormal: One side of the patient's face droops or does not move.
A-(Arm)	MOTOR WEAKNESS: Arm drift (Have patient close eyes, extend arms, palms up for 10 seconds; if only 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 or LAST known to be NORMAL _____ If patient awakened with symptoms, when were they last known to be normal?

* Results of the BEFAST should be documented on the patient’s pre-hospital medical record.

Specific Processes:

- Δ The ability to rapidly and accurately identify patients suffering from Stroke.
- Δ Patients who have sustained a Stroke event must receive care in a hospital that has a Stroke treatment program in place, which is capable of providing immediate and comprehensive assessment, resuscitation, intervention, and definitive care.
- Δ The Tidewater EMS Council must have continuous and effective region-wide coordination of pre-hospital and hospital care resources so that Stroke patients will be most expeditiously transported to the closest available interventional center or facility capable of performing neuro-endovascular procedures and neurosurgery; and, so that patient care can be provided in a manner that is both appropriate and timely, while establishing and maintaining continuity. To accomplish this there must be a method of tracking the care capability for Stroke patients and reviewing the quality of the process itself.
- Δ Provide quality EMS service and patient care to the EMS Systems’ citizens.
- Δ Continuously evaluate the EMS System based on established Stroke EMS performance measures.
- Δ Benchmark analysis.

Best Practices

- Δ Providers should gather information (e.g. history, etc.) that will assist physician(s) to evaluate the suitability for acute reperfusion therapy of any patient presenting with signs/symptoms that suggest stroke or ischemic chest pain
- Δ Fill out the appropriate checklist (located on page 11) **without delay** of treatment or transport and present it to the emergency department physician at the receiving facility

- Mode of transportation for Stroke patients who meet any of the criteria of the BEFAST Pre-Hospital Stroke Scale, indicative of an acute stroke, shall be transported to the **closest Designated Stroke Center**
  - Transport time, road and weather conditions should help determine best transport option
  - Use HEMS to lessen the time from scene to Stroke Center vs ground transport; within three hours of symptom onset (on-line medical control can alter the window of onset to treatment); and transport directly to a Designated Stroke Center
- Any patient with a compromised airway or impending circulatory collapse must be transported to the closest hospital Emergency Department, regardless of stroke readiness capability
- Initiate Rapid transport once acute stroke is suspected. Rapid Transport means shortening scene time and **DOES NOT mean transporting with red-lights and sirens**
- The benefit of reperfusion therapy decreases with time; consultation with on-line Medical Control is **STRONGLY** encouraged when patient will not arrive at a Designated Stroke Center within the tree-hour window from symptom onset.
- Stroke Designation/Certification is voluntary and identifies hospitals that established and maintain an acute stroke program which provides a specific level of medical, technical, and procedural expertise for acute stroke patients as designated by Centers for Medicare & Medicaid Services (CMS) through JC or other accrediting bodies approved by CMS for this purpose
- Designation 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.
- The TEMS council does not oversee the process for inter-facility transfer of patients, but hospitals should have guidelines and agreements developed and executed for acute stroke patients

Evaluation Criteria

All reports are de-identified for confidentiality and compliance to the statewide plan.

- Stroke alert going to receiving centers
- % Last Known Well documentation
- % stroke with glucose reading
- Stroke on-scene time <15 minutes
- Over- and under- triage to Designated Stroke centers in comparison to the total number of acute stroke patients delivered to hospitals
- Helicopter EMS utilization
- Mission: Lifeline Stroke
  - % of patients with suspected stroke for whom advanced notification (Stroke alert) was provided to the destination hospital
  - % of patients with suspected stroke, treated and transported who had a documented LKW time

Definitions

Acute Stroke – a patient suspected of having an acute cerebral ischemic event or stroke with the onset of any one symptom within the specified time frame

Designated Stroke Center – a hospital that achieved Primary Stroke Center Certification by the JC or equivalent accrediting body

Tidewater EMS (TEMS) Regional Trauma Triage Performance Improvement Plan – 2021

Vision

To develop an inclusive system, incorporating healthcare facilities, transportation, human resources, communications, and other identified components, that get the right patient to the right hospital in the shortest amount of time possible while maximizing resources. Thus improving the delivery of EMS and decreasing mortality, hospitalization, disability and morbidity in the TEMS region.

TEMS Information

The TEMS Region – Includes information regarding the layout, demographics and weather
Trauma Committee Membership – Includes purpose, roles, responsibilities and membership
Hospital Capabilities by Region – Includes easily identified, STEMI receiving hospitals

Goals

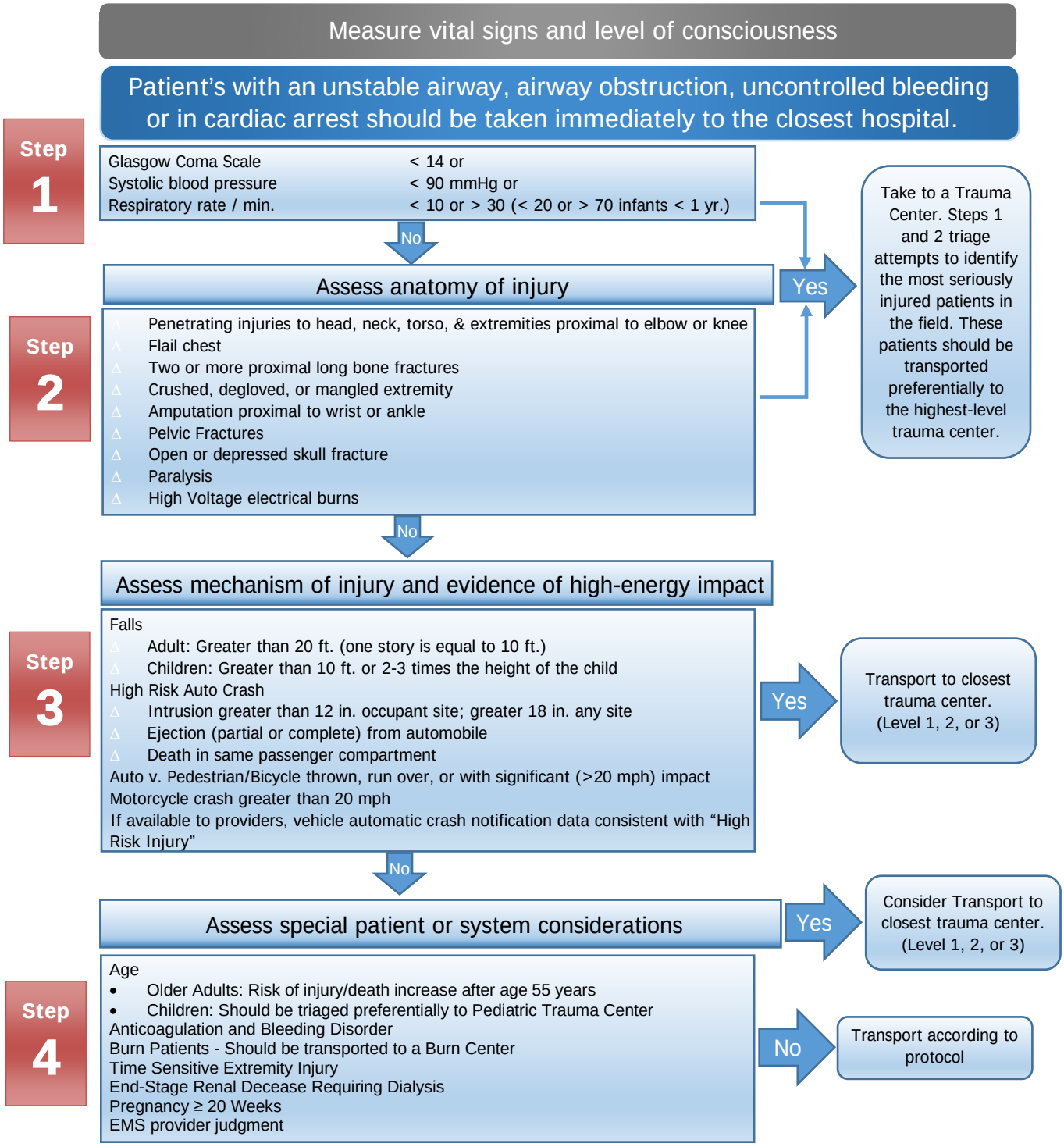
Trauma patient recognition and triage is a two-tiered system including:

1. Initial triage in the prehospital setting (using the Field Trauma Triage Decision Scheme and Pre-Hospital Trauma Triage Criteria), and
2. Secondary triage at all hospitals (including possible transfer to another hospital based on the Inter-Hospital Transfer criteria)

Within compliance with the Code of Virginia and EMS Regulations, this plan:

- Δ Establishes a uniform set of criteria for identifying and providing quality care for pre-hospital and inter-facility trauma patients
- Δ Geography, hospital capabilities, air medical services, local EMS resources and others guide how and to where the identified trauma patient will be transported or transferred
- Δ Promotes rapid access for pediatric and adult trauma patients to appropriate, organized trauma care through accepted criteria and coordinated ground/air pre-hospital transport
- Δ Conducting, promoting, and encouraging programs of education and training designed to upgrade the knowledge and skills of healthcare providers involved in trauma care (follow EMTALA and HIPAA laws)
- Δ Supports transferring any Pediatric Trauma Score ≤6 to a Designated Trauma Center
- Δ Educate public that any family member or bystander can initiate help by calling 911 and assured to receive guidance from trained emergency medical dispatchers, with a focus on maintaining a viable airway, bleeding control, spinal immobilization, and the prevention of shock
- Δ First responders and emergency medical personnel provides prompt on-scene treatment and stabilization in accordance with medical protocols (on-scene <15 minutes)
- Δ Patients are transported to the closest, most appropriate, emergency department/trauma center
- Δ Patient receives continuing care and rehabilitation to provide the highest chance at a complete recovery in the shortest time frame possible
- Δ For patients with burn injuries, follow the Burns protocol and the Burn Chart: Adult or Burn Chart: Pediatric protocol to determine percentage of body affected
- Δ Follow Prehospital Trauma Triage Criteria protocol to determine appropriate care for each patient
- Δ Refer to Tourniquet Application protocol, when applicable
- Δ During Mass Casualty Incidents, reference the Hampton Roads MCI Response Guide regarding patient distribution
- Δ Designates the Trauma PI Committee responsible for managing the execution

Action Plan: Field Triage Decision Scheme



*Pre-hospital providers should transfer trauma patients with uncontrolled airway, uncontrolled hemorrhage, or if there is CPR in progress to the closest hospital for stabilization and transfer.

Inter-hospital Criteria for Transfer of a Trauma Patient to a Designated Trauma Center

Inter-hospital transfer to trauma center requires a physician to physician consult. The referring and receiving physician may use the following criteria for determination of that transfer:

	Adult	Pediatric (<15 y/o)
Respiratory	Δ Bilateral thoracic injuries Δ Significant unilateral injuries in >55 y/o Δ (e.g. pneumothorax, hemo-pneumothorax, pulmonary contusion, >5 rib fractures). Δ Significant unilateral injuries in patients with pre-existing cardiac and/or respiratory disease Δ Respiratory compromise requiring intubation. Δ Flail chest	Δ Bilateral thoracic injuries Δ Significant unilateral injuries in patients with pre-existing cardiac and/or respiratory disease Δ Flail chest
CNS	Δ Unable to follow commands Δ Open skull fracture Δ Extra-axial hemorrhage on CT, or any intracranial blood Δ Paralysis Δ Focal neurological deficits Δ GCS ≤ 13	Δ Open skull fracture Δ Extra-axial hemorrhage on CT Δ Focal neurological deficits
Cardiovascular	Δ Hemodynamic instability as determined by the treating physician Δ Persistent hypotension Δ Systolic B/P (<100) without immediate availability of surgical team	
Injuries	Δ Any penetrating injury to the head, neck, torso or extremities proximal to the elbow or knee without a surgical team immediately available, where the physician in charge feels treatment of injuries would exceed capabilities of the medical center Δ The combination of trauma with burns. Δ Significant abdominal to thoracic injuries in patients where the physician in charge feels treatment of injuries would exceed capabilities of the medical center	Δ Any penetrating injury to the head, neck, chest abdomen or extremities proximal to the knee or elbows without a surgical team immediately available Δ Combination of trauma with burn injuries Δ Any injury or combination of injuries where the physician in charge feels treatment of the injuries would exceed the capabilities of the medical center
Special Considerations	Trauma in pregnancy, age >55, pediatric, bariatric, special needs individuals	Pediatric Trauma Score ≤6

Pediatric Trauma Score Determination

Component	+2	+1	-1
Size	Child/Adolescent, >20kg (44lbs)	Toddler, 11-20kg	Infant, <10kg (22lb)
Airway	Normal	Assisted O2, mask, cannula	Intubated, ETT, King, LMA, Crike
Consciousness	Awake	Obtunded; loss of consciousness	Coma; Unresponsiveness
Systolic BP	Greater than 90mm/Hg; good peripheral pulses, perfusion	51-90 mm/Hg; peripheral pulses, pulses palpable	<50 mm/Hg; weak peripheral or no pulses
Fracture	None seen or suspected	Single closed fracture anywhere	Open, multiple fractures
Cutaneous	No visible injuries	Contusion, abrasion, lacerations less than 7 cm through fascia	Tissue loss, any GSW, or stabbing through fascia

Best Practices

- Notify the hospital with a radio report as quickly as possible to ensure their preparedness and increase the ease of turnover
- Transport patients with unmanageable airway problems **or** uncontrolled hemorrhage to the **closest** hospital emergency department
- **Traumatic cardiac arrest with <u>any</u> electrical cardiac activity:** Transport to designated trauma center if transport time is less than 10 minutes' difference from the closest hospital
- Consider transport to a Level 1 Trauma Center for **patients with critical burns.** (e.g. Sentara Norfolk General, or MCV Medical Center)
- Consider Transport of Pediatric Patients (patients that are less than 15 years of age) with critical burns to a Level 1 Pediatric Trauma Center (Children's Hospital of the King's Daughters)
- Pregnant patients (Greater than 20 weeks) that do not meet the trauma criteria should be transported to closest OB/GYN facility
- Consider contacting medical control to address concerns about patient care, appropriate receiving facility, or air transport decisions
- When providing a pediatric trauma radio report include the corresponding Broselow or Handtevy tape color (where applicable) associated with the patient size
- When giving the patient and patient care report to the Trauma Team in the Trauma Bay, ensure that the most important information which includes the following is given to the team within 20 seconds:
  - Age and sex
  - Injuries noted and changes with patient during transport (include condition and vitals)
  - Intervention(s) and patients' response to the intervention(s)
- Agencies operating within a 30-minute ground transport time of a trauma center should maintain on-scene times of <15 minutes and document any delay, establish early contact to alert trauma center staff, and can request air ambulance transport without Medical Control authorization
- Air ambulance transport should not delay the patient's arrival at the hospital
- Scenes located outside a 30-minute ground transport time and air transport is on delay or unavailable should transport all trauma patients to the closest hospital. The provider should limit on-scene times to <15 minutes, establish early contact to receiving hospital because the facility may divert patient to a trauma center en-route or expedite transfer after arrival

Evaluation Criteria

- Δ On scene times below 15 minutes
- Δ Needle/Chest decompressions: how often performed and % with patient improvement
- Δ Traumatic cardiac arrest: total cases and % needing chest decompression
- Δ Transport destinations: % going to level 1, 2, 3 Trauma centers
  - o Track OMD/Diversion/Over triaged
- Δ Spinal Immobilization needed vs. used

Definitions

Non-Trauma Center Hospital – Provide prompt assessment, resuscitation, stabilization, and arrange for the transfer of the patient to a facility that can provide definitive trauma care.

Trauma Level I – Level I trauma centers have an organized trauma response and are required to provide definitive 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.

Trauma Level I Pediatric – Pediatric trauma centers have an organized trauma response and are required to provide definitive care for every aspect of injury, from prevention through rehabilitation for pediatric patients (less than 15 years of age). These facilities must have adequate depth of resources and personnel with the capability of providing leadership, education, research and system planning.

Trauma Level II – Expected to provide definitive care, regardless of the severity of injury. The specialty requirements may be fulfilled by on call staff that is promptly available to the patient. Due to some 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.

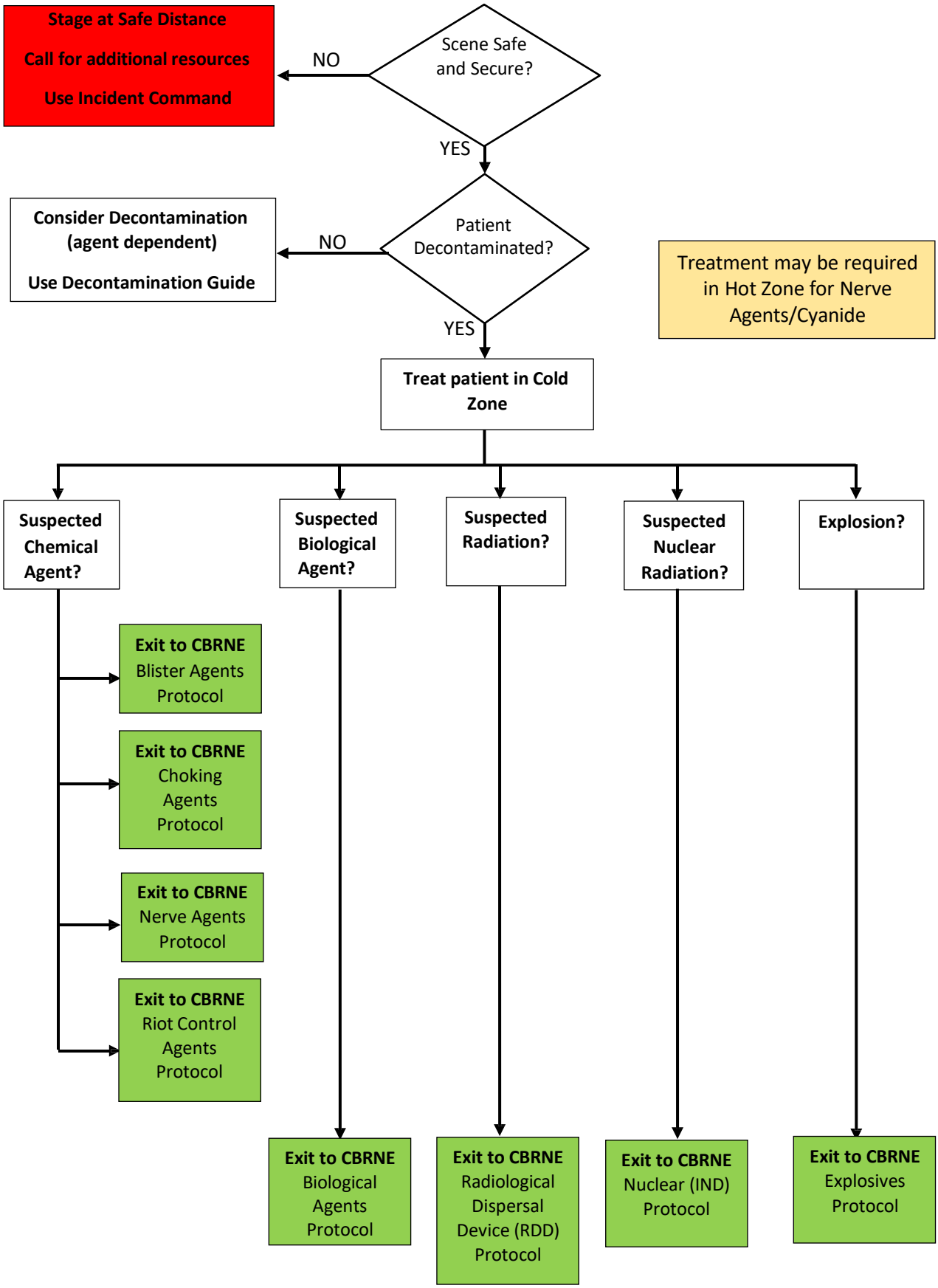
Trauma Level III – Provides prompt assessment, resuscitation, stabilization, emergency operations and arrange for the transfer of the patient to a facility that can provide definitive trauma care. Level III should take on responsibility for education and system leadership within their region.

Trauma Victim – A person who has acquired serious injuries and/or wounds brought on by either an outside force or an outside energy. These injuries and/or wounds may affect one or more body systems by blunt, penetrating or burn injuries. These injuries may be life altering, life threatening, or ultimately fatal wounds.

Contents

The following Protocols and Procedures are included:

Appendix J: HRMMRS CBRNE & HazMat Protocols



Blister Agents

GOALS

- Early recognition and appropriate intervention of patients poisoned with blister agents
- Protect responders from secondary exposure to blister agents during patient care

TREATMENT

Signs and Symptoms of Blister Agents

a) Skin penetration is rapid. Mustard causes both localized cellular and systemic damage. A large liquid or vapor exposure causes immune system failure and pulmonary damage. Sepsis and pulmonary damage are major causes of death

b) Blister agents are powerful irritants and vesicant, producing corrosion and necrosis of the skin, eyes, and respiratory tract. While the chemical reaction with biological tissue occurs rapidly, **symptoms are typically delayed by several hours**. Systemic poisoning occurs more easily in warm climates than in temperate ones

c) DERMAL - Dermal mustard exposure signs and symptoms occur within 2-24 hours of exposure. Itching and erythema occur 2 to 3 hours after dermal exposure to the gas or liquid; erythema spreads over the next 24 hours and yellowish blisters appear and can become ulcerated, which heal in 4 to 6 weeks after transitory melanoderma. Thinner skin (neck, axillae, and groin) is more susceptible than thicker skin (soles and palms)

d) INHALATION - Cough, dyspnea, and possibly pulmonary edema may occur up to 24 hours after inhalation of the gas. Ulceration of airway mucosa may occur. Mild pulmonary exposure produces rhinorrhea, sneezing, epistaxis, hoarseness, and cough within 12-24 hours of exposure. Severe exposure produces additional symptoms of productive cough and shortness of breath (mild to severe) 2-4 hours after exposure

Variations of Blister Agents

a) Mustard (Sulfur and Nitrogen)
b) Lewisite (causes immediate pain on skin contact)
c) Dimethyl Sulfate

Concept of Treatment Protocol

a) Blister Agent injuries are chemical burns (including inhalation injuries) and should be managed as such
b) Chelating agents (i.e., BAL) have been used to reduce the effects of exposure. However, no chelating agents are carried out-of-hospital in Hampton Roads
c) Sodium thiosulfate (found in regional Haz-Mat Drug boxes) has been used to prevent systemic injury

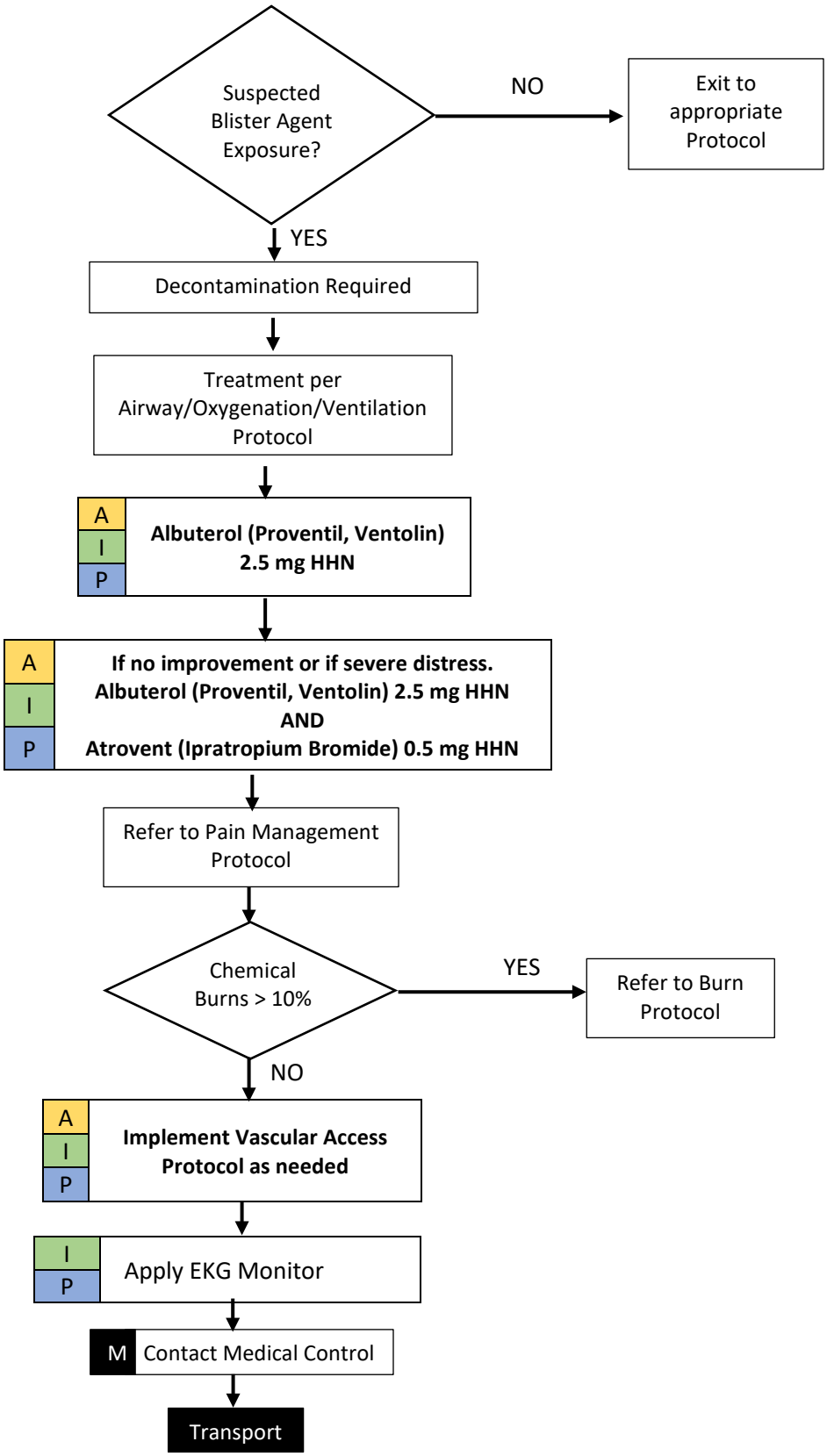
SPECIAL CONSIDERATIONS

- Blister Agents pose a significant risk of exposure to responders. They are difficult to remove during decontamination and do not provide immediate signs of contamination

References:

Wireless Information System for Emergency Responders (WISER), National Library of Medicine. WebWISER Version: Web Application: 4.5 .154; Web Services: 4.5 .70; Database: 4.6.3

CBRNE-Blister Agents



Choking Agents

GOALS

- Early recognition and appropriate intervention of patients poisoned with choking agents.
- Protect responders from secondary exposure to choking agents during patient care

TREATMENT

Examples of Common Choking Agents (including Toxic Industrial Chemicals):

a) Chlorine
b) Ammonia
c) Phosgene
d) Fuming Sulfuric Acid
e) Others - Found highlighted in 2016 Emergency Response Guide

Signs and Symptoms (general):

a) Difficulty Breathing
b) Throat "burning"
c) Wheezing
d) Laryngospasm
e) Non-cardiogenic Pulmonary Edema

Concept of Treatment:

a) Reduce the Dose
    i Rescue from Environment
    ii Decontamination (if contaminated)
b) Airway/Ventilation
    i Per Protocol, including CPAP
c) Administer Antidote(s)
    i Antidotes Available
    ii Nebulized Sodium Bicarbonate (2ml of 8.4% Na HCO3 and 2ml normal saline) may be ordered for confirmed chlorine exposures
d) Support Cardiovascular System
    i Maintain perfusion (mentation/peripheral pulses) without over hydration

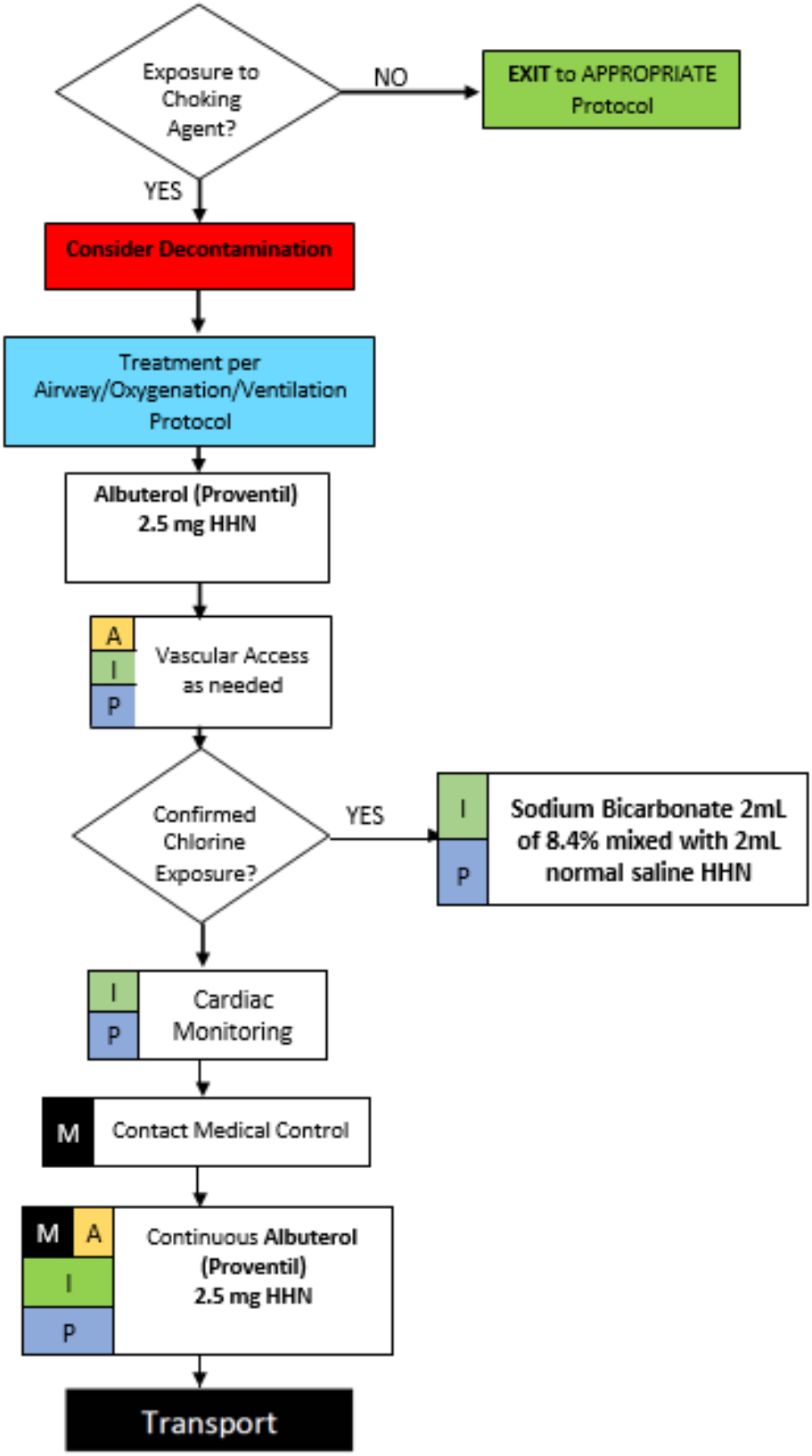
SPECIAL CONSIDERATIONS

- The decision to enter a contaminated area to rescue and/or provide patient care rests with the incident commander and organizational policy
- Victims that have been decontaminated and/or confirmed "clean" are safe for treatment and transportation to a health care facility
- Atrovent and Lasix administration ARE INAPPROPRIATE in this protocol

Resource: Poison Control Center - 1 (800) 222-1222

References: Wireless Information System for Emergency Responders (WISER), National Library of Medicine. WebWISER Version: Web Application: 4.5 .154; Web Services: 4.5 .70; Database: 4.6.3

CBRNE -Choking Agents



Nerve Agent (Adult)

GOALS

- Early recognition and appropriate intervention of patients poisoned with nerve agents
- Protect responders from secondary exposure to nerve agents during patient care

TREATMENT

Signs/Symptoms of Acute Nerve Agent Exposure

a) VAPOR - Initial effects following a mild vapor exposure include miosis, rhinorrhea, and dyspnea. Victims may have one of these effects or all three. A large concentration of vapor will cause sudden loss of consciousness and seizures followed by apnea and flaccid paralysis. The severe casualties will have miosis, copious secretions from the nose and mouth, and, unless they are paralyzed, will have fasciculation. "SLUDGE" will occur (salivation, lacrimation, urination, defecation, and gastric emesis). Effects begin within seconds to minutes

b) DERMAL - A very small drop on the skin may cause sweating and twitching at the site, while a small drop on skin may cause nausea, vomiting and diarrhea. A larger drop on the skin may cause loss of consciousness, seizures, apnea, and flaccid paralysis. Effects begin within 30 minutes (large amount) to 18 hours (small amount)

Variations of Nerve Agents

a) Military grade (i.e. Sarin, Somen, Tabun, VX, etc.)

b) Industrial pesticides

i Organophosphates (i.e. Azinphos-methyl, Malathion, Methyl parathion, etc.)

ii Carbamates (Aldicarb, Sevin, Bendiocarb, etc.)

Concept of Treatment Protocol

a) To provide the most treatment for the largest number of victims, the concept of treatment "waves" is presented.

b) This will allow for treatment teams to:

i Maximize the distribution of the limited supplies of antidotes ii Limit their exposure time in potentially harmful atmospheres

c) Victims that are non-ambulatory should be placed in the "recovery" position to allow for draining of oral secretions and maintenance of the airway

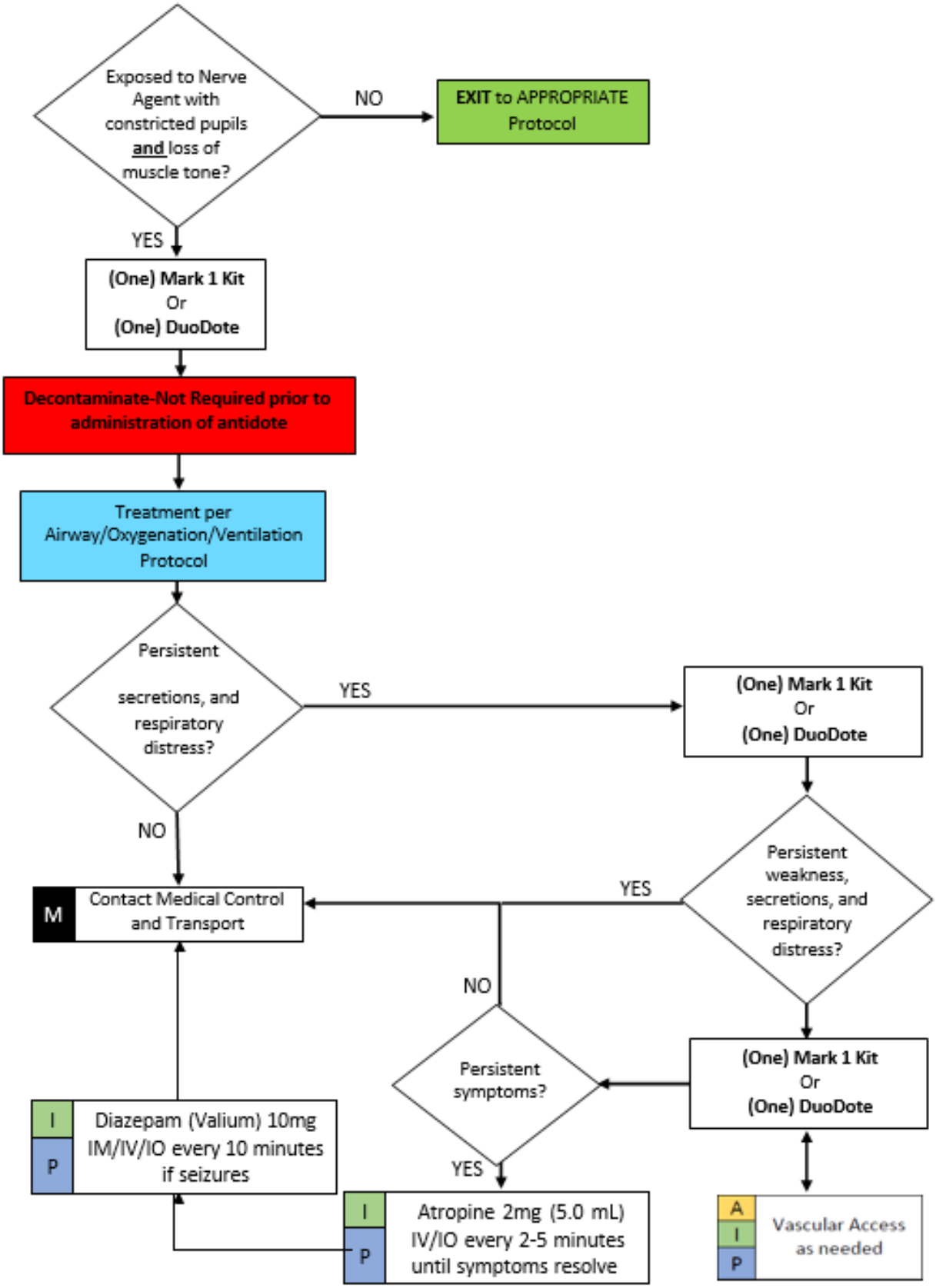
SPECIAL CONSIDERATIONS

- Victims whose skin or clothing is contaminated with liquid nerve agent can contaminate rescuers by direct contact or through off-gassing vapor
- Victims who have ingested nerve agents may off-gas dangerous levels of vapor, even after skin decontamination. All health care professionals should wear respiratory protection that protects against nerve agents, including Self-Contained Breathing Apparatus (SCBA) and chemical protective clothing to avoid contact with emesis

References:

- Wireless Information System for Emergency Responders (WISER), National Library of Medicine. WebWISER Version: Web Application: 4.5 .154; Web Services: 4.5 .70; Database: 4.6.3
- Recognition and Management of Pesticide Poisonings, U.S. EPA, Fifth edition, 1999

CBRNE - Nerve Agents (Adult)



Tidewater EMS Council, Inc.

CBRNE - Nerve Agents (Pediatric)

GOALS

- Early recognition and appropriate intervention of patients poisoned with nerve agents
- Protect responders from secondary exposure to nerve agents during patient care

TREATMENT

Signs/Symptoms of Acute Nerve Agent Exposure

See Adult notes

Pediatric Variations in Signs and Symptoms

a) Little experience with nerve agents is available to distinguish clinical effects in children from those in adults, although two cases of anticholinesterase pesticide poisonings in children suggest a disproportionate degree of depressed level of consciousness and muscle weakness. Thus, children may manifest primarily central and/or neuromuscular effects after nerve agent exposure.

Pediatric Treatment Concept

a) Each Mark-1 kit contains two auto injectors (0.8 inch needle insertion depth), one each of atropine 2 mg (0.7 mL) and pralidoxime 600 mg (2 mL), to be administered in two separate intramuscular sites. Duo Dote provides the same medications, atropine 2.1 mg (0.7 mL) and pralidoxime 600 mg (2 mL), but as a single Auto injector with the need for only one intramuscular injection; **while not approved for pediatric use, they should be used as initial treatment in circumstances for children with severe, life-threatening nerve agent toxicity for whom IV treatment is not possible or available or for whom more precise IM (mg/kg) dosing would be logistically impossible (especially pre-hospital)**

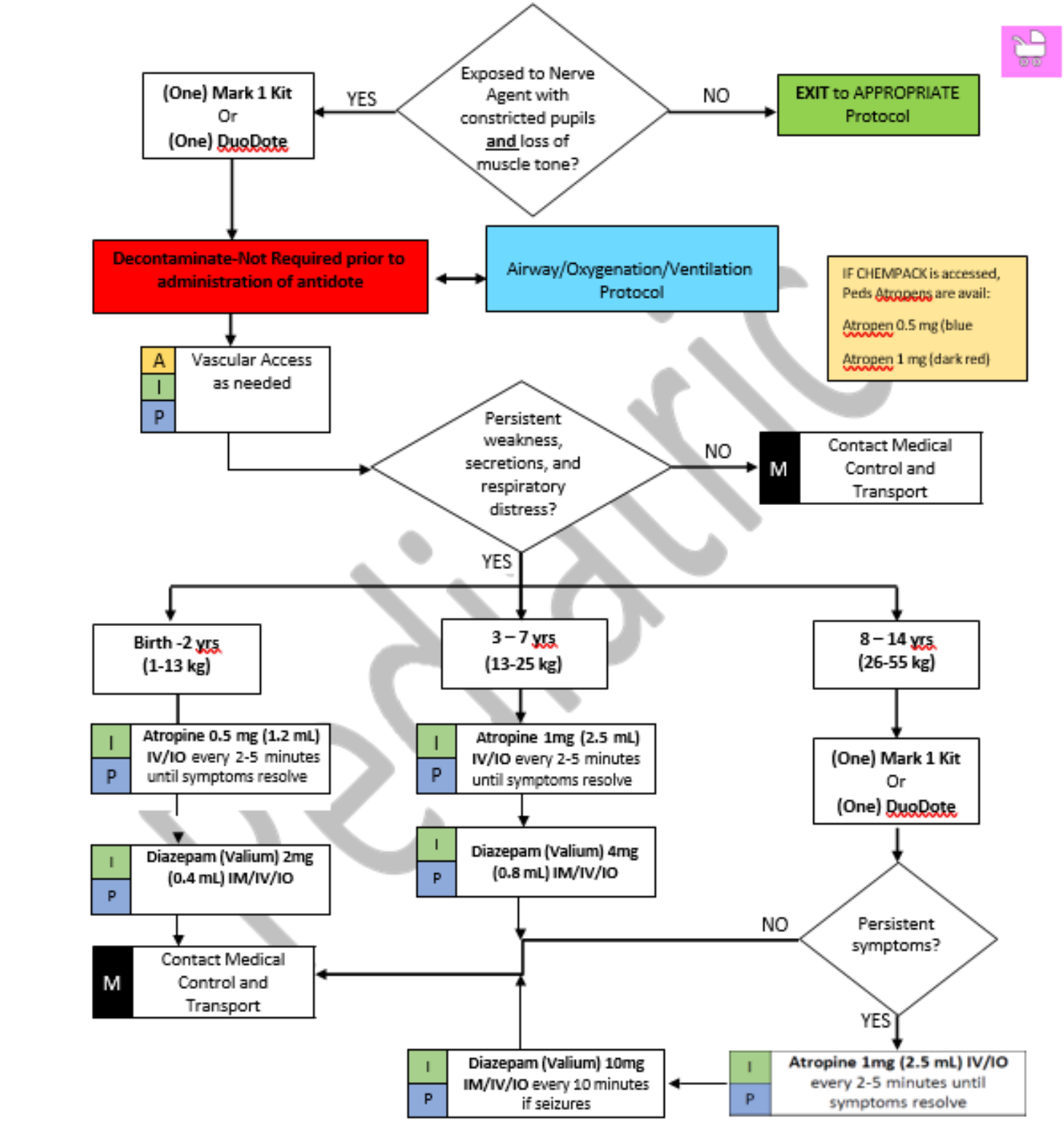
SPECIAL CONSIDERATIONS

- Victims whose skin or clothing is contaminated with liquid nerve agent can contaminate rescuers by direct contact or through off-gassing vapor
- Victims who have ingested nerve agents may off-gas dangerous levels of vapor, even after skin decontamination. All health care professionals should wear respiratory protection that protects against nerve agents, including Self-Contained Breathing Apparatus (SCBA) and chemical protective clothing to avoid contact with emesis

References:

- Pediatric Emergency Preparedness for Natural Disasters, Terrorism and Public Health Emergencies, A National Consensus Conference, National Center for Disaster Preparedness, Mailman School of Public Health. March, 2007
- Pediatric Terrorism and Disaster Preparedness: A Resource for Pediatricians, Agency for Healthcare Research and Quality, U.S. Department of Health and Human Services, October, 2006

CBRNE - Nerve Agents (Pediatric)



Riot Control Agents

GOALS

- Early recognition and appropriate intervention of patients poisoned with nerve agents
- Protect responders from secondary exposure to nerve agents during patient care

TREATMENT

General Information:

- Remove patient from contaminated area
- If Law Enforcement dispensed, request product identification
- In most instances, the best method of decontamination is moving air across the contaminated area, allowing the agent to blow away. In cases of visible gross contamination, water is useful for removing large amounts of agent, but ultimately the remaining agent will not be removed until the water dries and the agent can blow away
- Make sure the water flows away from the face. Hair is the next most effect reservoir, after clothes, for contamination
- Use particular care that water does not run the hair to the eyes and dry the hair after use of water for decontamination
- Use of water on clothing does NOT remove the contaminant; it merely holds it to the clothes until the water dries, and then the agent is released into the air again
- Chloroacetophenone (CN) and Chlorobenzalmalononononitrile CS in crystal form tend to cling to clothing, skin, and hair, and are often visible on the patient. Removing as much clothing as practical is the single most effective decontamination action one can take. For CN or CS in smoke form, remove clothing and allow residual agent to off-gas
- Use only plain water to irrigate eyes exposed to Oleoresin Capsicum (OC). Saline will cause an increase in pain
- Several aftermarket decontamination solutions are available for OC agent decontamination. Milk (of any type) is also an effective solution because of the antagonistic relationship between lactic acid and the active enzyme in the OC
- The use of commercially available decontamination wipes for OC and most CS/CN exposures can provide a means of neutralization. These wipes, similar to the wet wipes found in restaurants, are a cloth-type paper wipe 7 1/2 X 11 1/2 inches containing a non-tearing liquid solution

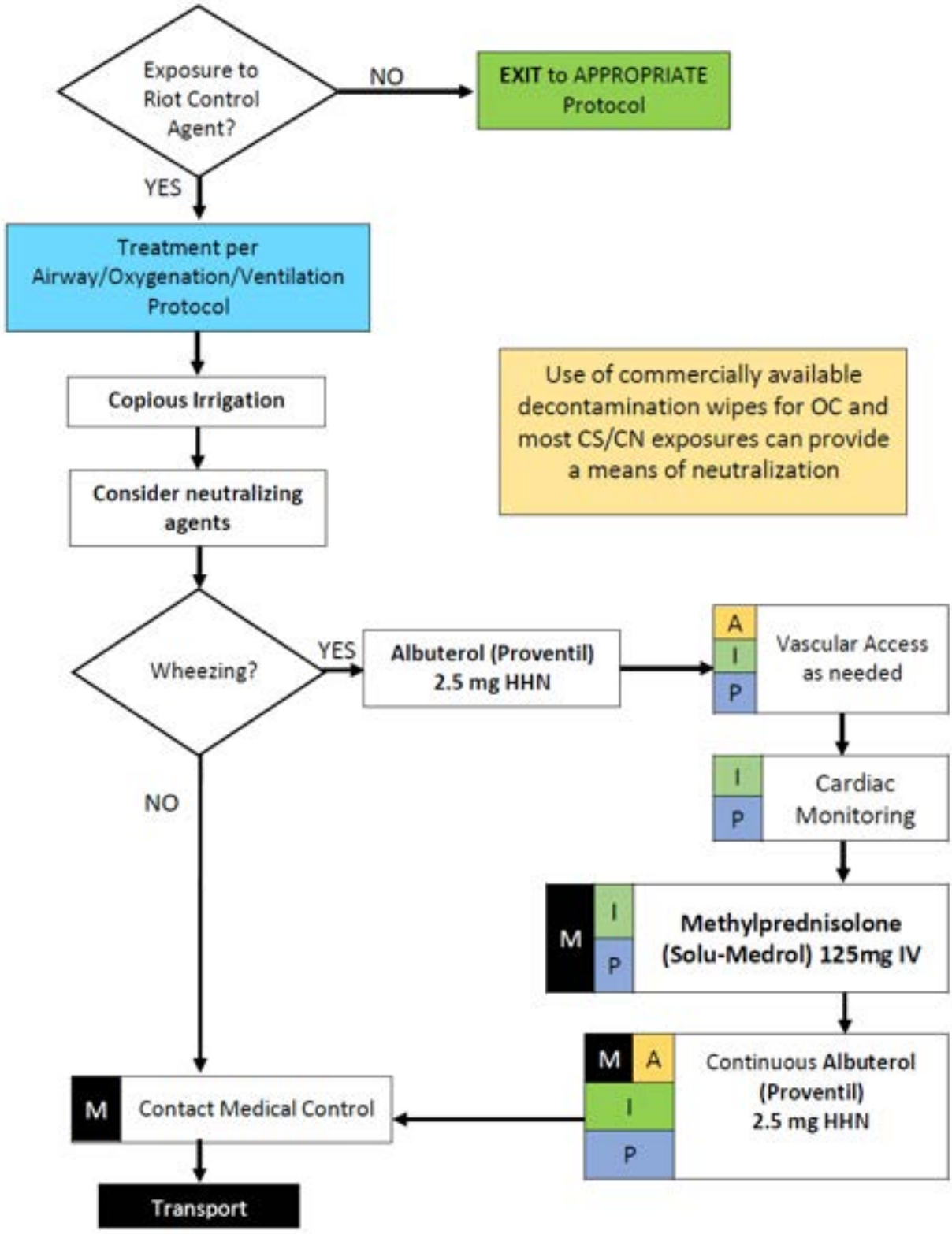
SPECIAL CONSIDERATIONS

- Agents have a high safety ratio and have not been found to cause permanent lung damage or exacerbate chronic pulmonary diseases. Nevertheless, airway problems should be anticipated in individuals with lung disease, particularly after higher than average exposure concentrations
- Use copious amounts of plain water for removing **gross** contamination only. Bleach solutions should not be used. They may react with Chlorobenzalmalononononitrile (CS) to form a combination that is more irritating to the skin than CS alone.

References:

- Currance, Clements, & Bronstein (2005) *Emergency Care for Hazardous Materials Exposure* 3rd edition, Elsevier Mosby, St Louis, p. 602-605
- Currance, P. L. (2005) *Medical Response to Weapons of Mass Destruction*, Elsevier Mosby, St Louis, p. 78-79

CBRNE- Riot Control Agents



Biological Agents

GOALS

- Early recognition and appropriate intervention of patients poisoned with biological agents.
- Protect responders from secondary exposure to biological agents during patient care

TREATMENT

Signs and Symptoms of Exposure

a) Anthrax - A nonspecific prodrome (i.e., fever, dyspnea, cough, and chest discomfort) follows inhalation of infectious spores. Approximately 2--4 days after initial symptoms, sometimes after a brief period of improvement, respiratory failure and hemodynamic collapse ensue

b) **Plague** - Clinical features of pneumonic plague include fever, cough with purulent sputum, hemoptysis, and chest pain

c) **Botulism -** Clinical features include symmetric cranial neuropathies (i.e., drooping eyelids, weakened jaw clench, and difficulty swallowing or speaking), blurred vision or diplopia, symmetric descending weakness in a proximal to distal pattern, and respiratory dysfunction from respiratory muscle paralysis or upper airway obstruction **without sensory deficits**. Inhalational botulism would have a similar clinical presentation as foodborne botulism; however, the gastrointestinal symptoms that accompany foodborne botulism may be absent

d) **Smallpox (variola).** The acute clinical symptoms of smallpox resemble other acute viral illnesses, such as influenza, beginning with a 2--4 day nonspecific prodrome of fever and myalgia before rash onset. Several clinical features can help clinicians differentiate varicella (chickenpox) from smallpox. The rash of varicella is most prominent on the trunk and develops in successive groups of lesions over several days, resulting in lesions in various stages of development and resolution. In comparison, the vesicular/pustular rash of smallpox is typically most prominent on the face and extremities, and lesions develop at the same time

e) **Hemorrhagic fever** (such as would be caused by Ebola or Marburg viruses). After an incubation period of usually 5--10 days (range: 2--19 days), illness is characterized by abrupt onset of fever, myalgia, and headache. Other signs and symptoms include nausea and vomiting, abdominal pain, diarrhea, chest pain, cough, and pharyngitis. A maculopapular rash, prominent on the trunk, develops in most patients approximately 5 days after onset of illness. Bleeding manifestations, such as petechiae, ecchymosis, and hemorrhages, occur as the disease progresses

f) **Ricin** – Symptoms are specific to individual route of exposure. Severe exposure may lead to multiorgan failure and death within 3 days

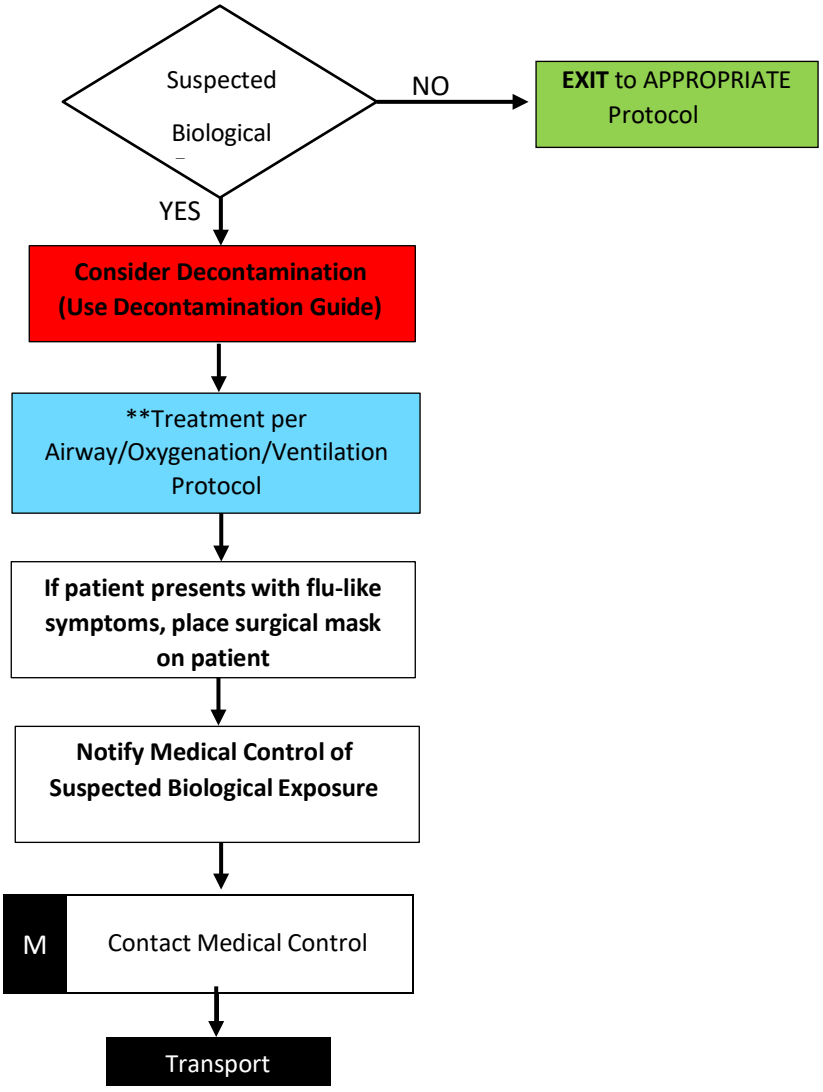
SPECIAL CONSIDERATIONS

- Responders should wear a minimum of N 95 respirators when responding to non-specific flu-like symptoms to reduce the chance of infection. Surgical masks may be placed on infected patients (under a Partial Non-Rebreather oxygen mask, if necessary) Additional personal protective equipment may be necessary, depending on the suspected disease.
- Contact Local Health Department to determine if antibiotic prophylaxis is required for first responders and/or families

References:

- MMWR, Center for Disease Control and Prevention, Department of Health and Human Services, Recognition of Illness Associated with the Intentional Release of a Biologic Agent, October 19, 2001,
- MMWR, Center for Disease Control and Prevention, Department of Health and Human Services, Investigation of a Ricin-Containing Envelope at a Postal Facility --- South Carolina, November 21, 2003
- Interim Guidance for Emergency Medical Services (EMS) Systems and 911 Public Safety Answering Points (PSAPs) for Management of Patients Under Investigation (PUIs) for Ebola Virus (EVD) in the United States Updated: September 10, 2015

CBRNE- Biological Agent



Radiological

GOALS

- Early recognition and appropriate intervention of patients injured following the detonation of a Radiological Dispersal Device
- Protect responders from inhalational exposure to radioisotopes during patient care

TREATMENT

General Information:

Treatment of seriously injured or ill radiologically contaminated patients takes priority over all other activities, including decontamination. Do not delay advanced life support to assess contamination status. Perform required emergency care

- Patients with open wounds should have the wound dressed and bandaged without cleaning
- The most likely isotopes used for Radiological Dispersal Devices will emit Gamma radiation, in addition to Alpha and Beta. Therefore, most available detectors (Gamma RAE, Ludlum Rate meter, etc.) will identify contamination. However, the dispersal of a source reduces the level of radioactivity and therefore, detection above background may be difficult
- When monitoring for patient contamination (external), the use of portal monitors (found at several hospital emergency departments and available through the Hampton Roads Metropolitan Medical Strike Team) and/or the use of hand-held rate meters with a “pancake” probe is suggested. When using hand-held rate meters, a quick “triage” of contamination should focus on the head (hair) and feet (shoes), with a more extensive survey on those found to be contaminated
- Once radiological contamination has been identified, the following resources may be of assistance:

a) Radiation Emergency Assistance Center/Training Site (REACT/TS)

i Weekday phone: (865) 576-3131

ii Weekend/Night phone: (865) 576-1005

b) Armed Forces Radiobiology Research Institute, Medical Radiobiology Team

i Phone: (301) 295-0530

- Radioisotopes commonly associated with Radiological Dispersal Devices include Cesium 137 and Cobalt 60.

SPECIAL CONSIDERATIONS

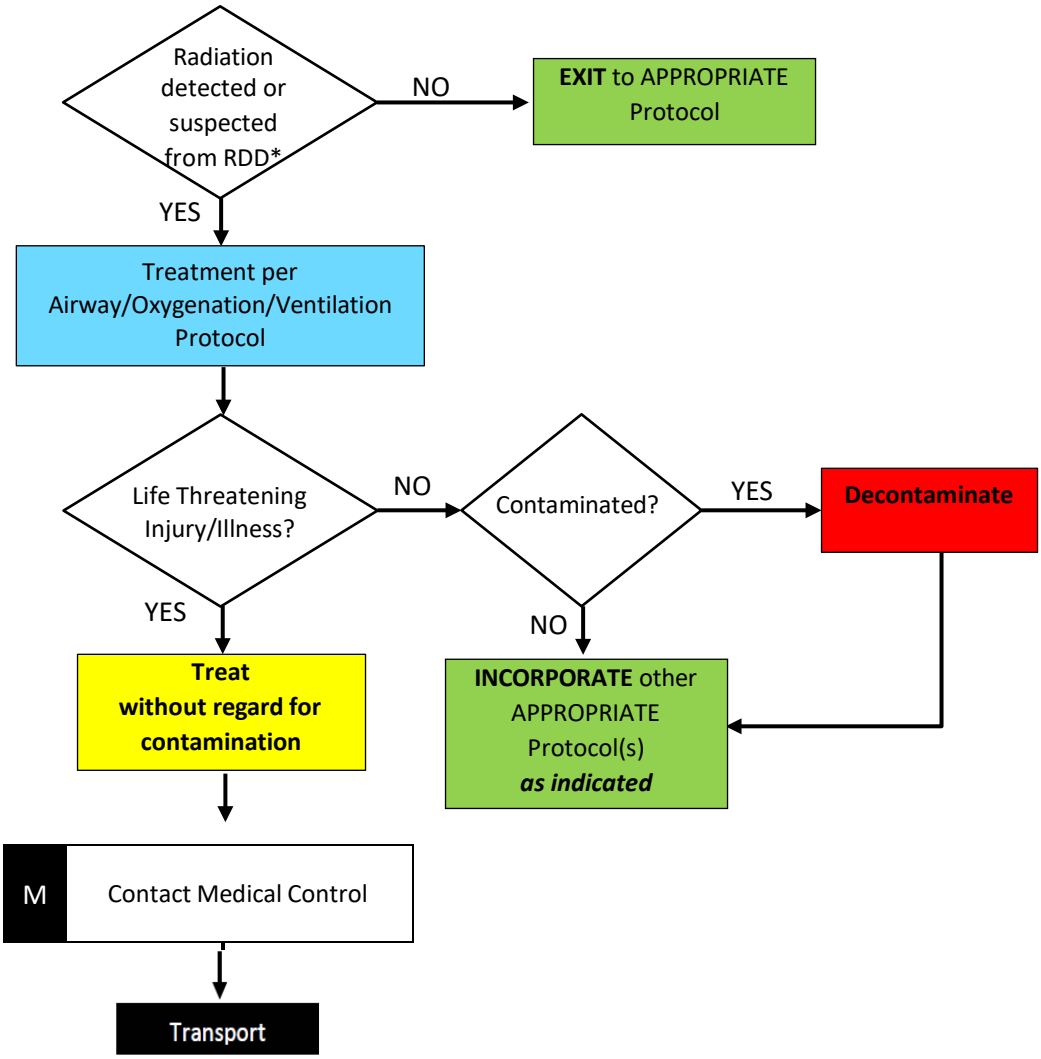
- Responders should wear a minimum of N 95 respirators when responding to non-specific explosions to reduce the chance of internal contamination

- Contaminated patients from a RDD present a LOW RISK OF EXPOSURE to healthcare providers

References:

Wireless Information System for Emergency Responders (WISER), National Library of Medicine. WebWISER Version: Web Application: 4.5 .154; Web Services: 4.5 .70; Database: 4.6.3

CBRNE – Radiation



*RDD-Radiological Dispersion Device

Nuclear

GOALS

- Early recognition and appropriate intervention of patients injured following a nuclear event.
- Protect responders from inhalational exposure to radioisotopes during patient care

TREATMENT

General Information:
Treatment of seriously injured or ill radiologically contaminated patients takes priority over all other activities, including decontamination. Do not delay advanced life support to assess contamination status. Perform required emergency care

- The use of Potassium Iodide (KI) is only useful in the prevention of thyroid cancer following internal contamination of radioactive iodine. Radioactive iodine may be generated by:
  a) Nuclear Power Plant loss-of-coolant accident (LOCA)
  b) Improvised Nuclear Device (IND)
  c) Typically, not a product of a Radiological Dispersal Device
- For the first dose to be effective, time is of the essence
- Potassium Iodide (KI) will be available in the Surry Nuclear Power Plant Evacuation Assembly Centers.
- A single dose of KI protects the thyroid gland for 24 hours.

SPECIAL CONSIDERATIONS

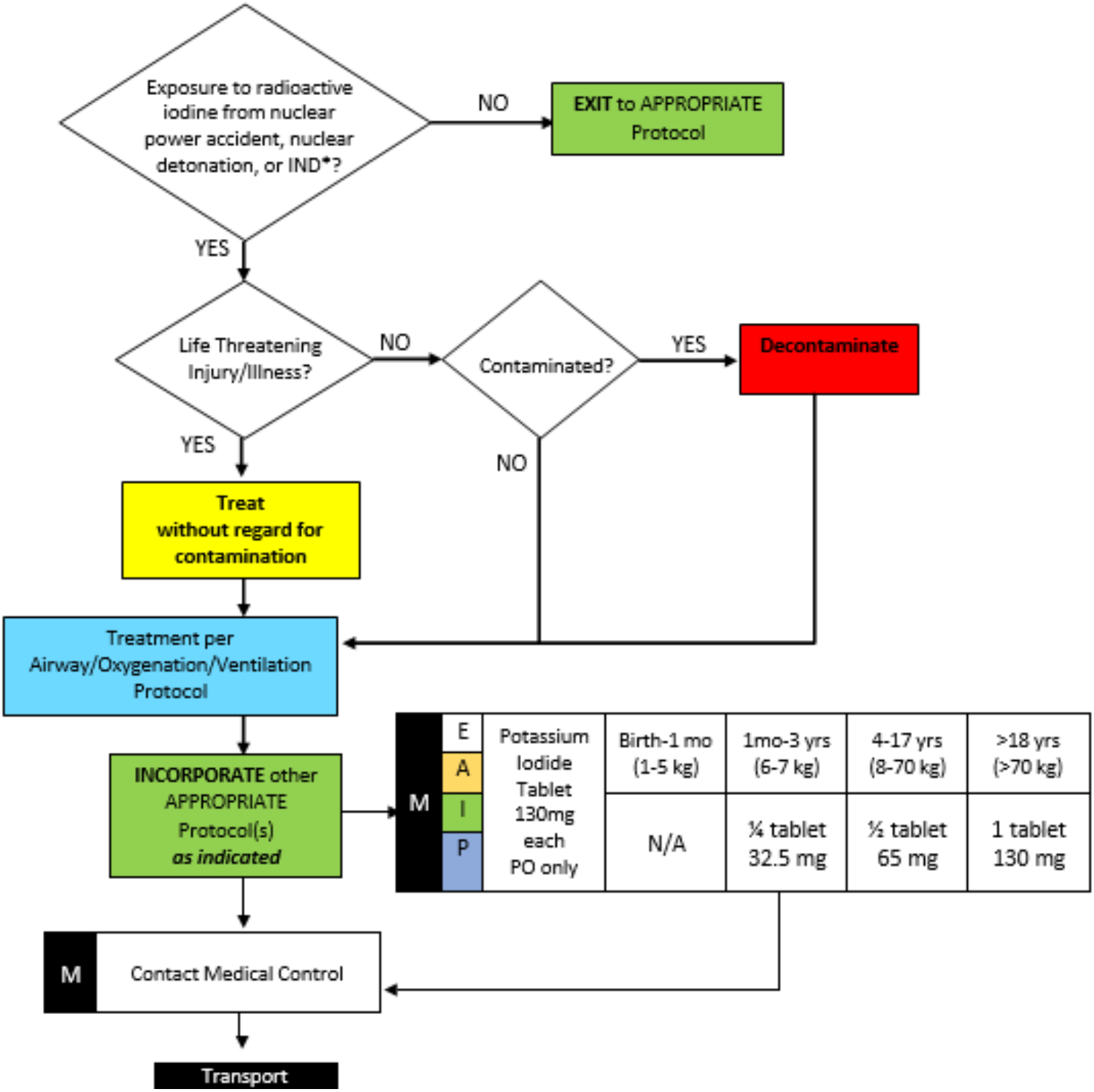
Responders should wear a minimum of N 95 respirators when responding to non-specific explosions to reduce the chance of internal contamination

- Contaminated patients from a nuclear event present a low risk of exposure to health care providers
- It may be harmful for some people to take KI because of the high levels of iodine in this medicine. If they are allergic to iodine (If you are unsure about this, consult medical control; a seafood or shellfish allergy does not necessarily mean that they are allergic to iodine.) or they have certain skin disorders (such as dermatitis herpetiformis or urticaria vasculitis)

References:

- Department of Health and Human Services, Center for Disease Control and Prevention, Potassium Iodide Fact Sheet, February, 2006
- Pediatric Emergency Preparedness for Natural Disasters, Terrorism and Public Health Emergencies, A National Consensus Conference, National Center for Disaster Preparedness, Mailman School of Public Health. March, 2007

CBRNE- Nuclear



Explosives

GOALS

- Early recognition and appropriate intervention of patients exposed to explosives.
- Protect responders from secondary exposure to explosives during patient care

General Information:

a) Blast/Explosions can be both accidental i.e. Natural gas) or intentional (i.e. Terrorism)
b) Coordinate response and entry with Law Enforcement, Fire, and EMS.
c) Provide initial information upon arrival.

M – My call sign
E – Exact location
T – Type of incident (accidental, intentional, unknown)
H – Hazards (smoke/dust/chemical/biological, including human tissue)
A – Access and egress
N – Number of casualties (gross estimation)
E – Emergency assistance required
Consider: Additional non-transport apparatus for manpower
- Private Ambulance Service (i.e., MTI- for transportation resources)
- Mass Casualty Evacuation Transport Unit (MCETU)

d) Identify casualty collection points.
e) Transport “yellow” and “red” patients as they are ready (don’t delay awaiting “sicker” patients)
f) Allow “green” patients to assist “yellow” patients with care.

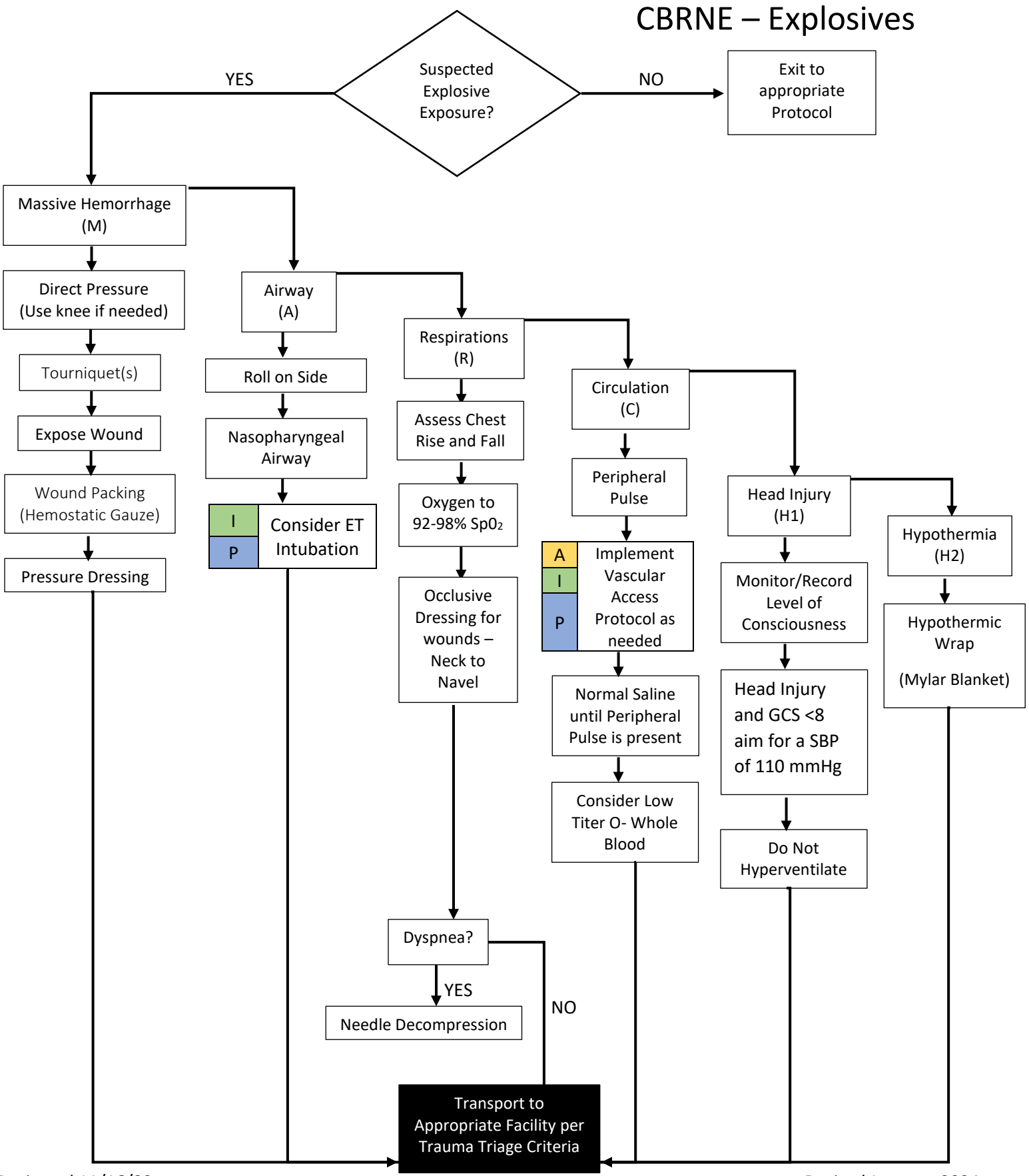
SPECIAL CONSIDERATIONS

- Responders should wear a minimum of N 95 respirators when responding to non-specific explosions to reduce the chance of internal contamination. Additional personal protective equipment may be necessary.
- Unknown or unexpected biological chemicals and radiologic hazards may exist.
- Remove and/or decontaminate PPE frequently.

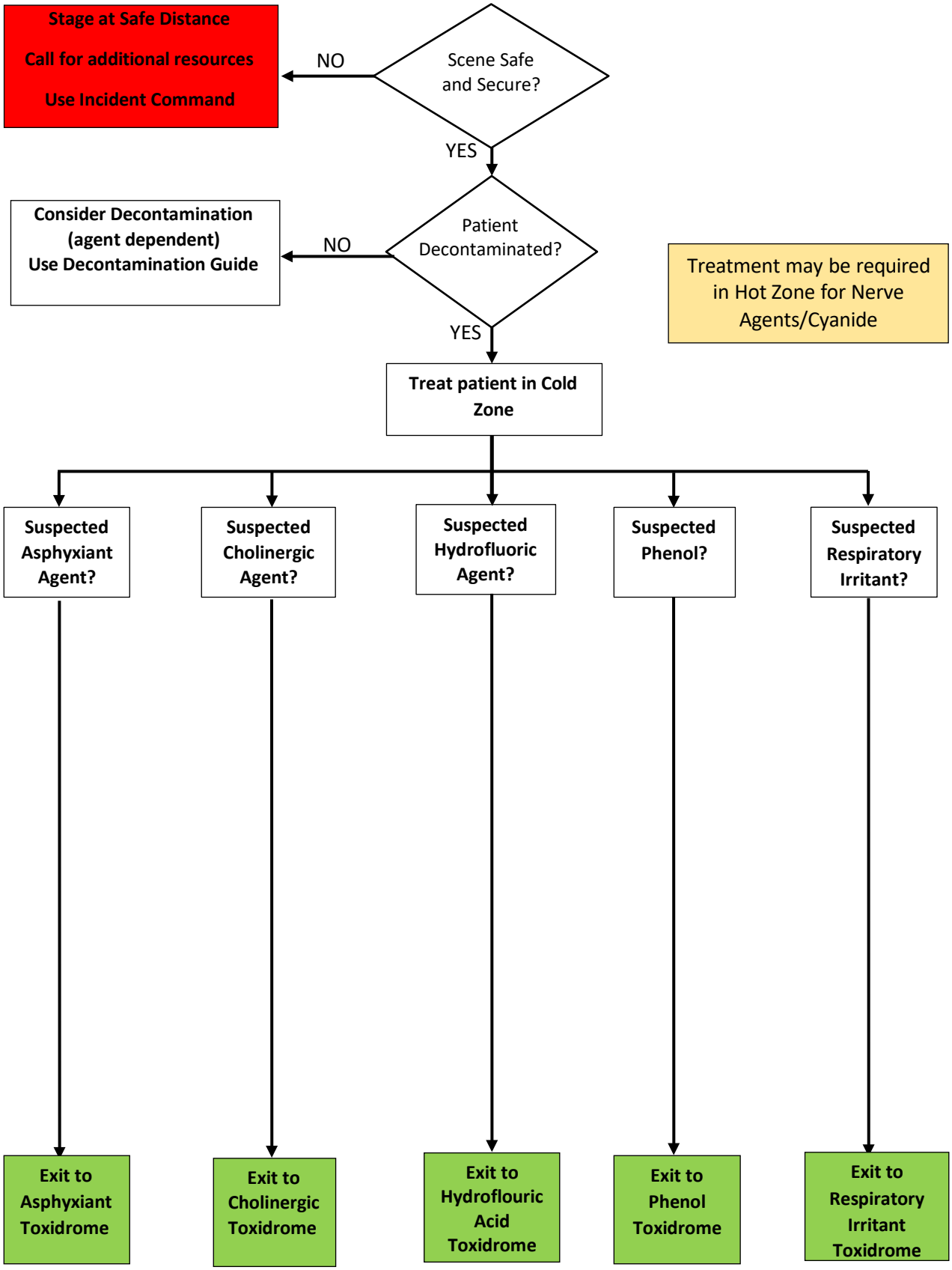
References:

Adapted from:
- Watson, Matt. (2016). Tactical Operations Consulting – S.E.R.V.E Handout. www.toc-llc.com
- Advanced Tactical Paramedic Protocols Handbook. (2016) Journal of Special Operations Medicine. 9th ed.

Appendix J: HRMMRS CBRNE & HazMat Protocols



Appendix J: HRMMRS CBRNE & HazMat Protocols



General Protocol for Haz-Mat Medical Care

The Four Priorities

Reduce The Dose

Remove from the Contaminated Area

- Rescue
  - Bystanders will be assisting, be prepared
  - Know your policies regarding PPE and patient contact/rescue
  - Direct ambulatory victims to safe area away from concentration of contamination
- Decontamination (See Regional Decontamination Guide for Mass Casualties)
  - *Identify those who need decontamination, such as*:
    - Seeking decontamination
    - Proximity to source
    - Characteristics of toxic exposure (i.e., miosis)
    - Contaminated or just exposed?
  - Tools
    - Water Can (extinguisher)
      - Individual “hasty” decontamination
    - Engine/Pumper
      - Class “A” Foam is OK for initial Mass Decontamination
      - Should be followed with plain water when possible
      - Large volume/Low pressure (60 – 90 psi)
    - Dry (cold weather or lack of adequate water)
      - FiberTect brand absorbents
      - Reactive Skin Decontamination Lotion
  - Remove outer clothes
    - Reluctance to disrobe - Offer gross decontamination anyway (large Volume/low Pressure water)
  - Chemical specific when indicated in protocol
  - Contact Poison Control, but follow Med Control Confirmation of Decontamination
    - Visual
    - pH paper (1 – 13 range)
    - M8 paper (requires prolonged contact with liquid)
    - Electronic Detectors
    - PID (ppb?)
    - AP2C
    - Radiation w/ Pancake Probe
  - Tag with designated color/band when confirmed “clean”
    - Purple Tape

Airway/Ventilation

CAUTION: Ingested toxic chemicals present a real hazard to health care professionals from gastrointestinal off-gassing. Assure adequate respiratory protection and and adequate area ventilation

- Airway
  - Recovery Position (AKA Lateral Recumbent)
  - Suction (High Volume)
  - Nasopharyngeal (NPA) v. Oral airway (OPA)
    - NPA advantages
      - Can use when gag reflex intact
      - Remains in-place during movement
  - Alternative Airways w/ Blind Insertion
    - King (with gastric tube)
    - Combitube
    - LMA
    - Endotracheal Intubation
      - GlideScope/King Vision
      - "Trigger" (Endotrol) Tube
- Ventilation (to maintain Sp02 ≥ 94% or ANY patient with suspected Carbon Monoxide/Cyanide exposure)
  - Partial Non-Rebreather Mask (10-15 lpm)
  - CPAP (in non-cardiogenic pulmonary edema)
  - Oxygen powered Hand-Held Nebulizer
    - Albuterol
  - Bag-Valve w/reservoir and Oxygen
    - PEEP valve (5 – 20 cmH2O)
  - Automatic Ventilator
    - Pressure cycled
      - Oxylator
      - Vortran

Antidote Administration

No antidote exists for many poisons

See specific protocols attached

- Asphyxiant Toxidrome
- Cholenergic Toxidrome
- Hydrofluoric Toxidrome
- Phenol Toxidrome
- Respiratory Irritant Toxidrome

Cardiovascular Support

- Rest
  - Limits increase in pulmonary vascular pressures
  - Reduces risk of non-cardiogenic pulmonary edema
- Maintain Perfusion, without over-hydrating
  - Peripheral Pulses OK?
  - Mental Status OK?
- Fluid Replacement
  - Isotonic Solutions
- Inotropes
  - Norepinephrine (Levophed) Drip PRIMARY
  - Epinephrine Drip SECONDARY

Avoid Diuretics in non-cardiogenic pulmonary edema, until adequate rehydration confirmed

Asphyxiant Toxidrome

GOALS

- Early recognition and appropriate intervention of patients poisoned with asphyxiants
- Protect responders from secondary exposure to asphyxiants during patient care

TREATMENT

General Information:

Examples of Common Asphyxiants (including Toxic Industrial Chemicals):

a) Hydrogen Cyanide
b) Potassium Cyanide
c) Hydrogen Sulfide
d) Carbon Monoxide
e) Methemoglobinemia

- Common Exposure Situations:
  a) Cyanide is primarily found as either a solid cyanide salt, a salt solution, or as hydrogen cyanide gas. It may be liberated as cyanide gas in house fires from the combustion of wool, silk, synthetic rubber, and polyurethane.
  b) Hydrogen sulfide is produced naturally by biological degradation of sulfur-containing products (e.g., fish, sewage, and manure) and produced as a byproduct in many industrial processes (i.e., paper mills, petroleum refineries, tanneries, carbon disulfide production, and hot asphalt fumes).
  c) Carbon monoxide sources include household fires, home furnaces, stoves and water heaters, and vehicle exhaust. Another potential source is methylene chloride (often used as a paint stripper or degreaser) that is absorbed through inhalation.
  d) Acquired methemoglobinemia is caused by strong oxidizing agents, most commonly local anesthetics, recreational drugs, and nitrogen-based industrial chemicals. The use of nitrites to treat cyanide poisoning may cause significant methemoglobinemia.
- Signs and Symptoms (general):
  a) Headache
  b) Severe Difficulty Breathing
  c) Cough
  d) Cyanosis
  e) Non-Cardiogenic Pulmonary Edema/ARDS
  f) Altered Level of Consciousness

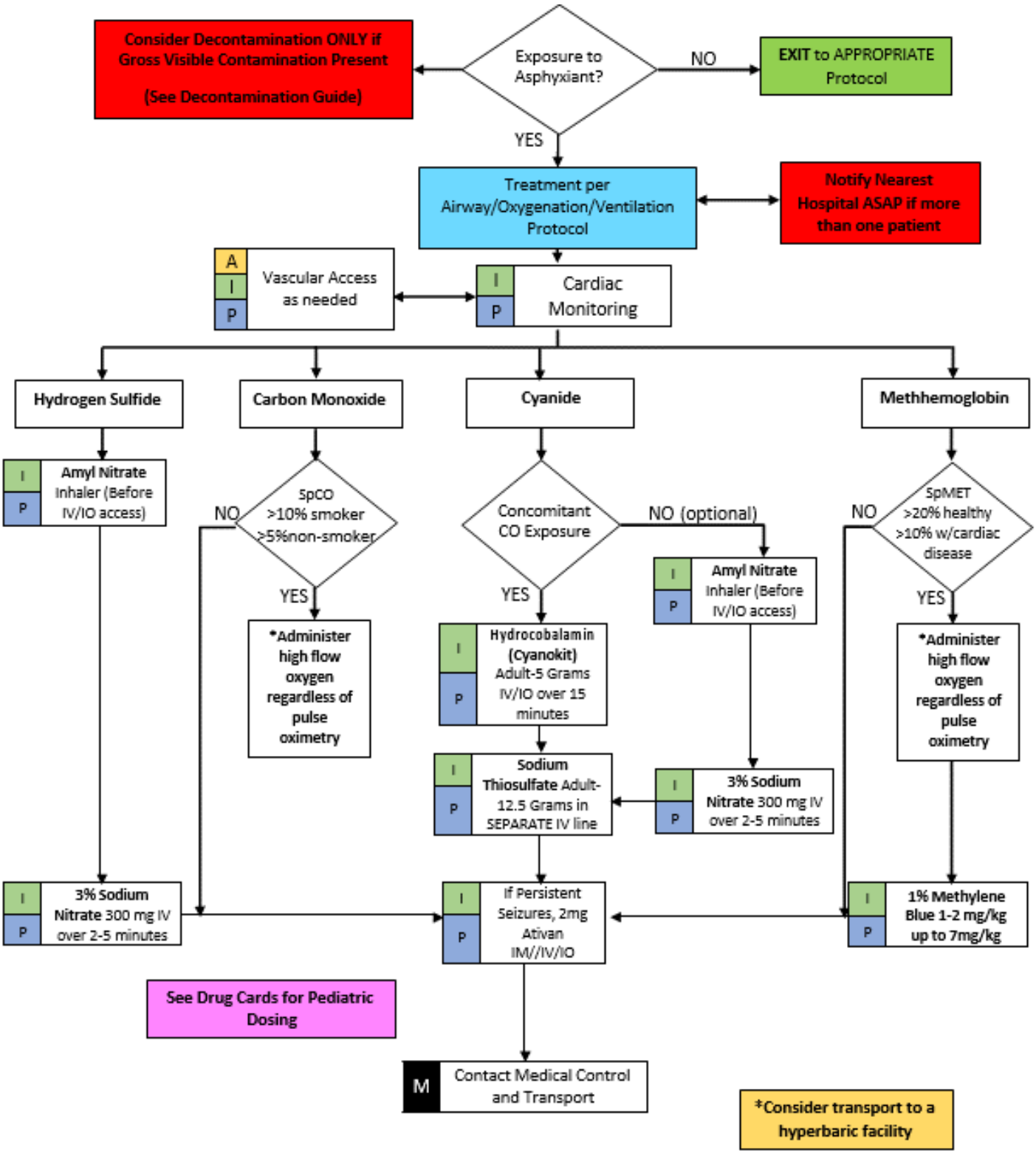
SPECIAL CONSIDERATIONS

- The decision to enter a contaminated area to rescue and/or provide patient care rests with the incident commander and organizational policy
- Victims that have been decontaminated and/or confirmed "clean" are safe for treatment and transportation to a health care facility

References:

Wireless Information System for Emergency Responders (WISER), National Library of Medicine. WebWISER Version: Web Application: 4.5 .154; Web Services: 4.5 .70; Database: 4.6.3

Asphyxiant Toxidrome



Cholinergic Toxidrome

GOALS

- Early recognition and appropriate intervention of patients poisoned with Cholinergic toxin
- Protect responders from secondary exposure to cholinergic toxin during patient care

TREATMENT

General Information:

Signs/Symptoms of Acute Nerve Agent Exposure

- VAPOR

Initial effects following a mild vapor exposure include miosis, rhinorrhea, and dyspnea. Victims may have one of these effects or all three. A large concentration of vapor will cause sudden loss of consciousness and seizures followed by apnea and flaccid paralysis. The severe casualties will have miosis, copious secretions from the nose and mouth, and, unless they are paralyzed, will have fasciculation. "SLUDGE" will occur (salivation, lacrimation, urination, defecation, and gastric emesis). Effects begin within seconds to minutes.

- INGESTION

Immediate onset of gastrointestinal symptoms. OFF-GASSING AND VOMITUS MAY BE DANGEROUS TO HEALTH CARE PROVIDERS. Assure SCBA and Chemical Protective clothing use by all providers while providing direct patient care and during transport. Close window between patient care compartment and drivers compartment or block with pillow if possible. Open driver's compartment windows completely to provide dilution of any vapors. If driver develops any vision difficulties, stop transport as soon as safely possible and request another driver. Do not transport any additional persons in drivers' compartment.

- DERMAL

A very small drop on the skin may cause sweating and twitching at the site, while a small drop on skin may cause nausea, vomiting and diarrhea. A larger drop on the skin may cause loss of consciousness, seizures, apnea, and flaccid paralysis. Effects begin within 30 minutes (large amount) to 18 hours (small amount)

- <u>Variations of Nerve Agents</u>
  - Military grade (i.e., Sarin, Somen, Tabun, VX, etc.)
  - Industrial pesticides
  - Organophosphates (i.e., Azinphos-methyl, Malathion, Methyl parathion, etc.)
  - Carbamates (Aldicarb, Sevin, Bendiocarb, etc.)

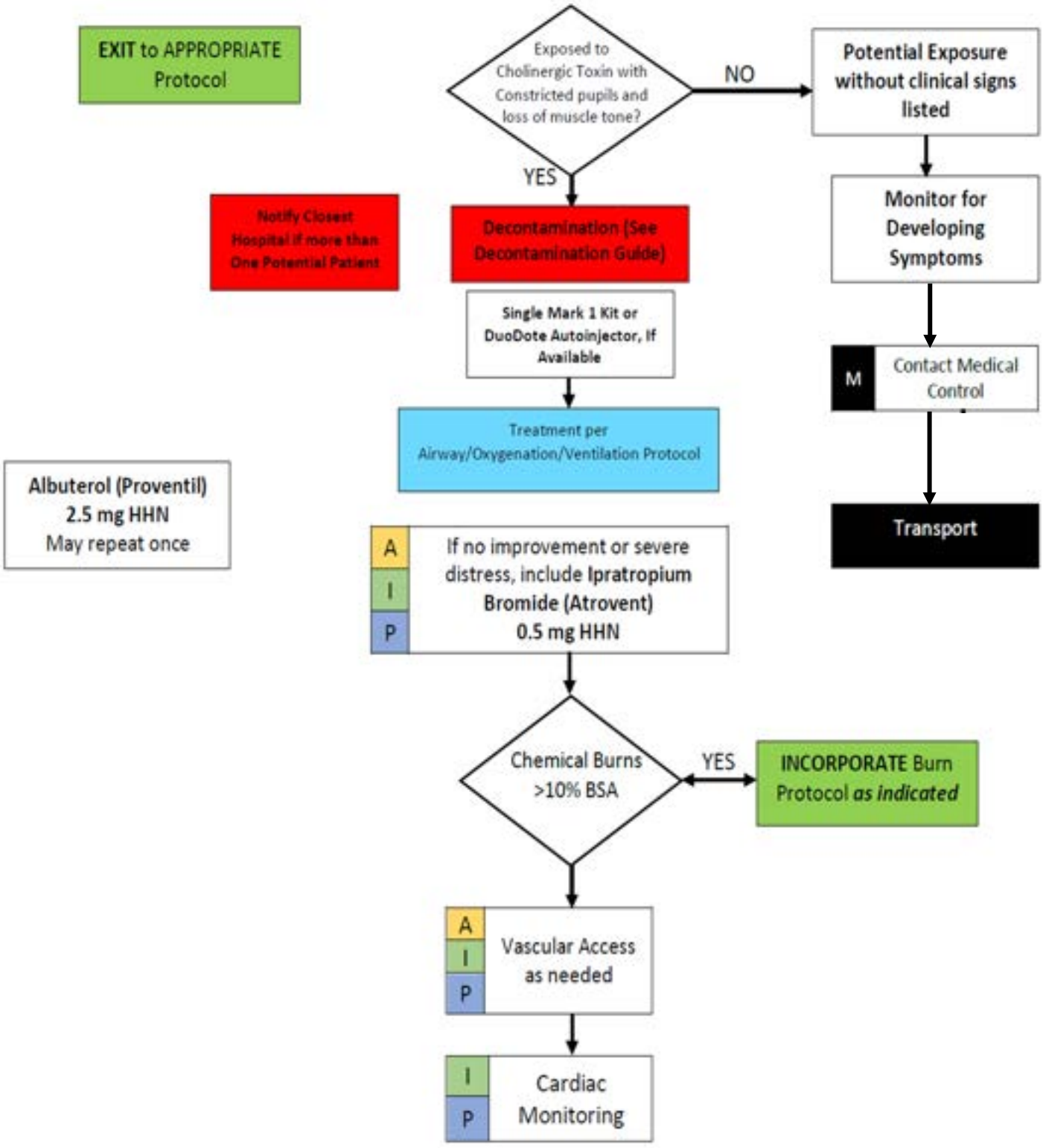
SPECIAL CONSIDERATIONS

- Victims whose skin or clothing is contaminated with liquid nerve agent can contaminate rescuers by direct contact or through off-gassing vapor
- Victims who have ingested nerve agents may off-gas dangerous levels of vapor, even after skin decontamination. All health care professionals should wear respiratory protection that protects against nerve agents, including Self- Contained Breathing Apparatus (SCBA) and chemical protective clothing to avoid contact with emesis

References:

- Wireless Information System for Emergency Responders (WISER), National Library of Medicine. WebWISER Version: Web Application: 4.5 .154; Web Services: 4.5 .70; Database: 4.6.3
- Recognition and Management of Pesticide Poisonings, U.S. EPA, Sixth edition, 2013

Cholinergic Toxidrome



Hydrofluoric Acid Toxidrome

GOALS

- Early recognition and appropriate intervention of patients poisoned with Hydrofluoric Acid
- Protect responders from secondary exposure to Hydrofluoric Acid during patient care

TREATMENT

General Information:

Common Exposure Situations:

a) Hydrogen fluoride (HF) is an irritant gas used in chemical manufacturing or a solution used for rust removal, glass etching, and silicon semiconductor chip manufacturing.

b) Highly electronegative fluoride ion penetrates tissues deeply and binds calcium leading to hypocalcemia (and hypomagnesemia) , tissue burns (rare) and cell death.

Signs/Symptoms of Hydrofluoric Acid exposure

a) Mild to moderate exposure:
   i) Dermal
   ii) Exposure can result in delayed, unrelenting, severe pain without visible signs of injury.

b) Ocular
   i) Exposure can cause mucosal irritation.

c) Inhalation
   i) Inhalation of low concentrations may cause prompt mucosa! Irritation, dyspnea, cough and wheezing.

d) Severe exposure:
   i) Dermal - Tissue destruction or necrosis may be caused by dermal exposure to large amounts of or highly concentrated solutions of HF and may result in systemic poisoning.
   ii) Ocular - Exposure may cause corneal erosion, scarring and opacification.

e) Inhalation
   i) Inhalation may cause systemic poisoning with hypocalcemia, ventricular dysrhythmias (prolonged QT, Torsade de Pointe), hyperkalemia, hypomagnesemia, acidosis and cardiac arrest.

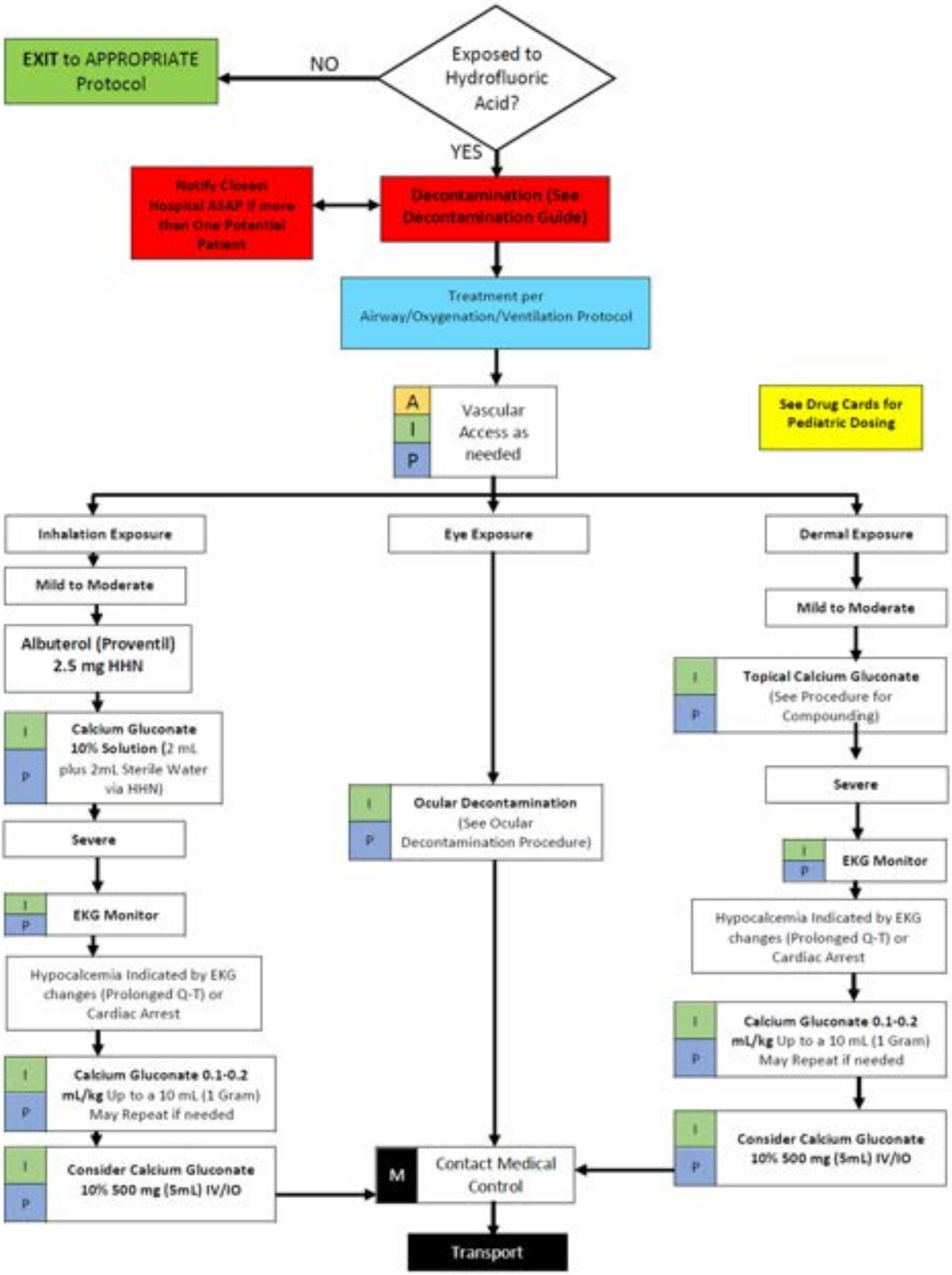
SPECIAL CONSIDERATIONS

- The decision to enter a contaminated area to rescue and/or provide patient care rests with the incident commander and organizational policy
- Victims that have been decontaminated and/or confirmed "clean" are safe for treatment and transportation to a health care facility

References:

Wireless Information System for Emergency Responders (WISER), National Library of Medicine. WebWISER Version: Web Application: 4.5 .154; Web Services: 4.5 .70; Database:4.6.3

Hydrofluoric Acid Toxidrome



Phenol (Carbolic Acid) Toxidrome

GOALS

- Early recognition and appropriate intervention of patients poisoned with Phenol
- Protect responders from secondary exposure to Phenol during patient care

TREATMENT

General Information:

Common Exposure Situations:

a) The major uses of phenol, consuming two thirds of its production, involve its conversion to plastics or related materials. Phenol is also a versatile precursor to a large collection of drugs, most notably aspirin but also many herbicides and drugs.

b) Phenol is a common chemical used on college and commercial laboratories for activities such as tissue preservation and DNA/RNA extraction.

Signs/Symptoms of Phenol exposure

a) Concentrated phenol is extremely corrosive and may cause oral, esophageal, and gastric burns following ingestion.

b) Ocular or dermal contact may result in severe burns; skin absorption can cause systemic symptoms and death.

c) Systemic manifestations of toxicity may include nausea, vomiting, diarrhea, dyspnea, tachypnea, pallor, profuse sweating, hypotension, dysrhythmias, acute lung injury, methemoglobinemia, hemolytic anemia, elevated anion gap metabolic acidosis, agitation, lethargy, seizures, and coma. Liver, lung, central nervous system and renal injury may also occur.

d) Phenol (carbolic acid) toxicity occurs most frequently following acute ingestion or chronic dermal application; however, systemic toxicity can also result from inhalation of vapor. Ingestion of as little as 1 gram may cause death.

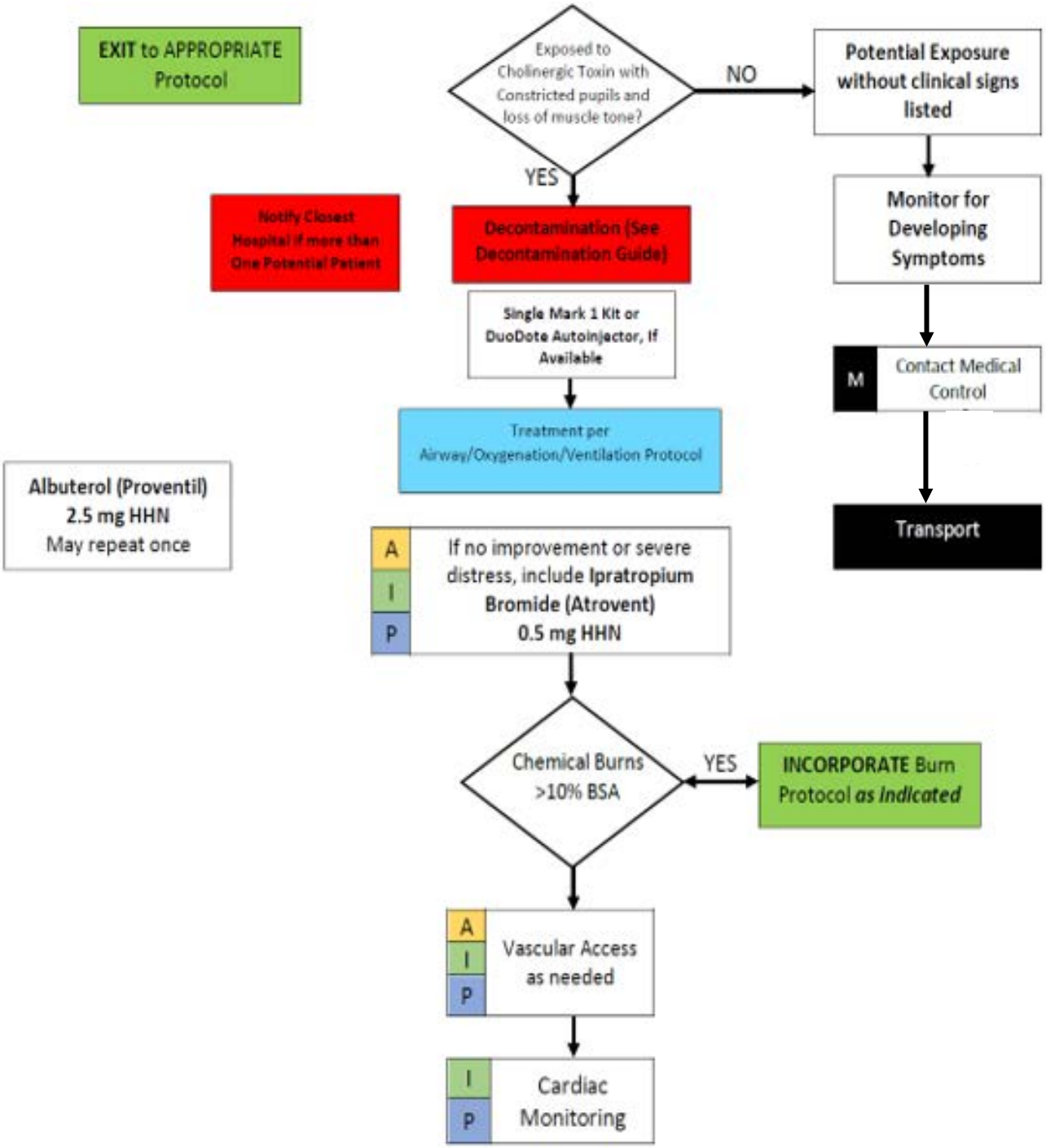
SPECIAL CONSIDERATIONS

- Victims whose skin or clothing is contaminated with Phenol can contaminate rescuers by direct contact or through off-gassing vapor

References:

Wireless Information System for Emergency Responders (WISER), National Library of Medicine. WebWISER Version: Web Application: 4.5 .154; Web Services: 4.5 .70; Database:4.6.3

Phenol (Carbolic Acid) Toxidrome



Respiratory Irritant Toxidrome

GOALS

- Early recognition and appropriate intervention of patients poisoned with respiratory irritants.
- Protect responders from secondary exposure to respiratory irritants during patient care

TREATMENT

General Information:

Examples of Common Respiratory Irritants (including Toxic Industrial Chemicals) :

a) Chlorine (acid)
b) Ammonia (base)
c) Phosgene (acid)
d) Oleum/Fuming Sulfuric Acid

Signs and Symptoms (general):

a) Throat "burning" with persistent cough. Less common in phosgene exposure.
b) Difficulty Breathing with hypoxia that may take hours to present
c) Wheezing that may progress to crackles (rales) from minutes to several hours, depending on dose. This indicates Non-Cardiogenic Pulmonary Edema/ARDS

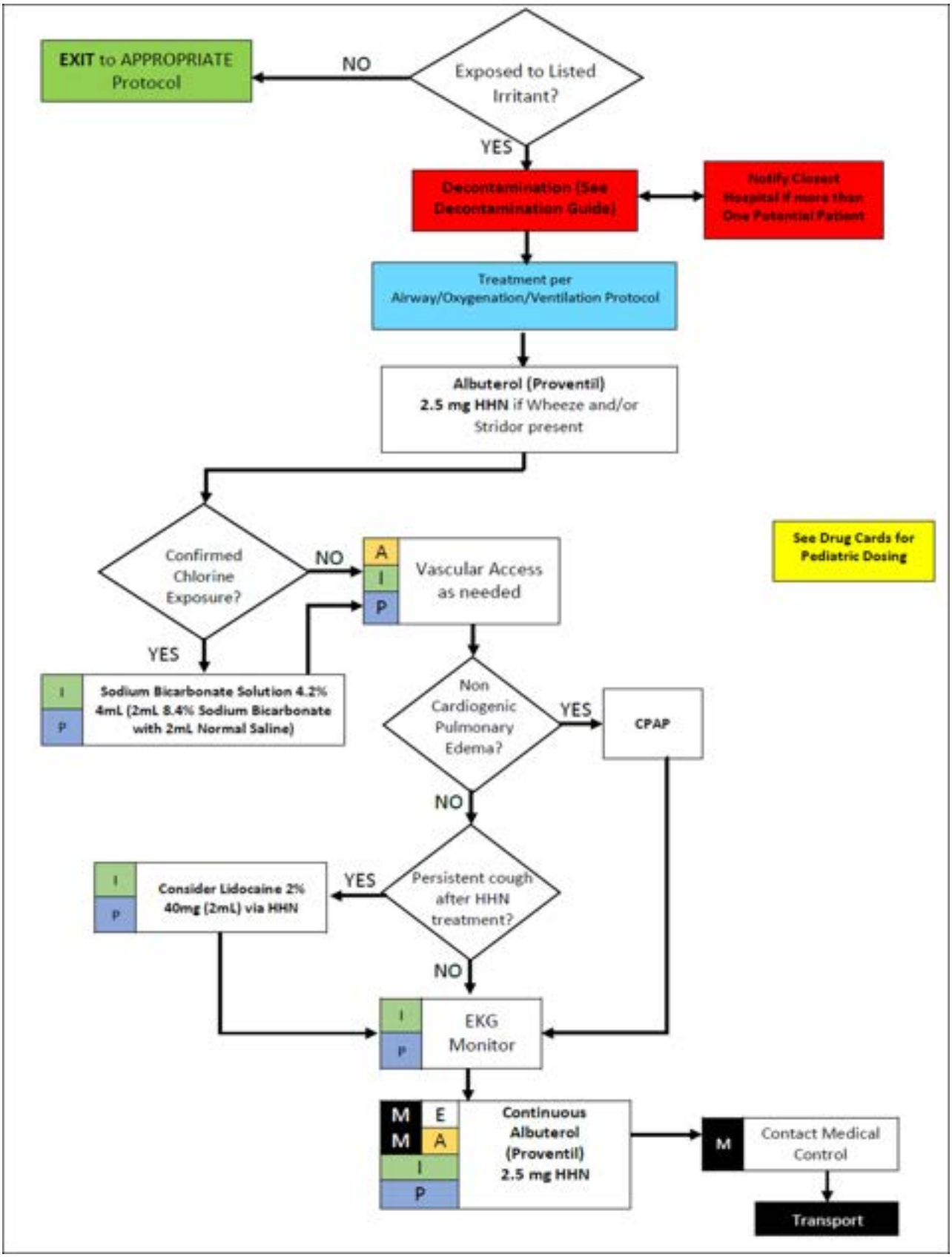
SPECIAL CONSIDERATIONS

- The decision to enter a contaminated area to rescue and/or provide patient care rests with the incident commander and organizational policy
- Victims that have been decontaminated and/or confirmed "clean" are safe for treatment and transportation to a health care facility

References:

Wireless Information System for Emergency Responders (WISER), National Library of Medicine. WebWISER Version: Web Application: 4.5 .154; Web Services: 4.5 .70; Database:4.6.3

Respiratory Irritant Toxidrome



Hazardous Materials Treatment Procedures

Calcium Gluconate Paste

Clinical Indications:

Presumptive/confirmed mild to moderate skin contamination from hydrofluoric acid

Contraindications:

Cardiopulmonary arrest following hydrofluoric acid contamination (use Calcium Chloride IV/IO)

Precautions:

Only for small dermal wounds, including the hand

Procedure:

Step 1: Gather calcium gluconate powder, water-soluble lubricant (K-Y Jelly) and glove that will fit patient (if applying to hand wound). You may use the wooden tongue depressors in the Haz-Mat Support Box to mix.

Step 2: On a clean surface, mix 1.5 g calcium gluconate fine powder (1/2 of single capped container) + 30 mL (about 1 oz. or half of tube.) water-soluble lubricant. This will yield an approximate 5.0% slurry

Step 3: Apply thin coat to burn area (indicated by extreme pain and associated erythema (redness).

Step 4: If exposure is the hand, place hand in glove containing 10 mL slurry (assuring contaminated area is covered by slurry

Step 5: Treat as indicated in the Hydrofluoric Acid protocol. Contact Med Control as needed

Ocular Decontamination

Clinical Indications:

Apparent solid or liquid contamination in or around the eyes.

Contraindications:

Persistent general contamination hazardous to patient or health care professionals - provide decontamination as necessary.
No sign or symptom of ocular contamination.
Note: Consider Pain Management Protocol

Procedure:

Option 1: Morgan Lens

Step 1: INSERTION: Administer 2 drops of Tetracaine Hydrochloride topical ocular anesthetic per eye.

Step 2: Attach Morgan Lens Delivery Set, I.V., set-up or syringe using solution and rate of choice - START FLOW. *

Step 3: Have patient look down, insert Morgan Lens under upper lid. Have patient look up, retract lower lid, and drop lens in place.

Step 4: Release the lower lid over Morgan Lens and adjust flow. Tape tubing to patient's forehead to prevent accidental lens removal. Absorb outflow with the Medi-Duct. DO NOT RUN DRY.

Step 5: REMOVAL: CONTINUE FLOW, have patient look up, retract lower lid - hold position.

Step 6: Slide Morgan Lens out - TERMINATE FLOW.

Note: The local anesthetic may also serve as a prognostic indicator as the drops are irritating on instillation in the normal eye, while the absence of irritation indicates a problem in eyes with severe burns and damaged corneal nerves.

Option 2: I.V. Lactated Ringers + Nasal Cannula

Step 1: Instill Tetracaine Hydrochloride topical ocular anesthetic

Step 2: Spike 1 L Lactated Ringers with 10 gtts/cc administration set.

Step 3: Estimate 3 - 4 feet of tubing from the drip chamber and cut off the remaining.

Step 4: The IV tubing will fit snuggly into the nasal cannula tubing.

Step 5: Rest the nasal cannula prongs over the patient's nasal bridge to irrigate the eyes.

Step 6: Adjust flow as described below. Continue till completed.

Recommended Treatments:

Ocular injury due to:

Acid burns or solvents, gasoline, detergents, etc.

Solution: Lactated Ringer's** I.V. Solution

Mode: Morgan Lens Delivery Set or I.V.+Nasal Cannula set-up
Rate: 500 ml rapid/free flow each involved eye. Reassess and continue at slower rate.
Frequency: Once. Repeat as necessary.

Alkali burns

Solution: Lactated Ringer's** I.V. Solution

Mode: Morgan Lens Delivery Set or I.V+Nasal Cannula set-up
Rate: 2000 ml rapid/free flow each involved eye. Reassess. Continue at 50 ml/hour or 15 drops/minute.
Frequency: Continuous until pH of cul-de-sac is returned to neutrality.

Non-embedded foreign bodies

Solution: Lactated Ringer's** I.V. Solution

Mode: Morgan Lens Delivery Set or I.V.+Nasal Cannula set-up
Rate: 500 ml rapid/free flow each involved eye. Reassess and continue at slower rate.
Frequency: Once. Repeat as necessary.

Foreign body sensation with no visible foreign body **Solution:** 20 cc sterile saline 0.9% solution each involved eye **Mode:** 2 X 10cc Saline Flush syringe

Rate: Slowly without force.

Frequency: Once. Repeat once if necessary.

Notes:

*Allows Lens to "float" over cornea and sclera.
**Recommendation based on pH: Tears approximately 7.1, Normal Saline 4.5 to 7.0, Lactated Ringers 6.0 to 7.5. 0.9% Normal Saline IV solution may be used in the absence of Lactated Ringers IV solution

Reference:

Morgan Lens Instructions at http://www.morganlens.com/use.html (09/29/2012)

Preemptive Vascular Access

Clinical Indications:

Responder to work in Chemical Protective Clothing in an elevated ambient temperature environment as determined by the senior Haz-Mat trained medic on scene.

Contraindications:

Minimal risk of dehydration Refusal by responder Poor peripheral access

Precautions:

Use only forearm veins Avoid antecubital fossa Use no larger than 18ga over-the-needle catheter

Procedure:

Step 1: BEFORE CPC - Provide oral hydration 20 - 40oz. water or water/electrolyte mix. **Step 2:** Assess vital signs. Continue if pre-CPC assessment passed. Assess venous access as usual.
Step 3: If easy access, place catheter and flush with 10cc saline via saline lock. If access fails, place gauze pad over puncture and apply pressure until bleeding stops.
Step 4: With catheter/saline lock in place, cover with transparent, adhesive film. Cover completely by wrapping circumferentially with 2-3 inch self-adherent elastic wrap, keeping the profile low.
Step 5: AFTER CPC - Provide oral hydration 20 - 40oz. water or water/electrolyte mix
Step 6: Unless contaminated with hazardous chemicals, remove wrap to access saline port. If contaminated, assure decontamination before removal.
Step 7: Place I.V. administration set (10 gtts/cc) attached to 1 L Normal Saline
Step 8: Flow 1 L Normal Saline over 10 - 20 minutes.
Step 9: Reassess need for additional I.V. fluids. Contact Med Control as needed

Hampton Roads MMST Haz-Mat Drug Box, Haz-Mat Medical Support Box, and Nerve Agent Antidote Kit

Haz-Mat Drug Box (Green)

Drug	Concentration	Amount
ALBUTEROL INH	0.83 mg/ml	2 packs w/ five 3 ml vials
AMYL NITRITE INH		2 boxes w/ 12 inhalants
ATROPINE LJT	0.4 mg/ml	10 vials w/ 20 ml
CALCIUM GLUCONATE	3 grams per bottle	3 bottles/powder
CALCIUM GLUCONATE 10%	10ml vial	5 vials IV Solution
CYANOKIT	5 gram vial	1 vials
EYE WASH	4 fl oz	2 bottles
KY JELLY	2 oz per bottle	3 bottles
TETRACAINE	0.50%	2 bottles w/ 15 ml
SOD BICARB	8.40%	4 luer-jets w/ 50 ml
SOD NITRITE	30 mg/ml	4 10 ml vials in 2 boxes
SOD THIOSUL	25% (250 mg/ml)	2 boxes w/ 50 ml
LIDOOCAINE 1%	10mg/ml	50ml vial

Haz-Mat Medical Support Box

CONTENTS

Top Tray	
6ea	Morgan Lens
5ea	10cc NS flushes
1ea	Sharps Shuttle
Directions for use of Morgan lens	
1ea	Roll of 4" Tape
5ea	IV Start Kits
5ea	18 gauge IV Catheters
5ea	20 gauge IV Catheters
2ea	Pen Lights
5ea	IV Needleless connectors
Middle Tray	
4ea	Morgan Lens
25ea	Tongue Depressors
5ea	Nebulizer Masks
5ea	Morgan Lens Droplet Sets
Bottom Tray	
5ea	1000 ml lactated Ringers
5ea	Hand Held Nebulizers
10ea	Med Ducts
1ea	Isopropyl Alcohol 16 oz

Hampton Roads Metropolitan Medical Response System (HRMMRS)
Nerve Agent Antidote Kits – Type I

Contents

10 – DuoDote Auto-Injector (pralidoxime 600 mg/2 ml + atropine 2.1 mg/0.7 ml)

1 – Set of TEMS/PEMS Regional Medical Protocols – CBRNE (Nerve Agents – Adult; Nerve Agents – Pediatric)

Storage Requirements

- Kits issued to licensed emergency medical services agencies and stored in locked cabinets in stations, EMS vehicles, or to hospital pharmacies without Chempacks for use by hospital emergency rooms or emergency medical services agencies upon request during an emergency. Case has 1 tamper-evident, numbered, breakable seals.
- Kits must be stored at controlled room temperature (68-77 degrees F with excursions between 59-86 degrees F).
- Kits must be readily accessible 24 hours/day, 7 days/week. Kits stored in stations must be able to be transported immediately to the incident.

Hampton Roads Metropolitan Medical Response System (HRMMRS)
Nerve Agent Antidote Kits - Type II

Contents

50 – DuoDote Auto-Injector (pralidoxime 600 mg/2 ml + atropine 2.1 mg/0.7 ml)
3 – Set of TEMS/PEMS Regional Medical Protocols – CBRNE (Nerve Agents – Adult; Nerve Agents – Pediatric)

Storage Requirements

- Kits issued to licensed fire department/emergency medical services agencies Hazardous Materials Teams and stored in locked cabinets in vehicles and HRMMST equipment trailers for use by these response teams upon request during an emergency. Case has 2 tamper-evident, numbered, breakable seals.
- Kits must be stored at controlled room temperature (68-77 degrees F with excursions between 59-86 degrees F).
- Kits must be readily accessible 24 hours/day, 7 days/week. Kits stored in stations, on Hazmat vehicles, and on HRMMST trailers must be able to be transported immediately to incident.

HRMMRS DuoDote/WMD Box Distribution (March 2020)

Southside Agencies/Hospitals	DuoDote Boxes	Peninsula Agencies/Hospitals	DuoDote Boxes
Chesapeake	1	Gloucester County-Abingdon	1
Franklin	1	Hampton	1
Isle of Wight County	1	James City County	1
Norfolk	1	Newport News	2
Northampton County	1	Poquoson	1
Portsmouth	1	Williamsburg	1
Southampton County - Boykins	1	York County	1
Suffolk	1	Bon Secours Mary Immaculate Hospital	1
Surry County	1	Bon Secours Rappahannock	1
Virginia Beach	1	Riverside Doctors' Hospital Williamsburg	1
Bon Secours DePaul Medical Center	1	Riverside Regional Medical Center	1
Bon Secours Maryview Medical Center	1	Riverside Shore Memorial	1
Chesapeake Regional Medical Center	1	Riverside Walter Reed Hospital	1
Riverside Shore Memorial	1	Sentara Careplex Hospital	1
Sentara Leigh Hospital	1	Sentara Williamsburg	1
Sentara Norfolk	1		
Sentara Obici Hospital	1		
Sentara Princess Anne	1		
Sentara Virginia Beach	1		
Southampton Memorial	1		
Total	**20**	**Total**	**15**

Southside Agencies	WMD Boxes	Peninsula Agencies	WMD Boxes
Chesapeake Hazmat (orange box w/50)	1		
Norfolk Hazmat (orange box w/50)	1		
HRMMST Equipment Cache – Southside (Norfolk) (orange box w/50)	2	HRMMST Equipment Cache – Peninsula (York) (orange box w/50)	2
Portsmouth Hazmat (orange box w/50)	1		
Virginia Beach Hazmat (orange box w/50)	1		
Total	**6**	**Total**	**2**

Plan for Distribution of HRMMRS DuoDote Boxes

- 35 yellow DuoDote Boxes (Pelican case - 11 in. x 10 in. x 7 in.) will be distributed to 17 Fire/EMS agencies and 17 hospitals. Each DuoDote Box will contain 10 DuoDote Auto-Injectors. The DuoDote Boxes will replace the orange HRMMRS WMD Antidote Kits with the exception of the Southside Regional Hazardous Materials Teams and the Hampton Roads Metropolitan Medical Strike Team. These teams will continue to carry the orange HRMMRS box with 50 DuoDote Auto-injectors.

MEDICATIONS

Albuterol

- **MAJOR ACTIONS**
  - Relaxation of bronchial smooth muscle by stimulating beta$_2$-adrenergic receptors.
  - May cause some vasodilation.

- **INDICATIONS**
  - Toxic exposure accompanied by bronchospasm (e.g., wheezing).
  - Reversible bronchospasm.
  - Asthma
  - Bronchospasm that occurs in association with bronchitis and emphysema.

- **DOSAGE**
  - Adult: Nebulized—2.5 mg. Dose may be repeated every 1 to 4 hours as needed. Higher doses (up to 2.5 mg every 15 minutes as needed) may be used for acute attacks (limited by cardiac and other adverse effects).
  - Pediatric: Nebulized--0.15 mg (0.03 ml)/kg to a maximum of 2.5 mg in 3 to 4 ml NS. Dose may be repeated every 1 to 4 hours as needed.

- **PRECAUTIONS**
  - Administer with caution in patients with hypertension, hyperthyroidism, renal insufficiency, hepatic insufficiency, or sensitivity to sympathomimetic amines.
  - May cause tachycardia, hypertension, palpitations, nervousness, tremor, nausea, vomiting, muscle cramps, hypotension and hypokalemia, and hyperglycemia.
  - May cause paradoxical bronchospasm as a result of repeated excessive use.
  - Store in light-resistant containers.

- **HOW SUPPLIED**
  - 2.5-mg/2.5 ml ampule for nebulizer solution (1 mg/ml).

Atropine Sulfate

- **MAJOR ACTIONS**
  - Antimuscarinic (blocks parasympathetic muscarinic receptor sites); inhibits acetylcholine (postganglionic cholinergic nerve-blocking agent).
  - Inhibits parasympathetic nervous system.
  - Blocks cholinergic-medicated neuromuscular junctions.
  - Increases heart rate by blocking vagal stimulation.
  - Increase conduction through the AV node.
  - Reduces tone and motility of the GI tract.
  - Inhibits salivary, bronchial, and sweat gland secretions.
  - Dilates pupils (mydriasis).

- **INDICATIONS**
  - Specific physiologic antagonist for toxic exposures of organophosphates, carbamates, and nerve agents.
  - Sinus Bradycardia or ventricular rates with hypotension.
  - Asystole and high-degree blocks with slow ventricular rates.

- **DOSAGE**
  - Adult:
    - Symptomatic toxic exposure to organophosphates, carbamates, or similar acting nerve agents:
      - Initial dose—IM via autoinjector: 2 to 6 mg, based on response to treatment. Repeat 2-mg every 3 to 5 minutes as needed (refer to Mark I antidote kit protocol in this section).
      - Initial dose—IV push: 2 mg, repeated every 3 to 5 minutes as needed.
  - Pediatric:
    - Symptomatic toxic exposure to organophosphates, carbamates, or similar acting nerve agents:
      - Initial dose---IM via autoinjector: 2 to 6 mg, based on weight and response to treatment. Repeat 2-mg every 3 to 5 minutes as needed (refer to Mark I antidote kit protocol in this section)
      - Initial dose--- IV push 0.05 to 0.1 mg/kg up to maximum of 2 mg. Repeat this dose every 3 to 5 minutes as needed.
  - Atropine should be given until the lungs are clear to auscultation.
  - For severely poisoned patients, a continuous infusion at 0.01 to 0.03 mg/kg/min may be required.

- **PRECAUTIONS**
  - Severely poisoned patients are relatively atropine resistant. They do not respond to the drug as do patients with cardiac instability. Large amounts may be necessary.
  - Increases intraocular pressure dilates the pupils.
  - If large doses are necessary, preservative-free preparations should be used.

- **HOW SUPPLIED**
  - Vials -- 8 mg/20 ml (0.4 mg/ml).
  - Atropine – 2mg/0.7ml autoinjector
  - Atropine – 1mg autoinjector (CHEMPACK)
  - Atropine – 0.5mg autoinjector (CHEMPACK)

Calcium Gluconate

- **MAJOR ACTIONS**
  - Used to treat hydrofluoric acid (HF) and fluoride toxicity.
  - Binds the fluoride ion, preventing tissue and systemic injury.
  - Depending on the type and extent of exposure, calcium gluconate may be administered via several routes. Calcium gluconate gel may be administered topically. Subcutaneous (SQ) injections or intra-arterial (IA) infusion may be used for definitive treatment of local injuries. IV therapy may be needed for systemic signs and symptoms.
  - For local injury, the end point of therapy is the elimination of pain.
  - For systemic poisoning, therapy should be guided by clinical presentation and laboratory values.

Calcium Gluconate Gel

- **INDICATIONS**
  - Mild to moderate skin burns resulting from exposure to HF.
- **DOSAGE**
  - No commercial formulation is currently approved in the United States.
  - The product may be mixed using calcium gluconate powder and a water- soluble lubricant.
  - Mix 1 g calcium gluconate solution in 40 g (about 40 mL) water-soluble lubricant = 2.5% gel; alternative is 1.5 g calcium gluconate fine powder + 30 mL (about 1 oz.) water-soluble lubricant = 5.0% slurry; apply thin coat to burn, then place hand in glove containing 10 mL slurry for 4 hours).
- **PRECAUTIONS**
  - Skin surface may look normal; burn is in lower skin layers.
  - Bone tissue may be involved.
  - Severe burns may require SQ or IA injections; thus, rapid transport to medical facility is essential.
  - Watch for systemic poisoning signs and symptoms.

Intravenous Injections

- **INDICATIONS**
  - Systemic poisoning resulting from exposure to HF.
  - Hypocalcemia secondary to HF exposure.
  - If serum calcium concentration cannot be determined rapidly; when there is a history of HF exposure, patient is symptomatic, and has ECG changes consistent with hypocalcemia (prolonged QT interval).
- **DOSAGE**
  - Administer 0.1 to 0.2 ml/kg IV up to 10 ml. Repeat dose as necessary.
  - Larger than usual doses may be necessary.
- **PRECAUTIONS**
  - Closely monitor ECG and serum calcium and serum potassium concentrations during therapy.
  - Hypotension, bradycardia, and arrhythmias may occur.

Cyanide Antidote Kit

- **MAJOR ACTIONS**
  - **Amyl nitrite** reacts with hemoglobin to form an approximate 5% methemoglobin.
  - **Sodium nitrite** reacts with hemoglobin to form an approximate 20% to 30% methemoglobin. Methemoglobin attracts cyanide ions from tissue and binds with them to become cyanmethemoglobin.
  - **Sodium thiosulfate** converts cyanmethemoglobin to thiocyanate, which is excreted by the kidneys.

- **INDICATIONS**
  - Treatment of poisoning from cyanide-releasing compounds.
  - Treatment of poisoning from cyanide metabolites.
  - Use of amyl nitrite and sodium nitrite for hydrogen sulfide poisoning.

- **DOSAGE**
  - Adult:
    - Aspirols of amyl nitrite should be broken and held, one at a time, in front of patient's nose. They should be left in place for 15 seconds, followed by a 15-second rest, and repeated until sodium nitrite can be administered. This produces an approximate 5% methemoglobin. The use of amyl nitrite should not delay prompt respiratory support. In case of respiratory arrest, place aspirol inside mask or nebulizer attachment and ventilate (remove after 15 seconds, ventilate for 15 seconds, and repeat) until sodium nitrite can be administered.
    - Stop amyl nitrite administration and administer 300 mg of sodium nitrite (10 ml of 3% solution) by IV push over 5 minutes. This produces a theoretical 20% to 30% methemoglobin.
    - **For cyanide exposure only:**
      - Immediately follow sodium nitrite with 12.5g of sodium thiosulfate at one half of the original dose.
      - If toxic signs reappear (or prophylactically at 2 hours post initial dose), repeat both sodium nitrite and sodium thiosulfate at one half the original dose.
  - Pediatric:
    - Aspirols of amyl nitrite should be administered as in the adult patient (above).
    - Sodium nitrite dose (IV): Must be based on child's weight. **Failure to dose according to one of these dosing parameters may lead to a fatal overdose of sodium nitrite.**
    - Sodium nitrite dose based on body weight estimation:
      - 6 mg/kg (0.2 ml/kg) of the 3% solution slowly IV.
      - Do not exceed 10 ml or 300 mg.
    - **For cyanide exposure only:**
      - Sodium thiosulfate dose (IV): Calculate dosage based on child's weight.
      - Sodium thiosulfate dose based on body weight: 1 ml/kg of the 25% solution slowly IV.
      - Do not exceed 12.5 g.
      - If toxic signs reappear (or prophylactically at 2 hours post initial dose), repeat administration of both sodium nitrite and sodium thiosulfate at one half of the original dose.

- **PRECAUTIONS**
  - Methemoglobin will alter the ability for most pulse oximetry units to accurately measure oxygen saturation.
  - Both sodium nitrite and amyl nitrite in excessive doses can induce a dangerous methemoglobinemia and can be fatal.
  - Sodium nitrite can cause hypotension.

- **HOW SUPPLIED**
  - Amyl Nitrite Inhalant 0.3mL aspirols
  - Sodium Nitrite 300mg in 10mL ampoule
  - Sodium Thiosulfate 12.5g in 50mL vial

Hydroxycobalmin (aka - Cyanokit)

- **MAJOR ACTIONS**
  - The action of Cyanokit in the treatment of cyanide poisoning is based on its ability to bind cyanide ions. Each hydroxocobalamin molecule can bind one cyanide ion by substituting it for the hydroxo ligand linked to the trivalent cobalt ion, to form cyanocobalamin, which is then excreted in the urine.
- **INDICATIONS**
  - Cyanokit contains hydroxocobalamin, an antidote indicated for the treatment of known or suspected cyanide poisoning.
- **DOSAGE**
  - The starting dose of Cyanokit for adults is 5 g, (two 2.5 g vials or one 5 g vial) administered by IV infusion over 15 minutes.
  - Depending upon the severity of the poisoning and the clinical response, a second dose of 5 g may be administered by IV infusion for a total dose of 10 g.
  - The rate of infusion for the second 5 g dose may range from 15 minutes (for patients in extremis) to 2 hours based on patient condition.
  - The recommended diluent is 0.9% Sodium Chloride injection.
  - Diluent is not included with Cyanokit.
  - There are a number of drugs and blood products that are incompatible with Cyanokit, thus Cyanokit may require a separate intravenous line for administration (i.e. Sodium Thiosulfate).
  - Pediatrics - Safety and effectiveness of Cyanokit have not been established in this population. In non-US marketing experience, a dose of 70 mg/kg has been used to treat pediatric patients

    See Pediatric Dosage Chart Attached

- **PRECAUTIONS**
  - Blood Pressure Increase - Many patients with cyanide poisoning will be hypotensive; however, elevations in blood pressure have also been observed in known or suspected cyanide poisoning victims.
  - Interference with Clinical Laboratory Evaluations - Because of its deep red color, hydroxocobalamin has been found to interfere with colorimetric determination of certain laboratory parameters (e.g., clinical chemistry, hematology, coagulation, and urine parameters).
  - Because of the dark red color of hydroxocobalamin, the two most frequently occurring adverse reactions were chromaturia (red- colored urine) which was reported in all subjects receiving a 5 g dose or greater; and erythema (skin redness), which occurred in most subjects receiving a 5 g dose or greater.
- **HOW SUPPLIED**
  - Each Cyanokit carton consists of the following:
    - Two 250ml glass vials, each containing lyophilized hydroxocobalamin for injection, 2.5 g (to be diluted with 100ml 0.9% Normal Saline per vial) OR One 250ml glass vial containing lyophilized hydroxocobalamin for injection,
      5.0 g (to be diluted with 200ml 0.9% Normal Saline)
    - One or Two sterile transfer spikes
    - One sterile IV infusion set
    - One quick use reference guide
    - One package insert

Pediatric dose for Hydroxocobalamln

70 mg/kg over 15 minutes not to exceed a single dose of 5 grams Supplied packaging of

Hydroxocobalamin is 2.5 gm in 100 ml

- concentration of 25mg/ml

Weight in kg / lbs	Amount in mg	Volume in ml	Infusion method of choice
2 kg / 4.4 lbs	140 mg	5.6 ml	Syringe Pump
3 kg / 6.6 lbs	210 mg	8.4 ml	Syringe Pump
4 kg / 8.8 lbs	280 mg	11.2 ml	Syringe Pump
5 kg / 11 lbs	350 mg	14 ml	Syringe Pump
10 kg / 22 lbs	700 mg	28 ml	Syringe Pump
15 kg / 33 lbs	1050 mg	42 ml	Syringe Pump
20 kg / 44 lbs	1400 mg (1.4 gm)	56 ml	Syringe Pump
25kg / 55 lbs	1750 mg (1.8 gm)	70 ml	Withdraw 30 ml infuse the remaining 70 ml from vial
30 kg / 66 lbs	2100 mg (2.1 gm)	84 ml	Withdraw 16 ml infuse the remaining 84 ml from vial
35 kg / 77 lbs	2450 mg (2.5 gm)	98 ml	Infuse 1 entire vial
40 kg / 88 lbs	2800 mg (2.8 gm)	112 ml	Infuse 1 entire vial + 12 ml
45 kg / 99 lbs	3150 mg (3.2 gm)	126 ml	Infuse 1 entire vial + 26 ml
50 kg / 110 lbs	3500 mg (3.5 gm)	140 ml	Infuse 1 entire vial + 40 ml

Methylene Blue 1%

- **MAJOR ACTIONS**
  - Methylene blue is a thiazine dye.
  - Two opposite actions on hemoglobin:
  - Low doses of methylene blue reduce methemoglobin to hemoglobin.
  - High doses oxidize hemoglobin iron in the ferrous state (FE^{+2}) to ferric iron (FE^{+3}), forming methemoglobin. Only iron in the ferrous state can bind with oxygen.

- **INDICATIONS**
  - Poisoning causing methemoglobinemia greater than 30%.
  - Methemoglobinemia with signs/symptoms of hypoxia.

- **DOSAGE**
  - Adult: 1 to 2 mg/kg (0.1 to 0.2 ml/kg) of a 1% solution given slow IV push over 5 minutes. Follow with 15 – 30ml Normal Saline flush of IV/IO line. Repeat as necessary up to total dose of 7 mg/kg.
  - Pediatric: Same as adult.

- **PRECAUTIONS**
  - Must be injected slowly over a period of 5 minutes to prevent local high concentration of the compound from producing additional methemoglobin.
  - Do not exceed recommended dosage.
  - Large doses may produce nausea, chest and abdominal pain, dizziness, headache, profuse sweating, mental confusion, and the formation of methemoglobin.
  - Tissue infiltration may cause neurotic abscesses.
  - Contraindicated in patients with glucose-6-phosphate deficiency (G6PD).
  - Provides reversible oxidation-reduction by red blood cell methemoglobin reductase to its colorless form, leukomethylene blue. Leukomethylene blue reduces methomoglobin to hemoglobin. Reaction may go both ways.
  - Gives urine, feces, and glandular secretions blue-green color.
  - May stain skin.
  - Relative Contraindications renal impairment

- **HOW SUPPLIED**
  - 10-mg/1 ml ampule.
  - 10-mg/10 ml ampule.

Sodium Bicarbonate

- **MAJOR ACTIONS**
  - Acts as an alkalinizing agent and main component of bicarbonate- carbonic acid buffer system.
  - Dissociates to yield free bicarbonate ions.
  - Bicarbonate ions combine with hydrogen ions produced by metabolic acidosis or hypoxia-induced anaerobic metabolism to maintain acid-base balance.

- **INDICATIONS**
  - Cardiac arrest (if indications of preexisting metabolic acidosis and only after other treatments have been used)
  - Metabolic acidosis
  - Severe hypercalcemia
  - Hyperkalemia
  - Certain toxic exposures (see specific guideline)

- **DOSAGE**
  - Use in CHLORINE respiratory exposure (in addition to Albuterol)
    - Nebulized - Mix 2 ml 8.4% NaHCO3 with 2ml Normal Saline
  - Adult—IV: 1 mEq/kg (1 ml/kg of 5.4% solution) as an initial dose; then 0.5 mEq/kg every 10 minutes.
  - Pediatric—IV or IO: 1 mEq/kg (1 ml/kg of 5.4% solution) over I minute as an initial dose; then 0.5 mEq/kg every 10 minutes. A dilute solution 4.2% 0.5mEq/ml) may be used in neonates.
  - Whenever possible, any usage should be guided by blood gas determination.

- **PRECAUTIONS**
  - May cause alkalosis, which can cause as many problems as acidosis.
  - May increase intravascular volume and increase cardiac workload.
  - May increase cerebral acidosis if patient is not being adequately ventilated.
  - Precipitates if given with calcium chloride.
  - Deactivates catecholamine if given in same line without adequate flushing.

- **HOW SUPPLIED**
  - 50-mEq/50 ml preloaded syringe (1 mEq/ml) 8.4%.

Tetracaine Hydrochloride (Ophthalmic Solution)

- **MAJOR ACTIONS**
  - Stabilizes the neuronal membrane and prevents the initiation and transmission of nerve impulses.
  - NOTE: Tetracaine hydrochloride is a short-acting topical anesthetic; the effects begin with 20 to 30 seconds of application. Duration of action is about 15 minutes.

- **INDICATIONS**
  - Pain relief to assist eye irrigation and the use of Morgan Therapeutic Eye Irrigation lens.

- **DOSAGE**
  - Adult and pediatric: 1 to 2 drops of 0.5% solution in affected eye.
  - For longer transports, 1 to 2 drops every 15 minutes, up to a maximum of 3 doses.

- **PRECAUTIONS**
  - Transient signs and symptoms: stinging, burning, and conjunctiva redness may occur.
  - Severe allergic reactions may occur. Check for allergies to "-caine" anesthetics before administration.
  - Warn patient not rub or touch eyes.
  - Do not use discolored solution.
  - Store in tight, light-resistant container at room temperature until opened. Store in a tight container under refrigeration after opened.
  - Use with caution in patients with cardiac problems or hyperthyroidism.
  - For short-term use only. Long-term use may cause corneal opacification.

- **HOW SUPPLIED**
  - 0.5% solution in 15-ml dispenser.

Xylocaine (Lidocaine) 1%

- **MAJOR ACTIONS**
  - Anesthetic
  - Antiarrhythmic

- **INDICATIONS**
  - Persistent cough following exposure to respiratory irritant

- **DOSAGE**
  - Nebulized:
    - Adult: 2ml (20mg) of a 1% solution combined with 3ml (2.5mg) Albuterol.
    - Pediatric: Same as adult.

- **PRECAUTIONS**
  - Contraindications:
    - hypersensitivity to Amide - type anesthetics
    - Ventricular dysrhythmias
    - Stokes Adams syndrome
    - 2nd and 3rd degree heart block
    - Bradycardia

- **SIDE EFFECTS:**

  o Bradycardia o Hypotension o Dizziness
  o Numbness o Drowsiness o Confusion o Seizure

- **HOW SUPPLIED**
  - Lidocaine HCL 1% -10mg/ml – 20ml vial

Hampton Roads Haz-Mat/WMD Victim Decontamination Guide

HAZMAT/WMD Mass Casualty Decontamination Guide 2010

Hampton Roads Metropolitan Medical Response Program

INCIDENT MANAGEMENT CHECKLIST

- ☐ Do not rush into the incident scene – protect yourself.
- ☐ Communicate the incident to other responders.
- ☐ Conduct scene safety assessment, to include secondary devices.
  - 360 ° survey for threats/objects out of place
  - Determine wind direction
- ☐ Establish a visible command post.
- ☐ Establish perimeter/zones.
- ☐ Assess risks and determine need for Mass Decontamination.
  - Signs and symptoms of exposure
  - Approximate number of casualties.
  - Determine type/state (liquid, solid or gas) of the hazard. (see algorithm on flip-side)
  - Contact Haz-Mat/Poison Control for guidance
- ☐ Notify medical facilities and assess need for additional resources (engine or ladder companies) to assist with hospital-based
- ☐ Determine what additional resources are needed on scene
  - See resources below
- ☐ Determine wind direction and establish safe area for decontamination set up.
- ☐ Determine the impact of weather conditions on decontamination operations (temperature, wind speed, wind direction). *If the temperature is below 65°F, consider cold weather decontamination.*
- ☐ Set up decontamination site.
  See Other Side
- ☐ Transport victims to medical facility (as necessary).

Resources

- 2008 DOT Emergency Response Guidebook (orange)
- Local Haz-Mat Team

- Disaster Medical Support Units
- Metropolitan Medical Strike Team
  - York ECC
  - Norfolk ECC
- Virginia Haz-Mat Officer/VEOC
  1-804-674-2400
- Poison Control
  1-800-222-1222

VICTIM DECONTAMINATION CHECKLIST

- ☐ Gain control of the victims as rapidly as possible and direct to area(s) to begin decontamination or medical observation.
- ☐ Communicate decontamination process to the victims (e.g., remove garments down to underwear immediately).
  - In multi-lingual communities, use illustrated signs to provide instructions to victims.
- ☐ Perform decontamination triage by separating and prioritizing victims into categories in preparation for mass decontamination (see Decontamination Triage Tree on reverse).
  - Non-ambulatory
  - Ambulatory and symptomatic
  - Ambulatory, non-symptomatic, exposed to contaminant
  - Ambulatory, non-symptomatic, no obvious exposure to contaminant

Note: It is possible that the severity of conventional injuries may require that certain victims receive an elevated priority, regardless of whether they are showing obvious signs/symptoms of exposure.

- ☐ Execute Decontamination
  - Encourage victims to remove as much clothing as possible, but at least remove outer garments down to underwear.
  - Cutting and/or unbuttoning is preferred to pulling clothing over the head.
  - If clothes must be lifted over the head, instruct victims to do so carefully by placing hands and arms inside the garment and using the hands to pull the head opening away from the face and head as much as possible.
- ☐ Establish a method for collecting and tracking personal items (e.g., bag labeled with victim name/number or Triage Tag numbered tab).
  - Based on decontamination triage prioritization, instruct victims to move through the decontamination corridor.
- ☐ Wash time should be between 30 seconds and three minutes.
- ☐ Instruct victims to:
  - Tilt head back.
  - Raise and spread arms and spread legs to expose armpits and groin.
  - Walk through shower system slowly, and periodically turn 90 degrees (1/4 turn).
  - Victims should apply gentle friction by using their hands, a cloth, or a sponge to aid in removal of contamination.
  - When the contamination is a liquid chemical agent, DO NOT apply friction without the aid of soap as this may spread the hazard over the body and increase medical risk.
  - Rubbing should start with the head and proceed down the body to the feet.
- ☐ After passing through decontamination corridor, provide victims with clothing/cover.
- ☐ Direct symptomatic patients to additional treatment or secondary decontamination area(s) as appropriate
- ☐ Victims that have been decontaminated and confirmed with detection tools should receive a purple arm band.
- ☐ Direct non-symptomatic victims to observation area(s).

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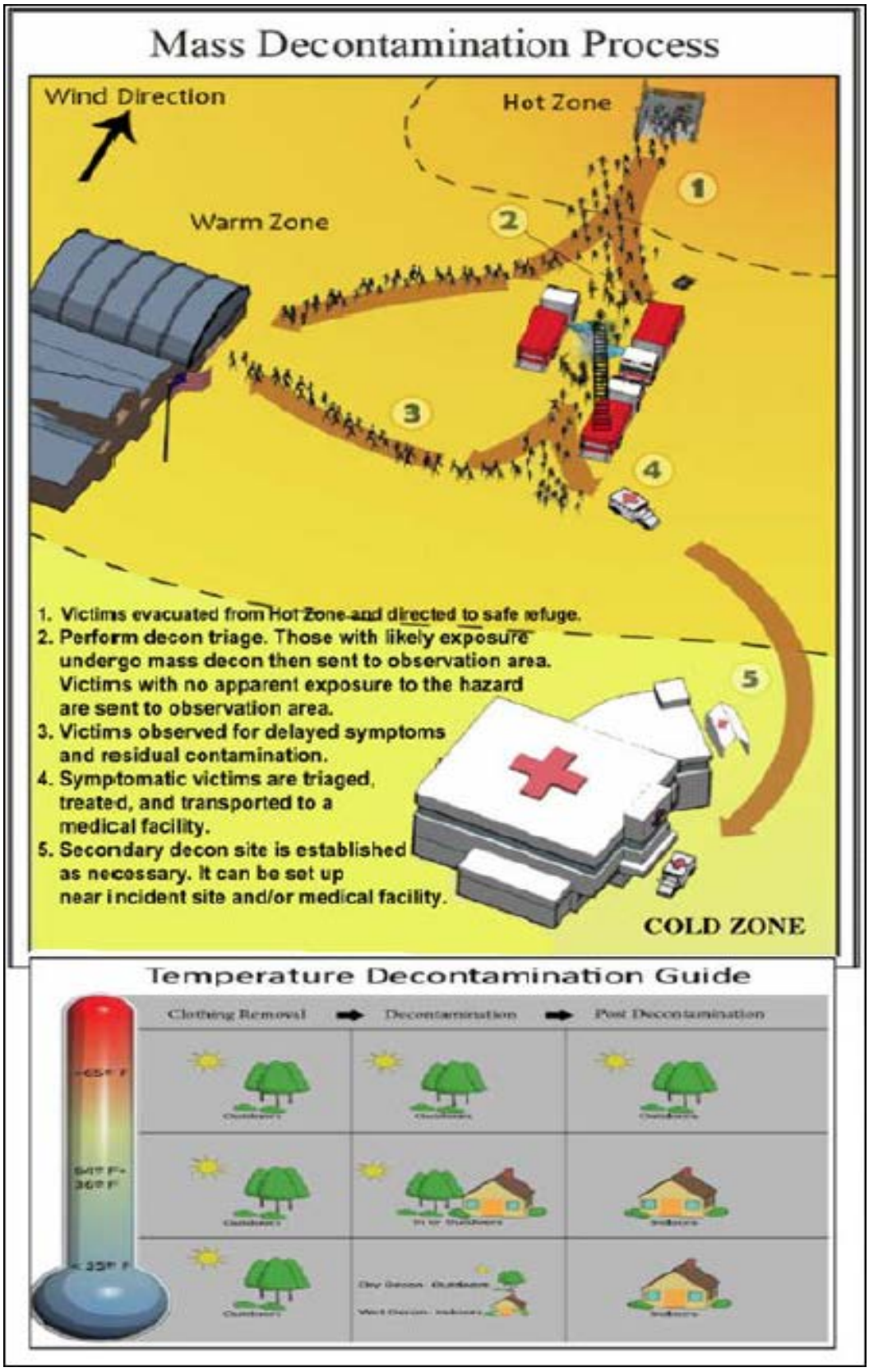
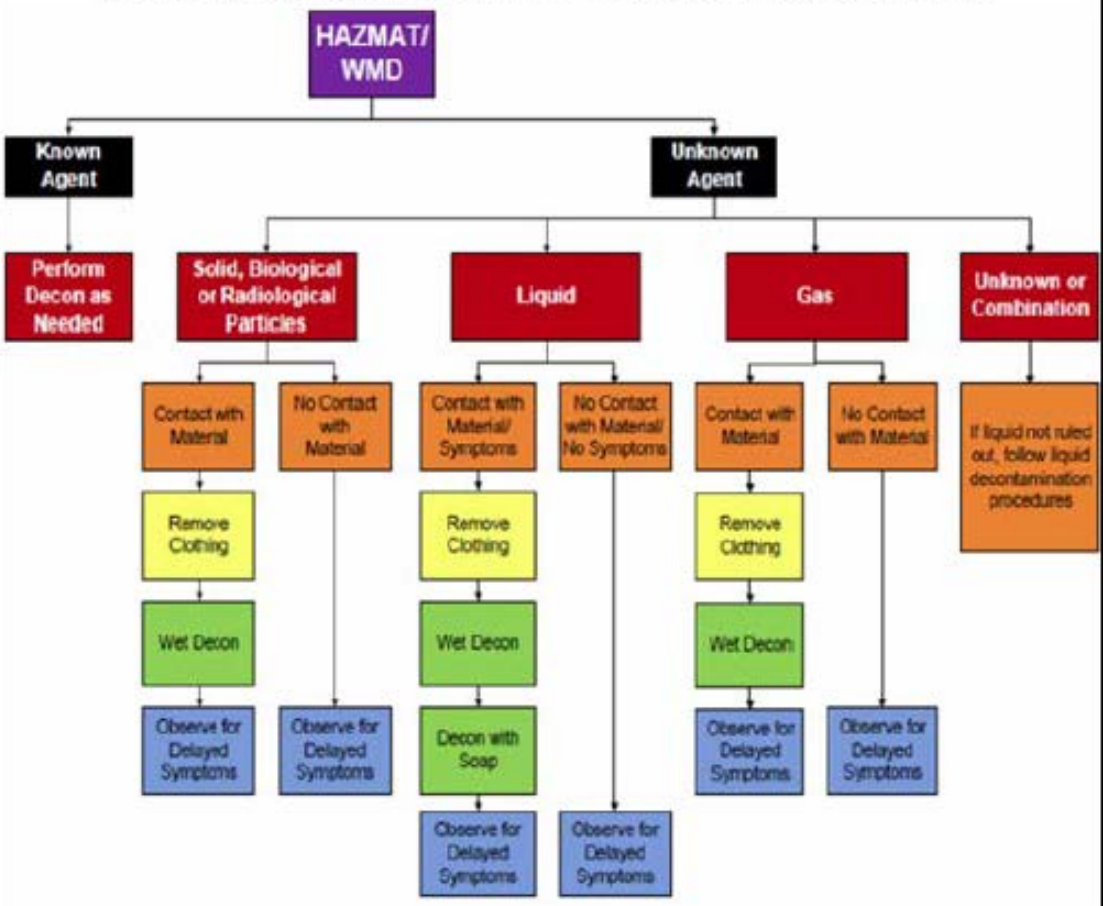

Mass Decontamination Process
Wind Direction
Hot Zone
Warm Zone
1
2
3
4
5
1. Victims evacuated from Hot Zone and directed to safe refuge.
2. Perform decon triage. Those with likely exposure undergo mass decon then sent to observation area. Victims with no apparent exposure to the hazard are sent to observation area.
3. Victims observed for delayed symptoms and residual contamination.
4. Symptomatic victims are triaged, treated, and transported to a medical facility.
5. Secondary decon site is established as necessary. It can be set up near incident site and/or medical facility.
COLD ZONE
Temperature Decontamination Guide
Clothing Removal
Decontamination
Post Decontamination

Generic Guidelines for Unknown Contaminates



DECONTAMINATION DEFINITIONS

Mass (casualty) Decontamination—Decontamination of a large number of people, in the event of contamination by a harmful substance.

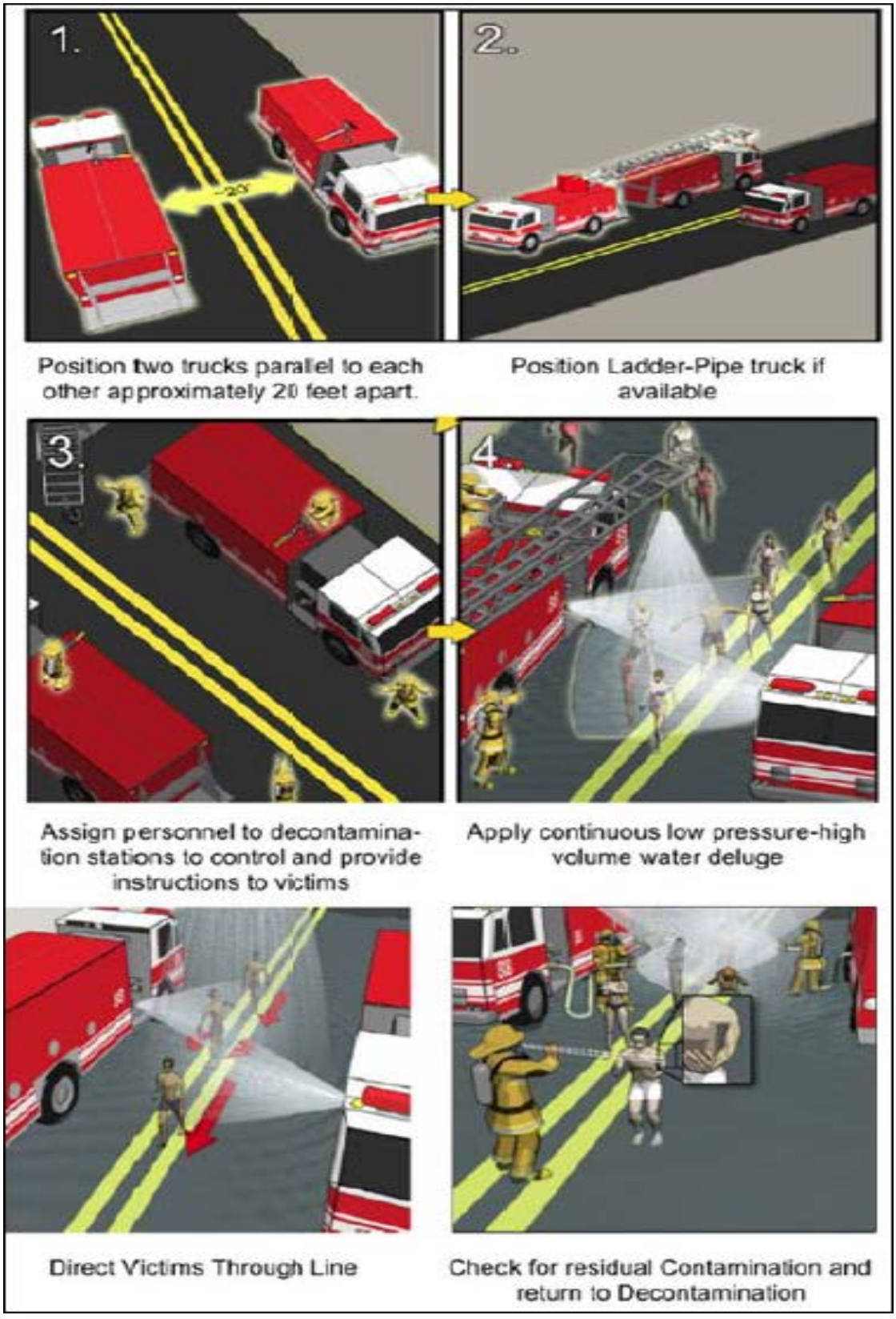
Secondary Decontamination with Confirmation—Though removal of contamination, usually manually by responders, followed by a confirmatory survey with detection equipment.

Emergency Decontamination—The urgent removal of contamination from First Responders and/or First Receivers following incidental contamination during initial response. Usually involves the first available high volume/low pressure clean water available (water extinguisher, Engine Company, garden hose, etc.)

Technical Decontamination—The structured process of decontamination of responders in protective clothing, utilizing several steps to assure complete decontamination. This also may be used to describe the "Virginia 9-ste" decontamination system.

COLD WEATHER DECONTAMINATION (<65°F) CHECKLIST

- ☐ Conduct some form of decontamination regardless or temperature conditions.
- ☐ Remove clothing outdoors
- ☐ If victims are outdoors in very low temperatures (<36°F), use a dry method of decontamination (eg, removal of clothing, blotting) instead of water for liquid contamination.
- ☐ After dry decontamination, victims should be moved inside or to a heated area for water/soapy water high-volume, low pressure water shower and to mitigate the effects of cold weather.
- ☐ Physically identify decontaminated victims with purple arm band.


1.
2.
Position two trucks parallel to each other approximately 20 feet apart.
Position Ladder-Pipe truck if available
3.
4.
Assign personnel to decontamination stations to control and provide instructions to victims
Apply continuous low pressure-high volume water deluge
Direct Victims Through Line
Check for residual Contamination and return to Decontamination

Notes

Tidewater EMS Council, Inc.

Appendix K: TEMS Medication Information

Overview

The purpose of this section is to serve as a drug information supplement and to provide a brief description of the out-of-hospital medications that are authorized by the Tidewater EMS Council Medical Directors.

This document in no way represents the comprehensive pharmaceutical knowledge required for use of these medications by Emergency Medical Technicians providing field care. The comprehensive information about the use of these medications by practicing EMTs and paramedics requires reference to other detailed sources.

Medications are listed alphabetically based on generic names.

Table of Contents

Acetaminophen (Tylenol)

A sterile, clear, colorless, non-pyrogenic, isotonic formulation of acetaminophen intended for intravenous infusion. A non-salicylate antipyretic and non-opioid analgesic agent. Its chemical name is N-acetyl-p-aminophenol.

Protocols: Pain Management

General Info

- Acetaminophen injection is used together with other medicines (eg, narcotic pain relievers) to relieve moderate to severe pain.
- Acetaminophen is used to relieve mild to moderate pain and reduce fever in patients. It does not become habit-forming when taken for a long time.
- Acetaminophen may cause unwanted effects when taken in large doses, including liver damage.

Indications

- Non-cardiac related pain
- Pain not responsive to BLS interventions (splinting, traction, ice, position of comfort, etc.)
- GCS >/= 13 and pain requires pharmacological intervention
- Preferred medication unless more advanced pharmacological intervention is required through use of narcotic and/or dissociative agent

Contraindications

- Tylenol within the last 4 hours
- Liver disease or hepatic impairment
- Chronic alcohol use
- Age <4 months
- Known allergy

Precautions

- Not to be used for headache or migraine

Dosage

- Adult - 1g IV/IO over 15 minutes (Standing Order)
- Pediatric - (Age >4 months): 15mg/kg IV/IO over 15 minutes (Standing Order) - MAX 1g

Adenosine (Adenocard)

Slows or blocks conduction through the AV node. May restore NSR in patients with PSVT.

Protocols: Tachycardia – Adult, Tachycardia – Pediatric (Stable)

General Info

- Adenosine induces a transient heart block in the AV node, and may be able to break certain forms of SVT, converting to normal conduction (i.e., SR or ST)
- Will not affect atrial fibrillation, atrial flutter, or ventricular tachycardia
- Remarkably short half life
- Must be administered fast IV push with ready bolus flush without delay
- Use of a 3-way stopcock may facilitate delivery

Indications

- Symptomatic Paroxysmal Supraventricular Tachycardia
- As a diagnostic tool for Symptomatic Wide Complex Tachycardia

Contraindications

- Second- or third-degree AV block (except in patients with a functioning pacemaker)
- Sick Sinus Syndrome (except in patients with a functioning pacemaker)
- Poison induced tachycardia
- Patients with a known hypersensitivity to Adenosine

Precautions

- The effects of adenosine are antagonized by methylxanthines such as caffeine and theophylline, so larger doses of Adenosine may be required to be effective
- Use with caution in patients with asthma

Dosage

- Adult dosage - Initial 6 mg rapid IV push with immediate 10 ml NS flush , repeat dosage of 12 mg
- Pediatric dosage - initial dosage 0.1 mg/kg rapid IV push with 10 ml NS flush, repeat at 0.2 mg/kg not to exceed 12 mg

Albuterol Sulfate (Proventil)

Beta-2 agonist for bronchial dilation
Potassium transport agent in Hyperkalemic patients

Protocols: Allergic Reaction, Breathing Difficulty, Crush Syndrome, Dialysis Renal Failure

General Info

- Albuterol produces bronchodilation by relaxing bronchial smooth muscle through beta-2 receptor stimulation. In addition, it can help drive potassium back in to cells, combating hyperkalemia-associated complications
- For severe distress and/or breathing difficulty which has not responded to home treatments, a mix of 2.5 mg Albuterol and 0.5 mg Atrovent may be a more appropriate first-line treatment
- Blood pressure, pulse should be monitored
- May induce tachycardia and tremor
- Should be given any time a CHF patient is wheezing
- Should be given on a continuous basis for Crush
- HHN flow rates should be 4-6 $^{L}/_{min}$ or 8-10 $^{L}/_{min}$ when utilizing a mask
- May require coaching to properly administer to some patients

Indications

- Asthma
- Suspected hyperkalemia
- Bronchospasm in patients with reversible obstructive airway disease

Contraindications

- Symptomatic tachycardia
- Any known hypersensitivity to the drug

Precautions

- Patients with cardiovascular disorders (coronary insufficiency, arrhythmias, hypertension, etc.)
- Convulsive disorders and diabetes

Dosage

- Adult Breathing Difficulty 2.5 mg HHN
- Adult/Pediatric Allergic Reaction/Anaphylaxis 2.5 mg HHN
- Crush Syndrome 2.5 mg HHN continuous treatments
- Pediatric Breathing Difficulty 2.5 mg HHN
- Renal Failure 2.5 mg HHN

Amiodarone (Cordarone)

A dysrhythmic for wide-complex tachycardias and ventricular fibrillation

Protocols: Tachycardia – Adult, Tachycardia – Pediatric (Stable), Cardiac Arrest, ROSC

General Info

A complex dysrhythmic, its action is not entirely understood, though is thought to involve prolonging the action potential duration, prolonging the refractory period, or interacting with K+ channels.

- Never given IV push to a perfusing rhythm
- Remarkably long half-life (25-100 days, average 58) within the body
- Viscous, and easily foams when drawn up rapidly with smaller gauge needles
- Flush IV line thoroughly when administered in the same IV line as furosemide or sodium bicarbonate
- Use Zofran with caution due risk of dysrhythmias due to prolonged QT intervals

Indications

- Ventricular fibrillation
- Pulseless ventricular tachycardia
- Ventricular tachycardia with a pulse

Contraindications

- 2nd and 3rd degree heart blocks unless patient has a functioning pacemaker
- Any known hypersensitivity to the drug/ iodine/ benzyl alcohol
- Cardiogenic shock
- Pregnancy, breastfeeding

Precautions

- Use with caution with patients that are currently taking
  - Beta blockers
  - Calcium channel blockers
  - Anticoagulants
- Heart failure
- Torsades de Pointes

Dosage

• Adult Wide Complex Tachycardia	150 mg in 100 ml NS given over 10 min
• Adult Cardiac Arrest	300 mg IVP 2nd dose 150 mg IVP
• Pediatric Wide Complex Tachycardia	5 mg/kg in 50/100 ml NS over 20 min
• Pediatric Cardiac Arrest	5 mg/kg up to 300 mg

Aspirin (acetylsalicylic acid, ASA)

Decreases platelet aggregation for suspected cardiac ischemia and barotrauma

Protocols: Chest Pain/ACS

General Info

- Aspirin's antiplatelet property works by inhibiting the production of a platelet binding agent, and is different from other common blood thinners such as plavix or coumadin
- Early administration during chest pain serves as a cardioprotective agent to reduce the impact of infarct, and the risk of secondary MI
- EMT may administer with physician orders as well as agency's OMD approval
- If patient has taken aspirin shortly before EMS arrival, administer additional aspirin up to the maximum dose (324 mg)
- May be administered to patients taking antiplatelets:
  - Plavix
  - Effient
  - Ticlid
- Contact medical control for patients taking anticoagulants:
  - Heparin
  - Lovenox
  - Coumadin
  - Eliquis
  - Xarelto
  - Pradaxa

Indications

- Suspected acute myocardial infarction

Contraindications

- History of GI bleeding
- Bleeding disorders
- Surgery in past 14 days
- Hypersensitivity to salysilates or other NSAIDs

Precautions

- Aspirin should be used cautiously in patients with peptic ulcer disease or poor kidney function

Dosage

- Chest Pain 4-81 mg tablets (324 mg)

Atropine

An anticholinergic agent to increase heart rate or dry secretions

Protocols: Bradycardia, CBRNE/HazMat Exposure

General Info

- Blocks acetylcholine at parasympathetic neuroreceptors sites to increase firing of the SA and conduction through the AV of the heart.
- Dries secretions by blocking vagus nerve stimulation
- Not an actual antidote for cholinergic poisoning but blocks the action of acetylcholine at muscarinic receptors; as a treatment for SLUDGE-style poisons such as organophosphate insecticides and nerve gases, including Tabun (GA), Sarin (GB), Soman (GD) and VX. Consider early alert to medical control as field supplies are insufficient for prolonged SLUDGE-management

Indications

- Hemodynamically unstable bradycardia
- Cholinergic poisoning

Contraindications

- None when used in emergency situations

Precautions

- Dose of 3 mg should not be exceeded except in cases of cholinergic poisoning
- May cause tachycardia (caution in acute MI)
- May cause hypertension
- May be ineffective in patients with 2nd degree type II or 3rd degree heart blocks with a widened QRS complex

Dosage

- Bradycardia 1 mg up to a max of 3 mg
- Cholinergic agent poisoning 2 to 5 mg
- Pediatric Bradycardia 0.02 mg/kg (0.1 mg minimum dose; max single dose 1 mg)

Calcium Chloride

A cellular stabilizing agent in hyperkalemic patients and calcium replacement during blood transfusion

Protocols: Crush Syndrome, Dialysis Renal Failure, Cardiac Arrest, Whole Blood

General Info

- May help to correct or blunt the effects of abnormal blood chemistry (K, Ca, Na)
- Temporary cellular stabilizing agent for hyperkalemic patients with Crush Syndrome and Renal Failure
- Used for prevention and treatment of hypocalcemia associated with the transfusion of blood products containing citrate preservatives.
- Flush lines and administration site when used in conjunction with sodium bicarbonate
- Not routinely indicated for pediatric patients

Indications

- Full arrest in renal dialysis patient
- Magnesium Sulfate overdose
- Acute hypocalcemia
- Acute hyperkalemia associated with Crush or Renal Failure

Contraindications

- Simultaneous use with sodium bicarbonate
- Digitalis toxicity (may cause Ventricular Fibrillation in patients receiving digitalis)

Precautions

- Sudden death may occur when given too rapidly
- Causes tissue irritation and necrosis if infiltration at the IV site

Dosage

- Whole Blood — 1 gram over 3 minutes
- Crush Injury — 1gram over 3 min IVP (MUST flush IV line thoroughly when administered in the same IV line as Sodium Bicarbonate to prevent precipitation of medication)
- Dialysis — 1 gram in 100 ml NS over 10 minutes

Dexamethasone (Decadron)

A corticosteroid used to treat inflammation, autoimmune, or hormonal conditions.

Protocols: Breathing Difficulty Adult, Breathing Difficulty Pediatric

General Info

- Dexamethasone works to regulate the body's metabolism and immune response.
- Common side effects can include increased blood pressure, increased blood sugar, or mood changes.
- Comes in several forms, including an oral tablet, and injection

Indications

- Allergic Reaction: Anaphylaxis
- Preferred medication over Solumedrol
- Breathing Difficulty: COPD/Asthma with Wheezing which did not improve after Albuterol and Atrovent

Contraindications

- Known Allergy

Precautions

- Use cautiously in patients with cardiac/ renal /hepatic disease as it increases fluid retention
- Carbohydrate intolerance

Dosage

- Adult 10mg IV/IO/IM/PO
- Pediatric: 0.5mg/kg (max 10mg) IV/IO/IM/PO

Dextrose

A concentrated sugar suspension for hypoglycemia complications, and in conjunction with insulin for hyperkalemia in Crush Syndrome

Protocols: Hypoglycemia, Crush Syndrome

General Info

- Provides carbohydrates for cellular metabolism
- If extravasation occurs, discontinue immediately as it may lead to local tissue necrosis
- Administer 12.5 grams of D10 first. Repeat if needed
- Therapeutic response may take a few minutes
- D50 should be used in conjunction with insulin for treatment of Crush patients
- D10 is preferred for treatment of hypoglycemic patients
- If premixed D10 is not available:
    - Draw 50 ml NS from a 250 ml bag and discard
    - Add 25 grams of D50 to the bag and mix thoroughly

Indications

- Hypoglycemia
- Prevention and treatment of hypoglycemia during Crush Syndrome management

Contraindications

- Few when used in the emergency setting
- Intracranial hemorrhages

Precautions

- Use cautiously in patients with cardiac/ renal /hepatic disease as it increases fluid retention
- Carbohydrate intolerance

Dosage

• Hypoglycemia	12.5 grams (125 ml). Repeat if needed.
• Crush Syndrome	25 grams IV/IO (50 ml) (if insulin is available)
• Pediatric dosage- < 7 years old	5 ml/kg D10
• Pediatric dosage- > 7 years old	12.5 grams (125 ml). Repeat if needed

Diphenhydramine (Benadryl)

An antihistamine for allergic reaction and anticholinergic for dystonic reaction

Protocols: Allergic Reaction, Agitated/Combative Patient

General Info

- Benadryl works to combat and blunt the histamine response found in allergic reaction, and has a mild-to-moderate CNS sedative effect
- Consider if patient exhibits signs of a dystonic reaction following Haldol administration in the Agitated/Combative Patient protocol
  - Although an antihistamine, also possesses significant anticholinergic properties; it may help in balancing cholinergic activity

Indications

- Anaphylaxis
- Allergic reactions
- Dystonic reactions after Haldol administration

Contraindications

- Hypersensitivity to H-1 receptor antagonist
- Asthma
- Neonates

Precautions

- Nursing Mothers
- Glaucoma
- Patients taking MAOI medications
- Hypertension

Dosage

- Adult Dosage 50 mg IV/IO/ IM
- Pediatric Dosage 1 mg/kg up to a total dose of 50 mg, may repeat once

Epinephrine

Sympathomimetic and profound α and β agonist

Protocols: Allergic/Anaphylactic Reaction, Breathing Difficulty, Sepsis, Shock Non-Traumatic, Cardiac Arrest, ROSC, Bradycardia – Adult, Bradycardia - Ped

Packaging

- 1 mg / 1 mL ampule
- 1 mg / 10mL preloaded syringe
- 0.3 mg Autoinjector (Adult)
- 0.15 mg Autoinjector (Ped)

General Info

- Bronchodilator - Asthma/COPD, not responsive to other therapies. IM epinephrine should be considered for the acute, severe attack
- Vasoconstrictor that increases the rate and force of cardiac contractions
- Nebulized epinephrine is an acceptable alternative to the racemic epinephrine
- Epinephrine 1:1000 is not indicated for IV/IO injection
- To make "push pressor" mix 1ml of Epinephrine 1:10000 in 9ml of NS

Indications

- Anaphylaxis
- Bronchial Asthma
- Croup
- Exacerbation of some forms of chronic obstructive pulmonary disease (COPD)
- Cardiac Arrest
- Unstable Bradycardia
- Non-traumatic, non-hypovolemic shock

Contraindications

- Hypertension
- Patients with tachydysrhythmias
- Hypersensitivity to sulfates may produce a life-threatening reaction

Precautions

- Should be protected from light
- Blood pressure, pulse and EKG must be constantly monitored
- Must call medical control for physician's order in patients older than 40 years of age or patients with a cardiac history
- Pregnancy

Dosage

- Refer to specific protocols for dosages

Etomidate

Ultrashort-acting nonbarbiturate hypnotic for rapid induction of anesthesia; modulates GABA receptors to induce general anesthesia.

Protocols: RSI

General Info

- Doesn't have any analgesic properties
- Minimal cardiovascular effects
- Shall always be administered prior to administration of paralytic agent
- IV/IO slow push over 30-60 seconds
- Duration of action – less than 10 minutes

Indications

- Anesthesia for RSI

Contraindications

- Patients with known history of hypersensitivity to the drug

Precautions

- May suppress adrenal gland and induce hypotension in patients with profound shock
- Category C for pregnancy

Dosage

- Adult – 30mg (20 mg for patients less than 160lb)
- Pediatric – 0.3 mg/kg up to 30mg

Fentanyl

Synthetic opiate which decreases pain impulse transmission in the CNS, increases pain threshold, and alters pain perception by binding to opiate receptors.

Protocols: Pain Management, RSI

General Info

- Fentanyl is an opioid receptor agonist, and causes profound analgesia and sedation
- May cause respiratory depression
- May administer additional fentanyl if needed with physician order
- May cause nausea; implement Nausea/Vomiting protocol as necessary
- May cause peripheral vasodilation (afterload) and decrease venous return (preload)

Indications

- Moderate to severe pain
- Sedation maintenance for mechanically ventilated patients

Contraindications

- Patients with known history of hypersensitivity to the drug
- Myasthenia gravis

Precautions

- Severe heart disease
- Increased intracranial pressure
- Geriatrics
- Pregnancy (C), increases to (D) when administered for prolonged periods or high doses when administered to patients who are close to full term
- Liver / kidney failure (may prolong duration of action)
- Respiratory depression (Narcan should be available)
- Not recommended IV/IO to pediatric patients due to the "wooden chest" syndrome possibility

Dosage

- Adult - 50 mcg May consider additional dose if pain persists.
- Pediatric - 1 mcg/kg INTRANASAL (max of 50 mcg) May consider additional dose if pain persists.

Furosemide (Lasix)

A loop diuretic for fluid shifting in Breathing Difficulty

Protocols: Breathing Difficulty

General Info

- May produce weak vasodilatory effect
- Vasodilatory effect normally seen within 5-10 minutes and diuresis normally seen anywhere from 5-30 minutes
- May not be effective for patients with end-stage renal failure; consult medical control for guidance

Indications

- Congestive heart failure
- Pulmonary edema
- Cerebral edema

Contraindications

- Dehydration

Precautions

- Should be protected from light
- Dehydration
- Pregnancy
- Anuria

Dosage

- Adult dosage 40 mg slow IVP
- Pediatric dosage 2 mg/kg IV/IO

Glucagon

A human hormone which prompts glycogen stores in the body to be converted to glucose

Protocols: Hyper/Hypoglycemia

General Info

- Treatment for hypoglycemia, may be given when IV access is unavailable to administer D10
- Prolonged hypoglycemia and/or other conditions which have consumed all available glycogen stores prior to administration render glucagon ineffective in treatment

Indications

- Hypoglycemia without IV access

Contraindications

- Known hypersensitivity to the drug

Precautions

- May be ineffective in patients who may have decreased glycogen stores
  - Alcoholics
  - Malnutrition
  - Liver disease
  - Pediatrics

Dosage

- Adult 1 mg IM
- Pediatrics 1 mg IM

Glucose

Increases level of blood glucose.

Protocols: Hyper/Hypoglycemia

General Info

- Provides carbohydrates for cellular metabolism.
- Therapeutic response may take a few minutes.

Indications

- Hypoglycemia

Contraindications

- Impaired airway reflex/inability to protect airway
- Intracranial hemorrhages
- Hypersensitivity to corn products
- Hyperglycemia

Precautions

- Use cautiously in patients with cardiac/ renal /hepatic disease as it increases fluid retention
- Carbohydrate intolerance

Dosage

Adult/Pediatric – Full tube buccal. Repeat if needed.

Haloperidol (Haldol)

Depresses cerebral cortex, hypothalamus, limbic system, which controls activity and aggression.

Protocols: Agitated Combative Patient

General Info

- Lowers seizure threshold, and is contraindicated in patients with such histories
- Chemically restrained patients must also be physically restrained
- Haldol is for intramuscular administration only and should never be used intravenously
- Has strong a-adrenergic and anticholinergic blocking properties
- Not indicated for patients younger than 5 years old
- Patients over 70 years old should receive half of the dose
- May cause QT interval prolongation
- Treat dystonic reaction with diphenhydramine

Indications

- Managing combative patients in the field

Contraindications

- Parkinson's disease
- Seizure disorder

Precautions

- Anticholinergic agent overdose
- Previous cardiac history
- Patients receiving Lithium or epinephrine treatments
- Impaired liver function
- Orthostatic Hypotension

Dosage

Adult - 2.5 – 5 mg IM

Pediatric – 0.05 mg/kg IM (up to 2.5 mg)

Hydroxocobalamin (Cyanokit)

Binds to cyanide ions to form cyanocobalamin (vitamin B12), which is then excreted through the urine

Protocols: Carbon Monoxide Cyanide

General Info

- Follow instruction supplied with the kit for preparation and administration
- Must be protected from light and heat
- Refer to Carbon Monoxide Cyanide Protocol/ Handtevy for instructions on preparation and administration to pediatric patients

Indications

- Suspected hydrogen cyanide exposure

Contraindications

- Hypersensitivity

Precautions

- Pregnancy, breastfeeding

Dosage

- Adult dosage — 5g in 200 ml of NS over 15 minutes
- Pediatric dosage — 70 mg/ kg appropriately diluted over 15 minutes

Ipratropium bromide (Atrovent)

An anticholinergic for bronchial dilation

Protocols: Difficulty Breathing (Asthma/COPD)

General Info

- Atrovent is an anticholinergic (parasympatholytic) agent inhibiting vagally mediated reflexes by antagonizing the action of acetylcholine
- For severe distress and/or breathing difficulty which have not responded to home treatments, a combination treatment of 2.5 mg Albuterol and 0.5 mg Atrovent may be a more appropriate first line
- With a 2-hour half-life, only 1 dose is allowed under standing orders
- HHN flow rates should be 4-6 $^{L}/_{min}$ or 8-10 $^{L}/_{min}$ when utilizing a mask
- May require coaching to properly administer to some patients

Indications

- Asthma as an adjunct to Albuterol
- Bronchospasm associated with bronchitis and emphysema as an adjunct to Albuterol

Contraindications

- Patients with known hypersensitivity to the drug or to atropine/ bromide/ soybean or peanuts

Precautions

- Caution when used in elderly and those with heart failure and urinary retention
- May cause bronchospasm

Dosage

- Adult and Pediatric — 0.5 mg in 2.5 ml (unit dose) mixed in nebulizer with 2.5 mg/3 ml (unit dose) Albuterol Sulfate (Proventil)

Ketamine

Affects limbic system and cerebral cortex to dissociate patient from the surrounding environment. In low doses produce analgesia and modulate central sensitization.

Protocols: Pain Management

General Info

- IV administration shall be performed slowly
- Don't exceed 50 mg total dose
- Not indicated for pediatric patients
- Dilute in equal parts of NS prior to administration

Indications

- Moderate to severe pain without airway compromise

Contraindications

- Patients with known history of hypersensitivity to the drug
- Known or suspected schizophrenia
- Pregnancy
- Altered mental status

Precautions

- Cardiovascular disease
- Conditions in which increased blood pressure would be hazardous (ICP, CHF, HTN)
- May cause nausea; implement Nausea/Vomiting protocol as necessary
- Patients with liver impairment (may prolong duration of action)
- May increase CNS depression when used with alcohol, cannabis, magnesium sulfate, hydrocodone, antihistamines

Dosage

- Adult – 0.5 mg/kg IN or 0.25 mg/kg IV

Lidocaine

A dysrhythmic for wide-complex tachycardias and ventricular fibrillation, or pain management associated with IO

Protocols: Cardiac Arrest, Intraosseous Access

General Info

- A sodium channel blockade and second-line dysrhythmic
- May be used for digoxin toxicity
- When used for pain management of IO – very slow push (over 2 minutes) prior to NS or medication administration

Indications

- Cardiac arrest with recurrent wide-complex tachycardia
- Local analgesic for pain management of IO

Contraindications

- High degree heart blocks
- PVCs in conjunction with bradycardia
- Supraventricular dysrhythmias

Precautions

- Pregnancy; breastfeeding
- Geriatrics
- Kidney/Liver disease
- Congestive heart failure
- Malignant hyperthermia

Dosage

• Cardiac arrest	1 mg/kg initial bolus, repeat once at 0.5 mg/kg
• Adult EZ-IO insertion	40 mg, may repeat once at 20 mg
• Pediatric EZ-IO insertion	0.5 mg/kg, may repeat once at 0.25 mg/kg

Magnesium Sulfate

A dysrythmic for torsades, smooth muscle relaxant for severe breathing difficulty (asthma, COPD), and a NDMA inhibitor in eclampsia

Protocols: Cardiac arrest, Tachycardia - Adult, Breathing difficulty, Pregnancy (Pre) Eclampsia

General Info

- Acts as a calcium channel blocker thereby suppressing early after depolarizations leading to Torsades
- Relaxes smooth muscle cells and causes bronchodilation
- Blocks neuromuscular transmission and decreases the amount of acetylcholine by the motor nerve impulse

Indications

- Torsades (polymorphic ventricular tachycardia)
- Breathing difficulty that include wheezing
- Seizure in pregnancy

Contraindications

- Patients in renal failure (all protocols except pregnancy state do not give to renal failure patients; pregnancy states use caution)
- Heart block
- Shock

Precautions

- Side effects: AMS, respiratory depression, hypotension
- Loss of deep tendon reflexes in the eclamptic patient may indicate over administration
- Use with caution in patients receiving digitalis
- Use with extreme caution in patients with myasthenia gravis and other neuromuscular conditions

Dosage

- Cardiac arrest – adult: 2 grams in 100ml NS over 5 minutes
- Cardiac arrest – pediatric: 50mg/kg in 100ml NS over 5 minutes (max 2g)
- Tachycardia – adult: 2 grams in 100ml NS over 5 minutes
- Breathing difficulty – adult: 2 grams in 100ml NS over 5 minutes
- Breathing difficulty – pediatric: 50mg/kg in 100ml NS over 5 minutes (max 2g)
- Pregnancy (pre) eclampsia: 4 grams in 100ml NS over 5 minutes

Methylprednisolone (Solu-Medrol)

A corticosteroid which reverses capillary permeability to reduce inflammation of bronchioles.

Allergic Reaction, Breathing Difficulty

General Info

- Solu-Medrol is a potent anti-inflammatory steroid used to reduce inflammation due to asthma, COPD or allergic reaction
- Solu-Medrol onset of action is 20-30 minutes after administration, so it does not replace faster acting drugs such as albuterol, Atrovent and/or epinephrine
- Must be reconstituted prior to administration
- Solu-Medrol should not be routinely administered to pediatric patients; however, it may be considered for extended transports (physician order only)

Indications

- Severe anaphylactic reaction in patients who are hemodynamically unstable or in respiratory distress
- Severe asthma / COPD

Contraindications

- Patients with a known hypersensitivity to glucocorticoids

Precautions

- Pregnancy and breastfeeding
- Diabetes
- Seizures
- CHF
- TB
- Trauma

Dosage

- Asthma / COPD — 125 mg IV slow push
- Anaphylaxis — 125 mg slow IV slow push
- Pediatric dosage — 2 mg/kg up to 125 mg

Midazolam (Versed)

A benzodiazepine sedative hypnotic, that potentiates GABA, causing amnesia, sedation, and skeletal muscle relaxation.

Protocols: Bradycardia – adult, Tachycardia – adult, Agitated/Combative Patient, AOV, Breathing Difficulty – adult, CPR Induced Consciousness, RSI – post airway, Seizures

General Info

- May be administered IV/IO/IM/IN
- Second line drug for seizures in pregnant patients
- Rapid IV push may result in apnea; should be administered over 1 minute
- Intranasal dose should be split into two doses (one in each nare)
- Preferred route for pediatrics is IN/IM

Indications

- Active Generalized Seizure
- Anxiety with CPAP use
- Combative patients
- CPR Induced Consciousness
- Sedation after advanced airway placement
- Sedation for pacing and cardioversion

Contraindications

- Shock
- Glaucoma
- Acute alcohol intoxication with depressed vital signs

Precautions

- Respiratory depression is common with versed. COPD patients are more sensitive to this effect.
- Adverse reactions may increase when used with:
  - Barbiturates
  - Alcohol
  - CNS depressants
  - Cimetidine (Tagament)
  - Diltiazem (Cardizem)

Dosage

• CPR Induced Consciousness	2.5 mg IV
• Bradycardia – adult	2.5 mg IV
• Tachycardia – adult	2.5 mg IV
• Agitated/Combative patient – adult	2.5 mg IN/IM (age ≥ 70, 1.25 mg)
• Agitated/Combative patient – pediatric	0.2 mg/kg IN/IM (max single dose 2.5 mg)
• Agitated/Combative patient – severe agitation adult	5mg IN/IM (age ≥ 70, 2.5 mg)
• Agitated/Combative patient – severe agitation peds	0.2 mg/kg IN/IM (max single dose 5mg)
• AOV/RSI after advanced airway placement	2.5 mg IV/IO, may repeat after 5 minutes
• Breathing difficulty – adult	1 mg IV
• Active Seizure – adult	2.5 mg IV **OR** 5 mg IN/IM

Morphine

A natural opioid analgesic: helps the heart by causing venous dilation and decreased venous return

Protocols: AOV, Chest Pain/ACS, Pain Management, RSI – post airway

General Info

- Morphine is an opioid receptor agonist that causes profound analgesia and sedation
- Narcan is the antagonist and may be used to reverse overdose

Indications

- Sedation after advanced airway placement
- Chest pain
- Pain management

Contraindications

- Shock
- Respiratory depression
- Asthma and/or hypercarbia
- GI obstruction
- Head injury
- MAOI use

Precautions

- May cause respiratory depression (Narcan should be readily available)
- If administering via IVP, it must be given via slow push to avoid apnea
- Implement Nausea/Vomiting protocol as needed
- May cause decreased cardiac output including bradycardia and hypotension

Dosage

• Post advanced airway placement – peds	0.1mg/kg IV
• Chest Pain	2mg IV/IM (max of 10mg)
• Pain Management – adult	5mg IV/IM (max of 10mg)
• Pain Management – peds	0.1mg/kg IV (max of 5mg)

Naloxone (Narcan)

An opioid receptor antagonist

Protocols: Overdose/Poisoning

General Info

- Goal of Narcan is to establish an adequate respiratory drive and dosing should be titrated for this effect; it is not based on consciousness
- In the suspected opioid overdose patient, Narcan should be administered and given time to take effect before proceeding to intubation
- Layperson administration does not count towards max dose guidelines

Indications

- Poor respiratory drive/profound shock from suspected opioid overdose
- Clonidine overdose by medical control order

Contraindications

- Anyone with an allergy or sensitivity

Precautions

- May cause withdrawal symptoms
- Could precipitate seizures in seizure patients; dysrhythmias in cardiac patients
- An opioid overdose that results in cardiac arrest should have high quality CPR and defibrillation, along with airway management and first line drugs prior to Narcan administration (if used at all)

Dosage

- Overdose/Poisoning – adult: 2mg IM/IV/IN
- Overdose/Poisoning – peds: 0.1mg/kg IM/IV/IN (max single dose 2mg)

Nitroglycerin

A potent vasodilator for decreasing oxygen demand in chest pain, and fluid shifting in CHF

Protocols: Breathing Difficulty, Chest Pain /ACS

General Info

- Nitroglycerin works principally in chest pain to reduce total peripheral vascular resistance by vasodilation of the coronary vessels, thus decreasing the oxygen demand placed on the ischemic heart; presumably leads to reduced tissue infarct and better post-event outcome
- Produces redistribution of blood from the central circulation into larger capacitance veins, decreasing pulmonary venous congestion and decreasing left atrial and ventricular filling pressures, leading to better cardiac output and improvement in breathing for the patient in acute fluid overload

Indications

- Chest pain of suspected cardiac origin
- Acute congestive heart failure

Contraindications

- Shock; blood pressure less than 90mmHg
- Patients that have taken sexually enhancing medication in the past 72 hours such as Viagra, Levitra, Cialis, etc.
- Increased intracranial pressure, cerebral hemorrhage
- Pediatric patients

Precautions

- Be cautious with administration when SBP falls 30mmHg or more
- Patients experiencing right ventricular OMI are volume dependent; NTG could cause profound cardiogenic shock

Dosage

- Breathing difficulty; Chest Pain/ACS — 1 SL tab every 3-5 mins (max 3 doses)
- Breathing difficulty; Chest Pain/ACS — 1 inch paste TD

Norepinephrine (Levophed)

A peripheral vasoconstrictor and an inotropic stimulator of the heart

Protocols: Sepsis, Shock (Non-traumatic), Appendix J: HRMMRS CBRNE & Hazmat Protocols

General Info

- Produces positive inotropic effects (contractions) and peripheral vasoconstriction
- Selectively dilates blood vessels of the brain, heart, mesentery, and kidneys

Indications

- Septic patients with hypotension refractory to fluid therapy
- Cardiogenic shock such as STEMI and CHF
- For CBRNE and Hazmat situations, primary medication for cardiovascular support
- Infusion should be titrated to achieve a SBP between 90-100mmHg or a MAP of ≥ 65mmHg

Contraindications

- Hypotension due to hypovolemia
- Pediatric patients
- Hypertension

Precautions

- Fluid administration must be initiated prior to administration
- Should be administered through the largest vein possible to prevent extravasation and necrosis

Dosage

- Thoroughly mix the bag by inverting twice
- Drip rates are calculated using a 60-drop set

Norepinephrine (Levophed)
Add 4 mg of Norepinephrine (Levophed) to a 250 mL Normal Saline (16 mcg/mL)

Levophed Dose	2 mcg/min	3 mcg/min	4 mcg/min	5 mcg/min	6 mcg/min	7 mcg/min	8 mcg/min	9 mcg/min	10 mcg/min	11 mcg/min	12 mcg/min
Drops per 60 seconds	8	11	15	19	23	26	30	34	38	41	45
Drops per 15 seconds	2	3	4	5	6	7	8	9	10	11	12

Ondansetron (Zofran)

A serotonin antagonist

Protocols: Nausea/Vomiting

Packaging

- 4 mg / 2 mL vial
- 4 mg tablet (ODT)

General Info

- Works by blocking serotonin, which can affect digestion, thus helping with the symptoms of nausea and vomiting
- May have little effect on motion sickness

Indications

- Nausea and/or vomiting
- Consider liberal administration in patients where vomiting could cause airway compromise, such as patients in a cervical collar, on a backboard, or otherwise restricted in movement

Contraindications

- History of Torsades or other prolonged Q-T conditions
- Contact medical control before administering to a pregnant patient

Precautions

- Use cautiously in patients on Amiodarone or Haloperidol due to increased risk of arrhythmia and prolonged Q-T interval
- Should be given over 2-5 minutes when administering via IV to prevent potential adverse reactions
- Pediatric patients less than 1 year of age
- Liver disease

Dosage

- Nausea/Vomiting – adult: 4mg IV/IM
- Nausea/Vomiting – peds: 0.15mg/kg (max 4mg)

Rocuronium

A non-depolarizing neuromuscular blocker that produces muscle relaxation

Protocols: Rapid Sequence Induction (RSI), Rapid Sequence Induction (RSI) – Post Airway

General Info

- Used to promote airway muscle paralysis to facilitate endotracheal intubation
- Provides chest wall relaxation to facilitate mechanical ventilation to patients under sedation

Indications

- Intubation is needed in the presence of a gag reflex
- An awake patient with respiratory compromise
- Anytime an airway needs to be secured in the presence of an awake patient with a pulse
- To continue sedation during transport after the initial RSI event; signs of decreasing sedation may include: tearing from eyes, spontaneous breathing, increased heart rate/BP/problems breathing, decreased oxygen saturations

Contraindications

- Patients that are not properly sedated

Precautions

- In patients with renal or hepatic dysfunction, effects may be prolonged because of delayed elimination
- At least 1 trained RSI paramedic AND an additional intermediate/paramedic must be present for adults
- At least 1 trained RSI paramedic AND an additional paramedic must be present for peds
- Patient must be packaged appropriately to prevent breaks and dislocations
- Adult doses are delineated by weight: small adult dose is for patients less than 165 pounds or 75kg; standard dose is for all other adults

Dosage

- RSI and RSI Post Airway – adult — 100mg IV/IO (small adult 80mg)
- RSI and RSI Post Airway – peds — 1mg/kg IV/IO (max 100mg)

Sodium Bicarbonate

A salt that breaks down to form sodium and bicarbonate in water, making an alkaline solution able to neutralize acid.

Protocols: Cardiac Arrest, Agitated/Combative Patient, Crush Syndrome, Overdose/Poisoning, Appendix J: HRMMRS CBRNE & Hazmat Protocols

General Info

- Normal pH is 7.35 to 7.45 whereas a pH less than 7.35 places the patient into a state of acidosis
- Mixes with lactic acid that forms in low perfusion states and in periods of inadequate oxygenation; then converts to a form of carbonic acid, that turns into CO2 and is expelled through the lungs
- May assist in lowering of serum potassium in hyperkalemia by alkalinizing system blood volume and causing the intercellular shift of potassium via hydrogen and potassium exchange
- High sodium load increases the electrochemical gradient across cardiac cell membranes, potentially attenuating the TCA-induced blockade of sodium channels
- Neutralizes the hydrochloric acid formed when phosgene and chlorine gas react with the water in the lungs

Indications

- Cardiac arrest in the renal/dialysis patient with suspected hyperkalemia
- Cardiac arrest in the severely agitated/combative patient
- Crush syndrome in the setting of cardiac arrest, peaked T waves with wide QRS, prolonged QT interval, and/or loss of P waves
- Tricyclic/sodium channel blocker overdose with wide QRS (greater than 0.12 seconds)
- Choking agent exposure (chlorine, ammonia, phosgene, fuming sulfuric acid, others located in the ERG)

Contraindications

- Alkalotic states
- Hypocalcemia
- Hypernatremia

Precautions

- Must ensure proper airway/ventilation when used in cardiac arrest
- Flush IV line THOROUGHLY before and after any other medication

Dosage

• Cardiac arrest – all ages	1mEq/kg IV/IO
• Agitated/combative cardiac arrest – adult	50mEq IV/IO
• Crush – adult	1-2mEq/kg IV/IO
• Overdose/poisoning – all ages	1mEq/kg IV/IO (max 50mEq)
• Hazmat	2ml med with 2ml NS nebulized

Appendix L:

TEMS HIGHLY INFECTIOUS DISEASE REGIONAL PLAN

Appendix L: Highly Infectious Disease Regional Plan

Highly Infectious Disease Intra-Facility Transport Agencies, Assessment Hospitals and Treatment Hospitals

The Virginia Hospital and Healthcare Association (VHHA) in cooperation with the Virginia Department of Health (VDH) has designated the following hospitals as either a Highly Infectious Disease (e.g. Ebola) Assessment or Treatment hospitals.

Treatment Hospitals:

- UVA Medical Center
- VCU Medical Center

Assessment Hospitals:

- Virginia Hospital Center
- Winchester Medical Center
- Augusta Health
- Lynchburg General Hospital
- Sentara Mary Washington Hospital
- Sentara Princess Anne Hospital

The following EMS Agencies have been identified as capable and willing to provide **INTER- FACILITY** transport of potential Ebola/Highly Infectious Disease patients. This list may change as more agencies increase their capabilities. To view the most current list go to: http://www.vdh.virginia.gov/OEMS/EO/EbolaInterfacility.htm. Additional questions should be addressed to Ms. Karen Owens, Emergency Operations Manager, Office of Emergency Medical Services at Karen.Owens@vdh.virginia.gov

Location	EMS Agency Name	Dispatch Number
Abingdon	Abingdon Ambulance Service	(276) 628-8470
Charlottesville	UVa Medical Transport	(434) 982-3500 x1672
Farmville	Paladin Medical Transport	(434) 315-5620 x1
Fredericksburg	LifeCare Medical Transport	(540) 752-5883
Herndon	Physician Transport Services	(703) 941-7025
Roanoke	First Call Ambulance Service	(540) 986-2030
Roanoke	Carilion Clinic Patient Transport #468	(540) 981-8600
Virginia Beach	Medical Transport LLC	(757) 671-8911
Winchester	Valley Medical Transport	(540) 536-0082

Tidewater EMS Council, Inc.

Appendix L: Highly Infectious Disease Regional Plan

GOALS

- Early recognition and appropriate intervention of patients exposed to ***CURRENT DISEASE***.
- Early recognition and appropriate intervention of patients that have tested positive for ***CURRENT DISEASE*.**
- Protect responders from exposure to ***CURRENT DISEASE*** during patient care.

TREATMENT

- Patients should wear a surgical mask; this can be placed over a NC or NRB.
- First arriving unit should start assessment from afar (at least 6 feet) and wear appropriate PPE as they move closer.

Aerosolizing procedures

- Discontinue all CPAP and Hand Held Nebulizers prior to entering emergency department (ED)
- If patient is being ventilated via BVM wait outside ED – hospital staff will meet EMS outside and exchange BVM with device that has an inline viral/bacterial filter prior to entering ED
- Consider withholding or limiting to only patients truly requiring them.
- Contact Medical control for guidance if you have questions.
- Providers within 6 feet or enclosed space--wear Full PPE including N95
- Perform outdoors, in open spaces if possible. If not, leave ambulance doors open and perform prior to transporting. If necessary to perform while transporting, turn on HVAC and open exhaust vents.

SPECIAL CONSIDERATIONS

- Hand hygiene is EXTREMELY important. Washing hands with soap and water is ideal.
  - Only use hand sanitizer when handwashing is not immediately available.
- Avoid touching your face while working.
- Properly don, wear, and doff PPE to limit exposure.
- If available, use HEPA filtration on BVM, HHN, ventilators to filter expired air.
- If intubation is required, a face shield should be worn (as an addition to full PPE) and video laryngoscopy should be used to provide distance between provider and patient
- Limit the number of providers performing care to only those absolutely required.
- Isolate driver's compartment if available. If not, driver should open outside air vents in the driver's compartment and turn on the HVAC.
- Family members should not ride in the ambulance. If there is a reason to have a family member ride, they must wear a facemask/surgical mask.
- In cardiac arrest, crews should work to obtain ROSC within 20 minutes; after 20 minutes contact medical control to determine termination of resuscitation; patients pronounced should be left on scene
- Upon arrival at hospital, leave all doors open, carefully disinfect and clean ALL surfaces
- Documentation should be performed after PPE is removed.
  - Include all crew members and their role; including level of patient contact.
  - Reasons why any procedures were withheld if applicable.

PPE

PPE (per CDC guidelines and recommendations)

- Full: N95, eye protection (front and sides), gown, and gloves
- Providing direct patient care without aerosolizing procedures:
  - N95, gloves gown, eye protection (front and sides).
    - If no N95 available, surgical mask is acceptable
    - Gown not required if none are available
- Driver should continue to wear a mask if the patient compartment is not completely isolated from driver compartment.

Appendix L: Highly Infectious Disease Regional Plan

Tidewater EMS Council, Inc.

Appendix M: Mobile Integrated Healthcare (Vaccinations)

GOALS

- Provide guidance for EMS agencies within the Tidewater EMS Regional Council to administer vaccinations for public health and safety
- Provide guidance to identify specific EMS providers that will administer vaccinations under authority of their individual Operational Medical Director (OMD)
- Establish standardized procedures for providers to administer vaccinations
- Ensure requirements are met for appropriate documentation, record keeping, and reporting of vaccinations, as required

TREATMENT

- All procedures, skills, or techniques involved with administration of the vaccine must be within the scope of practice of the individual EMS provider's level of certification
- Adverse reactions to vaccinations shall be managed within existing EMS protocols
- Severe (Anaphylactic) reactions identified during the observation period should be treated RAPIDLY

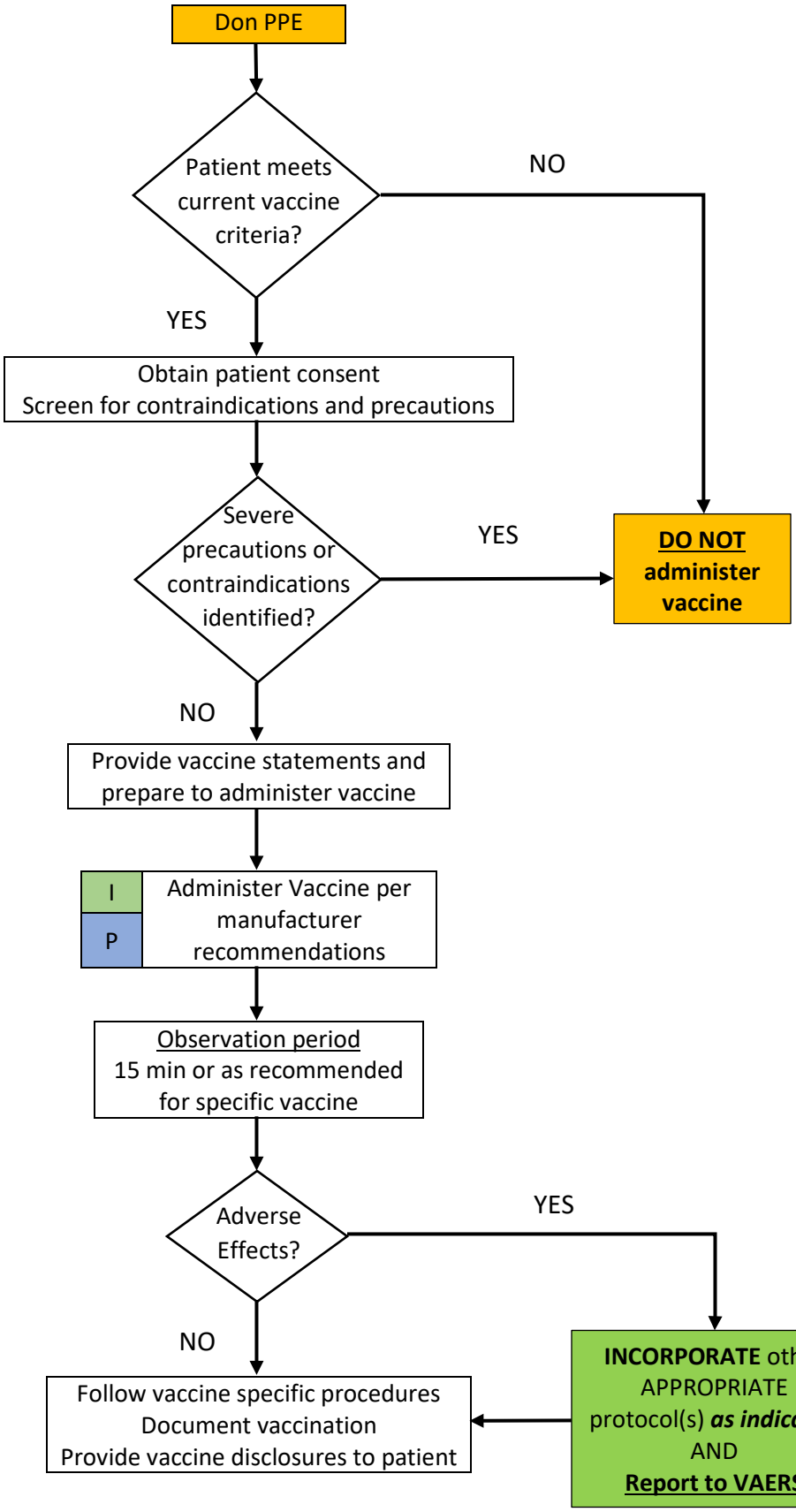
SPECIAL CONSIDERATIONS

- All vaccination programs must be registered with the Virginia Immunization Information System (VIIS) and current registration will be maintained for as long as the program is active
- EMS agencies should have an established MOU with the local health district, pharmacy, other health system OR be participating in a registered EMS program
- Participating agencies must have standing orders for immunizations
- Vaccinators must have current certification at the ALS level (Paramedic or Intermediate) with Virginia OEMS, regional sanctioning as a TEMS ALS provider, and be released to function under general supervision
- Vaccinators must have successfully completed all training requirements for the specific vaccine in the specific patient population AND complete continuing education as required
- EMS agencies will maintain proof of competency for each vaccinator in their personnel files
- The agency's OMD will serve as the supervising physician for the vaccination program and "prescriber" as identified in the *Code of Virginia*
- Specific procedures for administration of vaccines and approval for each individual provider that will administer vaccines is at the discretion of the agency's OMD
- Record keeping for all vaccinations will conform to VIIS guidelines
- Any adverse reactions will be reported through the Vaccine Adverse Event Reporting System (VAERS)
- Vaccine disclosures provided to the patient should include education about the specific vaccine and potential adverse effects following the observation period

PPE

- Per CDC guidelines and specific vaccine recommendations
- PPE requirements may be modified by individual agencies based on availability

Appendix M: Mobile Integrated Healthcare (Vaccinations)



TIDEWATER EMERGENCY MEDICAL SERVICES COUNCIL, INC.
REGIONAL MEDICAL PROTOCOLS, Version: July 1, 2022

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