Regional Medical Protocols

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

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Travis Mitchell      Bon Secours Hampton Roads
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Jerry Sourbeer       Virginia Beach Department of EMS
Jay Porter           Tidewater EMS Council
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Operational Medical Directors Committee

<table>
<thead>
<tr>
<th>Stewart W. Martin, Chair</th>
<th>Chris Foley</th>
<th>Jamil Khahn</th>
<th>Joel Michael</th>
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<tbody>
<tr>
<td>Allison Ashe</td>
<td>Jeremy Garlick</td>
<td>Barry Knapp</td>
<td>Ed McLaughlin</td>
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<tr>
<td>Manuel Armada</td>
<td>Lori Giovenetti</td>
<td>Joe Lang</td>
<td>Rene Moncion</td>
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<tr>
<td>Michael Bono</td>
<td>Stephen Grimes</td>
<td>Albert Langa</td>
<td>Paul Rosko</td>
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<tr>
<td>Susan Boyle</td>
<td>Theresa Guins</td>
<td>Philip Leavy</td>
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<td>Dennis Harrison</td>
<td>Timothy Lee</td>
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<td>Scott McCain</td>
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</tbody>
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The revision of these protocols could not have been accomplished without the invaluable assistance and input from the following individuals:

James Chandler, Executive Director   Tidewater EMS Council, Inc.
Thomas Schwalenberg, Chair          Medical Operations 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

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.”
Performance Indicators

Under the direction of the Commonwealth of Virginia, Virginia Department of Health, Office of Emergency Medical Services, the Tidewater EMS Council, Inc. (TEMS) has been directed to enhance regional quality improvement monitoring capabilities. TEMS has elected to start this process with the addition of performance indicators to the regional protocols.

Performance indicators are a means of following identified performance benchmarks through the quality improvement process. TEMS is enabling all agencies in the region to participate in quality or performance improvement management through a regional database and statistical package which will monitor how well the region is delivering prehospital medical care.

Many of the performance indicators have been developed to increase documentation reliability throughout the region. The performance indicators should be used as a basic template for patient care documentation related to specific protocols. Compliance with the performance indicators will enable 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. Over time, these snapshots can be used by the regional council and local EMS/Fire agencies to improve the consistency and quality of prehospital patient care.

We encourage all providers in the TEMS region to actively use the performance indicators. Thank you for assisting the TEMS Regional Council and your local EMS/Fire agency as we strive to provide the highest level of quality prehospital medical care.
A teddy bear in the upper corner of the protocol indicates a corresponding pediatric protocol.

An assessment/decision box asks a question. The answer to the question determines which arrow you follow out of the decision shape.

An assessment/action box states an act/procedure that needs to be completed.

A delivery box indicates a live birth has taken place.

A treatment (bolded box) indicates a treatment/skill that needs to be completed.

- [EMT] EMT = EMT
- [A] A = Advanced EMT
- [I] I = Intermediate
- [P] P = Paramedic

NOTE: Bracketed letter indicates PHYSICIAN ORDER needed. Non-Bracketed letter indicates STANDING ORDER.

A single arrow shows the direction that the protocol is heading for further treatment options.

A double arrow indicates a decision point which can occur independently of other actions in the protocol or at the same time.
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.

X – Procedure is approved
O - Optional Skill, Agency OMD Approval Needed

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<th>EMT</th>
<th>Advanced</th>
<th>Intermediate</th>
<th>Paramedic</th>
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<td>Inhaled Medication - Nebulizer</td>
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<th>HEAR DIAL &amp; DTMF</th>
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<td>Bon Secours DePaul Medical Center</td>
<td>94.8</td>
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<td>Children's Hospital of the King's Daughters</td>
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<td>Portsmouth Naval Medical Center</td>
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<td>Riverside - Shore Memorial Hospital</td>
<td>123</td>
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<td>KXX440</td>
<td>(757) 569-6150</td>
<td>(757) 516-1058</td>
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**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**

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<td>Med 1</td>
<td>463.000</td>
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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

PROCEDURE

1. Prepare 12-Lead ECG monitor and connect patient cable with electrodes
2. Expose chest and prep as necessary. Modesty of the patient should be respected
3. 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
4. Instruct patient to remain still
5. Press the appropriate button to acquire the 12-Lead ECG within 5 minutes of patient contact

Standard
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/or transmit to the closest Percutaneous Coronary Intervention (PCI) Center within 5 minutes
3. Document the procedure, time, and results on/with the patient care report (PCR)
Palm Method:
The palm method is a tool whereby the size of the patients palm is used as an indicator for specific percentage of TBSA.
The surface area of a patients palm equals approximately 1% of TBSA. This method is particularly useful where the burn has an irregular shape or has a scattered distribution.

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

INDICATIONS

- Altered mental status
- Cardiac arrest with return of spontaneous circulation (ROSC)
- Any serious trauma or medical condition
- Any use of Naloxone (Narcan)

CONTRAINDICATIONS

None

PROCEDURE

Follow manufacturer’s instructions for placement and use of device.

Use on both adult and pediatric patients.

<table>
<thead>
<tr>
<th>Endotracheal tube (ETT)/blind insertion airway device (BIAD)/bag valve mask (BVM):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn on recording instrumentation.</td>
</tr>
<tr>
<td>Place ETCO₂ sampling device in between ventilation device (BVM/ventilator) and the mask/endo-tracheal tube (ETT)/King Airway/Combitube/ Laryngeal Mask Airway (LMA)</td>
</tr>
<tr>
<td>Attach sampling device to recording instrumentation and ventilate.</td>
</tr>
<tr>
<td>The Capnometer shall remain in place with the airway and be monitored throughout</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-intubated spontaneously breathing patient:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn on recording instrumentation.</td>
</tr>
<tr>
<td>Place the sampling nasal cannula on the patient.</td>
</tr>
<tr>
<td>Attach sampling device to recording instrumentation. Observe and record results.</td>
</tr>
<tr>
<td>The capnometer shall remain in place with the airway and be monitored throughout prehospital care and transport.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Continuous positive airway pressure (CPAP)/ Bilevel positive airway pressure (BiPAP):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follow manufacturer’s recommendations for placement of ETCO₂ in conjunction with use of CPAP/BiPAP.</td>
</tr>
<tr>
<td>Place sampling nasal cannula on the patient.</td>
</tr>
<tr>
<td>Place CPAP/BiPAP mask on patient ensuring a good seal.</td>
</tr>
<tr>
<td>Observe and record results.</td>
</tr>
<tr>
<td>The capnometer shall remain in place with the airway and be monitored throughout prehospital care and transport.</td>
</tr>
</tbody>
</table>

PEARLS

- Normal range → ETCO₂ in adult and pediatric patients is 35-45 mm Hg.
- Cardiac arrest → Attempt to keep ETCO₂ above 10 mm Hg.
- Post-cardiac arrest → Attempt to keep ETCO₂ between 34-40 mm Hg.
If ETCO₂ levels remain above 45 mm Hg despite ventilatory assistance, bronchodilators, CPAP or BIPAP, intubation may be needed.

When ETCO₂ 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 ETCO₂ detector or sampling tube

### Normal and Abnormal etCO₂/Capnograph Waveforms

<table>
<thead>
<tr>
<th>Normal Capnogram</th>
<th>etCO₂: 35-45 mmHg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waveform Characteristics:</td>
<td></td>
</tr>
<tr>
<td>A: Baseline</td>
<td></td>
</tr>
<tr>
<td>B: Expiratory Upstroke</td>
<td></td>
</tr>
<tr>
<td>C: Expiratory Plateau</td>
<td></td>
</tr>
</tbody>
</table>

#### Bronchospasm/Asthma
- Other Possible Causes:
  - Bronchospasm/COPD
  - Obstruction in the expiratory limb of the breathing circuit
  - Presence of a foreign body in the upper airway
  - Partially kinked or occluded artificial airway

#### *Increasing etCO₂ (Hypoventilation)*
- Other Possible Causes:
  - Decrease in respiratory rate
  - Decrease in tidal volume
  - Increase in metabolic rate
  - Rapid rise in body temperature (malignant hyperthermia)

#### *Decreasing etCO₂ (Hyperventilation)*
- Other Possible Causes:
  - Increase in respiratory rate
  - Increase in tidal volume
  - Metabolic acidosis
  - Fall in body temperature

*Assumes adequate circulation and alveolar gas exchange*
Rebreathing CO₂
Other Possible Causes:
• Faulty expiratory valve
• Inadequate inspiratory flow
• Partial rebreathing
• Insufficient expiratory time

Curare Cleft
Other Possible Causes:
• Patient is mechanically ventilated
• Depth of cleft is proportional to degree of muscle relaxants

Cardiac Arrest
Other Possible Causes:
• Decreased or absent cardiac output
• Decreased or absent pulmonary blood flow
• Sudden decrease in CO₂ values

Return of Spontaneous Circulation
Other Possible Causes:
• Increase in cardiac output
• Increase in pulmonary blood flow
• Gradual increase in CO₂ production
CHEST DECOMPRESSION WITH NEEDLE

INDICATIONS: (I, P)

Patients with hypotension (Systolic BP less than 90), clinical signs of shock, and at least one of the following signs:
- Jugular vein distention.
- Tracheal deviation away from the side of the injury (often a late sign).
- Increased resistance when ventilating a patient.

PROCEDURE:

- Administer high flow oxygen
- Locate the second intercostal space in the mid-clavicular line on the same side as the pneumothorax. Cleanse the site. [Note: If unable to place anteriorly, lateral placement may be used at the fourth intercostal space, midaxillary line.] Insert the 12-14 gauge x 2 ½ inch catheter with 10 cc syringe attached into the skin over the third rib and direct it just over the top of the rib (superior border) into the interspace
- Advance the catheter through the parietal pleura until a “pop” is felt and air or blood exits under pressure through the catheter, then advance catheter only to chest wall.
- Remove the needle, leaving the plastic catheter in place
- Secure the catheter hub to the chest wall with dressings and tape
- 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 complication
- Document time and response on the patient care report (PCR)

NOTES:
- In the absence of clinical signs of shock, performing needle decompression is inappropriate
- In pediatric patients it is generally preferred to use an 18g needle. Larger children/adolescents may require an adult-sized needle
**CPAP**

**INDICATIONS: (EMT, A, I, P)**

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

Examples of conditions for which 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:**

- Ensure adequate oxygen supply to ventilation device
- Explain the procedure to the patient
- Place the delivery mask over the mouth and nose. Oxygen should be flowing at this point
- Starting with the lower straps, secure the mask with provided straps until no air leak
- 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)
- Observe closely for signs of complication.
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 a 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 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.
Thoroughly mix the bag by inverting it twice. Inspect for any leaks or particulate.

Epinephrine Drip
To prepare an epinephrine drip solution:
Add 1 mg of Epinephrine to a 250mL bag of Normal Saline (NS)
1 mg of Epinephrine is:
1mL of Epinephrine 1:1000 or 10mL of Epinephrine 1:10,000
For 4 mcg/mL

<table>
<thead>
<tr>
<th>Epinephrine Dose</th>
<th>2 mcg/min</th>
<th>3 mcg/min</th>
<th>4 mcg/min</th>
<th>5 mcg/min</th>
<th>6 mcg/min</th>
<th>7 mcg/min</th>
<th>8 mcg/min</th>
<th>9 mcg/min</th>
<th>10 mcg/min</th>
</tr>
</thead>
<tbody>
<tr>
<td>These are all drops per minute utilizing a mini-drip set (60 drop set)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drops per 60 seconds</td>
<td>30</td>
<td>45</td>
<td>60</td>
<td>75</td>
<td>90</td>
<td>105</td>
<td>120</td>
<td>135</td>
<td>150</td>
</tr>
<tr>
<td>Drops per 15 seconds</td>
<td>8</td>
<td>11</td>
<td>15</td>
<td>19</td>
<td>23</td>
<td>26</td>
<td>30</td>
<td>34</td>
<td>38</td>
</tr>
</tbody>
</table>

Levophed (Norepinephrine) to Treat Post-Arrest Hypotension Chart
Add 4 mg of Levophed (Norepinephrine) to 250 ml Normal Saline
These are all drops per minute utilizing a mini-drip set (60 drop set)

<table>
<thead>
<tr>
<th>Dosage using estimated body weight</th>
<th>gtts by Time</th>
<th>0.1 mcg/kg/min</th>
<th>0.2 mcg/kg/min</th>
<th>0.3 mcg/kg/min</th>
<th>0.4 mcg/kg/min</th>
<th>0.5 mcg/kg/min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Adult (100 lbs/ 45Kg)</td>
<td>1 minute</td>
<td>17 gtts</td>
<td>34 gtts</td>
<td>51 gtts</td>
<td>68 gtts</td>
<td>85 gtts</td>
</tr>
<tr>
<td></td>
<td>15 seconds</td>
<td>4 gtts</td>
<td>9 gtts</td>
<td>13 gtts</td>
<td>17 gtts</td>
<td>21 gtts</td>
</tr>
<tr>
<td>Medium Adult (150 lbs/ 68Kg)</td>
<td>1 minute</td>
<td>26 gtts</td>
<td>51 gtts</td>
<td>77 gtts</td>
<td>102 gtts</td>
<td>128 gtts</td>
</tr>
<tr>
<td></td>
<td>15 seconds</td>
<td>7 gtts</td>
<td>13 gtts</td>
<td>19 gtts</td>
<td>26 gtts</td>
<td>32 gtts</td>
</tr>
<tr>
<td>Large Adult (200 lbs/ 91Kg)</td>
<td>1 minute</td>
<td>34 gtts</td>
<td>68 gtts</td>
<td>102 gtts</td>
<td>136 gtts</td>
<td>170 gtts</td>
</tr>
<tr>
<td></td>
<td>15 seconds</td>
<td>9 gtts</td>
<td>17 gtts</td>
<td>26 gtts</td>
<td>34 gtts</td>
<td>43 gtts</td>
</tr>
<tr>
<td>Extra-Large Adult (250 lbs/ 113 Kg)</td>
<td>1 minute</td>
<td>43 gtts</td>
<td>85 gtts</td>
<td>128 gtts</td>
<td>170 gtts</td>
<td>213 gtts</td>
</tr>
<tr>
<td></td>
<td>15 seconds</td>
<td>11 gtts</td>
<td>21 gtts</td>
<td>32 gtts</td>
<td>43 gtts</td>
<td>53 gtts</td>
</tr>
<tr>
<td>Obese Adult (&gt;300 lbs/ 136 Kg)</td>
<td>1 minute</td>
<td>51 gtts</td>
<td>102 gtts</td>
<td>153 gtts</td>
<td>204 gtts</td>
<td>255 gtts</td>
</tr>
<tr>
<td></td>
<td>15 seconds</td>
<td>13 gtts</td>
<td>26 gtts</td>
<td>38 gtts</td>
<td>51 gtts</td>
<td>64 gtts</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Eye Opening (E)</th>
<th>Verbal Response (V)</th>
<th>Motor Response (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No eye opening.</td>
<td>1. No verbal response</td>
<td>1. No motor response.</td>
</tr>
<tr>
<td>2. Eye opening to pain.</td>
<td>2. Incomprehensible sounds.</td>
<td>2. Extension to pain.</td>
</tr>
<tr>
<td>3. Eye opening to verbal command.</td>
<td>3. Inappropriate words.</td>
<td>3. Flexion to pain.</td>
</tr>
<tr>
<td></td>
<td>5. Orientated</td>
<td>5. Localizing pain.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. Obeys Commands.</td>
</tr>
</tbody>
</table>

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.
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 1mL 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
- Use a method that fragments 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), Galcagon
Intraosseous Access

INDICATIONS: (A, I, P)

• Cardiac Arrest
• Patient in extremis with immediate need for delivery of medications and or fluids

CONTRAINDICATIONS:

• Suspected narcotic overdose, seizure, and/or hypoglycemia are relative contraindications for the use of intraosseous access due to other less invasive alternatives
• Fracture of the bone selected for IO infusion (consider alternate site)
• Excessive tissue at insertion site with the absence of anatomical landmarks (consider alternate site)
• Previous significant orthopedic procedures, IO within 24 hours, prosthesis; (consider alternate site)
• Infection at the site selected for insertion (consider alternate site)
• Severe osteoporosis or other bone degenerative conditions
• Intraosseous access is not appropriate for prophylactic access

PROCEDURE:

• Identify the need for IO access. Consider IV prior to IO
• Insert the IO device according to the manufacturer’s recommendation
• Flush IO site with 10 mL of 0.9% Normal Saline to ensure patency and clear IO pathway
• Initiate IO infusion. A pressure infuser may be necessary to maintain flow rates ADULT ONLY. Pressure infuser is contraindicated in Pediatrics
• Lidocaine 1 mg/kg IO not to exceed 40 mg titrated to pain effect may be administered. NOTE: This dosing is not considered an antidysrhythmic dose
• Apply wrist band provided with IO device
• Monitor for extravasation
Nasogastric / Orogastric Tube Insertion

INDICATIONS: (A, I, P)
- Gastric decompression in intubated patients

CONTRAINDICATIONS:
- Sinusitis (for nasogastric)
- Esophageal Varicies
- 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 *Wong-Baker FACES Pain Rating Scale* as shown below. This is extremely useful in the pediatric population, as well as any patient that there may be a communication barrier.

![Pain Rating Scale Image]

**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 feels 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.

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 and one limitation of the Cincinnati Prehospital Stroke Scale is that it can only identify cerebral strokes.

1. Cincinnati Prehospital Stroke Scale:
   a. Facial Droop (ask patient to smile or show their teeth)
      i. Abnormal: one side of the face moves differently
      ii. 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
   b. Arm drift (ask patient to close eyes and hold both arms (palms up) straight out for 10 seconds)
      i. Abnormal: one arm moves differently than the other
   c. Abnormal speech (ask the patient to say “you can’t teach an old dog new tricks”)
      i. Abnormal: speech is slurred or patient uses incorrect words
   d. If any one of these 3 signs is abnormal, it is highly probable the patient is having a stroke

2. BE FAST:
   a. Balance loss
      i. Sudden loss of balance or coordination
   b. Eyes blur
      i. Sudden trouble seeing or blurred vision in one or both eyes
   c. Facial drooping (ask patient to smile or show their teeth)
      i. Abnormal: one side of the face droops or is numb
      ii. 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
   d. Arm drift (ask patient to close eyes and hold both arms (palms up) straight out for 10 seconds)
      i. Sudden weakness or numbness of an arm or leg, especially on one side of the body
   e. Speech difficulty (ask the patient to say “you can’t teach an old dog new tricks”)
      i. Sudden confusion, trouble speaking or understanding speech
   f. Time
      i. Time patient was last seen or known to be normal
      ii. Rapid transport to the hospital

3. MEND (Miami Emergency Neurologic Deficit); Exam (bold = perform on scene; perform remainder during transport)
   a. Mental Status
      i. Level of consciousness (AVPU)
      ii. Speech (“You can’t teach an old dog new tricks”; abnormal = slurred, wrong words or “mixing up” words)
      iii. Questions (age, month; abnormal = doesn’t know answer)
      iv. Commands (open eyes wide, close them tightly; abnormal = doesn’t follow commands)
   b. Cranial nerves
      i. Facial droop (show teeth or smile; abnormal = one side does not move as well as other)
      ii. Visual fields (four quadrants – left upper and lower, right upper and lower; abnormal = doesn’t recognize finger movement in all four quadrants) 1. Have patient look at your nose; hold hands about 18 inches in front of the patient
      iii. Horizontal gaze (side-to-side; abnormal = not able to follow finger movement by moving eyes completely to left and right)
   c. Limbs
      i. Motor
         1. Arm drift (close eyes, hold out arms; abnormal = arm can’t move or drifts down)
         2. Leg drift (open eyes, lift each leg separately; abnormal = leg can’t move or drifts down)
      ii. Sensory – arm, leg (close eyes and touch, pinch; abnormal = doesn’t feel light touch, pinch)
      iii. Coordination – arm, leg (finger to nose, heel to shin; abnormal = abnormal movements)
Pre-Hospital 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 fracures
- 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 and 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 provides, based on experience and expertise, may always exercise clinical judgment regarding atypical patient presentations
S.T.A.R.T. - Simple Triage and Rapid Treatment

ASSESS RESPIRATIONS
Is patient breathing?

YES

Respiratory Rate >30/min
IMMEDIATE (RED TAG)

Respiratory Rate <30/min
ASSESS PERFUSION
Control Bleeding

Radial Pulse Absent
IMMEDIATE (RED TAG)

Radial Pulse Present
ASSESS MENTAL STATUS
Can patient follow simple commands?

NO
IMMEDIATE (RED TAG)

YES
DELAYED (YELLOW TAG) OR MINIMAL (GREEN TAG)

NO
Reposition Airway

YES
IMMEDIATE (RED TAG)

NO
DECEASED (BLACK TAG)
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 injury
- Place the device just proximal of the injury. Do not place over a joint or open fracture site (preferably over a single bone structure).
- The band will be around the affected injury.
- 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
- Tourniquets removal only per medical control order
- Do not use a tourniquet for neck or facial wounds.

IF ORDERED TO REMOVE THE TOURNIQUET:

- 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.
- Even if bleeding does not restart, leave the tourniquet unengaged but in place. Monitor wound closely as the bleeding may restart when the blood pressure normalizes.
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, dysrythmias 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.
- DO NOT cardiovert, defibrillate, perform CPR or administer nitrates unless directed by a VAD coordinator, physician or online medical control. CPR may or may not be indicated based on manufacturer’s recommendations. 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
Adult Cardiac Protocols
Objectives:
- Early recognition and appropriate management of pulseless / apneic adult patients

General Information:
- During High-Quality CPR
  - Push hard and fast (At least 100/min at least 2 inches deep)
  - Ensure full chest recoil
  - Minimize interruptions in compressions
  - One cycle of CPR: 30 compressions: 2 breaths; 2 min = 5 cycles
  - Rotate compressors every 2 min
  - Avoid excessive ventilation
  - Check rhythm every 2 minutes
  - If BLS airway is adequate, priority is vascular access and medication administration. ALS airway should be secured when adequate resources are available
  - After an advanced airway is placed, rescuers no longer deliver “cycles” of CPR
    - Give continuous chest compressions without pauses for breaths
    - Give 8-10 breaths/min (1 breath every 6-8 seconds)
- AED use
  - Follow the voice prompts of the AED
  - Contraindications to AED
    - Rigor Mortis / Lividity
    - Injuries incompatible with life
    - No Code/DNR situations
- Search for and treat possible contributing factors:
  - Hypovolemia
  - Hypoxia
  - Hypokalemia / Hyperkalemia
  - Hypoglycemia (Verify via Glucometry)
  - Hypothermia / Hyperthermia
  - Hydrogen ion (Acidosis)
  - Tension Pneumothorax
  - Toxins
  - Trauma
  - Tamponade Cardiac
  - Thrombosis (coronary or pulmonary)

Warnings/Alerts:
- CPR may still be required in the presence of an organized cardiac rhythm
- It is the responsibility of the provider delivering the shock to ensure that no one is touching the patient prior to shock delivery
- A moving vehicle may introduce artifact during AED analysis and may lead to inappropriate defibrillation
- The following conditions need to be addressed prior to defibrillation:
  - Patient in standing water
  - Patients with transdermal medications
  - AICD/Pacer/Medi-ports – Do not place pads over device

OMD Notes:
- Ventricular Assist Device Patients – Early contact with medical control should be made
- All efforts should be made to minimize time from last compression to defibrillation (Defibrillator can be charged while continuing compressions)
- Preference is to have a trained provider use a manual defibrillator rather than AED

Performance Indicators:
<table>
<thead>
<tr>
<th>Onset of Arrest Time</th>
<th>Initial Rhythm</th>
<th>Bystander/FR CPR/AED</th>
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<tr>
<td>Time of Initial Defibrillation</td>
<td>Consistency of CPR</td>
<td>Changes in EKG Rhythm</td>
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<tr>
<td>Patient Packaging</td>
<td>Patient Disposition</td>
<td></td>
</tr>
</tbody>
</table>
Objectives:
- Early recognition and appropriate management of bradycardic rhythms
- Recognition of a hemodynamically unstable patient due to a bradycardic rhythm

General Information:
- Signs and symptoms of a hemodynamically unstable patient can include:
  - Acute change in mental status
  - Hypotension
  - Ongoing chest pain and/or breathing difficulty
- Identify and treat underlying causes including H&Ts:
  - Hypovolemia
  - Hypoxia
  - Hypokalemia / Hyperkalemia
  - Hypoglycemia (Verify via glucometry)
  - Hypothermia / Hyperthermia
  - Hydrogen ion (Acidosis)
- External Pacing:
  - Atropine may be ineffective with 2nd degree Type II and 3rd degree AV Block. Prepare for immediate pacing
  - Contact Medical Control for pain management or sedation if needed
- *Dopamine Drip - Premixed Drip is preferred (Been removed and will be re-evaluated in 2016)
  - If premixed drip is not available then add 400 mg of dopamine to 250 ml NS for concentration of 1600 mcg/ml
  - Dose 2-10 mcg/kg/min
  - Dopamine not currently carried in the regional drug boxes

Warnings/Alerts:
- Patient may deteriorate due to unnecessary delay in pacing
- Failure to recognize electrical and mechanical capture may lead to patient deterioration
- Assessment of a carotid pulse may be inaccurate due to muscle jerking which may mimic a carotid pulse
- Severely hypothermic patients should not be paced: contact medical control

OMD Notes:
- Medical Control may order an Epinephrine Drip if dopamine is ineffective
  - Add 0.4 mg of Epinephrine 1:1000 to 100 ml NS for a concentration of 4mcg/ml
  - Dose 2-10 mcg/min

Performance Indicators:
- Onset of Symptoms (time)
- Treatment and Response
- Vital Signs – 2 set minimum
- LOC
- Pacing Parameters
- Stable or Unstable Patient
- Initial Rhythm
- 12 Lead EKG

Regional Medical Patient Care Protocols
Version: July 2016
Objectives:
- Early recognition and appropriate management of tachycardic rhythms
- Recognition of hemodynamically unstable patients due to unstable tachycardic rhythms

General Information:
- Signs and symptoms of a hemodynamically unstable patient can include:
  - Acute change in mental status
  - Hypotension
  - Ongoing chest pain and/or breathing difficulty
  - Signs and symptoms of shock
  - Ischemic chest pain
  - Acute heart failure
- For recurrent VT, medical control may order an Amiodarone drip
  - 150 mg in 100 ml over 10 minutes
  - Do not use in the same IV line with furosemide, heparin or sodium bicarbonate
- Follow manufacturer guidelines for biphasic settings for synchronized cardioversion
- Although not common, V-Tach can occur at rates less than 150; if unsure of treatment contact medical control
- Underlying causes of sinus tachycardia which may cause a heart rate > 150 include hypovolemia, hypoxia, fever, pain, anxiety, or medications. DO NOT treat these patients with adenosine.

Warnings/Alerts:
- DO NOT cardiovert sinus tachycardia
  - Polymorphic VT can deteriorate quickly to VF - defibrillate ASAP with the highest energy setting based on manufacturer recommendations
  - If unable to obtain synchronization, deliver unsynchronized shock at defibrillation energy (manufacturer recommendations)
  - Do not delay cardioversion for administration of sedation to the unstable patient
  - It is the responsibility of the provider delivering the shock to ensure that no one is touching the patient prior to shock delivery
  - Address the following conditions prior to cardioversion:
    - Patients in standing water
    - Patients with transdermal medications
    - AICD/Pacer/Medi-ports - Do not place pads over device
  - Other conditions may mimic wide complex tachycardia
    - Internal pacemakers
    - Aberrancy

OMD Notes:
- A-Fib may require higher synchronized cardioversion energy levels. Recommendations:
  - Biphasic 120-200j
  - Monophasic 200j
  - Contact medical control for guidance
- Polymorphic VT (Torsades) should be defibrillated (NOT synchronized cardioverted) at highest defibrillation energy levels (manufacturer's recommendations)

Performance Indicators:
- Response to therapy
- Onset of symptoms
- Initial rhythm
- Stable or unstable
- Vitals before and after intervention
- LOC
Objectives:
- To provide criteria for pre-hospital termination of resuscitation

General Information:
- Contraindications to using the protocol include patients who are exhibiting neurological activity, or patients with suspected hypothermia
- Inappropriate initiation of CPR includes patients with dependent lividity, rigor mortis, injuries incompatible with life or a valid DDNR or POST form
- Resuscitation must continue while you are evaluating the patient
- Patients in cardiac arrest from environmental causes may warrant resuscitation efforts greater than 20 minutes (ie: hypothermia, submersion injuries etc.)
- Once resuscitation has been discontinued
  - Distribute bereavement booklet to family members, if available
  - Leave all expendable ALS supplies in place
- Search for and treat possible contributing factors:
  - Hypovolemia
  - Hypoxia
  - Hypokalemia / Hyperkalemia
  - Hypoglycemia (Verify via Glucometry)
  - Hypothermia / Hyperthermia
  - Hydrogen ion (Acidosis)
  - Tension Pneumothorax
  - Toxins
  - Trauma
  - Tamponade Cardiac
  - Thrombosis (coronary or pulmonary)

Warnings/Alerts:
- Contact Medical Control early to determine viability of patient
- Contact Medical Control for guidance regarding discontinuing resuscitation during transport

OMD Notes:

Performance Indicators:
- Onset of Arrest
- Initial Rhythm
- Neurological Exam
- External Body Temperature
- Online Medical Control (Physician Name)
- Patient Age
- Time Resuscitation ended
Inappropriate initiation of CPR without ALS procedures?

Yes -> Discontinue resuscitation

No -> Cumulative BLS & ALS resuscitation for at least 20 minutes?

No -> Discontinue resuscitation

Yes -> Identified & Treated underlying causes?

No -> Discontinue resuscitation

Yes -> Any ROSC during the resuscitation?

No -> Discontinue resuscitation

Yes -> Continue resuscitation and implement appropriate protocol(s)
Objectives:
- To appropriately treat patients who have return of spontaneous circulation
- To ensure adequate perfusion

General Information:
- Optimize ventilation and oxygenation
  - Utilize end tidal CO2 with ventilation and oxygenation with 10-12 breaths/minute and titrate to a target PETCO2 of 35-40 mm Hg
  - Maintain oxygen saturation ≥ 94%
  - Do not hyperventilate – 1 breath every 5-6 seconds / 10-12 breaths a minute
- For recurrent VF/Pulseless VT, Medical Control may order an Amiodorone drip
  - 150 mg in 100 ml over 10 minutes
  - Do not use in the same IV line with furosemide, heparin or sodium bicarbonate
- Administer 250 mL boluses up to 1 liter of NS reassessing after each 250 mL bolus
- Consider transporting to a PCI Center for ROSC patients
- Search for and treat possible contributing factors:
  - Hypovolemia
  - Hypoxia
  - Hypokalemia / Hyperkalemia
  - Hypoglycemia (Verify via Glucometry)
  - Hypothermia / Hyperthermia
  - Hydrogen ion (Acidosis)
  - Tension Pneumothorax
  - Toxins
  - Trauma
  - Tamponade Cardiac
  - Thrombosis (coronary or pulmonary)

Warnings/Alerts:
- Amiodorone is contraindicated in the following conditions:
  - Bradycardia
  - Heart block
  - Hypotension
  - Pulmonary edema
  - Cardiogenic shock

ODM Notes:
- 250 mL bolus is best accepted medical practice 09/09/08 OMD committee minutes
- STEMI – Contact Medical Control regarding transport decisions

Performance Indicators:
EKG Rhythm Evaluation of Perfusion Treatment and Response to Treatment 12 Lead EKG
Reassess oxygen, ventilation, mental status and vital signs

Treatment per the Airway/Oxygenation/Ventilation Protocol

Optimize ventilation and oxygenation
- Maintain oxygen saturation ≥ 94%
- Consider advanced airway and waveform capnography
- Do not hyperventilate

Evaluate heart rate (ECG)

Implement appropriate Cardiac Protocol

Manual systolic BP >90?

Yes

No

250 ml bolus NS may repeat up to 1000 ml if lung sounds clear

If systolic BP <90 after fluid bolus
Epi drip 0.1-0.5 mcg/kg/min

EKG Monitor 12 lead and transmit if available

Contact Medical Control

Transport
Adult General Protocols
Objectives:
- When possible, a room air pulse oximetry reading should be obtained and documented
- The goal is to maintain SpO2 of 94%. Note: below 94% may be normal for patients with chronic hypoxia such as COPD
- Oxygen therapy should be considered for patients with altered mental status, hypoperfusion, smoke inhalation, or dyspnea regardless of spo2 reading
- Support the patient's breathing as needed

General Information:
- Oxygen therapy
  - SpO2 90 - 93% - nasal cannula at 1 to 6 liters per minute
  - SpO2 < 90% - Non-rebreather at 10 to 15 liters per minute or CPAP
- Assisted ventilations
  - BLS Airway
    - Attempt should be made to use to Providers to ensure adequate BVM ventilation using “E-C” Technique
  - ALS Airway (endotracheal intubation, supraglottic tube placement)
    - Cardiac monitor and pulse oximetry should be used
    - Verify tube placement with ETCO2, waveform capnography is preferred
    - Unconscious intubated patient
      - Verify tube placement
      - Secure with commercial device, package with c-collar and long board
      - Monitor for development of absent lung sounds and/or a hemodynamically unstable patient which may warrant needle decompression
      - Consider OG/NG tube when using BVM or after endotracheal intubation
  - Ventilatory rates
    - One breath every 6 seconds (10 breaths/min) after securing advanced airway
    - When using capnography, adjust rate to maintain 35-45 mmHg

Warnings/Alerts:
- Failure to use ETCO2 monitoring increases the risk of an unrecognized misplaced tube
- Failure to confirm tube placement prior to securing or following patient movement may lead to unrecognized tube displacement
- Apnea is an absolute contraindication to nasal intubation
- Intubated patients should be monitored for:
  - Displacement (also consider right main stem)
  - Obstruction
  - Pneumothorax
  - Equipment failure

OMD Notes:
- Ventricular Assist Device Patients - Early contact with medical control should be made

Performance Indicators:
- Initial and ongoing SpO2
- Confirmation of airway
- ETCO2
- Use of CPAP
- Application of oxygen
- Cervical immobilization
- Use of secondary airway
- Documentation of Breath Sounds

Regional Medical Patient Care Protocols
Version: July 2016
Note: This protocol is to be used in conjunction with existing protocols in a complementary manner.

Consider Supplemental Oxygen
The Goal is SpO2 ≥ 94%
SpO2 90-93% = Nasal Cannula
SpO2 < 90% = Non-rebreather
ETCO2 = 35-45mmHg
For suspected STEMI patients, oxygen should only be used in patients < 94% SpO2

Loss of airway or inadequate breathing?

No

Yes

Consider calling for assistance if < 3 providers present or if needed

Airway patent after airway maneuvers?

Yes

No

Complete obstruction?

Yes

No

Consider complete airway obstruction. Visualize airway, remove foreign body if necessary

Percutaneous needle cricothyrotomy or sanctioned alternative airway kit

Exit or return to appropriate protocol(s)

Need for breathing support?

Yes

No

BVM, high concentration oxygen consider CPAP

Tension Pneumothorax with serious signs and symptoms?

Yes

No

Needle Decompression

Oxygenation Improved?

Yes

No

Advanced Airway

Consider:
Versed (Midazolam) 2-2.5 mg IV for post-intubation sedation

Exit or return to appropriate protocol(s)
Objectives:
- To assess and appropriately treat patients with allergic reactions and/or anaphylaxis
- To differentiate between an allergic reaction and anaphylaxis

General Information:
- Signs and symptoms of allergic reaction may include:
  - Itching
  - Hives
  - Flushing (red skin)
  - Mild swelling of face (especially the eyes and lips), neck, hands, feet or tongue
- Signs and symptoms of anaphylaxis may include all of the above; but must include one of the following:
  - Respiratory distress
    - Labored breathing (i.e. stridor, wheezing, hoarseness, cough)
  - Signs and symptoms of a hemodynamically unstable patient can include:
    - Acute change in mental status
    - Hypotension
    - Ongoing chest pain and/or breathing difficulty
- Rapidly progressing signs and symptoms should be treated as anaphylaxis
- EMT may use patient’s EpiPen on standing orders
- In hemodynamically unstable patients, epinephrine 1:1,000 IM is the preferred route of administration instead of SQ
- In severe anaphylaxis with hypotension and/or severe airway obstruction, medical control medical order Epinephrine 1:10,000 IV

Warnings/Alerts:
- Epinephrine 1:1,000 shall not be given IV
- Caution should be used when administering epinephrine to patients with a cardiac history or to patients 40 years old or older
- Due to packaging change, epinephrine 1:1,000 may appear as 1mg/1ml and epinephrine 1:10,000 may appear as 1mg/10ml

OMD Notes:
- Maximum single dose of Epinephrine is 0.5mg
- Medication induced angioedema (e.g. ACE inhibitor) may not respond to epinephrine, Benadryl, or Solu-medrol; aggressive airway management may be required

Performance Indicators:

- Use of EpiPen
- Application of oxygen
- 12 Lead EKG
- Treatment and response to treatment
- Application of oxygen
Hemodynamically unstable or respiratory distress?

Yes

Epinephrine 1:1000 or 1mg/ml 0.01 mg/kg IM max dose 0.5 mg

No

Implement Vascular Access protocol as needed

Diphenhydramine (Benadryl) 50 mg IV/IM as needed

EKG Monitor if needed

Contact Medical Control

Transport

Tidewater EMS Council, Inc.
Medical - Allergic/Anaphylactic Reaction

Regional Medical Patient Care Protocols
Version: July 2016
Objectives:
- To assess and appropriately treat patients with behavioral emergencies
- Address any underlying conditions that may contribute to behavioral

General Information:
- Contact police if there is any question of scene safety
- Assure physical safety of patient and personnel
- Capacity to refuse issues are complex. If a patient is intoxicated, has a head injury, has a history of overdose or is thought to be of any danger to self or others, he/she is most likely not capable to refuse treatment. Contact police and Medical Control to aid in making the decision
- No transport does not mean no PCR is necessary.
- Documentation should be complete including patient's mental state and your rationale for the no transport decision

Warnings/Alerts:
- Behavioral emergency calls can rapidly deteriorate
- Failure to appropriately address behavioral emergencies for patients with questionable capacity may lead to negative outcomes
  Example: medical legal, harm to patient or others, further patient deterioration

OMD Notes:

Performance Indicators:
Time on Scene       Patient Capacity       Transport or Non-Transport       Online Physician Name
Scene Safety

Treatment per the Airway/Oxygenation/Ventilation Protocol

Consider alternative causes for an altered mental status such as hypoglycemia, stroke, overdose, head injury, etc.

Patient consents to treatment? No

Patient has capacity to refuse? No

Is patient combative? No

Transport to closest appropriate Emergency Department unless otherwise directed.

Yes

No transport. Document findings

Exit to Combative Patient Protocol

Yes

Yes

Transport to closest appropriate Emergency Department unless otherwise directed.
Objectives:
- To appropriately assess patients who received bites and stings
- To identify source of bite or sting

General Information:
- The use of constricting bands requires input from medical control
- Consider contacting animal control for identification and management of animal

Warnings/Alerts:
- Make no attempts to capture or kill the animal or insect inflicting the bite or sting
- Do not bring live animals to the hospital. Transport dead animals in a sealed container or consider bringing a photograph of the animal or insect that inflicted the bite or sting

OMD Notes:
- none provided

Performance Indicators:
Identification of bite/sting source
Packaging of amputated part(s)
Scene size-up, Consider safety of rescuers/patient

Treatment per Airway/Oxygenation/Ventilation Protocol

Control Bleeding

Signs & Symptoms of Anaphylaxis?

Yes → EXIT to Allergic / Anaphylactic Reaction Protocol

No → Remove jewelry or other constricting objects from injured body part. Wash minor bites/stings with soap & water, or irrigate with sterile saline.

Marine life stings

- Gently scrape material sticking to skin

Snake bites

- Apply: Dressing/bandage
- Immobilize (Keep site below level of the heart)

Insect sting or bite

- Gently scrape to remove stinger

Animal or Human Bite

- Apply dressing/bandage
- Cold pack

Amputated Parts: Transport wrapped in dry, sterile dressing in a plastic bag. Place in a cooled container, but not directly on ice

Apply:
- Dressing/bandage
- Heat pack
- Alcohol (Closed Injuries)

Assess & treat other injuries

Contact Medical Control

Transport

Contact Medical Control
Objectives:
- To assess and treat with breathing difficulty,
- To determine the most likely cause of the patient's breathing difficulty

General Information:
- Treatment of breathing difficulty should begin without delay
- A patient with a history of heart failure that has wheezing upon auscultation of lung sounds should not be automatically classified as an asthma or COPD patient.
- Pulmonary Edema from heart failure (HF)
  - Heart failure is primarily a cardiac event, not a respiratory event. Treatment should focus on reducing preload and afterload.
  - CPAP is an appropriate first-line treatment
    - It is acceptable to briefly remove the CPAP mask to administer nitroglycerine
    - Consider sedation if necessary
  - Lasix may not be appropriate for patients with end-stage renal failure. Consult medical control for more direction
  - Pulmonary edema may produce bronchoconstriction with wheezing. Albuterol is indicated in these cases
  - Patients with clear breath sounds or unilateral crackles should be transported without medication
  - Transdermal nitroglycerine
    - Sublingual should be given first, whenever possible; transdermal nitro has a slower onset (> 30 minutes)
- Bronchoconstriction (asthma, COPD)
  - Patients in severe distress or those who have not responded to home therapy may receive albuterol 2.5mg/atrovent 0.5mg as a first-line treatment
  - Atrovent is only allowed once under standing orders
  - Patients with severe asthma or COPD may not exhibit wheezing due to insufficient tidal volume
  - For severe cases consider:
    - Magnesium sulfate 2g over 5 minutes (standing orders for I&P)
    - Epinephrine 1:1,000 0.01mg/kg IM, max dose 0.5mg (physician order for I&P)

Warnings/Alerts:
- Do not administer epinephrine 1:1,000 IV
- Do not administer nitroglycerine if the patient has taken sexually enhancing medications (i.e. Viagra, Levitra, Cialis) within the past 72 hours
  - Nitroglycerin should not be given to patients with a systolic blood pressure <110 mmHg without IV access,
  - Sublingual should be given first, whenever possible; transdermal nitro has a slower onset (> 30 minutes)
- CPAP may worsen any existing hypotension
- Patients must have respiratory effort for CPAP to be effective

OMD Notes:
- Provider shall administer a minimum of 1 SL nitroglycerine prior to application of CPAP for HF
- CPAP should be used for asthma patients in severe distress not responsive to nebulizers where intubation is being considered
- At times it is difficult to determine if the cause of breathing difficulty is HF, or COPD/asthma or a combination. Therefore the patient may require treatment using both pathways with capnography

Performance Indicators: Breath sounds before/after treatment
- Sedative use
- 12 lead EKG
- Initial and ongoing SPO2
- ETCO2
- Treatment and response to treatment
Objectives:
● To assess and appropriately treat patients with burn injuries
● To determine the extent and severity of burn injuries

General Information:
● Stop the burning process. Cool burned areas until pain is lessened or up to 30 minutes if patient can maintain normal body temperature.
● Remove clothing around burned area carefully. If clothing is stuck to skin, cut the clothing instead of pulling it away.
● Small burned areas may be covered with a moist dressing for patient comfort; large burned areas should be covered with dry, sterile dressings.
● Criteria for direct transport to a regional Burn Center:
  o > 10% BSA full-thickness burns
  o > 20% BSA partial-thickness burns
  o > 15% BSA partial and full-thickness burns
  o Burns to genitals, hands, feet, face or surface area over joints
  o Geriatric or pediatric patients
  o Inhalation, electrical injury or chemical burns
  o Associated traumatic injuries
  o Pre-existing disorders that could complicate management

Warnings/Alerts:
● Do not delay transport to start IVs or perform other non life-saving ALS interventions
● Use caution when cooling patients to avoid hypothermia
● Inhalation burns with impending airway compromise should be treated with aggressive advanced airway management
● Patients who received morphine should have SPO2 and cardiac monitor

OMD Notes:
● None provided

Performance Indicators:
Time on scene Initial and ongoing SPO2
Estimated body surface area Initial and ongoing vitals
Transport to appropriate facility Patient disposition
Use of appropriate dressing Appropriate pain management
Scene Safety and Hazmat Considerations

Treatment per the Airway/Oxygenation/Ventilation Protocol

Stop the burning process

Does the patient meet the criteria for direct transport to regional burn center? (estimate total body surface burned)

No

Immediate transport to appropriate medical facility. Contact Medical Control enroute

Consider oral endotracheal intubation if impending airway obstruction is suspected due to inhalation injury

Cover with dry sterile sheet or dressing

Implement Vascular Access protocol as needed

EKG Monitor if needed

Consider 20 ml/kg IV bolus up to 1L in severe burns

Implement pain management protocol as needed

Contact Medical Control monitor and transport
Objectives:
- To assess and appropriately treat patients with suspected cerebrovascular accidents

General Information:
- Obtain CVA-specific history
  - Onset of stroke symptoms
  - Last time seen normal
  - List of signs/symptoms
  - Risk factors
  - Previous CVA
  - Medications
  - New onset dysrhythmias
- Transport patient, even if symptoms have resolved
- Transport a family member or other witness to verify time of onset of stroke symptoms
- Utilize recognized pre-hospital stroke scale (i.e., Cincinnati Pre-Hospital Stroke Scale)
- If possible, transport to a medical facility with the ability to give thrombolytics
- Make contact with medical control early if your closest facility is not a stroke center

Warnings/Alerts:
- Do not delay transport to start IVs or perform other non-life-saving ALS interventions
- Patients with stroke symptoms are at high risk for airway compromise
  - Example: vomiting, gurgling, drooling, snoring, change in breathing pattern, change in head position
- The airway should be continuously monitored for patency
- Hypoxemia will worsen stroke outcomes

OMD Notes:
None provided

Performance Indicators:
Time of symptom onset
Blood glucose level
Previous deficits
Pre-hospital stroke scale
EKG monitor
Tidewater EMS Council, Inc.
Medical - Cerebral Vascular Accident
(CVA or Stroke)

Treatment per Airway/Oxygenation/Ventilation Protocol

Signs & Symptoms of Stroke?

Yes

Perform Prehospital Stroke Scale

EMT A I P

Obtain Glucometry

If Glucometry is < 60 mg/dL OR > 500 mg/dL Implement Hypo/Hyperglycemia Protocol

EMT A I P

EKG Monitor 12 lead and transmit if available

Transport patient with the head of stretcher elevated unless airway precludes this

Implement Vascular Access protocol as needed

Contact Medical Control

Exit to appropriate protocol
Objectives:
- To assess and treat patients who have been poisoned by various substances

General Information:
- If the scene is unsafe, notify fire department or HAZMAT team immediately
- Do not act upon advice from poison control center; contact medical control for instructions
- Dry chemicals should be brushed off patient's skin before flushing with water
- Chemical exposure to the eyes can be flushed with IV saline using an administration set by all field providers
- Remove any contaminated clothing
- Asphyxiants
  - Examples: Carbon monoxide, cyanide, hydrogen sulfide
  - Pulse oximetry may be unreliable due to asphyxiants’ effects on red blood cells
  - Do not transport directly to a hyperbaric facility without consulting medical control
- Cholinergic
  - Examples: Organophosphates, carbamates, military nerve agents, azinphos-methyl, methyl parthion, cholrothiophos, carbaryl, aldicarb
- SLUDGE
  - Salivation, Lacrimation, Urination, Defecation, Gastrointestinal cramping, Emesis
- Corrosives
  - Examples: Acids (acetic, hydrochloric, nitric, phosphoric, sulfuric) and Bases (sodium hydroxide, ammonium hydroxide, potassium hydroxide)
  - Do not induce vomiting if ingested. If patient vomits, position patient and suction to avoid aspiration
  - Expect rapid mucous membrane swelling if ingested, and consider early and aggressive airway management
- Hydrocarbons
  - Examples: gasoline, methane, toluene, carbon tetrachloride, methylene chloride, trichloroethylene
  - Do not induce vomiting if ingested. If patient vomits, position patient and suction to avoid aspiration
- Irritant Gas
  - Examples: Chlorine, ammonia, phosgene
  - Chlorine gas is created when bleach is mixed with ammonia or acid-based cleaners

Warnings/Alerts:
- Do not bring hazardous materials to the hospital / Notify hospital ASAP
- Do not use diuretics or nitroglycerin for patients with non-cardiogenic pulmonary edema

OMD Notes:
- Notify Hospital Early for preparation purposes
- Don’t delay transport for WMD kits

Performance Indicators:
Initial Evaluation
Use of Decontamination
Appropriate Receiving Facility
Documentation of Substance (if known)
Treatment and Response to Treatment
Scene Safe and Decon Patient

Treatment per the Airway/Oxygenation/Ventilation Protocol

Notify Medical Control of HAZMAT Incident

Implement Vascular Access protocol as needed

EKG Monitor If needed

Cholinergic?

Yes
Call for DuoDote Box
Do not delay transport

Atropine 2 mg every 3-5 minutes until drying of secretions

For seizures:
Versed (Midazolam) 5 mg IN / IV
or
Versed (Midazolam) 10 mg IM

Medical Control

Transport
Objectives:
- To assess and appropriately treat patients with chest pain or suspected acute myocardial infarction
- To eliminate patient’s chest pain

General Information:
- Aspirin
  - EMT and AEMT may administer aspirin on standing orders
  - Even if patient has taken aspirin within one day, administer additional aspirin up to the maximum protocol directed dose
  - Patient should be directed to chew and swallow
  - Do not administer aspirin in the following cases:
    - Patient with history of GI bleeding or other bleeding disorders
    - Patient with history of recent surgery (Within 14 days)
    - Patients that have already recently taken maximum dose of aspirin prior to EMS arrival
    - Patients with sensitivity / allergy to aspirin
- Nitroglycerin
  - EMT and AEMT may administer nitroglycerin with physician order
  - Nitroglycerin should not be given to patients with a systolic blood pressure < 110mmHg without IV access
  - Nitroglycerin may be given every 5 minutes (after the initial three doses) with physician orders as long as the systolic blood pressure remains > 90mmHg
  - Sublingual should be given first, whenever possible; transdermal Nitro has a slower onset (>30 minutes)
- Transdermal nitroglycerin
  - Should be administered if patient cannot tolerate SL nitroglycerin or if SL nitroglycerin fails to relieve pain
- Morphine (I and P only)
  - May be administered concurrently with nitroglycerin if pain is unresolved
  - May administer additional morphine if needed with physician order
  - Implement nausea / vomiting protocol as necessary
- If the patient has cocaine induced chest pain, physician may order Valium 5mg IV/IM

Warnings/Alerts:
- Do not administer nitroglycerin to patients who have taken sexually enhancing medications (Viagra, Levitra, Cialis) within the past 72 hours
- Be cautious of continued nitroglycerin Administration with a > 30mmHg systolic blood pressure drop
- Contact medical control prior to administering ASA if patient is on anticoagulant therapy (Heparin, Lovenox, Coumadin, Effient, Warfarin, Plavix, Paradox, Xarelto)

OMD Notes:
- May administer ASA if patient is taking anti thrombolytics (Aggrenox, Ticlid)
- Call medical control if patient has any history of prior sensitivity or allergic reaction to aspirin
- Do not delayed patient treatment to obtain a 12-lead EKG

Performance Indicators:
- Chest pain scale 1 to 10
- OPQRST assessment
- 12 lead EKG within 10 minutes
- Vital signs after Drug Administration
- Sexually enhancing drug use
- Closest appropriate facility
- Medication administration
Objectives:
- To assess and appropriately treat a patient who is combative
- To ensure the safety of the patient and others
- To utilize de-escalation techniques prior to pharmaceutical intervention

General Information:
- De-escalation
- Physical restraint guidelines
  - Use the minimum physical restraint required to accomplish necessary patient care and ensure safe transportation
    - Soft restraints may be sufficient
    - If law enforcement or additional Personnel are needed, call for it prior to attempting restraint procedures
    - Do not endanger yourself or your crew
  - Avoid placing restraints and such a way as to preclude evaluation of the patient's medical status (airway, breathing, and circulation). Consider whether placement of restraints will interfere with necessary patient care activities or will cause further harm
- Chemical restraint guidelines
  - Sedative agents may be used to provide a safe and humane method of restraining the violently combative patient who presents a danger to themselves or others and to prevent the violently combative patient from further injury while secured by physical restraints
  - These patients may include but are not limited to the following:
    - Alcohol and/or drug-intoxicated patient
    - Restless, combative head injury patients
    - Mental illness patients
    - Physical abuse patients (more humane than physical restraint)
- Capacity to refuse issues are complex. Capacity is a patient's ability to understand their medical situation and make an informed decision about care after being advised of the risks and benefits of a particular course of action. Contact police and medical control to aid in making the decision
- Consider 50mg diphenhydramine (Benadryl) if patient exhibits signs of a dystonic reaction (standing orders for intermediates/paramedics)
  - Note: abnormal muscle tone, sudden stiffening, turning head to one side

Warnings/Alerts:
- All patients who have been given Haldol must be placed on EKG Monitor and physically restrained
- Haldol lowers the seizure threshold and is contraindicated in patients with a seizure history
- Considerations during restraint:
  - Airway/ventilation compromise
  - Positional asphyxia
  - Neurovascular injuries/compromise
  - Agitated delirium (acidosis)

OMD Notes:
- None provided

Performance Indicators:
- De-escalation attempted
- Use of chemical restraint
- Patient mental capacity
- Time on scene
- Use of physical restraint
- Patient disposition
Verbal De-Escalation Guidelines
2. Position yourself between the patient and your exit.
3. Keep your hands in front of your body (Non-threatening manner).
4. Only one provider should communicate with the patient.
5. Maintain a soothing tone of voice.
6. Listen to the patient’s concerns.
7. Empathize. Use positive feedback.
9. Be willing to slow down and disengage if appropriate.
10. Calmly set boundaries of acceptable behavior.
Objectives:
● To assess and appropriately treat patients who receive dialysis

General Information:
● Dialysis patients are very susceptible to electrolyte imbalances and hypoglycemia
● Serious signs and symptoms of electrolyte imbalances include:
  o Weakness
  o Chess
  o Peaked t-waves on an EKG
  o Hypotension
  o Hypertension
  o Pulmonary edema
  o Headache
  o Dizziness
● Shunts/fistulas are formed by connecting a vein to an artery to provide access for hemodialysis
  o Do not take a blood pressure or start an IV in the extremity with the shunt / fistula
● Dialysis patients are frequently given anticoagulant medications and bleeding may be difficult to control
● Bleeding from shunts/fistulas can be very difficult to control
  o Apply fingertip pressure directly to the bleeding site
  o Do not apply pressure to other areas of the shunt / fistula
  o Do not use tourniquets directly on shunt / fistula
  o It may be necessary to assign a provider to maintain direct pressure
  o For life-threatening, uncontrollable bleeding place a tourniquet above the shunt / fistula
● Dialysis patients with chest pain should be disconnected from the machine and reassessed prior to implementing the chest pain/AMI/ACS protocol
● For cardiac arrest in dialysis patients, calcium chloride 1 gram IV/IO followed by 40 ml flush and sodium bicarbonate 1mEq/kg IV/IO should be administered as first-line drugs

Warnings/Alerts:
● Do not use tourniquets directly on shunt / fistula
● Do not give magnesium sulfate to renal failure patients
● Flush IV lines thoroughly between sodium bicarbonate and calcium chloride administration; or administer through two separate IV lines

OMD Notes:
● None provided

Performance Indicators:
Last dialysis treatment  Onset of sign and symptom  EKG rhythm
Treatment and response  12 lead EKG
Objectives:
- To assess and appropriately treat patients who are experiencing a diving medical disorder

General Information:
- Mild symptoms
  - Fatigue
  - Itching
- Serious Symptoms
  - Pain
  - Vertigo
  - Focal weakness
  - Vision and/or speech difficulty
  - Marbled rash
  - Numbness and/or tingling
  - Confusion
  - Seizure
  - Cardiac arrest
- Aspirin may help prevent clot formation around nitrogen bubbles in the bloodstream
- Medical Control will designate transport destination
  - Hyperbaric chambers:
    - Sentara Leigh Hospital ED, (757) 261-6804, Hyperbaric (757) 261-4325
    - Bon Secours DePaul ED (757) 889-5112, Hyperbaric (757) 889-2300
    - Chesapeake Regional Medical Center (757) 312-6149, Hyperbaric (757) 312-6510
    - Sentara Obici ED (757) 983-4815, Hyperbaric (757) 934-4953
    - Diver Alert Network (919) 684-9111
- Document Depth, Time and Gas

Warnings/Alerts:
- Transport patients in a supine position
- Do not transport directly to a hyperbaric chamber without direction from medical control

OMD Notes:
- Transport only to hyperbaric chambers at medical facilities listed above
- Medical control may order ASA

Performance Indicators:
- Barotrauma history
- Transport to appropriate facility
- Depth, time and gas
- Online medical control
Objectives:
- To assess and appropriately treat patients who have experienced a submersion injury

General Information:
- Collect history
  - Trauma
  - Immersion time
  - Air and water temperature
  - Salt, brackish or fresh water
  - Under the influence of alcohol or medication/drugs

Warnings/Alerts:
- Do not insert a nasogastric or orogastric tube without securing the airway with endotracheal intubation
- Consider alternate methods of c-spine immobilization if patient will not tolerate a supine position (e.g. KED, short board, manual control)

OMD Notes:
- Transport all submersion incident patients; patients who have experienced a submersion incident are at high risk for developing life-threatening pulmonary edema within 72 hours of the incident
- Medical control may order CPAP

Performance Indicators:
- Time in water
- Secondary injury
- Water temperature
- Transport to appropriate facility
Victim in water?

- Yes: Maintain rescuer safety
- No: Treatment per the Airway/Oxygenation/Ventilation Protocol

Cardiac Arrest?

- Yes: Exit to appropriate protocol
- No: Rescue breathing and CPR as soon as possible if needed

Implement diving medical disorder, spinal motion restriction, trauma, altered mental status, hypothermia or other protocols as needed

EMT

Consider CPAP or aggressive airway management if in severe respiratory distress

IP

EKG Monitor as needed

AP

Implement vascular access protocol as needed

Contact medical control

Attempt to transport all submersion patients

Regional Medical Patient Care Protocols
Version: July 2016
Objectives:
- To assess and appropriately treat patients who have experienced an electrical or lightning injury

General Information:
- Note entrance/exit wounds
- Lightning and high voltage injuries can be associated with internal injuries from blast effect
- Electrical injuries are associated with falls, seizures, and extremity injuries
- Multiple patients are common in electrical injuries
- Patients with electrical/lightning injuries are at high risk for developing cardiac dysrhythmias
- For cardiac arrest, defibrillate at highest possible setting

Warnings/Alerts:
- Scene safety is paramount
- Ensure patient is not touching source of electrical current

OMD Notes:
- 12 lead EKG should be obtained, if available
- Use reverse triage which requires patients in cardiac arrest to be treated first

Performance Indicators:
- Vital signs-2 set minimum
- EKG rhythm
- Transport to appropriate facility
- Secondary injury
Scene Safety

Treatment per the Airway/Oxygenation/Ventilation Protocol

Spinal motion restriction if needed

Cardiac Arrest? Yes → Exit to Appropriate Protocol

No → Implement appropriate Protocols as needed (Burns, Cardiac, Trauma, etc)

EMT AIP

EKG Monitor 12 lead and transmit if available

Implement Vascular Access protocol as needed

Contact Medical Control

Transport
Objectives:
- To maintain the life of a specific patient if it may be necessary, in rare situations, for the online physician to direct and ALS prehospital provider to render care not explicitly listed within the TEMS regional medical protocols

General Information:
- Extraordinary care is defined as any situation not covered by the TEMS regional medical protocols
- If the prehospital provider receives a physician order for care, but does not feel comfortable with the order or does not agree that it is absolutely necessary to maintain the life of the patient, he/she must document the “inability to carry out a physician order” in the narrative section of the PCR
- A TEMS Regional Trauma Triage or EMS Non-trauma Quality Improvement form must be submitted by the receiving physician and the primary ALS provider immediately following the incident
- The agency medical director, specialty physician, attending physician, primary ALS provider and trauma attending physician, if applicable, must conduct a review of the incident for the purpose of quality improvement
- Consider calling a physician to the scene for more efficient medical direction

Warnings/Alerts:
- All of the following are essential criteria must be met:
  - The online physician and the provider must agree that the procedure is not addressed elsewhere in the protocols and that the procedure is absolutely necessary to maintain the life of the patient
  - The provider must feel capable, based on the direction given by the online physician, of correctly performing the procedure
  - The prehospital provider must inform the consulting and receiving physician(s) of the effect of the treatment upon arrival at the receiving hospital

OMD Notes:
- None provided

Performance Indicators:
- Online medical control (name)  Onset of injury
- Condition of airway  Patient packaging
- Procedure performed  Patient response
- Transport to appropriate facility  Scene time
Extraordinary care is defined as any situation not covered by the Tidewater EMS Regional Medical Protocols.

**Extraordinary Situation?**

- **No**
  - Exit to Appropriate Protocol

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

- **Treatment per the Airway/Oxygenation/Ventilation protocol**
- **Implement crush syndrome protocol if appropriate**
- **Establish contact with Medical Control early in the scenario**
- **Ensure essential criteria* are met**
- **Perform the extraordinary procedure, maintaining constant open communication with the on-line physician**
- **Transport to nearest Trauma Center or as directed by medical control**

*ALL of the following ESSENTIAL CRITERIA MUST BE MET to validate this protocol:

- The on-line physician and the provider must agree that the procedure is not addressed elsewhere in the protocols and this procedure is absolutely necessary to maintain the life of the patient.
- The provider must feel capable, based on the direction given by the on-line physician, of correctly performing the procedure.
- The prehospital provider must inform the consulting and receiving physician(s) of the effect of the treatment upon arrival at the receiving hospital.
- A Tidewater Regional Trauma Triage or EMS Non-Trauma Quality Improvement (QI) form must be submitted by the receiving physician and the primary ALS provider immediately following the incident.
- The agency medical director, specialty physician, attending physician, primary ALS provider and trauma attending physician (if applicable) must conduct a review of the incident for the purpose of quality improvement.

**Note**: If the prehospital provider receives a physician order for care, but does not feel comfortable with the order or does not agree that it is absolutely necessary to maintain the life of the patient, he/she must document the "inability to carry out a physician order" in the narrative of the prehospital patient care report (PCR).
Objectives:
- To assess and appropriately treat patients with Hyper / hypoglycemia

General Information:
- Oral glucose may be administered by EMT and above providers on standing orders, provided to Patient meets the following criteria:
  - Glucometer < 60 mg/dL
  - Known or suspected history of diabetes
  - Conscious and able to swallow
  - Able to maintain own airway
- Dextrose 50% may be administered rectally with physician order
- Dextrose administration requires a patent flowing IV line, not a saline lock
- Patients with a prolonged period of hypoglycemia may not respond to glucagon

Warnings/Alerts:
- Do not administer oral glucose to patients that are not able to swallow or protect their own airway
- If the IV infiltrates while administering dextrose, stop dextrose administration immediately

OMD Notes:
- IO access is inappropriate for suspected narcotic overdoses or hypoglycemic patients. Consider other routes of administration of medications
- IN glucagon may be used for the combative, hypothermic or poor peripheral vascular disease patient

Performance Indicators:
Documented cause (if known) Post treatment glucometry reading
Treatment and response to treatment
Tidewater EMS Council, Inc.
Medical - Hyper/Hypoglycemia

Regional Medical Patient Care Protocols
Version: July 2016
Objectives:
● To assess and appropriately treat patients who are hyperthermic

General Information:
● Mild symptoms (heat cramps / heat exhaustion)
  o Muscle cramps
  o Nausea
  o Headache
  o Irritability
● Mild hyperthermia (passive cooling)
  o Administer oral fluids - water or half-strength electrolyte solution, if mixed with ice
  o Remove from environment
  o Remove clothes
● Serious symptoms (heat stroke)
  o Hypotension
  o Loss of sweating (wipe away sweat to see if it reappears)
  o Vomiting
  o Altered mental status
  o Seizures
  o Coma
● Serious hyperthermia (active cooling)
  o Air moving across wet skin
  o Ice packs at axilla, groin, neck
  o Unit A/C on
  o May have need for administration of IV fluids and transport rapidly

⚠️ Warnings/Alerts:
● Heat stroke is a life-threatening emergency. Do not delay transport

OMD Notes:
● None provided

Performance Indicators:
Time on scene
12 lead EKG
Total amount of fluid given PO/IV
Patient disposition
Cooling method used
Objectives:
- To assess and appropriately treat patients who are exhibiting signs and symptoms of hypothermia

General Information:
- Mild hypothermia
  - Tachycardia
  - Lethargy
  - Shivering
  - Slurred speech
- Moderate hypothermia
  - Respiratory depression
  - Altered mental status
  - Bradycardia
- Severe hypothermia
  - Unconscious
  - Cyanosis
  - Rigid muscles
  - Pupils fixed and dilated
  - Cardiac arrest
- Management
  - Keeping patients horizontal as much as possible
  - Count pulse and respiratory rate for 60 seconds
  - Use passive rewarming measures only
    - Remove wet clothing
    - Cover patient with blanket
    - Turn up heat in unit
- Active rewarming is not advocated in the prehospital setting

Warnings/Alerts:
- Handle hypothermic patients gently to avoid deterioration into ventricular fibrillation
- Severely hypothermic patients can appear to be in rigor mortis. Providers should attempt resuscitation for hypothermic patients in cardiac arrest, unless there is clear evidence of irreversible death (e.g. decomposition, injuries incompatible with life, etc.)

OMD Notes:
- None provided

Performance Indicators:
<table>
<thead>
<tr>
<th>Time on scene</th>
<th>Volume infused</th>
<th>Patient disposition</th>
<th>Exposure time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Objectives:
● To appropriately assess and treat patients who are profoundly nauseous or vomiting

General Information:
● Nausea and vomiting generally are not life-threatening conditions
● Suction should be readily available whenever a patient is nauseous or vomiting
● Zofran (ondansetron) may be administered when vomiting could produce an airway obstruction (for example, in backboarded patients) or for patient comfort when the patient is repeatedly vomiting
  o Dose 4mg slow IV push over 2-5 minutes or IM if IV is unavailable
  o Repeated doses are generally not effective; however, if the patient is still vomiting 10 minutes after the first dose a repeat dose may be given
  o Pregnancy- providers should consult medical control before administering Zofran to a pregnant patient

Warnings/Alerts:
● Ventilating an unconscious patient will produce aspiration and airway obstruction- suctioning is essential
● Use caution when administering Zofran (ondansetron) with Cordarone (amiodarone), or Haldol (haloperidol) due to increased risk of arrhythmias from prolonged Q-T intervals

OMD Notes:
● None provided

Performance Indicators:
Document cause (if known) Type of emesis
Treatment and response to treatment
Treatment per the Airway/Oxygenation/Ventilation Protocol

Is the patient actively vomiting or profoundly nauseated?

Yes → Implement Vascular Access protocol

Administer Zofran (Ondansetron) 4 mg IV over 2-5 minutes or IM if IV unavailable

Patient improved?

Yes → Administer 250 mL NS bolus, may repeat up to 1000 mL NS if lung sounds remain clear

No → If after 10 minutes vomiting continues repeat Zofran (ondansetron) 4 mg IV over 2-5 minutes or IM if IV unavailable

Contact medical control and transport
Objectives:
- To appropriately assess and manage out-of-hospital births
- To appropriately assess and manage patients with vaginal bleeding

General Information:
- Obtain functional history:
  - Premature?
  - Multiple births?
  - Meconium?
  - Prenatal care?
  - Narcotic use?
- Transport pregnant patients in the left lateral recumbent position
- For patients with gestation greater than 20 weeks, transport patient to the closest facility with obstetric capabilities. Medical control continues to serve as a resource in cases of uncertainty
- High-risk pregnancies include the following: (notify medical control early for transport destination)
  - No prenatal care
  - Preterm labor- gestational age <= 34 weeks
  - Premature rupture of membranes (with or without labor-gestational age <= 34 weeks)
  - Major medical conditions (pre-eclampsia, diabetes, etc.) with gestational age <= 34 weeks
  - Mild/moderate vaginal bleeding at gestational age 20-34 weeks
- Consider additional resources to care for the patient and the newly born
- Vaginal bleeding is considered moderate to severe if the patient has lost more than 500ml of blood or if she is using 1 pad/hour or more
- If child is delivered, technician needs to complete 2 PCRs
- If possible transport mother and baby together

Warnings/Alerts:
- Checking for cervical dilation is not within the scope of these protocols
- Do not assume that vaginal bleeding is due to normal menstruation
- Third-trimester bleeding is never normal and can be life-threatening to the mother and the fetus

OMD Notes:
- None provided

Performance Indicators:

<table>
<thead>
<tr>
<th>History of pregnancy</th>
<th>Time of delivery</th>
<th>Delivery complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex of newborn</td>
<td>Total fluid administered</td>
<td>Time of placenta</td>
</tr>
<tr>
<td>delivery</td>
<td>1 and 5 minute APGAR</td>
<td>Amniotic fluid color</td>
</tr>
<tr>
<td>Treatment and response to treatment</td>
<td>Amount of blood loss</td>
<td></td>
</tr>
</tbody>
</table>
Objectives:
- To appropriately assess and treat patients with pre-eclampsia or eclampsia

General Information:
- Pre-eclampsia may occur for up to 6-8 weeks post-partum
- Signs and symptoms
  - Blood pressure- systolic > 140mmHg and/or diastolic > 80mmHg
  - General edema, particularly upper extremities or face
  - Frontal headaches
  - Vision disturbances
  - Altered mental status
  - Abdominal pain
- Magnesium sulfate
  - Treatment for control of eclampsia
  - Dose 4g in 100mL NS over 5 minutes
- Ativan (lorazepam)
  - Dilute in an equal amount of NS for IV/IO administration
  - Dose 2mg slow IV push (over 2 minutes)
  - May be administered IM if IV/IO access is not available. Do not dilute if administering IM
  - May repeat with physician order up to max dose 8mg
  - Medical control may order 1mg for post-seizure patients to prevent further seizures
- Versed (midazolam)
  - Dose 5mg IN equally (2.5mg) divided in each nostril
  - Dose 10mg IM
  - Dose 2mg slow IV push over 1 minute
- All patients receiving Ativan (lorazepam) or Versed (midazolam) should have cardiac and SPO2 monitoring
- Transport pregnant patient in left lateral recumbent position
  - Transport patient to 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.

Warnings/Alerts:
- 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 benzodiazepines should be on cardiac and SPO2 monitor with vital sign reassessment every 5 minutes
- Flush IV lines thoroughly after medication administration
- Valium is incompatible with most drugs and precipitation is likely to occur

OMD Notes:
- Glucometry should be obtained on all patients experiencing a seizure
- IO is to be used as a last resort

Performance Indicators:
- Onset of symptoms
- Treatment and response to treatment
- History of pregnancy
- Transport to appropriate facility
Treatment per the Airway/Oxygenation/Ventilation Protocol

Signs & Symptoms of Pre-eclampsia?

No → Exit to Appropriate Protocol

Yes → Implement Vascular Access protocol as needed

Decrease external stimulus

Seizure?

No → Magnesium Sulfate: 4 grams in 100 mL NS IV/IO over 5 minutes

Yes → If seizure persists, then give:

- Ativan (lorazepam): 2 mg IN/IV/IM
- Versed (midazolam): 5 mg IN/IV

EMT Glucose: < 60 or >500?

Contact Medical Control

Transport to Appropriate Facility
Objectives:
- To assess and appropriately treat non-cardiac pain in an effort to reduce patient's level of pain

General Information:
- Pain is an important indicator of disease or injury, but is generally undertreated in EMS
- Physicians do not have to assess first-hand a patient's pain level—document the patient's initial pain level in the PCR
- Provide BLS pain control measures such as position of comfort, splinting, ice, traction, etc.
- Fentanyl dose
  - 50mcg IV/IO/IM/IN over 2 minutes
  - May be repeated up to 100mcg
- Morphine dose
  - 5mg IV or IM with maximum total dose 10mg
  - Morphine should be administered via slow IV push
  - Higher doses may be appropriate for patients with chronic pain after consulting medical control
- Conditions in which pain control may be appropriate (standing orders for I and P)
  - Significant traumatic injury
  - Burns
  - Kidney stones
  - Cancer
  - Sickle cell
  - Abdominal pain
- Implement nausea/vomiting protocol as needed

Warnings/Alerts:
- Patients who receive pain medication should also receive cardiac and SPO2 monitoring
- Monitor patient closely for respiratory depression and treat appropriately

OMD Notes:
- Do not implement pain management protocol to treat headaches/migraines
- Rapid administration of Fentanyl can cause an inability to ventilate

Performance Indicators:
- Pain scale before and after
- Patient mental status
- Treatment and response to treatment
Treatment per the Airway/Oxygenation/Ventilation Protocol

Pain >5 on a 10 Scale?
- Yes

Systolic BP > 90 mmHg and NO signs of hypoperfusion?
- Yes

GCS >= 13?
- Yes

Morphine 5 mg IV/IO/IM may be repeated to relieve pain up to 10 mg OR Fentanyl 50 mcg IV/IO/IM/IN over 2 min may be repeated once up to maximum of 100 mcg

Administer Zofran 4 mg over 2-5 min IV or IM if IV unavailable

Contact Medical Control
Objectives:
• To assess and treat responders at working scenes

General Information:
• Rated Perceived Exertion (RPE) scale (NFPA 1584)
  1 No exertion
  2 Very light
  3 Light
  4
  5 Somewhat hard
  6
  7 Hard heavy
  8
  8.5 Very hard
  9
  9.5 Extremely hard
  10 Maximal exertion
• Active Cooling
  o Cooling vest, chair or other direct cooling devices
  o Place arms in ice water
  o Should take place in a shaded area
  o Allow patients to cool off gradually before moving them to an air conditioned environment
• Passive cooling
  o Remove protective gear
  o Rest in shaded and/or air conditioned environment
  o Cool water misters
• Rehydration should be with water or sports drink
  o Powdered sports drinks should be mixed at half-strength
  o Single serve sports drinks should be full strength
• Patients removed from the incident or transported to a medical facility warrant PCR documentation
• Implement Hyperthermia protocol as necessary

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

OMD Notes:

Performance Indicators:
Activity Level RPE Scale Initial and Ongoing Vital Signs
Ambient Temperature Patient Temperature Cooling Method

Regional Medical Patient Care Protocols
Version: July 2016
One 45 or 60 min SCBA or
Two 30 min SCBA
or
SCBA Failure
or
40 minutes strenuous activity
(5-10 on RPE scale)
or
Use of encapsulating PPE

Entry Evaluation
Heart Rate
Blood Pressure
Temp

Temp > 101.6° F?

Yes

Rest 20 min
Rehydrate (1 Qt)
Active Cooling
Treat Injury

No

Re-evaluation
HR > 100 bpm
BP > 160 Systolic
BP > 100 Diastolic
Temp > 100° F?

Yes

Treat & consider transport
contact medical control for guidance

No

Return to Manpower

Rest/Rehabilitation
Rest 20 min
Rehydrate (1 Qt)
Passive Cooling (if needed)

Re-evaluation
HR > 100 bpm
BP > 160 Systolic
BP > 100 Diastolic
Temp > 100° F?

Yes

Treat & consider transport
contact medical control for guidance

No

Return to Manpower

If available, patient CO monitoring should be performed on all persons exposed to toxic environments or oxygen deficient atmospheres.
Objectives:
- To facilitate airway management through the use of sedatives and paralytics

General Information:
- Individual or agency use requires OMD approval and successful completion of the TEMS OMD committee approved Difficult Airway Management Course
- Pain control may be necessary
- Difficult airway characteristics
  - Small mouth opening (should be able to insert 2 fingers in mouth)
  - Protruding upper teeth
  - Large tongue
  - Immobility of the head, neck and jaw
  - Infections
  - Trauma
  - Obesity
  - Foreign body
  - Rheumatoid arthritis
  - Tumors
  - Congenital problems
  - Pregnancy

Warnings/Alerts:
- Use of end-tidal CO2 monitors and SpO2 monitoring is mandatory
- It is not advisable to intubate in a moving vehicle due to the risk of damaging laryngeal tissues
- There must be at least one RSI trained Paramedic and an additional ALS provider (released I or P for adult; P for patient < 12 y/o) with the patient to implement this protocol

OMD Notes:

Performance Indicators:
- Indication for RSI Difficult Airway Chart
- Confirmation of Airway after Each Movement
- Use of End-Tidal CO2
- Use of Secondary Airway
- Treatment and Response to Treatment
- Confirmation of ETT Placement
- Online Medical Control
- Documented EKG Rhythm
- Number of Intubation Attempts
- Patient Packaging
- Post Intubation Sedation

Regional Medical Patient Care Protocols
Version: July 2016
Rapid Sequence Induction
Page 1

You must have 1 trained RSI Paramedic AND:
- Another Paramedic for < 14 YOA
- Paramedic or Intermediate for > 14

Patient over 14 years old?

Yes

Administer 30mg IV/IO Etoroidate

No

Administer 0.3 mg/kg IV/IO Etoroidate

Administer 100mg Rocuronium

Yes

Administer 1 mg/kg IV/IO Rocuronium

Intubate the patient after jaw relaxes
(55-60 seconds)

Only Paramedics can intubate < 14 years old

Successful Intubation?

Yes

Continue to pg 2

No

Secondary Airway ventilating patient?

Yes

Utilize TEMS-approved surgical cricothyrotomy kit if available to secure the airway

No

Place secondary/supraglottic airway

Successful Intubation?

Yes

Continue to pg 2

No

Difficult Airway Equipment
- Video laryngoscopy
- TEMS-sanctioned surgical cricothyrotomy kit

Difficult Airway Evaluation
- Mallampati scoring
- Obstruction
- Neck mobility

Look externally

Evaluate 3-3-2 rule

Version: July 2016
Objectives:

- To appropriately care for the sedated/paralyzed patient including
  - Airway management
  - Patient packaging
  - Ensure safety and transport of the RSI patient

General Information:

- Patients may need additional sedative and paralytic medication during transport
- Signs and symptoms that the patient is not adequately sedated while paralyzed
  - Tachycardia
  - Tears from eyes
- Documentation (minimum)
  - GCS
  - Indication for RSI
  - Pre oxygenation
  - Dosages of all medications given
  - Type of intubation or airway control
  - Number of attempts (successful and unsuccessful)
  - Compliance with Airway /Oxygenation/ Ventilation of the intubated patient guidelines
  - SpO2 and end-tidal CO2 monitoring
  - Reassessment of ET tube placement every 5 minutes and after each patient movement
  - Patient packaging techniques

Warnings/Alerts:

- Use of end-tidal CO2 monitors and SpO2 monitoring is mandatory

OMD Notes:

Performance Indicators:

- Indication for RSI Difficult Airway Chart
- Confirmation of Airway after Each Movement
- Use of End-Tidal CO2
- Use of Secondary Airway
- Treatment and Response to Treatment
- Confirmation of ETT Placement
- Online Medical Control
- Documented EKG Rhythm
- Patient Packaging
- Number of Intubation Attempts
- Post Intubation Sedation
Rapid Sequence Induction

1. Patient over 14 years old?
   - Yes: Sedate with 5 mg of Versed IM/IO. May be repeated once after 5 minutes.
   - No: Sedate with 0.2 mg/kg of Versed IM/IO. May be repeated once after 5 minutes.

2. Is patient in pain?
   - Yes: Administer Fentanyl 50 mcg IM/IO. May be repeated once after 5 minutes.
   - No: Reassess patient every 5 minutes during transport. Ensure tube placement after each movement and continuously with ETCO2 (waveform capnography).

3. Need for paralysis during transport?
   - Yes: Administer Rocuronium 100 mg.
   - No: Contact medical control as needed.

4. Is patient in pain?
   - Yes: Administer Morphine 0.1 mg/kg IM/IO. May be repeated once after 5 minutes.
Objectives:
● To assess and treat patients with seizures
● To protect the airway of a seizing patient

General Information:
● Ativan (lorazepam) IV/IM is the preferred drug/route for seizure
● Ativan (lorazepam)
  o Dilute in an equal amount of NS for IV/IO administration
  o Dose 2mg slow IV push (over 2 minutes)
  o May be administered IM if IV/IO access is not available. Do not dilute if administering IM
  o May repeat with physician order up to max dose of 8mg
  o Medical control may order 1mg for post-seizure patients to prevent further seizures (I and P)
● Versed (midazolam)
  o Dose 5mg IN equally (2.5mg divided in each nostril)
  o Dose 10mg IM
  o Dose 2mg slow IV push (over 1 minute)

Warnings/Alerts:
● Versed and Ativan have potential to cause respiratory depression or bradycardia. For that reason, patients receiving these drugs should be on cardiac and SPO2 monitor with vital sign reassessment every 5 minutes
● Inadvertent arterial injection of Ativan may cause arterial spasm resulting in gangrene and possible amputation
● Flush IV lines thoroughly after medication administration

OMD Notes:
● None provided

Performance Indicators:
Length and frequency of seizure
Glucometry reading
Treatment and response to treatment
Tidewater EMS Council, Inc.
Medical - Seizures

Treatment per the
Airway/Oxygenation/Ventilation Protocol

Protect patient from injury

Glucose < 60 or > 500?
- No
  - Active generalized seizures?
    - No
      - Implement Vascular Access protocol
    - Yes
      - Ativan 2 mg IV/IM
        If IV/IM unsafe
        Versed (Midazolam)
        5 mg Intranasal

- Yes
  - Implement Vascular Access protocol

Implement Hyper/hypoglycemia Protocol

Seizures continuing?
- Yes
  - Ativan 2 mg IV/IM
    If IV/IM unsafe
    Versed (Midazolam)
    5 mg Intranasal
- No
  - Contact Medical Control

EKG Monitor

Transport

Regional Medical Patient Care Protocols
Version: July 2016
Objectives:

- To identify and treat patients with sepsis

General Information:

- Early identification and hospital notification of sepsis is associated with improved patient outcome
- Systemic Inflammatory Response Syndrome (SIRS) Symptoms:
  - SBP < 90 mmHg
  - Heart rate > 90/min
  - Respiratory rate > 20
  - Altered Mental Status
  - Temperature > 100.4 F or < 96.0 F
- Sepsis: systemic, deleterious host response to infection
- Severe Sepsis: Acute organ dysfunction secondary to documented or suspected infection
- Septic Shock: Severe sepsis plus hypotension not reversed with fluid resuscitation
- Decreased ETCO2 levels are linked to elevated serum lactate levels and are a good indicator of metabolic acidosis

Warnings/Alerts:

- Sepsis patients are at high risk for pulmonary edema. Frequently reassess lung sounds.

OMD Notes:

Performance Indicators:

- Source of infection if known
- Amount of Fluid Given
- Vital signs including temperature, ETCO2, and Lung sounds
- Treatment and Response to Treatment
Tidewater EMS Council, Inc.
Medical - Sepsis

Regional Medical Patient Care Protocols
Version: July 2016

Treatment per the Airway/Oxygenation/Ventilation Protocol

Known or suspected infection
Yes

Two or more SIRS Criteria
Yes

EMT

Capnography if available

ETCO2 <26
Yes

SBP <90
Yes

Implement Vascular Access Protocol

250 mL NS Bolus up to 30mL/kg to maintain SBP >90 if lung sounds remain clear

Norepinephrine (Levophed) 0.1-0.5 mcg/kg/min titrate to maintain systolic BP of 90 mmHg

Contact Medical Control

Transport

SIRS Criteria:
SBP < 90 mmHg
Heart rate > 90/min
Respiratory rate > 20
Altered Mental Status
Temperature > 100.4 F or < 96.0 F
Objectives:

- To assess and treat patients with shock

General Information:

- Signs and symptoms of a hemodynamically unstable patient can include:
  - Acute change in mental status
    - Hypotension
    - Ongoing chest pain and/or breathing difficulty
  - Types of shock
    - Hypovolemic
      - Hemorrhage *GI bleed, nose bleed
      - Fluid loss *vomiting/diarrhea, dehydration
    - Cardiogenic (pump failure)
      - Additional symptoms may include pulmonary edema, chest pain
      - Implement chest pain/AMI and breathing difficulty protocols as necessary
      - If no signs of pulmonary edema, administer 250ml bolus, may repeat up to 1000ml if breath sounds remain clear
      - Levophed (norepinephrine) 4mg in 250ml NS IV, 2-10mcg/min titrate to systolic BP 90mmHg
    - Vasogenic shock (inappropriate vasodilation)
      - Examples: anaphylactic, neurogenic, septic
      - Treat anaphylaxis per allergic reaction/anaphylaxis protocol
      - Fluid boluses are frequently ineffective; vasopressors are often necessary
      - Levophed (norepinephrine) 4mg in 250ml NS IV, 2-10mcg/min titrate to systolic BP 90mmHg

Warnings/Alerts:

- 

OMD Notes:

- None provided

Performance Indicators:

- Lung sounds
- Treatment and response to treatment
- Vital signs every 5 minutes
- Amount of fluid given
Treatment per the Airway/Oxygenation/Ventilation Protocol

Implement Vascular Access protocol as needed

Hypovolemic
Administer 250 mL NS bolus, may repeat up to 1000 mL NS if lung sounds remain clear

Vasogenic
Administer 250 mL NS bolus, may repeat up to 1000 mL NS if lung sounds remain clear

Cardiogenic
Administer 250 mL NS bolus, may repeat up to 1000 mL NS if lung sounds remain clear

Traumatic
Exit to Trauma Protocol

Norepinephrine (Levophed) 0.1-0.5 mcg/kg/min titrate to maintain systolic BP of 90 mm-Hg

Contact Medical Control and transport

Regional Medical Patient Care Protocols
Version: July 2016
Objectives:
- To provide guidelines for assessing and treating patients with possible spinal injuries.

General Information:
- Spinal motion restriction (SMR) includes:
  - C-Collar
  - Adequately secured to a stretcher
  - Minimal movement/transfers
  - Maintain in-line stabilization during necessary movement
- Age extreme (< 5 or > 65 years old) should receive SMR
- High-risk mechanisms of injury
  - High speed MVC
  - Falls > 3 times the patient's height
  - Axial load
  - Diving accidents
  - Penetrating wounds in or near the spinal column with positive neuro deficit
  - Blunt trauma to or near the spinal column
  - Sports injuries to the head/neck
  - Unconscious trauma patient
- High-risk mechanisms are not the only mechanisms that can produce spinal injuries
  - Previous spinal surgery
  - Trauma associated with intoxication
  - Age extreme patients (<5 or >65 years old)
- Medical patients are at risk for spinal injuries as well
  - Falls with unknown mechanism
  - Unable to determine if trauma occurred
- Low-risk mechanisms of injury can also produce spinal injuries that warrant motion restriction
- Reliable patients are:
  - Calm
  - Cooperative
  - Not impaired by drugs, medications, alcohol, or existing medication conditions
  - Awake, alert and oriented to person, place, time, and event
  - Without distracting injuries
- Signs and symptoms of an abnormal neurological exam include, but are not limited to:
  - Numbness and/or tingling
  - Altered mental status
  - New onset of difficulty in moving extremities
  - Decreased or absent or peripheral pulses
  - Inability to follow commands
  - Incontinence
  - Abnormal pupils and/or response
  - Dizziness or balance issues (e.g. unsteady gait)

Warnings/Alerts:
- Manual spinal immobilization must be maintained until neurological exam is completed
- When in doubt, provide spinal motion restrictions

OMD Notes:
- None provided

Performance Indicators:
<table>
<thead>
<tr>
<th>Index of suspicion</th>
<th>Mechanism of injury</th>
<th>Spinal stabilization during exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability indicators</td>
<td>Sensory exam results</td>
<td>Patient packaging</td>
</tr>
</tbody>
</table>
Neck pain and/or suspicion of C-Spine injury?

Apply manual stabilization until exam completed

Unconscious/Unresponsive?

Yes

Full Immobilization (LBB/OID/CC)

No

Age Extreme? (< 5 or > 65)

Yes

Spinal Motion Restriction

No

Unreliable Patient?

Yes

Spinal Motion Restriction

No

Mid-line C-Spine tenderness?

Yes

Spinal Motion Restriction

No

Abnormal neurological exam? (PMS)

Yes

Full Immobilization (LBB/OID/CC)

No

Immobilization not required, if in doubt, provide spinal motion restrictions

Regional Medical Patient Care Protocols
Version: July 2016
Objectives:
- To assess and treat patients who have a toxicological medical emergency

General Information:
- CNS depressants (symptoms may include: respiratory depression, pinpoint pupils, bradycardia, hypotension)
  - Examples: opiates (heroin, methadone, fentanyl, morphine, codeine, ultram, oxycodone), benzodiazepines (valium, versed, xanax, librium, ativan), barbiturates (Nembutal, Secoanal, amytal), anesthetics (GHB, Ketamine), ethyl alcohol
  - Support patient’s respirations as necessary with an OPA/NPA and BVM
  - Administer Narcan before attempting intubation
- Hallucinogens (symptoms may include: hallucinations, hypertension, tachycardia)
  - Examples: LSD, cannabis (marijuana), mescaline (peyote), PCP, mushrooms, ecstasy, jimson weed, nutmeg, morning glory seeds
- CNS Stimulants (symptoms may include hypertension, tachycardia, dysrhythmias)
  - Examples: cocaine (including crack), amphetamines (speed, diet pills); methamphetamines (crystal meth, ice, ecstasy); dextedrine; caffeine; club or designer drugs; ephedra and ephedrine
- Tricyclic antidepressants (symptoms may include: altered mental status, seizure, depressed respirations, coma)
  - Examples: Amitriptyline (Elavil); Amoxapine (Asendin); Clomipramine (Anafranil); Doxepin (Sinequin, Adepin); Imipramine (Trofanil); Nortriptyline (Aventyl, Pamelor);
  - Flexeril (cyclobenzaprine) is closely related to TCAs and should be treated the same

Warnings/Alerts:
- Narcan can precipitate seizures in patients with a seizure history or in long-term narcotic addicts
- Narcan can precipitate dysrhythmias in patients with cardiac disease, including ventricular fibrillation or ventricular tachycardia
- The goal of narcan administration is to establish an adequate respiratory rate, not to return the patient to full consciousness

OMD Notes:
- Do not act upon advice from poison control center; contact medical control for instructions as needed

Performance Indicators:
- Initial evaluation
- Documentation of substance taken (if known)
- Treatment and response to treatment
Treatment per the Airway/Oxygenation/Ventilation Protocol

Respiratory depression?

Yes

Opioids or unknown?

No

Suspect Tricyclic?

Yes

Sodium Bicarbonate 50 mEq IV over 2 minutes
Magnesium Sulfate 2 grams IV over 5 minutes for VT/Torsades

No

Wide QRS?

Yes

Give Naloxone (Narcan) 2 mg titrated to improve respiratory rate IN/IV/IM. May be repeated once

No

Implement other protocols as needed

Contact Medical Control

Transport

EMT A I P
Objectives:
- To appropriately assess and treat patients who have sustained traumatic injuries

General Information:
- External bleeding control
  - Direct pressure (may require firm fingertip pressure at site)
  - Tourniquet
    - Apply to the extremity proximal to the wound
    - IV tourniquets are not effective for bleeding control
- Some patients should be transported directly to a trauma center – it is not necessary to contact the closest facility for a diversion order. This includes patients who have:
  - Respirations < 8 or > 30
  - Assisted ventilations
  - Airway obstruction
  - Intubation
  - Unconscious/unresponsive
  - Do not follow commands
  - Unable to move extremities
  - Amputation of extremity
  - BP < 90 mmHg with signs/symptoms of shock
  - Heart rate > 120 with signs/symptoms of shock
  - Uncontrolled bleeding
  - No pulse in extremity
  - Penetrating injury of the head, neck, chest or abdomen
- If a patent airway cannot be established or CPR is in progress, transport the patient to the closest facility
- Some patients may need care at a trauma center, even if their injuries do not fit the criteria above. Those patients include:
  - Pregnancy > 24 weeks gestation
  - Geriatric
  - Pediatric
  - Bariatric
  - Special needs
- The goal of IV fluid administration is to maintain a systolic BP of 90 mmHg
- For patients with head injuries and a GCS < 8, the goal of IV fluid administration is to maintain a systolic blood pressure of 110 mmHg
- Resuscitation Criteria
  - Resuscitation should be withheld or discontinued in cases of:
    - Injuries incompatible with life (e.g. decapitation)
    - Trauma with evidence of significant time lapse (rigor mortis, dependent lividity, etc.)
  - Consider withholding resuscitation (Contact medical control if guidance is needed) for blunt or penetrating trauma with no breathing, pulse, pupillary response or organized EKG rhythm
- Does not apply to situations involving hypothermia, electrical injuries or submersion injuries

Warnings/Alerts:
- Do not delay transport to perform non-lifesaving ALS interventions on scene

OMD Notes:

Performance Indicators:

<table>
<thead>
<tr>
<th>Objective</th>
<th>Condition of airway</th>
<th>Patient packaging</th>
<th>Online medical control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset of injury</td>
<td>Patient disposition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment and Response to Treatment</td>
<td>Scene time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Amount of Fluid Given</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Tidewater EMS Council, Inc.
Injury - Trauma

Regional Medical Patient Care Protocols
Version: July 2016

Treatment per the Airway/Oxygenation/Ventilation Protocol

Cardiac Arrest? No → Meets Trauma Center transport criteria? No → Apply appropriate treatment or exit to appropriate protocol

Yes → Meets resuscitation criteria? No → Stop CPR

Implement cardiac protocols as needed

Bilateral needle decompression, if indicated

Transport to closest hospital, Contact Medical Control enroute

2 large bore IV to maintain BP

Contact Medical Control enroute

Implement Vascular Access protocol as needed

IV fluids to maintain BP

Implement Pain Management Protocol as needed

Implement spinal motion restriction protocol and transport

Amputated Parts: Transport wrapped in dry, sterile dressing in a plastic bag. Place in a cooled container, but not directly on ice

Continue Transport
Objectives:
- To assess and manage patients with crush injuries

General Information:
- Consider crush syndrome if trapped extremity or torso with compression and compromise of vascular supply
- Perform interventions simultaneously – crush syndrome development before prophylactic treatment may require volume load along with medications
- Apply EKG monitor early
- Coordinate medication administration with extrication efforts. Medications must be given before compression mechanism is released
- For prolonged extrication or high level compression, consider calling a physician to the scene to bring insulin, calcium gluconate and for more efficient medical direction
- Sodium bicarbonate
  - Helps reverse acidosis
  - 1–2 mEq/kg IV (may be mixed in 1000 ml NS)
- Albuterol
  - Continuous administration
  - Helps drive potassium back into the cells
- Calcium chloride
  - Temporarily stabilizes the cell membranes
  - 1 gram over 3 minutes
  - Calcium gluconate is preferred
- Insulin
  - Helps drive potassium back into the cells
  - 10 units IV with Dextrose 25 grams (must be given simultaneously)

Warnings/Alerts:
- Do not delay transport to provide non-life-saving ALS interventions on scene

OMD Notes:
- Early contact with medical control is recommended

Performance Indicators:
- Cause and Onset of Injury
- Appropriate Transport Destination
- Patient Packaging
- Total Volume Infused
- Confirmation of Airway
- Vital Signs Every 5 Minutes
Scene Safety

Crush Syndrome? No → Exit to Trauma protocol
Yes → Treatment per the Airway/Oxygenation/Ventilation Protocol

Consider activation of specialty Tech-Rescue Team (757) 385-5000

Vascular access, NS 1000 mL bolus, then 500 mL/hr

Consider additional 1000 mL bolus

EKG Monitor

Abnormal EKG or unstable vitals?

Peaked T waves? Wide QRS? Lengthening QT interval? Loss of P wave?


2 mg Morphine IV/IO/IM may be repeated to relieve pain up to 10 mg or fentanyl 50 mcg may be repeated to 100 mcg to relieve pain

Continuous Albuterol via H-HN/BVM, Sodium Bicarbonate 1-2 mEq/kg IV, D50 25 grams IV and Insulin 10 units IV (if available), Calcium Chloride 1 gram over 3 minutes IV

Maintain IV and Monitor for volume overload

Remove patient

Initiate Transport to nearest Trauma Center

Contact Medical Control

Implement the appropriate Cardiac Protocol
Objectives:
- To provide guidance for how and when prehospital providers should obtain vascular access

General Information:
- Fluid management standing orders for hypoperfusion or burns
  - Adults: 250 mL bolus with reassessment up to 1000 mL
  - Infant/child: 20 mL/kg
  - Newly born: 10 mL/kg within 20 minutes using syringe/stop-cock technique
- All bolus medications should be followed by an appropriate flush, 20-30 mL for adults and 5-10 mL for pediatrics
- Indications for intraosseous access:
  - Cardiac arrest
  - Profound hypovolemia with altered mental status
  - Patient with immediate need for medications and/or fluids
- Contraindications for IO:
  - Inability to locate landmarks (consider alternate sites)
  - Fractures or previous orthopedic procedures near insertion sites (consider alternate sites)
  - Infection at insertion site (consider alternate sites)
  - Severe osteoporosis or other degenerative bone conditions
- Approved intraosseous access sites:
  - Humeral head (Standing Order)
  - Proximal tibia (Standing Order)
  - Distal tibia tertiary (Physicians Order only)
- IOs must be flushed before attempting medication or fluid administration, and may require pressure infusers to administer fluid
- Lidocaine may be used for pain management of IO standing order for conscious patient
  - 20-40 mg for adults
  - 0.5 mg/kg for pediatrics

Warnings/Alerts:
- Do not use a 14g needle for IV access
- Intraosseous access is inappropriate for prophylactic access
- Intraosseous access is inappropriate for suspected narcotic overdose or suspected hypoglycemic patients. Consider IM medications instead

OMD Notes:
- The 14g catheters in the IV box are intended for chest decompressions and needle cricothyrotomy only

Performance Indicators:
Location and Type of Access   Treatment and Response to Treatment   Number of Attempts
NOTE: Intraosseous access is inappropriate for prophylactic access!

Need or Potential need for Pre-Hospital administration of medication and/or fluid? 

No

Yes

For cardiac arrest patients consider early IO access at proximal humeral head

Peripheral IV (Up to 3 attempts) Consider External Jugular (EJ) access (For I & P only)

3 unsuccessful IV attempts AND potential for cardiopulmonary failure?

No

Transport without venous access and exit to appropriate protocol

Yes

Intraosseous (IO) cannulation

Exit to appropriate protocol
Pediatric References
<table>
<thead>
<tr>
<th>Age</th>
<th>Heart Rate</th>
<th>Respiratory Rate</th>
<th>Systolic BP</th>
<th>Weight (kg)</th>
<th>Laryngoscope Blade</th>
<th>ET Tube</th>
<th>Suction Catheter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn (to 30 days) &amp; Infant (to 1 year)</td>
<td>100 – 160</td>
<td>30 -60</td>
<td>Minimum 60</td>
<td>Newborn 3-5 kg</td>
<td>0-1 straight</td>
<td>3.0-3.5 uncuffed</td>
<td>6-8 Fr</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Infant 6-8 kg</td>
<td>1 straight</td>
<td>3.5 uncuffed</td>
<td>8 Fr</td>
</tr>
<tr>
<td>Toddler (1 – 3 years)</td>
<td>90 – 150</td>
<td>24 – 40</td>
<td>Minimum 70</td>
<td>Toddler 10-11 kg</td>
<td>1 straight</td>
<td>4.0 uncuffed</td>
<td>8-10 Fr</td>
</tr>
<tr>
<td>Preschooler (3 – 5 years)</td>
<td>80 – 140</td>
<td>22 – 34</td>
<td>Minimum 75</td>
<td>Small Child 12-14 kg</td>
<td>2 straight</td>
<td>4.5 uncuffed</td>
<td>10 Fr</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Child 15-18 kg</td>
<td>2 straight or curved</td>
<td>5.0 uncuffed</td>
<td>10 Fr</td>
</tr>
<tr>
<td>School Age (6 – 10 years)</td>
<td>70 - 120</td>
<td>18 – 30</td>
<td>Minimum 80</td>
<td>Child 19-22 kg</td>
<td>2 straight or curved</td>
<td>5.5 uncuffed</td>
<td>10 Fr</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Large Child 24-30 kg</td>
<td>2-3 straight or curved</td>
<td>6.0 uncuffed</td>
<td>10 Fr</td>
</tr>
<tr>
<td>Adolescent (11 – 18 years)</td>
<td>60 - 100</td>
<td>12 - 16</td>
<td>Minimum 90</td>
<td><em>Adult</em> Greater than or equal to 32 kg</td>
<td>3 straight or curved</td>
<td>6.5 cuffed</td>
<td>12 Fr</td>
</tr>
</tbody>
</table>
### APGAR / Glasgow Coma Scale Score / Pain Rating Scale

#### APGAR

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

#### Pediatric Glasgow Coma Scale (GCS) Score

**Eye**

- 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*

**Verbal**

- >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

**Motor**

- 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

*See note about intubation*

- 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”)

#### Pediatric Pain Rating Scale

Explain to the child that each face is for a person who feels happy because there is no pain (hurt) or sad because there is some or a lot of pain. Face 0 is very happy because there is no hurt. Face 2 hurts just a little bit. Face 4 hurts a little more. Face 6 hurts even more. Face 8 hurts a whole lot, but Face 10 hurts as much as you can imagine, although you do not have to be crying to feel this bad. Ask child to choose the face that best describes the child’s own pain. Record the number under chosen face on patient care report.
Palm Method:
The palm method is a tool whereby the size of the patient's palm is used as an indicator for 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.

<table>
<thead>
<tr>
<th>Superficial (First-Degree)</th>
<th>Partial Thickness (Second-Degree)</th>
<th>Full Thickness (Third-Degree)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damage to the outer layer of skin {epidermis}, causing pain, redness and swelling.</td>
<td>Damage to both outer skin and underlying tissue layers {epidermis and dermis} causing pain, redness, swelling and blistering.</td>
<td>Damage extends deeper into tissues {epidermis, dermis and hypodermis} causing extensive tissue destruction. The skin may feel numb.</td>
</tr>
</tbody>
</table>
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 30-50cc of air with a Toomey Syringe (catheter tip) and auscultate over the stomach for the swish or bubbling of the air
- 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
JumpSTART Pediatric MCI Triage

Able to walk? YES → MINOR → Secondary Triage

Breathing? NO → Position upper airway → APNEIC → Breathing → IMMEDIATE

Palpable pulse? NO → DECEASED

YES → 5 rescue breaths → APNEIC → DECEASED

IMMEDIATE

Respiratory Rate

<15 OR >45 IMMEDIATE

15-45

Palpable Pulse? NO → IMMEDIATE

YES → PP (INAPPROPRIATE POSTURING OR "P") IMMEDIATE

AVPU

"A", "V" OR "P" (APPROPRIATE) DELAYED

Evaluate infants first in secondary triage using the entire JS algorithm

© Lou Romig MD, 2002
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 and 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 provides, based on experience and expertise, may always exercise clinical judgment regarding atypical patient presentations
Pediatric Cardiac Protocols
14 Years and Younger
Objectives:
- Early recognition and appropriate intervention for pediatric patients in cardiac arrest

General Information:
- During High-Quality CPR
  - Push hard and fast (At least 100/min; at least 1/3 anterior-posterior diameter of chest)
  - Ensure full chest recoil; minimize interruptions in compressions
  - One person CPR: 30 compressions: 2 breaths, two minutes = 5 cycles
  - Two person CPR: 15 compressions: 2 breaths, two minutes = 10 cycles
  - Rotate compressors every 2 min
  - A two-thumb encircling technique is preferred for infants
  - Avoid excessive ventilation

- If BLS airway is adequate, priority is vascular access and medication administration. A brief attempt at an advanced airway by an experienced provider is appropriate
  - After an advanced airway is placed, give continuous chest compressions without pauses for breaths.
  - Give 8-10 breaths/min (1 breath every 6-8 seconds)

- AED use
  - Pediatric AEDs are preferred for children < 8 years old
  - If pediatric AED is unavailable; an adult AED should be used
  - Adult AEDs should be used on children 8 years old or older
  - Defibrillation pads should not touch. Use pediatric-sized pads if available for children less than 8 years old; use a front-back placement if needed
  - Contraindications:
    - Rigor mortis / dependent lividity
    - Injuries incompatible with life
    - "No code"/ DNR

- Search for and treat possible contributing factors:
  - Hypovolemia
  - Hypoxia
  - Hypokalemia / Hyperkalemia
  - Hypoglycemia (Verify via Glucometry)
  - Hypothermia / Hyperthermia
  - Hydrogen ion (Acidosis)
  - Tension Pneumothorax
  - Toxins
  - Trauma
  - Tamponade Cardiac
  - Thrombosis (coronary or pulmonary)

Warnings/Alerts:
- CPR may still be required in the presence of an organized cardiac rhythm
- Perform CPR if the heart rate is less than 60 with poor perfusion despite oxygenation and ventilation
- It is the responsibility of the provider delivering the shock to ensure that no one is touching the patient prior to the shock delivery
- Failure to stop a moving vehicle during AED analysis may lead to inappropriate defibrillation
- The following conditions need to be addressed prior to defibrillation:
  - Patients in standing water
  - Patients with transdermal medication

OMD Notes:
- Endotracheal administration of medications should be used ONLY when IV/IO access is not available

Performance Indicators:
- Onset of Arrest Time
- Initial Rhythm
- Bystander/FR CPR/AED
- Time of Initial Defibrillation
- Consistency of CPR
- Changes in EKG Rhythm
- Patient Packaging
- Patient Disposition

Regional Medical Patient Care Protocols
Version: July 2016
Objectives:
- Early recognition and appropriate management of pediatric bradycardia

General Information:
- Signs and symptoms of a hemodynamically unstable patient can include:
  - Increased work of breathing
  - Altered mental status
  - Cyanosis
  - Poor perfusion and loss of peripheral pulses
- Search for and treat possible contributing factors
  - Hypovolemia
  - Hypoxia
  - Hypokalemia / Hyperkalemia
  - Hypoglycemia (Verify via Glucometry)
  - Hypothermia / Hyperthermia
  - Hydrogen ion (Acidosis)
  - Epinephrine
    - IV/IO 0.01 mg/kg (1:10,000 0.1 mL/kg) every 3-5 minutes
    - ETT 0.1 mg/kg (1:1,000 0.1 mL/kg added to 2-5 mL NS max of 10 mL of fluid)
  - Atropine
    - 0.02 mg/kg IV/IO, minimum dose 0.1 mg, max dose 0.5 mg
  - Pacing
    - Set rate to 100 bpm
    - Increase milliamps until electrical capture; final mA setting should be slightly above where electrical capture is obtained to prevent loss of capture
    - Verify mechanical capture

Warnings/Alerts:
- Too small doses of atropine produce a paradoxical bradycardia; therefore, a minimum dose of 0.1 mg is recommended
- Atropine and pacing are preferred over epinephrine if the patient has existing heart disease (cardiomyopathy or myocarditis, for example) - contact medical control for guidance

OMD Notes:
- None provided

Performance Indicators:
- Onset of Symptoms (time)
- Treatment and Response
- Vital Signs – 2 set minimum
- LOC
- Pacing Parameters
- Stable or Unstable Patient
- 12 Lead EKG
**Medical - Pediatric Bradycardia**

**Treatment per the Airway/Oxygenation/Ventilation Protocol**

**HR <60 and poor perfusion despite O2 and ventilations?**

- **No**

- **Begin CPR**

**Persistent symptomatic bradycardia?**

- **No**

- **Yes**

**Implement Vascular Access protocol**

**EMT Monitor 12 lead and transmit if available**

**Cardiac history?**

- **Yes**

  - **Atropine 0.02 mg/kg IV/IO**
    - **Min dose 0.1 mg**
    - **Max dose 0.5 mg**

- **No**

  - **Epinephrine 1:10,000 0.01 mg/kg IV/IO every 3-5 minutes**

  - **Consider pacing**

**Contact Medical Control and Transport**
Objectives:
- Early recognition and management of stable tachycardia in the pediatric patient

General Information:
- A key component to treatment of pediatric tachycardia is distinguishing between sinus tachycardia and SVT
  - Sinus tachycardia:
    - HR usually < 180 in children, 220 in infants
    - Rate variable with stress or activity
    - P-waves may be visible
    - Gradual onset
    - Common causes of ST include fever, dehydration, hemorrhage, pain, medications, exercise, anxiety, hypoxia
  - Supraventricular tachycardia
    - HR usually > 180 in children, 220 in children
    - Rate not variable
    - P waves absent or inverted
    - Sudden Onset
    - Infants may present with CHF symptoms
- Signs and Symptoms of a hemodynamically unstable patient include:
  - Altered Mental Status
  - Poor perfusion
    - Mottling
    - Pallor
    - Cyanosis
    - Diminished peripheral pulses
  - Ongoing chest discomfort and / or shortness of breath
  - Hypotension / Shock
- Vagal maneuvers
  - Apply ice to the forehead, eyes and bridge of nose to infants
  - Older children:
    - Blow through obstructed straw
    - Bear down as if having bowel movement
    - Hold breath while ice is applied to forehead, eyes and bridge of nose
- Adenosine:
  - First dose: 0.1 mg/kg rapid IV/IO push, max dose 6 mg
  - Second dose: 0.2 mg/kg rapid IV/IO push, max dose 12 mg
  - Medical control may order adenosine if SVT with aberrant conduction is suspected
- Amiodarone:
  - Perfusing rhythm with a pulse
    - < 10 kg 5 mg/kg in 100 mL NS over 20 minutes
    - > 10 kg 5 mg/kg in 250 mL NS over 20 minutes
  - Pulseless rhythm
    - 5 mg/kg rapid IV push with no dilution

Warnings/Alerts:
- Do not obstruct infant's airway while performing vagal maneuvers
- Do not use ocular pressure or carotid massage as a vagal maneuver

OMD Notes:

Performance Indicators:

<table>
<thead>
<tr>
<th>Vital Signs before Intervention</th>
<th>Vital Signs after Intervention</th>
<th>Stable or Unstable Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response to Therapy</td>
<td>Initial Rhythm</td>
<td>LOC</td>
</tr>
<tr>
<td>Onset of Symptoms</td>
<td>12 Lead EKG</td>
<td></td>
</tr>
</tbody>
</table>
Objectives:
- Early recognition and management of unstable tachycardia in the pediatric patient

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  - Altered Mental Status
  - Poor perfusion
    - Mottling
    - Pallor
    - Cyanosis
    - Diminished peripheral pulses
  - Ongoing chest discomfort and/or shortness of breath
  - Hypotension / Shock
- Consider causes such as the following and contact medical control for guidance:
  - Congenital cardiac conditions
  - Drug toxicity (tricyclic antidepressants, cocaine, calcium channel blockers)
- Adenosine:
  - First dose: 0.1 mg/kg rapid IV/IO push, max dose 6 mg
  - Second dose: 0.2 mg/kg rapid IV/IO push, max dose 12 mg
  - Medical control may order adenosine if SVT with aberrant conduction is suspected
- Amiodarone:
  - Perfusing rhythm with a pulse
    - < 10 kg 5 mg/kg in 100 mL NS over 20 minutes
    - > 10 kg 5 mg/kg in 250 mL NS over 20 minutes
  - Pulseless rhythm
    - 5 mg/kg rapid IV push with no dilution

Warnings/Alerts:
- Polymorphic VT can deteriorate quickly to VF - cardiovert ASAP
- If unable to obtain synchronization, deliver unsynchronized shock at defibrillation energy (manufacturer recommendations)
- If the patient has VT or SVT with altered mental status and other signs of hemodynamic instability, do not delay cardioversion to administer sedation

OMD Notes:
- None Provided

Performance Indicators:
- Vital Signs before Intervention
- Vital Signs after Intervention
- Stable or Unstable Patient
- Response to Therapy
- Initial Rhythm
- LOC
- Onset of Symptoms
Objectives:
- To appropriately treat patients who have return of spontaneous circulation
- To ensure adequate perfusion

General Information:
- Optimize ventilation and oxygenation
  - Utilize end tidal CO2 with ventilation and oxygenation with 12-20 breaths/minute and titrate to a target PETCO2 of 35-40 mm Hg
  - Maintain oxygen saturation 94% - 99%
  - Do not hyperventilate – 1 breath every 3-5 seconds / 12-20 breaths a minute
- Administer 20 mL/kg NS boluses up to 1000 mL reassessing after each bolus
- Search for and treat possible contributing factors:
  - Hypovolemia
  - Hypoxia
  - Hypokalemia / Hyperkalemia
  - Hypoglycemia (Verify via Glucometry)
  - Hypothermia / Hyperthermia
  - Hydrogen ion (Acidosis)
  - Tension Pneumothorax
  - Toxins
  - Trauma
  - Tamponade Cardiac
  - Thrombosis (coronary or pulmonary)

Warnings/Alerts:
- Perform CPR if the heart rate is less than 60 with poor perfusion despite oxygenation and ventilation

OMD Notes:
- With a patient in cardiac arrest, providers need to contact medical control as early as possible

References:

Performance Indicators:
EKG Rhythm
Total fluid administrated
Evaluation of Perfusion Treatment and Response to Treatment
Tidewater EMS Council, Inc.
Cardiac Arrest
Pediatric ROSC
Return of Spontaneous Circulation

Reassess oxygen, ventilation, mental status and vital signs

Treatment per the Airway/Oxygenation/Ventilation Protocol

Evaluate heart rate

Implement appropriate Cardiac Protocol

If HR < 60, continue compressions

Hypotensive?

No

20 mL/kg NS reassess after each bolus up to 1000 mL.
10 mL/kg for newborns or patients with cardiac history

Yes

Contact medical control

Transport

Hypotensive Limits:
- Neonate: <90 SBP
- Infant: <70 SBP
- 1-10 YOA: <70(age+2) SBP
- >10 YOA: <90 SBP
Pediatric General Protocols
14 Years and Younger
Objectives:
- Ensure patency of airway
- Provide proper oxygenation therapy
- Support the patient's breathing as needed

General Information:
- Oxygen therapy for patients with altered mental status, hypoperfusion, pain, trauma, carbon monoxide exposure, dyspnea or sickle cell patient in pain crisis regardless of SPO2 reading
- When possible, a room air pulse oximetry reading should be obtained and documented
- Oxygen therapy
  - The goal is to maintain SPO2 > 94% but may not be achievable due to various conditions (eg patient history, device limitations)
  - SPO2 90 %- 93 % - Nasal Cannula at 1-6 lpm
  - SPO2 < 90 % - Non-Rebreather at 10-15 lpm
  - The pulse oximetry reading should not be the sole factor to determine if the patient needs oxygen
- A BLS airway is adequate for most pediatric patients. However, a brief attempt at orl intubation by an experienced provider is appropriate
- Assisted ventilations
  - BLS Airway
    - The ventilation rate for pediatric patients is 12-20 bpm, or once every 3-5 seconds without CPR
    - Attempts should be made to use 2 providers to ensure adequate BVM ventilations using “E-C” technique
  - ALS (Advanced) Airway 8-10 breaths per minute, or once every 6-8 seconds with CPR (endotracheal intubation, supraglottic tube placement)
    - Select tube size using one of the following methods:
      - Size indicated on the length based resuscitation tape
      - (16+ age) divided by a 4 or (Age divided by 4 ) + 4
      - If using cuffed tubes, use tube half size smaller
    - Cardiac Monitor and Pulse Oximetry are required and waveform capnography if available
    - Consider OG/NG tube when using BVM or after endotracheal intubation

Unconscious Intubated Patients
- Verify tube placement
- Secure with commercial device
- Secure with commercial device, package with c-collar and long board
- Reassess tube placement every 5 minute, during transport or after movement of patient

OMD Notes:
- Needle cricothyrotomy may be used in children 3-12 years old if the cricothyroid membrane can be palpated
- Consider oxygen therapy for sickle cell patients in pain crisis as they may benefit from this therapy

Performance Indicators:
- Initial and Ongoing SpO2
- Confirmation of ETT
- Documentation of Breath Sounds
- Application of Oxygen
- Use of Secondary Airway
- Patient Packaging
Note: This protocol is to be used in conjunction with existing protocols in a complementary manner.

- Loss of Airway or Inadequate Breathing?
  - Yes: Consider calling for assistance if < 3 providers present or if needed.
  - No: Consider complete airway obstruction. Visualize airway, remove foreign body if necessary.

- Airway patent after airway maneuvers?
  - Yes: BVM, high concentration oxygen.
  - No: Need for breathing support?
    - Yes: Tension Pneumothorax with serious signs and symptoms?
      - Yes: Needle Decompression (min 18g needle).
      - No: Oxygenation improved?
        - Yes: Secure advanced airway.
        - No: Consider: 0.1 mg/kg Versed IV for post-intubation sedation.

- Exit or return to appropriate protocol.

- Percutaneous Needle Cricothyotomy or Sanctioned Alternative Airway Kit.
Objectives:
- To assess and appropriately treat pediatric patients with allergic reactions and/or anaphylaxis
- To differentiate between an allergic reaction and anaphylaxis

General Information:
- Signs and Symptoms of allergic reaction may include:
  - Itching
  - Hives
  - Flushing (red skin)
  - Mild swelling of face (especially the eyes and lips), neck, hands, feet or tongue
- Signs and symptoms of anaphylaxis may include all of the above; but must include one of the following:
  - Respiratory distress
    - Labored breathing (i.e. stridor, wheezing, hoarseness, cough)
  - Hemodynamic instability
    - Hypotension
    - Weak or absent distal pulses
    - Excessive sweating (diaphoresis)
- Rapidly progressing signs and symptoms should be treated as anaphylaxis
- EMTs may use patient’s Epi-Pen on standing orders
- In severe anaphylaxis with hypotension and/or severe airway obstruction, medical control may order Epinephrine 1:10,000 IV
- In hemodynamic instability Epinephrine 1:1,000 IM is the preferred route of administration instead of SQ
- Solu-Medrol is not indicated in the management of allergic reaction/anaphylaxis

Warnings/Alerts:
- Failure to use end-tidal CO2 monitoring increases the risk of an unrecognized misplaced tube
- Failure to confirm tube placement prior to securing or following patient movement may lead to unrecognized tube placement

OMD Notes:
- Maximum dose of Epinephrine is 0.5 mg
- The use of albuterol is encouraged if the patient exhibits wheezing or diminished aeration

Performance Indicators:
- Documented Cause (If Known)
- Application of Oxygen
- Treatment Provided
- Response to Treatment
- Use of Epi-Pen
Tidewater EMS Council, Inc.
Medical - Pediatric Allergic - Anaphylactic Reaction

Regional Medical Patient Care Protocols
Version: July 2016
Objectives:
- To appropriately manage breathing difficulty in pediatric patients

General Information:
- In the patient with stridor, drooling, and forward posture, let the patient maintain a position of comfort if they are maintaining their own airway
- In severe asthma, wheezing may not be present due to insufficient tidal volume
- Patients in severe distress or those who have not responded to home therapy may receive albuterol/atrovent as a first-line treatment.
- For severe asthma, medical control may order other medications:
  - **Magnesium sulfate**
    - 50 mg/kg (max dose 2 g) IV/IO drip
    - Mix in 250 mL NS administer over 20 minutes
  - **Epinephrine 1:1,000**
    - 0.01 mg/kg IM, max dose 0.5 mg
  - **Solumedrol**
    - Dose: 2 mg/kg (max dose 125 mg)
- Overdoses on drugs such as beta-blockers, tricyclic antidepressants and calcium-channel blockers may produce pulmonary edema

Warnings/Alerts:

OMD Notes:
- Solu-medrol should not be routinely administered to pediatric patients; however, it may be considered for extended transports (physician order only)

Performance Indicators:
- Breath Sounds Before and After Treatment
- Initial and Ongoing SpO2
- Treatment and Response to Treatment
Treatment per the Airway/Oxygenation/Ventilation Protocol

**Asthma**
- Hx Wheezing

**Patients <20 kg**
- Albuterol 2.5 mg H+H
- May repeat once

**Patients >20 kg**
- Albuterol 5 mg H+H

**If no improvement/Severe Distress**
- Albuterol / Atovent H+H (5mg Albuterol for pts >20kg)

**Vascular Access as needed if Severe Respiratory Distress**

**Contact Medical Control and Transport**

---

**Croup**
- Barking seal cough
- Stridor at rest
- Cold like signs and symptoms
- Fever

**If STRIDOR AT REST**
- 2 ml Epinephrine 1:1000 in 2 mL NS H+H

**If**

- Lasix 2 mg/kg

**Implement Vascular Access protocol as needed**

**Epiglottitis**
- Drooling
- Stridor at rest
- Fever
- Forward posture

**Avoid Agitation**

**Rapid Transport**
Objectives:
- To assess and appropriately treat pediatric patients with burn injuries

General Information:
- Stop the burning process. Cool burned area(s) until pain is lessened or up to 30 minutes if patient can maintain normal body temperature
- Remove clothing around burned area carefully. If clothing is stuck to skin, cut the clothing instead of pulling it away
- All burned areas should be covered with a dry, sterile dressing
- Criteria for direct transport to a regional burn/trauma center:
  - >10% BSA full-thickness
  - >20% BSA partial-thickness burns
  - >15% BSA partial and full-thickness burns
  - Burns to genitals, hands, feet, face or surface area over joints
  - Geriatric or pediatric patients
  - Inhalation, electrical injury or chemical burns
  - Associated traumatic injuries
- Sentara Norfolk General and CHKD have an agreement where some burn patients may be transported to CHKD
  - Significant burns to the face, and/or upper chest that could potentially compromise the airway should go to Sentara Norfolk General
  - A mechanism, such as a house fire where inhalation burn and potential rapid loss of airway control is a possibility, should go to Sentara Norfolk General. Check availability of CynoKit.
  - If the provider is unsure whether to transport to Sentara Norfolk General or CHKD they can call either facility for destination decision

Warnings/Alerts:
- Do not delay transport to start IV or to perform other non-life-saving ALS interventions for non-critical burn patients; not all burn patients need an IV
- Use caution when cooling patients to avoid hypothermia
- Inhalation burns with impending airway compromise should be treated with aggressive airway management

OMD Notes:
- Do not start an IO for pain management only

Performance Indicators:
<table>
<thead>
<tr>
<th>Time on Scene</th>
<th>Initial SpO2</th>
<th>Estimated Body Surface Burned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial and Ongoing Vital Signs</td>
<td>Dressing Type</td>
<td>Appropriate Facility</td>
</tr>
</tbody>
</table>
Scene Safety and Hazmat Considerations

Treatment per the Pediatric Airway/Oxygenation/Ventilation Protocol

Stop the burning process

Consider oral endotracheal intubation if impending airway obstruction is suspected due to inhalation injury

Evaluate criteria for direct transport to regional burn/trauma center. Estimate total body surface burned

Transport to appropriate medical facility. Contact Medical Control en route

Cover with dry sterile sheet or dressing

EKG Monitor if needed

Implement Vascular Access protocol for patients >20% BSA partial-thickness/2nd degree

0.1 mg/kg IV/IO/IM morphine max of 5 mg (may repeat once after 10 minutes) to relieve pain or 1mcg/kg Fentanyl IN up to 50mcg. May repeat once in 10 minutes
Objectives:
- To provide appropriate resuscitation for the newly born

General Information:
- Vascular access is generally not needed in resuscitation of the newly born
- Resuscitation should focus on airway management and breathing
- Meconium aspiration (Paramedic Skill Only)
- Routine suctioning is no longer recommended: only perform tracheal suctioning with thick meconium present in a severely distressed newborn
- Umbilical vein cannulation should not routinely be utilized in the newly born
- Utilization of the EZ IO may be indicated and may require less pressure during insertion than insertion in adult patients
- APGAR scoring should be documented at 1 minute and repeated at 5 minutes
- The depressed newly born or prematurely born infant is at risk for hypoglycemia
  - Check blood sugar
    - When a patient has a sudden change in responsiveness or perfusion
    - Patient is cold stressed
    - Patients large for gestational age
    - Patients born to diabetic mothers
    - When transport time is greater than 30 minutes
  - Implement pediatric hypo/hyperglycemia protocol as needed

Warnings/Alerts:
- Avoiding hypothermia is an important part of newly born management. Before delivery, make the room or ambulance as warm as possible
- Narcan is contraindicated for neonates of narcotic-addicted or methadone-dependent mothers

OMD Notes:

Performance Indicators:
- 1 minute & 5 Minute APGAR Score
- Meconium Aspiration
- Initial and Ongoing Vital Signs
- Suctioning of Airway
Birth

Dry and warm

Term gestation? Amniotic fluid not thick? Breathing or crying? Good muscle tone?

Evaluate respirations, heart rate, and color

Apneic OR HR < 100?

Yes

Breathing, HR > 100 but Cyanotic?

Yes

Persistent Cyanosis?

No

Contact Medical Control and Transport

Breathing HR > 100 & Pink?

No

Reposition, stimulate and oxygenate (blow by)

EMT A I P

BVM Ventilation

Yes

HR < 60 bpm?

No

Exit to appropriate Protocol

Yes

Begin CPR with a 3:1 ratio and rate of 120 compressions per minute
Objectives:
- To assess and appropriately treat pediatric patients with hypo/hyperglycemia

General Information:
- Oral glucose may be administered by EMTs and above providers on standing orders, provided the patient meets the following criteria:
  - Glucometry < 60 mg/dL pediatric, < 45 mg/dL newborn
  - Known or suspected history of diabetes
  - Conscious and able to swallow
  - Able to maintain own airway
- Dextrose 50% may be administered rectally with physician order
- Dose 1 g/kg (or 2 mL/kg)
- Dextrose administration requires a patent flowing IV line, not a saline lock
- To make Dextrose 25% expel 25 mL of the preloaded syringe and draw up 25 mL of NS
- To make Dextrose 10% expel 40 mL of the preloaded syringe and draw up 40 mL of NS
- Patients with a prolonged period of hypoglycemia may not respond to glucagon

Warnings/Alerts:
- Do not administer oral glucose to patients that are not able to swallow or protect their own airway
- If the IV infiltrates while administering dextrose, stop dextrose administration immediately

OMD Notes:
- Hypoglycemia is very dangerous, much more than hyperglycemia

Performance Indicators:
Documented Cause (If Known)  Treatment and Response to Treatment  Post Treatment Glucometry
Treatment per the Airway/Oxygenation/Ventilation protocol

Glucometry < 60 or < 45 for newborn? No

Glucometry > 500? No

EXIT to appropriate protocol

Yes

EMT Administer 1 tube oral glucose if conscious and able to swallow

A

I

P

Patient Improved? No

Yes

Vascular Access

A

I

P

Vascular Access

A

I

P

Newly Born: D10W 2 mL/kg IV/IO
Child: (< 2 years old) D25W 2 mL/kg IV/IO
Child: (> 2 Years Old) D50W 2 mL/kg IV/IO
Glucagon 1mg IM/IN if IV cannot be established

Contact medical control

A

I

P

Transport

Hx of vomiting, dehydration, dry mucus membranes and tachycardia? No

Yes

Vascular Access

A

I

P

Administer 20 mL/kg NS bolus Max 1000 mL
**Objectives:**
- To appropriately assess and treat pediatric patients who are profoundly nauseous or vomiting

**General Information:**
- Nausea and vomiting generally are not life-threatening conditions
- Suction should be readily available whenever a patient is nauseous or vomiting
- Zofran (ondansetron) may be administered when vomiting could produce an airway obstruction (for example, in backboarded patients) or for patient comfort when the patient is repeatedly vomiting
  - Dose 0.15 mg/kg up to total dose of 4 mg slow IV push over 2-5 minutes. OMD may order more

**Warnings/Alerts:**
- Ventilating an unconscious patient will produce aspiration and airway obstruction—suctioning is essential
- Fluid bolus should be given cautiously in the pediatric population

**OMD Notes:**
- There are conditions that cause vomiting in which a fluid bolus might increase intracranial pressure and cause a rapid deterioration, such as intracranial lesions, tumors, acute bleeding, malfunctioning VP shunts
- Prior to administering Zofran (ondansetron) obtain history of cardiac issues, arrhythmias, or prolonged Q-T intervals

**Performance Indicators:**
**Document Cause (if Known)** | **Type of Emesis** | **Treatment and Response to Treatment**
Treatment per the Airway/Oxygenation/Ventilation Protocol

Is the patient actively vomiting or profoundly nauseous with signs of dehydration?

Yes

Implement Vascular Access as needed

Administer 0.15 mg/kg up to 4mg Zofran IV over 2-5 minutes or IM if IV unavailable

Patient not improving or signs of poor perfusion?

Yes

20 mL/kg NS reassess after each bolus up to 1000 mL. 10 mL/kg for newborns or patients with cardiac history

Contact medical control and transport

No
Objectives:
- To assess and appropriately treat non-cardiac pain in an effort to reduce the pediatric patient’s level of pain

General Information:
Pain is an important indicator of disease or injury, but is generally undertreated in EMS
- Physicians do not have to assess first-hand a patient’s pain level-document the patient’s initial pain level in the PCR
- Provide BLS pain control measures such as position of comfort, splinting, ice, traction, etc.
- Fentanyl dose when no IV is available (IN only)
  - 1 mcg/kg
  - May be repeated up to a total of 50 mcg
- Morphine dose when IV available
  - 0.1 mg/kg IV, any single dose should not exceed 5 mg
  - Morphine should be administered via slow IV push
  - Higher doses may be appropriate for patients with chronic pain after consulting medical control
- Conditions in which pain control may be appropriate
  - Isolated extremity injury
  - Sickle cell crisis
  - Kidney stones
  - Cancer
  - Burns
- Implement nausea/vomiting protocol as needed

Warnings/Alerts:
- Patients who receive pain medication should also receive cardiac and SPO2 monitoring
- Monitor patient closely for respiratory depression and treat appropriately

OMD Notes:
- Do not start an IO for pain management
- IV Fentanyl not recommended for pediatric patients
- IN Fentanyl preferred
- Rapid administration of Fentanyl can cause an inability to ventilate

Performance Indicators:
<table>
<thead>
<tr>
<th>Pain Scale Before and After Treatment</th>
<th>Initial and Ongoing Vital Signs</th>
<th>Patient Mental Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response to Treatment</td>
<td>Patient Disposition</td>
<td></td>
</tr>
</tbody>
</table>
Treatment per the Airway/Oxygenation/Ventilation Protocol

Pain > 5 on a 10 Scale? Faces?

Yes

Normal systolic blood pressure for age?

No

If IV in place: 0.1 mg/kg IV morphine max of 5 mg (may repeat once after 10 minutes) to relieve pain
If no IV in place: 1 mcg/kg Fentanyl IN (may repeat once after 10 minutes to max of 50 mcg)


No

If IV in place: 0.1 mg/kg IV morphine max of 5 mg (may repeat once after 10 minutes) to relieve pain
If no IV in place: 1 mcg/kg Fentanyl IN (may repeat once after 10 minutes to max of 50 mcg)

Implement nausea / vomiting protocol as needed

Contact medical control and transport

Tidewater EMS Council, Inc.
General - Pediatric Pain Management
Non-Cardiac

Normal Systolic Blood Pressure
Neonate: > 60 mmHg
Infant: > 70 mmHg
1-10 Years: > 70 + (2 x age)
> 10 Years: > 90 mmHg
Objectives:
- To assess and treat pediatric patients with seizures
- To protect the airway of a seizing pediatric patient

General Information:
- Versed (midazolam) intranasal (IN) is the preferred drug for seizures
- Versed (midazolam)
  - Dose 0.2 mg/kg IN equally divided in each nostril, max 5 mg
  - Dose 0.1 mg/kg slow IV/IM push over 1 minute, max 2.5 mg
  - May be administered IM if IV/IO access is not available. IM versed may be just as good, if not better, than IV Ativan
- Ativan (lorazepam)
  - Dilute in an equal amount of NS for IV/IO administration
  - Dose 0.1 mg/kg up to total dose of 2 mg given IV/IO slow IV push (over 2 minutes)
  - May be administered IM if IV/IO access is not available. Do not dilute if administering IM
  - May repeat with physician order up to max dose of 8 mg
- All patients receiving Versed (midazolam) or Ativan (lorazepam) should have cardiac and SPO2 monitoring

Warnings/Alerts:
- Versed and Ativan have potential to cause respiratory depression or bradycardia. For that reason, patients receiving these drugs should be on cardiac and SPO2 monitor with vital sign reassessment every 5 minutes. Administer slow IVP to avoid apnea
- Inadvertent arterial injection of Ativan may cause arterial spasm, resulting in gangrene and possible amputation

OMD Notes:
- IO placement is the last resort for the treatment of a seizure patient

Performance Indicators:
Length and Onset of Seizure  Glucometer Reading  Treatment and Response to Treatment
Objectives:
- To assess and treat patients who have a toxicological medical emergency

General Information:
- CNS depressants (symptoms may include: respiratory depression, pinpoint pupils, bradycardia, hypotension)
  - Examples: Opiates (heroin, methadone, fentanyl, morphine, codeine, Ultram, oxycodone); benzodiazepines (Valium, Versed, Xanax, Librium, Ativan); Barbiturates (Nembutal, Secoanal, Amytal); Anesthetics (GHB, Ketamine); ethyl alcohol (EtOH)
  - Support patient’s respirations as necessary with an OPA/NPA and BVM
  - Administer Narcan before attempting intubation
- Hallucinogens (symptoms may include: hallucinations, hypertension, tachycardia)
  - Examples: LSD, Cannabis (marijuana), mescaline (peyote), PCP, mushrooms, Ecstasy, Jimson Weed, nutmeg, morning glory seeds)
- CNS stimulants (symptoms may include: hypertension, tachycardia, dysrhythmias)
  - Examples: Cocaine (including crack), amphetamines (speed, diet pills); methamphetamines (crystal meth, ice, Ecstasy); Dexedrine; caffeine; club or designer drugs; ephedra and ephedrine
- Tricyclic Antidepressants (symptoms may include: altered mental status, seizure, depressed respirations, coma)
  - Examples: Amitriptyline (Elavil); Amoxapine (Asendin); Clomipramine (Anafranil); Doxepin (Sinequin, Adepin); Imipramine (Trofanil); Nortriptyline (Aventyl, Pamelor); Flexeril (Cyclobenzaprine) is closely related to TCAs and should be treated the same

Warnings/Alerts:
- Narcan can precipitate seizures in patients with a seizure history or in long term narcotic addicts
- Narcan can precipitate dysrhythmias in patients with cardiac disease, including ventricular fibrillation or ventricular tachycardia
- The goal of Narcan administration is to establish an adequate respiratory rate, not to return the patient to full consciousness

OMD Notes:
- Do not act upon advice from poison control center; contact medical control for instructions if needed

Performance Indicators:
Initial Evaluation          Appropriate receiving facility
Documentation of substance taken (if known)  Treatment and Response to Treatment
Notes
Radio / Documentation

References
Professionalism cannot be stressed strongly enough. Think through your report for a moment before picking up the radio microphone. 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. Below are pertinent points that should be included in hospital radio reports:

- Unit’s identification and level of service (ALS or BLS)
- Patient’s age and gender
- Estimated time of arrival (ETA)
- Chief complaint and history of present illness
- Patient’s mental status and distress level (none, moderate or severe)
- Pertinent scene assessment findings and mechanism of injury
  - (i.e. fall, or motor vehicle accident)
- Treatment and vital signs (baseline)
- Pertinent past medical history (major past illness/injury)
- Pertinent findings of physical exam
- Patient’s response to treatment
- Questions and/or Orders?
- Update the hospital as needed during transport

The following are practices that should be avoided over the radio
- Stating patient’s name
- Use of personal identification numbers
- Patient’s race or ethnic origin (unless pertinent)
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
  o 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
  o Location of patient in vehicle and restraints used
  o Whether the air bag deployed
  o 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

CARCIAL 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:
  o How fall occurred, what the pt. was doing before the fall
  o How far patient fell
  o If patient hit anything on the way down
  o 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
  o Name of poison/drug
  o Amount exposed to or taken
  o Time of exposure or ingestion
  o How exposed or reason for taking med
  o Route of exposure
  o Length of time of exposure or ingestion
  o 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.)
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
- 2008-01-30: 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?)
Name: ________________________________________________________
SS# __________________-________________-______________________
DOB: ________________________________________________________________________________
Gender: ☐ Male ☐ Female
Address: ________________________________________________________________________________
Incident Location: ________________________________________________________________
Chief Complaint: _______________________________________________________________________

PMH: _________________________________________________________________________________

Meds: _________________________________________________________________________________

Allergies: ____________________________________________________________

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

Initial Vital Signs:
BP _____/_____ HR __________ RR __________ SaO2 __________
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

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<thead>
<tr>
<th>Time</th>
<th>BP</th>
<th>HR</th>
<th>RR</th>
<th>SaO2</th>
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<tbody>
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</table>

Glasgow Coma Score

<table>
<thead>
<tr>
<th>Time</th>
<th>Eye Opening</th>
<th>Verbal response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Early Opening</td>
<td>Late Opening</td>
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</tbody>
</table>

Additional Treatment:
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Medications:

<table>
<thead>
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<th>Time</th>
<th>Medication</th>
<th>Dosage</th>
<th>Route</th>
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</thead>
<tbody>
<tr>
<td></td>
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</table>

Additional Treatment:
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Report Giving to: __________________________________________________________________

Turned over to bed #: ___________________________
Tidewater EMS Council
Appendixes
Appendix A

RELATED 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 boxes prior to presentation to the pharmacy for exchange. It is to be understood that the ALS provider who returns the boxes to the pharmacy is responsible for their cleanliness.

   Approved: August, 1991

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) in the hospital by disposal down a sink drain. *An EMT-C, EMT-I, EMT-P, 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

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 24 hours) and returned to the receiving facility for inclusion in the patient's record.

   Approved: February, 1991
4. The use of any circumferential pneumatic device, (MAST, PSAG, air splints) should not be used as a primary splint for lower extremity fractures in the absence of hypotension. It has been shown that the use of the MAST garment as a splint can precipitate compartment syndrome in lower extremities.

Approved: August, 1990

5. Notification of transport to receiving hospitals:

- Each local EMS agency and hospital should establish its own routine policy on whether or not 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 brief 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.

Note: Sentara Norfolk General Hospital has requested that technicians not call in reports on BLS patients.
When an EMS agency transports to a hospital outside their normal catchment area, all cases including BLS should be called into the receiving hospital.

Approved: December 1, 1998
Revised: March 20, 2003
Revised: September 2, 2009

6. The use of the **14 gauge angiocath IV catheters** is restricted for chest decompression use only (suggested length 2 1/4 inches).

Approved: May, 1992
Revised: December, 1998

7. **Red lights and sirens** (RLS) are a tool to be used for the benefit of patient care. The benefits for the use of this tool should outweigh the risks. Risk assessment must consider the patient, EMS crew and public. Specifically, the Attendant-in-Charge (AIC) must consider the condition of the patient being treated and if there is a need for rapid transport to a medical facility. If more expeditious arrival at the hospital will immediately benefit the patient, then RLS use may be instituted. Discussion with on-line medical control may be utilized to assist in determining the need for RLS. However, the ultimate decision for RLS use rests with the AIC. The safe, prudent and legal operation of the vehicle remains the responsibility of the vehicle operator.

Specific situations in which individual EMS agencies will or will not require RLS may be enacted under policy of the agency Operational Medical Director.

Approved: March, 1995
Revised: December 1998

8. **EMS Coverage During Standby Events**

   • Local governments should regulate EMS care provided within a jurisdiction so that all patients, even at special events, are able to receive a level of care usually available in that jurisdiction.

   • Agencies intending to standby in an area outside their jurisdiction should notify the “home” agency of the standby;

   • 911 agencies doing standbys in their own jurisdiction may standby with BLS, even if ALS is normally provided, as long as ALS is readily available;

   • A “home” agency, when notified that an outside agency will conduct a standby, should remind the standby agency of the appropriate level of care to be provided.

Approved May 20, 1998
Appendix B
DRUG AND IV BOX POLICY
APPENDIX B

REGIONAL DRUG & IV BOX POLICY
(Including MMRS DuoDote Antidote Kits)

Documentation of Use

The Prehospital Patient Care Report (PPCR) or Electronic Patient Care Report (EPCR) is a legal document that must be completed after each and every ambulance call. Its completeness and accuracy are vital to the patient's health care record and provides legal documentation of the provider's actions. It also acts as a vital component in the exchange process of drug and IV boxes in the TEMS region. Each PPCR/EPCR must be legible and comprehensive.

The PPCR/EPCR must not only include written documentation of details about the patient's condition, but also basic and advanced techniques performed and pharmacological agents used. On the PPCR/EPCR form there are several blocks specifically designed for the documentation of ALS adjuncts and techniques. During an ALS call it is imperative that these blocks be filled out thoroughly, with a strong emphasis on attention to details. Each IV and/or drug box number used in patient care needs to be documented on the PPCR/EPCR as well.

After the EMS provider has completed the PPCR/EPCR, it should be reviewed for completeness. In all cases where ALS techniques or pharmacological agents were used or ordered, a pharmacy exchange form must accompany the medication boxes for exchange, one (1) for each box used. This can be completed by using an agency-created short form for exchanges or by printing the required page(s) from the Electronic Medical Record (EMR) software that your agency is using. Whichever process your agency uses, you must include the following information:

• Patient’s name (Hospital’s sticker may be used)
• Your agency name
• Unit number
• Your name
• Date of exchange
• Old and New Box numbers
• Medication used and waste of narcotics with witness information and signature
• *Signature of medical practitioner

*To comply with a requirement of the pharmacies, you will need a pen to paper (wet) signature on the pharmacy exchange form by the attending physician, physician assistant or nurse practitioner for all administration of Schedule II-IV medication. After one of these individuals has signed the pharmacy exchange form, the form is to be left with the medication box(es) at the exchange point.

Exchange Procedure

If an IV or drug box was used or opened inadvertently, the prehospital care provider then proceeds to the Pharmacy or designated area for box exchange. There is a place on the PPCR/EPCR for the pharmacy staff to sign documenting accountability for the narcotics in the used drug box. Anytime the drug box is opened during the call, the pharmacy staff should review
the narcotic contents of the box at the time of the exchange and sign in the appropriate space. This area is just below the accounting of drug and IV box numbers used in the ambulance call.

The new drug or IV box received during the exchange process needs to be documented on the PPCR/EPCR and a copy left inside the used box for the pharmacy staff. If more than one box is used, all box numbers should be noted on the PPCR/EPCR.

**Quarterly Inventory and Reporting**

To ensure accountability for the regional prehospital drug, RSI (if applicable) and IV box inventory system, the following policy is adopted:

1. All licensed ALS agencies will perform an inventory of all drug, RSI (if applicable) and IV boxes located within their systems on a quarterly basis. This inventory will be completed on the **third Wednesday** of each **March, June, September and December** by **4:30 p.m.** Once completed, a copy of the inventory will be forwarded to the TEMS office ASAP.

**NOTE:**

Norfolk Fire and Rescue will be responsible for Sentara Norfolk General, Sentara Leigh, and Bon Secours DePaul Medical Center.

Children's Hospital of the King's Daughters will report their own inventory.

Chesapeake Fire Department will be responsible for Chesapeake Regional.

Virginia Beach Emergency Medical Services will be responsible for Sentara Independence, Sentara Virginia Beach General and Sentara Princess Anne.

Portsmouth Fire and Rescue will be responsible for Bon Secours Maryview Medical Center.

Nansemond-Suffolk Volunteer Rescue Squad / Suffolk Fire-Rescue will be responsible for Sentara Obici, Bon Secours Health Center at Harbour View, and Sentara BelleHarbour.

Franklin Fire and Rescue will be responsible for Southampton Memorial.

Navy Region Mid-Atlantic Fire & Emergency Services will be responsible for Naval Medical Center Portsmouth.

The Eastern Shore Field Coordinator will be responsible for obtaining the inventories for the Eastern Shore agencies including Riverside-Shore Memorial Hospital.

2. The TEMS staff, on a quarterly basis will review the drug box and IV box inventory and accountability system to ensure compliance by all regional agencies.

**Quarterly Inventory Reporting Non-Compliance**

Review/Revised EMS Medical Operations Committee / ER Nurse Managers June 2016
Review/Revised OMD Committee June 2016
1. Failure to report: letter from TEMS to the agency’s administrator, with a copy to the agency's operational medical director, outlining the discrepancy and the necessary corrective action.

2. Second consecutive failure to report: A panel will be convened to review discrepancies and make a final determination about the agency’s continued participation in the regional IV and drug box exchange program.

Box Repairs; Adding New Boxes

1. Any agency, when placing any additional ALS vehicles in service in the TEMS region, will be required to purchase two (2) each drug boxes and two (2) each IV boxes per vehicle. (One box of each type for each vehicle, and one box of each type for system exchange to be placed in a local hospital if needed or in surplus for rapid availability.)

2. When placing additional drug or IV boxes into service, agencies will contact the TEMS office and request an inventory number be assigned to the box. It will be the responsibility of the agencies to bring the new box to the TEMS office to have the appropriate TEMS inventory control tag placed on the box.

3. When an IV or drug box is damaged notify the TEMS office. The TEMS staff will make arrangements for pickup and repair or replacement of a box.
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) and 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 tamper evident, breakable, numbered security lock.

2. Must be stored at controlled room temperature, defined as 68-77 degrees F with excursions between 59-86 degrees F.

3. Must be readily accessible 24 hrs/day, 7 days/week. Must be able to transport immediately to an incident.
Notes
Appendix C
SPECIAL RESOURCES
Appendix C

SPECIAL RESOURCES

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
    - Bon Secours DePaul ED (757) 889-5112 Hyperbaric (757) 889-2300
    - Chesapeake Regional Medical Center (757) 312-6149 Hyperbaric (757) 312-6510
    - Sentara Obici ED (757) 983-4815 Hyperbaric (757) 934-4953
    - 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) 385-5000

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 or
  - (757) 473-9453

- 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)
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

- STAT 1 /Mass Casualty Unit/Specialized Transport - Sentara 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

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
Notes
Appendix D

PATIENT

RESTRAINT
Appendix D

PATIENT RESTRAINT

PURPOSE

To establish a standard/guideline to be utilized only when necessary and in those situations where the patient is exhibiting behavior that the pre-hospital care provider believes presents a danger to the patient and/or others. This procedure applies to patients being treated under implied consent. Patients who are refusing treatment should not be subjected to this procedure unless police are on scene.

PROCEDURE

- Verbal De-escalation Guidelines

1. Make every attempt not to aggravate or worsen pre-existing injuries or medical conditions
2. Attempt to control the patient with verbal counseling

- Verbal De-escalation Procedure

1. Remain calm and friendly, be aware of your emotions
   ✓ Be mindful of your body language
   ✓ Breathe slowly and deeply
   ✓ Maintain a safe distance and refrain from touching
   ✓ Utilize contact and cover principles
2. Position yourself between the patient and your exit.
3. Keep your hands in front of your body (Non-threatening Manner)
4. Only one provider should communicate with the patient
5. Maintain a soothing tone of voice
6. Listen to patient's concerns
7. Empathize. Use positive feedback
8. Be reassuring. Outline the patient's choices
9. Be willing to slow down and disengage if appropriate
10. Calmly set boundaries of acceptable behavior

- Patient Capacity Issues

1. 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.
2. When tasked to determine the mental capacity of a patient to refuse treatment, ask yourself these questions about your patient:
   ✓ Is the patient in danger of hurting himself or others?
   ✓ Is there or 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 in your patient's condition?
✓ Does your patient understand the risks of refusing these treatments or interventions? Have you made those clear?

3. These questions apply only to the patient's immediate situation, not to long-term medical care.

- Physical Restraint Guidelines

1. Use the minimum physical restraint required to accomplish necessary patient care and ensure safe transportation:
   ✓ Soft restraints may be sufficient
   ✓ If law enforcement or additional personnel are needed, call for it prior to attempting restraint procedures
   ✓ Do not endanger yourself or your crew
2. Avoid placing restraints in such a way as to preclude evaluation of the patient's medical status (airway, breathing, and circulation). Consider whether placement of restraints will interfere with necessary patient care activities or will cause further harm.

- Physical Restraint Procedures

1. Ensure sufficient personnel are present to control the patient while restraining him/her; USE LAW ENFORCEMENT ASSISTANCE WHEN AVAILABLE
2. Place the patient face up on long backboard
3. Secure ALL extremities to the long backboard
   ✓ Try to restrain lower extremities first using Flex-cuffs (or equivalent) around both ankles
   ✓ Next, restrain the patient's arms at the side using Flex-cuffs (or equivalent) around each wrist
4. If necessary, use cervical spine precautions (CID) to control violent head or body movements
5. Place padding under patient's head and wherever else needed to prevent the patient from further harming him/herself or restricting circulation
6. Secure the backboard onto the stretcher for transport using additional straps if necessary; remember to secure additional straps to the upper part of the stretcher to avoid restricting the wheeled carriage
7. 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 Guidelines

1. Sedative agents may be used to provide a safe, humane method of restraining the violently combative patient who presents a danger to themselves or others and to prevent the violently combative patient from further injury while secured by physical restraints
2. These patients may include but are not limited to the following:
   ✓ Alcohol and or drug-intoxicated patients
   ✓ Restless, combative head-injury patients
   ✓ Mental illness patients
Physical abuse patients (more humane than physical restraint)

- **Chemical Restraint Procedure**

1. Assess the possibility of using physical restraint first; evaluate the personnel needed to safely attempt to restrain the patient
2. Have sedative medication prepared for injection; prepare for possible hypotensive side effects
3. Contact On-Line Medical Control prior to administration and clearly state the need for sedation if you think it is necessary for safety or patient care
4. Administer Haldol 5-10 mg IM or IV (Refer to the Combative Patient Protocol)
   - Vital signs should be assessed within the first five minutes and thereafter as appropriate
   - If necessary, contact On-Line Medical Control for additional sedation.
5. Assess the need for sedation carefully.
   - The violently combative patient stands a lesser chance of injury when sedated
   - Patients who are physically restrained and aggressively fighting their restraints and head injury patients who are combative and compromising their airway and C-spine may be candidates for sedation
   - Chemical restraint precautions: Side effects of Haldol may include hypotension, tachycardia, and acute dystonic reactions. Treat symptoms of dystonic reaction with Benadryl 25-50 mg IM or IV. Watch for increased sedation

- **Documentation (Minimum)**

1. In what manner was your patient violent? Record patient’s comments verbatim.
2. Did you feel threatened? Why?
3. Were you concerned about your patient's outcome without emergency medical interventions? Why?
4. Could you treat your patient appropriately without the use of restraints?
5. What Law Enforcement Officer was present?
6. What physician provided the order? Who was on-line medical control?
7. Document the frequency of respiratory and mental status change assessments. *
8. If your patient was physically restrained, was he prone or supine?
9. What kind of restraints did you use?
10. Where on your patient were these restraints placed?

* Constant evaluation of your patient's airway status and documentation of such is extremely important.
Appendix E
DURABLE DNR
FACT SHEET
Appendix E

Durable DNR FACT SHEET
Information provided by the Virginia Office of EMS

Durable DNR Forms are NOT intended for use in admission or welcome packages. The Durable DNR Form shall be treated no differently than a blank prescription pad.

Virginia Certified EMS Providers Can Honor the Following Do Not Resuscitate (DNR) orders

1. Virginia Durable Do Not Resuscitate (DNR) Orders are the only do not resuscitate form issued by the Virginia Department of Health (VDH). Durable DNR Orders do not expire. They remain in effect until the patient or someone designated to act on the patient’s behalf revokes the order. If the Virginia Durable DNR Order form is used in a health care facility, you must take the original order when you transport a patient. Virginia EMS providers CANNOT honor a Living Will or a DNR from another state.

2. “Other” DNR Orders is the term used to define a written physician’s order to not resuscitate. Virginia EMS providers can honor an original physician’s order only when the patient is in a licensed health care facility. This “Other” DNR Order may be on a form developed by the health care facility or any other type of written physician’s order. An “Other” DNR order must contain the same information that is on the yellow state DNR form and be issued from a physician who has a bona fide physician/patient relationship. This other DNR Order must contain the patient’s full legal name, state “Do Not Resuscitate” have the physician’s and patient’s signature or, if applicable, the person authorized to consent on the patient’s behalf and the date the “Other” DNR Order was issued. EMS providers will need to take the original “Other” DNR order with them when transporting a patient from one health care facility to another in order to honor the DNR should, the need arise.

Nursing Homes and Hospices Do Not Have to Use the Yellow Durable DNR Form

1. The Virginia Durable DNR Form is used primarily by EMS providers during prehospital events (events occurring outside of licensed medical facilities). When responding to a call from a nursing home or hospice, the EMS provider only needs to be shown an original Do Not Resuscitate Order in a patient’s chart. This written directive must be signed by the patient’s doctor and dated. It can be as simple as the doctor writing it on his prescription pad. The EMS provider will indicate on his Pre-Hospital Patient Call Report form that he was shown a DNR order or told by the patient’s doctor that the patient has one.

2. Authorized Alternate Durable DNR Orders (DNR Jewelry). Approved Durable DNR bracelets or necklaces can be honored in place of the Virginia Durable DNR Order form by EMS providers. After obtaining a Durable DNR Order form that has been signed by his/her physician, a patient can purchase an authorized Durable DNR bracelet or necklace from one of the
approved vendors listed below. The Office of EMS does not sell or distribute DDNR Jewelry. The patient must furnish the vendor with a copy of their Virginia Durable DNR Order Form.

Oneida Nameplate Company
Manchester, IA
Phone: 1 877 925-2586
E-mail: info@oneida-medical-jewelry.com

Appomattox Drug Store
Appomattox, VA
Phone: 1 800-330-7225
E-mail: info@appomattoxdrugstore.com

If the patient is wearing a Virginia Durable DNR bracelet or necklace, Certified EMS Providers **DO NOT** have to see the Durable DNR Order form.

3. A Certified EMS Provider can follow a direct verbal order by a physician, who is physically present and in attendance and willing to assume responsibility for the patient at the time of death

**Who Can Request Durable Do Not Resuscitate (DNR) Forms**

1. **Durable DNR Forms are available only to physicians** and to any facility, program or organization operated or licensed by the Board of Health or by the Department of Mental Health, Mental Retardation and Substance Abuse Services or operated, licensed or owned by another state agency. The Virginia Department of Health cannot issue a Durable DNR Order Form directly to a patient. It can only be issued by a physician to a patient with whom there is a bona fide physician/patient relationship. It is this physician’s responsibility to discuss information on the Durable DNR Form with the patient or the person authorized to consent on the patient’s behalf. The OEMS Website has sample **Durable DNR Forms for the use in admission or welcome packages so please do not use original Durable DNR Forms for this purpose.**

**How to Order Durable DNR Forms**

To order Durable DNR forms, fax your request, on Physician or Health Care Agency's letterhead or a Durable DNR request form, to the Office of EMS at **804 864-7580**. Orders cannot be filled over the telephone. *(Requests for quantities greater than 100 may require proof of need)*


This Web site includes:
1. DDNR Fact Sheet
2. How to Fill Out the Durable Do Not Resuscitate Form
3. How to Request Durable Do Not Resuscitate Forms
4. How to Purchase DDNR Bracelets and Necklaces
5. DDNR Sample form (pdf)
6. Virginia Durable DNR Request Form
7. The applicable Virginia laws (Code of Virginia) related to DDNR
8. Virginia Durable DNR Regulations
Applicable Virginia State Statutes:

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

12VAC5-66-10 Definitions
http://leg1.state.va.us/cgi-bin/legp504.exe?000+reg+12VAC5-66-10
12VAC5-66-20 Authority for regulation
http://leg1.state.va.us/cgi-bin/legp504.exe?000+reg+12VAC5-66-20
12VAC5-66-30 Purpose for regulation
http://leg1.state.va.us/cgi-bin/legp504.exe?000+reg+12VAC5-66-30
12VAC5-66-40 The Durable Do Not Resuscitate Order Form
http://leg1.state.va.us/cgi-bin/legp504.exe?000+reg+12VAC5-66-40
12VAC5-66-50 Authorized alternate Durable DNR jewelry
http://leg1.state.va.us/cgi-bin/legp504.exe?000+reg+12VAC5-66-50
12VAC5-66-60 Other DNR Order
http://leg1.state.va.us/cgi-bin/legp504.exe?000+reg+12VAC5-66-60
12VAC5-66-70 Issuance of a Durable DNR Order Form or Other DNR Order
http://leg1.state.va.us/cgi-bin/legp504.exe?000+reg+12VAC5-66-70
12VAC5-66-80 Durable DNR Order Form Implementation procedures
http://leg1.state.va.us/cgi-bin/legp504.exe?000+reg+12VAC5-66-80
Forms
http://leg1.state.va.us/cgi-bin/legp504.exe?000+reg+12VAC5-66-9998

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.
Appendix F
RESTOCKING POLICY AND FORM
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 and hospital pharmacies.

**POLICY ELEMENTS:**

1. Hospitals will exchange, on a one-for-one basis, certain supplies and pharmaceuticals used by participating EMS agencies on patients transported to the hospital.
   a. Supplies are designated on the *Tidewater Regional Ambulance Supply List* (Attached to the end of this policy). Hospitals will exchange designated supplies with all non-profit EMS agency ambulances on a one-for-one (one item used, one replacement item provided) basis.
   b. Pharmaceuticals and related supplies are designated on the *Tidewater IV Box Inventory* and the *Tidewater Drug Box Inventory*, consistent with the *Tidewater Regional Medical Protocols*, current edition. Hospitals will exchange designated intravenous supplies and pharmaceuticals with all EMS agency ambulances on a one-for-one basis utilizing a box-for-box exchange (used open box exchanged for sealed, prepared box). For-profit agencies are intentionally included in this exchange to promote and maintain standardized emergency patient care throughout the region consistent with Tidewater Regional Medical Protocols and to provide for patient safety and the appropriate control and inventory of pharmaceuticals and related supplies. Specific policies related to the IV and drug box exchange process, including inventory and documentation, are contained in the Tidewater "Regional Medical Protocols," current edition.
   c. Additionally, it is specifically noted that this one-for-one exchange policy also applies where an EMS agency might expend exchangeable supplies and/or pharmaceuticals 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 and/or pharmaceuticals 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 and/or pharmaceuticals (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 and/or pharmaceuticals (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 (not including drugs and IV supplies). Ambulance personnel will utilize the *Prehospital Patient Care Report* (PPCR, or its equivalent) to document the exchange of drugs and 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 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 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.

Review/Revised EMS MOC/ED Nurse Managers,
Approved, OMD Committee,
Tidewater Regional Ambulance Supply List

Airway
Adult and pediatric nasal cannulae
Adult and pediatric non-rebreather masks
Endotracheal tubes, various sizes
Endotracheal tube stylet
Disposable bag-valve-mask
Flexible suction catheters, 14 French
Suction tubing
Rigid suction catheter
Adult End Tidal CO2 detector (inline for intubated patients)
Disposable Emesis Bag

Cardiac Monitoring/pacing
EKG electrodes, adult and pediatric
Defib/Pacer pads

Immobilization
Cervical collars (Adjustable)

Linens
Sheets
Pillowcases
Blankets
Towels

Bandaging
Non-sterile 4X4 packs
Roller bandage (Kling-type) 4” and 6”

EZ-IO Needles
(Pink) Pediatric Needle Set for Patients 3 to 39 kg
(Blue) Adult Needle Set for Patients > 40 kg
(Yellow) Large Adult Needle Set

This list does not suggest specific brands or manufacturers. Selection of brands and manufacturers will be the prerogative of the hospitals.

Pharmaceuticals and related supplies are listed on the Tidewater Drug Box Inventory and IV Box Inventory lists, consistent with the Tidewater Regional Medical Protocols, current edition.
Tidewater Emergency Medical Services Council, Inc.

Regional Emergency Department Supply Replacement Form

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
☐ ET Tube Size ______
☐ Stylette Adult Ped
☐ Bag Valve Mask Adult Ped
☐ Suction Catheter 14 French
☐ Yankauer Suction Catheter
☐ Suction Tubing
☐ In line CO2 detector End Tidal Adult (Intubated patient)

Monitoring:
☐ EKG Electrodes Adult Ped
☐ Defib/Pacer Pads

First Aid Supplies:
☐ Non-Sterile 4x4’s
☐ Roller Bandages (Kling) 4” 6”
☐ Cervical Collar PED ADULT
☐ Disposable Emesis Bag

Other – EZ-IO:
☐ EZ-IO Ped (Pink) Needle for Patients < 40 kg
☐ EZ-IO Adult (Blue) Needle for Patients > 40 kg
☐ EZ-IO Adult (Yellow) Needle for Large Patients

EMS Provider Name: _______________________________________________ PLEASE PRINT AND SIGN
EMS Provider Signature: _____________________________________________ PLEASE PRINT AND SIGN
Hospital Staff: ____________________________________________________ PLEASE PRINT AND SIGN

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

☐ Patient Not Transported
Notes
Appendix G

TEMS HOSPITAL
CLOSURE POLICY
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 Medical Transport Dispatch Center at (757) 962-6814 or 1-800-322-3451 and provide the information requested. 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
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 SpO2 < 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.
Appendix H

AMBULANCE PT DESTINATION POLICY
**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 Ambulance Diversion 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 department 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 (in case of military agencies this may include branch clinics or equivalent as determined by the Medical Control Physician) 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 / AMBO 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 as severe trauma patients, as defined in the Tidewater Regional Trauma Triage Plan, will normally be transported directly to a Level 1 or Level II Trauma Center unless redirected by the Medical Control Physician as defined in the trauma triage plan.

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

6. 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.

7. 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 Lead Hospital. The Lead Hospital will relay
information to receiving hospitals as appropriate. Patient distribution will be a decision of the transportation unit leader in concert with available hospital and transportation resources.

8. 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

Appendix H (Addendum)

AMBULANCE PATIENT DESTINATION POLICY

Criteria for Maternal Transport

The Operational Medical Directors developed criteria to be used when transporting high-risk OB patients. Patients will by-pass Sentara Leigh and Sentara Bayside Hospitals. They will be transported to either Sentara Virginia Beach General or Sentara Norfolk General Hospital. The exception will be if the patient is directed by her individual obstetrician to go to a specific Sentara hospital. Patients will by-pass Sentara Leigh and Sentara Bayside for the following criteria:

- No prenatal care
- Pre-term Labor - Gestational age 20-34 weeks
- Premature rupture of membranes (with or without labor) - Gestational age 20-34 weeks
- Major medical conditions (pre-eclampsia, diabetes, etc.) with gestational age 20-34 weeks
- Mild/Moderate vaginal bleeding at gestational age 20-34 weeks

In cases of imminent delivery, the patient should be rapidly transported to the closest facility with obstetrical capabilities. Medical control continues to serve as a resource in cases of uncertainty.

Approved by the Operational Medical Directors Committee, June 21, 2000
Appendix I

TEMS REGIONAL PLANS
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Appendix I
TEMS
REGIONAL EMS PLAN
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Tidewater EMS Performance Improvement Plan

Created by Tidewater EMS Council PI Committee March 23, 2006
Updated February 1, 2017
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Purpose

The Performance Improvement Committees (PI), 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 Tidewater’s Emergency Medical Services Council (TEMS).

Definitions

1. **Performance Improvement** is measuring the output of a particular business process or procedure, then modify the process or procedure to increase the output, increase efficiency, improve safety or increase the effectiveness of the process or procedure.

Primary Objectives

1. Collect patient care statistics to evaluate system effectiveness and identify trends.
2. Make evidence based practices recommendations to drive changes in the region.
3. Provide performance data to the stakeholders within the Tidewater Region.

Membership

The members and alternate members shall be appointed by following method and shall be comprised of the following:

a. The Operational Medical Director shall be appointed by the OMD Committee and must be current as an approved OMD by OEMS.

b. A representative of a Designated Trauma Center in the region, that shall be agreed upon among the Trauma centers in the region and functions in a capacity that relates to the EMS system.

c. A representative of a hospital in the region as agreed upon by the area hospitals, and functions in a capacity that relates to the EMS system.

d. A representative of air medical agency that provides service in the region as appointed by the MOC.

e. A representative of a career EMS agency that provides service in the region as appointed by the MOC.

f. A representative of a volunteer EMS agency that provides service in the region as appointed by the MOC.

g. A designated appointee from the following Subcommittees
   1) STEMI
   2) Stroke
   3) Patient Safety
   a. Trauma

h. 2 At large community members

The committee shall elect a chairperson as well as a co-chairperson each member elected will serve as the leaders of the group for a 2 year term.
Member Responsibilities

1. Members of the 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:
   a. Maintain strict confidentiality of patient, provider, and personnel information.
   b. Maintain active membership, which is defined as 75% attendance by each committee member and/or their designee at all meetings.

2. The chairperson of the EMS PI Committee shall be an EMS representative of the committee or his/her designee. His/Her responsibilities shall include:
   a. Understand and follow the Tidewater Emergency Medical Services Committee Management Expectations document.
   b. Ensures an inclusive process to arrive at committee decisions.
   c. In the event of a tie vote among the members of the committee, the chairperson will break the tie by placing his vote.
   d. Be an active member of the STEMI, Stroke, Trauma, and Provider/Patient Safety PI Sub-Committees.
   e. Draft all letters of recommendations to local EMS agencies, hospitals, Operating Medical Director’s (OMD), Medical Operation Committee (MOC), or Board of Director (BOD)
   f. Draft all proposals for changes to policies, guidelines and protocols.
   g. Provide an executive summary to the Operating Medical Director’s (OMD), Medical Operation Committee (MOC), and Board of Director (BOD).

3. The co-chairperson of the EMS PI Committee shall be a hospital representative of the committee or his/her designee. His/Her responsibilities shall include:
   a. Liaison to all local EMS agencies and Hospitals.
   b. Liaison to the Protocol workgroup.
   c. Chair the committee meeting in the absence of the chairperson.

4. Confidentiality:
   In order to maintain the integrity of the PI Committee and protect patient and provider privacy, each member at all times will maintain strict confidentiality. However, 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, it is the responsibility of this committee to inform the appropriate agency and elicit input for possible solutions. All reasonable efforts will be taken to sanitize records and maintain patient anonymity.

5. Meetings: Meetings will be held on the second Thursday of Every other month effective January 2017.
Performance Improvement Organizational Chart

Regional EMS System Analysis Performance Improvement Program

Performance Improvement is essential in the improvement of any system. A broad look at what contributes to community health must include data from hospitals and prehospital agencies, so comprehensive care at the right time and at the right place can be ensured in each community. Accurate regional data can provide specific information about the health of our EMS & Trauma System and individual communities, facilities, and about prehospital services. The TEMS Regional Council Strategic Plan states that the regionalization of data collection is a high priority and promotes the development of standardized data collection and analysis.

1. The goals of TEMS PI Committees are to:
   a. Design and implement PI projects that are practical and are able collect patient care statistics to evaluate system effectiveness and identify trends in patient care.
   b. Establish Regional Clinical Bench Marks to measure the TEMS Regional system effectiveness.
   c. Share Best Practices among agencies for the betterment of the entire region.

2. Performance Improvement request may be submitted by Operating Medical Director’s (OMD), Medical Operation Committee (MOC), and Board of Director (BOD), other EMS agencies, hospitals, protocol and educational workgroup.

3. Each PI Committee shall establish annual project goals and supply quarterly data reports to the EMS PI Committee Chair.

4. Regional data will be tracked quarterly and posted on the TEMS website.

5. In a cooperative venture with agencies, the PI committees and the Education workgroup, an effort will be made to identify the educational needs of the EMS providers of the region through benchmarking, highlighting significant findings and through qualitative and quantitative measures of data gathering.
Medical Incident Review (MIR)

1. Medical Incident Review should be the primary responsibility of the individual EMS agency.

2. In cases where the PI Committee identifies a regional level issue they will:
   a. Evaluate all facts found during the review process to identify the root cause, performing a Root Cause Analysis (RCA)
      i. Root Cause Analysis (RCA) requires an objective review by qualified, appropriate members of EMS and hospitals programs within the TEMS Region, protected by a process which ensures confidentiality.
      ii. A review may incorporate the analysis of pertinent medical records including the Patient Care Report (PCR), Base Hospital CORE/HEAR recorded tape and/or patient outcome data.
      iii. A formal interview with involved personnel to review the facts may be arranged through the agency/faculty’s representative.

3. The PI Committee may conduct a Medical Incident Review (MIR) that could include but not limited to:
   a. Multi-agency/faculty incident
   b. Special requests submitted by an agency, faculty, or individual

4. The PI Committee shall provide the results of the MIR and recommendations or constructive feed back to resolve the patient care issue to the appropriate committee or workgroup.
   a. Recommendation may included changes to policy, produce, or protocols which will be forward to the Protocol workgroup
   b. Recommendations might include changes in operational procedures or equipment.
   c. Recommendations may include system retraining, individual counseling, individual knowledge and skills evaluation/refresher, and/or clinical monitoring
   d. Recommendations may include accommodations for individuals involved.
   e. All recommendations will be forward to the appropriate agency’s representative.
   f. This letter will be drafted by the appointed EMS PI Committee chairperson.

5. The PI Committee may report any findings to the Virginia Office of EMS that they feel violates the requirements set forth by the “Virginia Emergency Medical Services Regulations” 12 VAC 5-31.

Performance Indicators

Starting with the 2007 release of the Tidewater Regional Prehospital Medical Care Protocols the addition of Performance Indicators were added to enhance quality improvement initiatives. The utilization of performance indicators built directly into the regional protocols will facilitate consistency in performance expectation.

Performance indicators are a means of following identified performance benchmarks through the performance improvement process. The formal request of final outcome data from local hospitals to include diagnosis, significant findings, and discharge status will dramatically increase and enhance the quality and performance improvement capabilities throughout the TEMS region.

Many of the performance indicators have been developed to increase documentation reliability throughout the region. The performance indicators should be used as a basic template for patient care documentation related to specific protocols. Compliance with the performance indicators will enable 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. Over time, these snapshots can be used by the regional council and local EMS/Fire agencies to improve the consistency and quality of prehospital patient care.
References
Virginia Emergency Medical Services Regulations

12 VAC 5-31-600: “An EMS agency shall have an ongoing Quality Management (QM) Program designed to objectively, systematically and continuously monitor, assess and improve the quality and appropriateness of patient care provided by the agency. The QM Program shall be integrated and include activities related to patient care, communications, and all aspects of transport operations and equipment maintenance pertinent to the agency’s mission. The agency shall maintain a QM report that documents quarterly PPCR reviews, supervised by the operational medical director.”

Federal Laws

45 CFR 164.501 and 45 CFR 164.506 provides EMS personnel with the authority to receive protected health information for purposes of transport and subsequently permits EMS personnel to disclose protected health information to another health care provider such as a hospital for continued patient treatment.

45 CFR 164.501 of the Privacy Rule defines treatment as the provision, coordination or management of health care and related services by one or more health care providers, including the coordination or management of health care by a health care provider with a third party; consultation between health care providers relating to a patient or the referral of a patient for health care from one health care provider to another. 45 CFR 164.506 specifically states that a covered entity may disclose protected health information for treatment activities of a health care provider.

45 CFR 164.520 would not require EMS personnel to administer the Notice of Privacy Practices to a patient in transport. That can be done by the treating facility when it is practical to do so.

The HIPAA Privacy Rule also requires that covered entities must provide patients with a Notice of Privacy Practices. However, 45 CFR 164.520 provides specific direction related to the administration of notice. 45 CFR 164.520 (i) (B) states that a covered health care provider that has a direct treatment relationship with an individual must provide the notice in an emergency treatment situation, as soon as reasonably practicable after the emergency treatment situation.

Virginia Codes

§ 8.01-581.16, 8.01-581.17, 32.1-116.2, data or information in the possession of or transmitted to the Commissioner, the Advisory Board, or any committee acting on behalf of the Advisory Board, any hospital or prehospital care provider, or any other person shall be privileged and shall not be disclosed or obtained by legal discovery proceedings, unless a circuit court, after a hearing and for good cause shown arising from extraordinary circumstances, orders disclosure of such data.

Documentation

Appendix A

Attached (available online at www.tidewaterems.org, Performance Improvement menu item) you will find the TEMS Regional Quality Improvement Form. All forms containing incident data should be treated as Protected Health Information and handled using the secured document system in accordance with HIPAA standards.

TEMS QI Form.doc
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Executive Summary

Under the direction of the Tidewater EMS Council Medical Operations Committee, The Tidewater EMS Council (TEMS) has been charged with the responsibility of maintaining a Regional ST Elevation myocardial Infarction (STEMI) Triage Plan. The Regional STEMI Triage Plan establishes a strategy that incorporates the region's geographic variations and STEMI care capabilities and resources, including hospitals self-designated as “STEMI Centers.” The purpose of the Regional STEMI Triage Plan is to establish a uniform set of criteria for the pre-hospital triage and transport of acute STEMI patients.

STEMI patients should be recognized as quickly as possible to identify those eligible for thrombolytic or invasive therapy. Copious data have shown that both morbidity and mortality can be optimized by an approach of rapid interventional reperfusion targeted to within ninety minutes of hospital arrival. Further data have demonstrated that in-the-field recognition by pre-hospital providers utilizing 12-lead ECG coupled with pre-hospital notification of the receiving facilities can further reduce time to reperfusion, and is associated with further improvement in outcomes. EMS personnel must be trained to recognize, treat and transport STEMI patients in a timely manner. Although this diagnosis will be confirmed by physicians in the emergency departments, STEMI should be recognized by pre-hospital care providers competent to apply STEMI diagnostic criteria through the use of their 12 lead monitor defibrillators.

The primary goal of the TEMS Regional STEMI Plan is: To develop a STEMI Emergency Care System that, when implemented, will result in decreased cardiac mortality and morbidity in the TEMS Region. In order to accomplish this, a number of specific processes are essential. These are:

1. The ability to rapidly and accurately identify patients suffering from STEMI.
2. Patients who have sustained a STEMI event 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.
3. The Tidewater EMS Council must have continuous and effective region-wide coordination of pre-hospital and hospital care resources so that STEMI patients will be most expeditiously transported to the closest available interventional center or facility capable of performing PCI; 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 process, there must be a method of tracking the care capability for STEMI patients and reviewing the quality of the process itself.
4. The Regional Plan must provide all hospitals in the region with the opportunity to participate in the System (an inclusive system), and to receive STEMI patients if they are willing to meet the System and operational criteria, as established by this Plan.
5. Provide quality EMS service and patient care to the EMS Systems’ citizens.
6. Continuously evaluate the EMS System based on established STEMI EMS performance measures.
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, 12 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** - 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 then inflated, which compresses the blockage and widens the narrowed artery to restore blood flow.

**Balloon Inflation** - Another name for angioplasty, which is a surgical 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 then 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.

**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 Service (EMS)** - A system of health care professionals, facilities and equipment providing pre-hospital emergency care.

**EMS-to-Balloon Time (E2B)** - The amount of time between a heart attack patient’s entry into the pre-hospital system to the time he/she receives percutaneous coronary intervention (PCI), such as angioplasty.

**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 United States.

**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

**Non-PCI hospital** - A type of hospital that does not have the means to deliver percutaneous coronary intervention (PCI), the preferred means of treating a STEMI heart attack patient if done within the critical 90-minute window. Non-PCI hospitals can: administer clot-busting medicines that meet the health care needs of non-STEMI patients; refer STEMI patients to PCI hospitals, thus the name PCI-referral hospital; and treat STEMI patients with medications when it is not feasible for them to get to a PCI-capable hospital for treatment in a timely manner.
Percutaneous Coronary Intervention (PCI) - The family of medical procedures that uses a "mechanical" means to treat patients with partially or completely restricted blood flow through an artery of the heart. Examples include balloon angioplasty and stents.

PCI-capable Hospital - The Tidewater EMS Council defines a PCI Capable Hospital as a hospital with “an emergency interventional cardiac catheterization laboratory, but cannot meet all of the STEMI Receiving Center criteria to become a STEMI Receiving center.

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.

Point of First Medical Contact - The time that the patient is first contacted by the first arriving medical personnel on the scene or at the hospital.

Regional Hospital Virginia Heart Attack Coalition (VHAC) – The hospitals from the Regional VHAC, including Bon Secours Health System, Riverside Health System, Sentara Health System and the Hospital of Chesapeake Regional Medical Center.

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 Receiving Center - a hospital with “an emergency interventional cardiac catheterization laboratory capable of providing services to acute STEMI patients.” As defined by the American College of Cardiology and American Heart Association.

STEMI Receiving Center with Surgical Backup - STEMI Receiving Center w/Surgical Capabilities is defined as a STEMI Receiving Center Hospital with onsite surgical backup capabilities available 24 hours/7 days.

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.
Field STEMI Triage Decision Scheme

The Purpose of this Decision Scheme is to:
- Rapidly identify STEMI patients who call 911 or present to EMS
- Minimize the time from onset of STEMI symptoms to coronary reperfusion
- Quickly recognize a STEMI by 12-lead ECG
- Consider completing a reperfusion checklist (unless being transported directly to a PCI hospital) to determine thrombolytic eligibility
- Rapidly identify the best hospital destination based on symptom onset time, reperfusion checklist, and predicted transport time
- Early activation/notification to the hospital with transmission of 12-lead ECG prior to patient arrival
- Minimize scene time to 15 minutes or less (including a 12-lead ECG)

STEMI Patient (ST Elevation Myocardial Infarction)
1. Cardiac symptoms AND
   - 12-lead ECG criteria of 1 mm ST elevation (or more) in 2 or more contiguous leads OR
   - 12-lead ECG interpretation with an “ACUTE MI” statement OR
   - Left Bundle Branch Block (LBBB) NOT KNOWN to be present in the past

Any patient with a compromised airway or impending circulatory collapse must be transported to the closest Emergency Department. If Unable to transmit ECG; consult Online Medical Control for Guidance and Direction.

Transport to Closest STEMI Receiving Hospital Listed

Early Notification/Activation

Consider Reperfusion Checklist

Transport to PCI Capable Hospital or
Closest Hospital (Consult with Medical Control)

Non-PCI Hospital Listed
Early Notification/Activation

See Appendix E

Regional Performance Improvement Plan
Version: February 1, 2017
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STEMI Receiving Center Designation:
The Tidewater EMS Council defines a STEMI Receiving Center as a hospital with “an emergency interventional cardiac catheterization laboratory capable of providing the following services to acute STEMI patients.”

1) Protocols for triage, diagnosis and Cardiac Catheterization Laboratory activation should be established within the primary STEMI-Receiving Center. A single activation phone call should alert the STEMI team. Criteria for EMS activation of the Cardiac Catheterization Laboratory should be established in conjunction with EMS.

2) The STEMI Receiving Center should be available 24 hours/7 days a week to perform primary PCI.

3) The Cardiac Catheterization Laboratory staff including interventional cardiologist should arrive within 30 minutes of activation call.

4) There should be universal acceptance of STEMI patients (no diversion due to patient volume). There should be a plan for triage and treatment for simultaneous presentation of STEMI patients.

5) The STEMI Receiving center must meet the Regional Hospital VHAC quality measures. Regional Hospital VHAC will then provide a list of those centers to the TEMS Medical Advisory Committee on a semi-annual basis.
   a. The STEMI Receiving Center must meet ACC/AHA volume criteria for volume and perform a minimum of 36 Primary PCI procedures for STEMI each year
   b. The STEMI Receiving Center should actively participate in the Action Registry-GWTG
   c. Demonstrate at least 95% compliance with door-first device time within 90 minutes averaged over the year.
   d. Actively participate in the Eastern Region VHAC Quality report

6) The STEMI-Receiving Center must participate in the Tidewater EMS Council Performance Improvement Program.

7) A program should be in place to track and improve treatment (acutely and at discharge) with ACC/AHA guideline based Class I therapies.

8) There should be a recognized STEMI-Receiving Center liaison/system coordinator to the System and a recognized physician champion.

9) There should be multidisciplinary team meetings at least every 3 months to evaluate outcomes and quality improvement data. Operational issues should be reviewed, problems identified, and solutions implemented. The following measurements should be evaluated on an ongoing basis:
   a. Door-to-balloon (first device used) time, non-transfer within 90 minutes
   b. STEMI Referral Hospital ED door-to-balloon (first device used) time, transfer within 90 minutes
   c. First Medical contact to balloon inflation (first device used) non-transfer within 90 minutes
   d. First Medical contact to balloon inflation (first device used) transfer
   e. Proportion of eligible patients receiving reperfusion therapy
   f. Proportion of eligible patients administered guideline-based Class I therapies
   g. Proportion of patients with field diagnosis of STEMI and activation of the Cardiac Catheterization Laboratory for intended primary PCI that do not undergo acute catheterization because of misdiagnosis
   h. Undergo acute catheterization and found to have no elevation in cardiac biomarkers and no revascularization in the first 24 hours
   i. In-hospital mortality

10) Free standing emergency departments and satellite facilities are not considered as Receiving Centers.

See Appendix E for Current Listing of STEMI Receiving Centers

STEMI Receiving Center Hospital w/Surgical Capabilities is defined as a PCI Capable Hospital with onsite surgical backup capabilities available 24 hours/7 days.
The process of PCI Center identification is entirely voluntary on the part of the hospitals.

See Appendix E for current list of STEMI Receiving Center with Surgical Capabilities
PCI Capable Hospital is defined in The Tidewater EMS Council region as a hospital with “an emergency interventional cardiac catheterization laboratory, but cannot meet all of the STEMI Receiving Center criteria to become a STEMI Receiving center.

See Appendix E for a current list of PCI Capable Hospitals

Non-PCI Hospital is defined as “a local hospital within the EMS System’s service area which provides emergency care, including thrombolytic administration, to an acute STEMI patient but does NOT provide PCI services.”

See Appendix E for a current list of Non-PCI Capable Hospitals
Administrative Policies & Procedures – Air Medical Transport

**Indications:**

1. Patients meeting specialty care criteria *(see EMS Triage & Designation Procedures)* who can be delivered to an appropriate facility more rapidly by air ambulance than by ground transport.
2. The air ambulance service can provide needed medical capability at the scene.
3. Difficult-access situations:
   - Wilderness rescue
   - Ambulance egress or access impeded at the scene by road conditions, weather, or traffic

**Policy:** Senior technicians and designated officers shall have discretionary authority to summon appropriate air medical transport service prior to contacting Medical Control.

**Procedure:**

1. Establish a safe and logistically feasible landing zone.
2. Request air ambulance standby/response according to department procedure.
3. Establish number of patients, primary injuries, and approximate patient weight(s). Forward this information to the responding air medical service.
4. Contact on-line Medical Control. Provide a situation report.
5. Trauma patients should be fully immobilized. IV access should be established as time allows.
6. One individual, on-scene, should be responsible for providing the patient report(s) to the flight crew upon arrival.

**Note:**

If the patient becomes ready for transport and air ambulance ETA is delayed for more than 10 minutes, initiate immediate ground transport as outlined in EMS Triage & Designation Procedure.
Performance Improvement Process

Purpose
The purpose of the TEMS STEMI PI Process is to evaluate the Pre-hospital care provided to patients diagnosed with ST elevation MI or new onset of Left Bundle Branch Block. The project will have three primary evaluation areas: timeliness of care, treatment provided, and outcomes of care. The fields identified are critical to analyses for the following reasons:
fields allow linking of EMS data and hospital STEMI data;
fields allow for “real time” collection of data focused upon process improvement; and,
fields allow for retrospective systemic analyses.
The ultimate goal of collecting this data is to provide actionable information to the TEMS Performance Improvement Committee (PI Committee) and the TEMS Medical Operations Committee (MOC) relative to the care processes and outcomes associated with their treatment of STEMI’s as it relates to EMS. This process will incorporate self-reporting and self-reporting with incorporation into the existing Performance Improvement Committee. The Committee will provide and review the data reported at regular intervals.

Patient Eligibility Criteria

STE/ LBBB
Patients identified with a diagnosis with ST elevation MI or new onset of LBBB as determined by initial receiving hospital.

Data Collection Process
1) Receiving hospitals will identify patients with a diagnosis with ST elevation MI or new onset of LBBB and that were transported by EMS to their facility:
2) The receiving hospital will complete a STEMI Data form or send the needed data to the TEMS office.
3) The STEMI Data form will be forward to the transporting EMS agency for completion or forward the copy of the PPCR to TEMS Council office to enter the data.
4) TEMS Staff will collect the patient care statistics to evaluate system effectiveness and identify trends in EMS patient care.
5) The TEMS PI Committee will establish Regional Clinical Bench Marks to measure the TEMS Regional System effectiveness and report all findings to the MOC.

Performance Measures
(List located in Appendix D)

Performance Improvement Program
The TEMS STEMI Triage Committee will be responsible for the effective identification, analysis, and correction (jointly with the region’s EMS medical directors, EMS agency leadership and hospital leadership) of system issues related to STEMI triage and transfer within the Tidewater region. This requires an objective review by qualified, appropriate representatives of EMS and hospital programs within the TEMS Region, protected by a process which ensures patient confidentiality.
(PI/QI – Performance Improvement/Quality Improvement)

Effective PI/QI is critical to the evaluation of the EMS and STEMI system in the Tidewater EMS region. A broad look at what contributes to community health must include data from hospitals and prehospital agencies so comprehensive care at the right time and at the right place can be ensured in each community. Accurate regional data can provide specific information about the health of our EMS and STEMI system and individual communities, facilities, and about prehospital services.

1) The goals of Tidewater EMS STEMI Triage Committee’s PI/QI initiatives are to:
   a) Design and implement PI/QI projects that are practical and are able to collect patient care statistics to evaluate system effectiveness and identify trends in patient care. This goal relies heavily on the provision of such data by the Office of EMS.
   b) Establish regional clinical benchmarks to measure the regional system effectiveness.
   c) Trend data and outcomes to identify strong and weak points in the region’s STEMI care system with the goal of no preventable STEMI deaths as identified by a multidisciplinary quality improvement (QI) committee.
   d) Review individual cases brought to the attention of the STEMI Triage Committee.

2) Request for projects may be directed by the Operational Medical Direction (OMD) Committee, STEMI Triage Committee, EMS agencies or hospitals.

3) The STEMI Triage QI Committee Membership is comprised of the following membership:
   a) 1 ED physicians
   b) 3 Interventional Cardiologist (one from each PCI system)
   c) 1 OEMS approved OMD
   d) 1 ED nurses
   e) 4 Chest Pain coordinators (one from each system)
   f) 1 hospital administrators
   g) 1 prehospital provider from air medical service
   h) 1 prehospital provider from fire based EMS agency
   i) 1 prehospital provider from career based EMS agency
   j) 1 prehospital provider from volunteer based EMS agency
   k) 1 EMS administrators
   l) 1 TEMS support staff
   m) Additional representatives of hospitals are added if necessary to ensure that each hospital in the region has at least one representative on the committee.

4) The term for members of the STEMI Triage Committee will be two years, unless determined otherwise by the chairperson, with half of the committee rotating every year. The Interventional Cardiologist, Chest Pain coordinators, and hospital administrator will rotate their positions among themselves without specific terms.

5) Each member, or their designated representative, must attend at least 3 meetings in a one year period to remain on the team. If this attendance is not met, an immediate replacement will be sought from the representative organization or group.

6) Meetings will be held bi-monthly and at the Tidewater EMS office or as directed by the committee. A yearly scheduled will be posted on the council’s website and distributed to all committee members at the beginning of each year.
STEMI Triage Project (QI)

1. The goal of the STEMI Triage project is to identify the frequency of
   (i) incorrect triage in comparison to the total number of STEMI patients delivered to a hospital prior to
   pronouncement of death
   (ii) incorrect diversions of EMS transport
2. Data collection will be gathered from the following sources:
   (i) STEMI Data Form (Complete by each EMS agency)
   (ii) VPHIB
3. A Regional Clinical Bench Mark will be established to watch trends in the TEMS STEMI Triage Program

2016-2017 Schedule of Topics for STEMI PI

<table>
<thead>
<tr>
<th>Month</th>
<th>Quarterly Data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>July 2016</td>
<td>VHAC</td>
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</tr>
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<td></td>
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</tr>
<tr>
<td>September 2016</td>
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</tr>
<tr>
<td>October 2016</td>
<td></td>
<td></td>
</tr>
<tr>
<td>November 2016</td>
<td>VHAC</td>
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</tr>
<tr>
<td>December 2016</td>
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</tr>
<tr>
<td>January 2017</td>
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</tr>
<tr>
<td>February 2017</td>
<td>VHAC</td>
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</tr>
<tr>
<td>March 2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 2017</td>
<td>VHAC</td>
<td></td>
</tr>
<tr>
<td>May 2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 2017</td>
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</table>
medical services delivery system. A board of directors representing the localities served and other related organizations forms a private, nonprofit organization and enters into a contract with the Office of EMS, Virginia Department of Health, to provide various planning and coordination functions within each region. In the Tidewater region, the Tidewater EMS Council, Inc. is the contracted agency.

**Geography and Weather**

The Tidewater EMS region encompasses six cities and four counties in eastern Virginia. It is bordered by the Atlantic Ocean to the east, North Carolina to the south, Maryland's Eastern Shore to the North and the James River and several rural counties to the west.

The 2,717 square mile EMS region subdivides into two distinct geographical areas. The rural Eastern Shore (Planning District 22) lies to the north and is separated from the remainder of the region by the Chesapeake Bay and linked by a 17.6 mile toll bridge and tunnel. The Eastern Shore's two counties are Accomack and Northampton.

To the south, a combination of urban, suburban and rural jurisdictions form the larger portion of the region. This area, known as Southside Hampton Roads (formerly Planning District 20, now part of Planning District 23) includes the cities of Chesapeake, Franklin, Norfolk, Portsmouth, Suffolk and Virginia Beach, and the counties of Isle of Wight and Southampton.

The region is generally low-lying, interspersed with various rivers, lakes, creeks and man-made waterways. A significant number of bridges and tunnels link various areas within the region, and to other parts of the Commonwealth. Combining its coastline location and the various waterway crossings, which are oftentimes primary evacuation routes, the region is vulnerable to coastal storms and hurricanes. Storm surge and widespread flooding pose significant threats.

Other weather phenomena of significance to the region are infrequent tornadoes, usually spawned by hurricanes or severe thunderstorms, urban and flash flooding caused by severe thunderstorms, and winter snow. The normal annual snowfall is 5.8 inches (National Weather Service, Norfolk location), though over 14 inches fell during one storm in 2010, nearly 19 inches hit the area in one storm in 1892, and 1980 saw nearly 40 inches cumulative snowfall. Overall, the climate is not extreme, moderated by the effect of the Atlantic Ocean and the Chesapeake Bay.

**Demography**

According to US Census data, the regional population grew approximately 5.4% during the ten-year period from 2000 to 2010, increasing from 1,130,040 to 1,191,101. This growth is similar to the previous 1990-2000 decade but represents a continued moderation of the more robust 12.2% average growth during each of the previous two decades.

During the past decade, the greatest total population growth occurred in the jurisdictions of Chesapeake, Suffolk and Virginia Beach. The greatest rate of growth occurred in Suffolk, Isle of Wight County and Chesapeake. Accomack County and to a lesser extent Northampton County and Portsmouth lost population.

Population projections through 2020 vary quite a bit depending on source. The Virginia Employment Commission predicts an 11.7% regional growth over the decade with Suffolk, Chesapeake and Accomack County showing the greatest growth. The Weldon-Cooper Center for Public Service (UVA) predicts a 5.5% regional growth. A private firm called ProximityOne predicts a conservative 1.5% regional growth. A detailed population table follows.
EMS and Hospital Profile

The Tidewater EMS region includes 63 state-licensed EMS agencies. Of the total licensed agencies, 46 of them are 9-1-1 response agencies, including first responder and transporting agencies, and 17 are specialized and commercial EMS agencies. (One additional agency, NASA Wallops, is not licensed by the Commonwealth.) The latter categories include medevac, neonatal/pediatric, industrial, federal and other interfacility BLS or ALS transportation agencies. Regional maps indicating EMS agencies follow below.

There are 635 state-permitted EMS vehicles in the region. This number includes 383 BLS or ALS ground ambulances (including 4 neonatal ambulances), 3 rotary wing air ambulances (includes one as backup), and 249 first response or “chase” cars, fire apparatus which provide first response, and other specialty vehicles. [2015 data]

Reporting numbers of EMS providers is somewhat difficult. The state does not track “primary EMS affiliation” so the only reliable measure is place of residence. There are 4,916 certified EMS providers at all levels who reside in Tidewater. This number does not include those affiliated with EMS agencies in Tidewater who reside outside the region, and likewise does include those who reside in the region but are affiliated with EMS agencies outside the region. Further, some 1,368 of EMS providers residing in the region are not affiliated with any EMS agency resulting in 3,548 who are affiliated with an EMS agency (in or out of the region).

Each jurisdiction within the region provides emergency access to police, fire and EMS via the universal 9-1-1 telephone number. Each locality maintains its own emergency communications center except for the two Eastern Shore Counties which operate a joint Eastern Shore 9-1-1 Center. However, the town of Chincoteague, in Accomack County, maintains its own separate communications center. Each of these communications centers features an “enhanced” 9-1-1 system and several have incorporated text-to-911 service. Three of the communications centers covering four jurisdictions have obtained EMD accreditation from the Commonwealth. They are the Eastern Shore 9-1-1 Center, the City of Chesapeake Emergency Communication Center and the City of Norfolk Emergency Communications Center.

In addition to the emergency medical personnel and equipment provided by each agency and jurisdiction, a number of special teams and specialty resources are available within or hosted at the regional level. These include the Tidewater Regional Technical Rescue Team, the FEMA Urban Search and Rescue Team VA TF-2, the HHS Disaster Medical Assistance Team VA-1, a regional Marine Incident Response Team, a regional Hazardous Materials Team, a regional Metropolitan Medical Strike Team and a regional Incident Management Team.

The region includes 11 civilian and one military acute care hospitals. One of these (Sentara Norfolk General) is a state-designated level 1 Trauma Center and one (Sentara Virginia Beach General) is a level 3 Trauma Center. Eight of the hospitals are certified as “Primary Stroke Centers” by one of three accrediting agencies. There are three additional freestanding emergency departments that receive ambulance patients who don’t otherwise match criteria for transport to a specialty center. A regional map showing acute care hospitals with licensed bed counts and trauma center status follows below.

Revised July 2016

EMS and STEMI Care Resources

EMS Agencies

Daily pre-hospital emergency care in the region is provided by a combination of municipal and volunteer EMS services. Two types of services predominate: 1. combination municipal fire and EMS departments and 2. Volunteer rescue squads supplementing, or supplemented by, career or wage personnel support provided by a jurisdiction.

The cities of Norfolk, Chesapeake, Suffolk and Portsmouth are served by municipal combined fire and EMS departments with cross-trained, dual role personnel. Chesapeake and Suffolk are also served by volunteer components. Virginia Beach has a career EMS staff and a large volunteer component of ten rescue squads, and the city’s fire department provides first response.
The western portion of the Tidewater region, including Isle of Wight and Southampton counties and the city of Franklin and town of Smithfield, is served by a combination volunteer and career providers. The Eastern Shore, including Northampton and Accomack counties, is also served by a combination of volunteer and career providers.

As of 09/16/2013 the Tidewater EMS region includes 63 state-licensed EMS agencies. Of the total licensed agencies, 47 of them are 9-1-1 response agencies, including first responder and transporting agencies, and 16 are specialized and commercial EMS agencies. The latter categories include medevac, neonatal/pediatric, industrial and other interfacility transportation agencies.

### EMS Providers - Tidewater Region

As of 02/01/2017

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<tr>
<th>County</th>
<th>EMR</th>
<th>EMT</th>
<th>AEMT</th>
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<th>EMT/P</th>
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<td>17</td>
<td>6</td>
<td>8</td>
<td>32</td>
</tr>
<tr>
<td>ISLE OF WIGHT</td>
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<td>163</td>
<td>48</td>
<td>58</td>
<td>46</td>
<td>296</td>
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<td>271</td>
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<td>38</td>
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<td>507</td>
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<tr>
<td>NORTHAMPTON</td>
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<td>3</td>
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<td>81</td>
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<td>106</td>
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<td>913</td>
<td>334</td>
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### Tidewater EMS Region Population 1970 - 2015 (with 2020 Projection)

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<td>449.5</td>
<td>29,004</td>
<td>31,268</td>
<td>31,703</td>
<td>38,305</td>
<td>33,164</td>
<td>(5,141)</td>
<td>-13.42%</td>
<td>33,516</td>
<td>33,432</td>
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<td>Chesapeake city</td>
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<td>89,580</td>
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<td>151,876</td>
<td>199,184</td>
<td>222,209</td>
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<td>11.56%</td>
<td>238,283</td>
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<td>6,860</td>
<td>7,308</td>
<td>7,864</td>
<td>8,542</td>
<td>8,355</td>
<td>(187)</td>
<td>2.03%</td>
<td>8,355</td>
<td>8,361</td>
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<td>18,285</td>
<td>21,003</td>
<td>25,053</td>
<td>35,270</td>
<td>35,542</td>
<td>5,272</td>
<td>18.64%</td>
<td>36,408</td>
<td>38,826</td>
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<td>Norfolk city</td>
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<td>299,979</td>
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<td>242,803</td>
<td>8,400</td>
<td>3,508</td>
<td>3.08%</td>
<td>247,169</td>
<td>252,128</td>
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<td>Northampton County</td>
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<td>14,025</td>
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<td>(676)</td>
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<td>-5.00%</td>
<td>12,176</td>
<td>12,133</td>
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<td>Portsmouth city</td>
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<td>100,565</td>
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<td>96,874</td>
<td>95,717</td>
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<td>Southampton County</td>
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<td>19,731</td>
<td>17,550</td>
<td>18,570</td>
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<td>6.22%</td>
<td>6.22%</td>
<td>18,551</td>
<td>18,684</td>
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<td>Suffolk city*</td>
<td>400.2</td>
<td>45,024</td>
<td>47,621</td>
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<td>84,585</td>
<td>20,908</td>
<td>32.82%</td>
<td>90,426</td>
<td>99,126</td>
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<td>Virginia Beach city</td>
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<td>202,199</td>
<td>383,069</td>
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<td>12,737</td>
<td>3.00%</td>
<td>3.00%</td>
<td>453,500</td>
<td>438,114</td>
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<tr>
<td>Region</td>
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<td>812,817</td>
<td>899,267</td>
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<td>1,130,040</td>
<td>1,181,061</td>
<td>61,061</td>
<td>5.40%</td>
<td>1,235,488</td>
<td>1,251,236</td>
<td>1.22%</td>
</tr>
</tbody>
</table>

*includes Nansemond Co annexed in 1975


**Regional Performance Improvement Plan**

Version: February 1, 2017

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EMS Communications

Each jurisdiction within the region provides emergency access to police, fire and EMS via the universal 9-1-1 telephone number. Each locality maintains its own emergency communications center except for the two Eastern Shore Counties which operate a joint Eastern Shore 9-1-1 Center. However, the town of Chincoteague, in Accomack County, maintains its own separate communications center. Each of these communications centers features an "enhanced" 9-1-1 system and all but two provide pre-arrival instructions to callers via an emergency medical dispatch (EMD) program. Two of the communications centers, the Eastern Shore 9-1-1 Center and the City of Chesapeake Emergency Communication Center, have obtained EMD accreditation from the Commonwealth.

There are three systems utilized in the region for medical communications: 1. the VHF (or HEAR) radio system, 2. the UHF (or COR) system, and 3. locality-specific 700 and 800 MHz trunking systems.

It is standard in the region that all ambulances have the VHF system and that mobile radios have all four frequencies of the Virginia Office of EMS VHF Initiative (155.205, 155.340, 155.380, 155.400). These frequencies are also the foundation of the regions' hospital-to-hospital, ambulance-to-ambulance, and scene-to-hospital mass casualty communications plan.

It is the standard in the region that all advanced life support ambulances have the UHF mobile system, accessing all ten MED channels. Many agencies also use the 700-800 MHz radio frequencies as a means of communication to local hospitals.

STEMI Education

All EMS personnel in Virginia require certification by the state. The Code of Virginia assigns the Department of Health the responsibility for ensuring that all providers of emergency medical services are adequately trained to perform their duties as emergency medical technicians. Local EMS agencies and their medical directors then verify training and competency of EMS providers through local orientation and street supervision.

The state Office of EMS has developed examination and certification guidelines for 5 levels of prehospital care providers. The Emergency Medical Responder (EMR), Emergency Medical Technician (EMT), Advanced EMT (AEMT) and Paramedic (P) levels conform to nationally established Department of Transportation (DOT) training standards. The Intermediate Level of training is a state level certification.

Tidewater Community College offers EMT, AEMT, EMT-Intermediate and EMT-Paramedic training. Norfolk Fire and Rescue offers EMT-Intermediate training. The Center for EMS Training is a private non-profit training center offering EMT, EMT-Intermediate, and EMT-Paramedic training.

With passage of revised EMS regulations in 2013, the state requires providers of initial Intermediate and Paramedic courses to be accredited training sites. Accreditation follows a detailed application and site review process, with guidelines to ensure adequate educational resources to provide a high quality of advanced level training. Coordinators of these programs must receive additional training as ALS Course Coordinators and be pre-approved by the region.

EMR, EMT, AEMT, EMT-Intermediate classes are conducted throughout the region as needed by the community college, EMS agencies, fire departments or other public and private groups and individuals.

Testing of students who complete initial state certification courses (and for others who are recertifying, re-entering the system or challenging state certification with national or another state's certification) is coordinated by the council under a contract with the Office of EMS. Known as "consolidated testing", large test sites are scheduled by the council in coordination with the Office of EMS test site examiners and test site coordinators throughout the region. Site coordination involves the arrangement and preparation of test facilities, evaluators and "victims"; promotion of test dates; student registration; staffing test sites. Office of EMS examiners officiate at the sites.
Typically, 21-24 consolidated tests are scheduled annually throughout the region. Those who evaluate candidates during testing are trained by the council, and retrained periodically, in standardized evaluation techniques consistent with state guidelines.

The state requires recertification of all EMS training levels at certain intervals: EMT, every 4 years; Enhanced, and Intermediate and Paramedic, every 3 years; and EMS Education Coordinator, EMT Instructor and ALS Coordinator, every 2 years. Individual agencies have traditionally assumed the responsibility of providing refresher and required continuing education topics. The council also sponsors monthly continuing education courses consistent with Category 1 continuing education requirements of basic and advanced levels.

Full refresher courses are offered by the Tidewater Community College, the Center for EMS Training and Norfolk Fire Rescue. Other continuing education programs, such as various rescue (e.g. vehicle extrication, emergency vehicle operation, etc.) and medical courses (e.g. Basic Trauma Life Support, Advanced Cardiac Life Support, Pediatric Advanced Life Support, etc.) are offered by a variety of organizations and institutions, including the council, on a regular basis.

The council publicizes available continuing education opportunities on its website, through direct mailings, listserv postings and during various committee meetings. The council also coordinates a range of specialty courses not typically offered by the local agencies or educational institutions (e.g. Infection Control Officer courses, moulage courses, mass casualty management courses, CISM) on an as-needed basis. The state Office of EMS conducts annual EMT Instructor/ALS Coordinator renewal workshops, promoted by the EMS council.

In addition to all of the above education offered to the providers in the region, all of the hospital systems continue to offer continuing education opportunities to the providers within the region through an ongoing process.
References

Code of Virginia

§ 32.1-111.3. Statewide Emergency Medical Care System
A.
1. Establishing a comprehensive emergency medical services patient care data collection and evaluation system pursuant to Article 3.1 (§ 32.1-116.1 et seq.) of this chapter;

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


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

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

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

B. No individual, licensed emergency medical services agency, hospital, Regional Emergency Medical Services Council or organization advising the Commissioner shall be liable for any civil damages resulting from any act or omission preformed as required by this article unless such act or omission was the result of gross negligence or willful misconduct.
§ 8.01-581.19 Civil Immunity for physicians, psychologists, podiatrists, optometrists, veterinarians, nursing home administrators and certified emergency services personnel while members of certain committees.

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

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

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

**Purpose:** The purpose of this referral is to improve the quality and efficiency of STEMI care in the Tidewater region. This form is intended for positive and negative comments regarding incidents in the Tidewater region. *The intent of this form is to identify “system” issues. Information obtained will be used by the STEMI Triage Performance Improvement Committee to identify and offer solutions to improve the STEMI system as a whole, with the ultimate goal being improved patient care.* All information obtained through this process will remain confidential.

Your Name: ____________________________ Telephone: ______________________

EMS Agency: ____________________________ EMS Incident #: ______________________

Receiving Hospital/s: ____________________________ Date of Hosp. Adm.: ______________

Injury/Diagnosis: ____________________________ Date/Time of Events: ________________

Patient Name: ____________________________ Age: ______

Patient SSN: ____________________________ Patient DOB: ________________________

Purpose of the referral:

___ Patient Care  
___ Disposition/Destination/Referral  
___ Equipment Issue  
___ Other

Description of Events:
________________________________________________________________________________________________________
________________________________________________________________________________________________________
________________________________________________________________________________________________________
________________________________________________________________________________________________________

Pursuant to sections § 8.01-581.16, 8.01-581.17, 32.1-116.2, of the Virginia Code, data or information in the possession of or transmitted to the Commissioner, the Advisory Board, or any committee acting on behalf of the Advisory Board, any hospital or prehospital care provider, or any other person shall be privileged and shall not be disclosed or obtained by legal discovery proceedings, unless a circuit court, after a hearing and for good cause shown arising from extraordinary circumstances, orders disclosure of such data.

*Fax this form to (757) 963-2325. The original must be sent via U. S. Mail to the address provided or destroyed.*

For QI Committee Use:

Date received: ________________ Action taken:
________________________________________________________________________________________________________
________________________________________________________________________________________________________
________________________________________________________________________________________________________
________________________________________________________________________________________________________

__
Appendix A: Thrombolytic Checklist

NOTE: Exclusions on this checklist are not absolute. Final decisions regarding patient eligibility for any given intervention will be determined by the receiving physician(s).

Date: ______________ Time: __________ EMS Agency/Unit: __________________________________

Patient Name: ____________________________________________________________ Age: ________

Estimated weight: ______ lbs/kg

PHOTOCOPY THIS FORM AND LEAVE A COPY WITH ED PHYSICIAN AT BEDSIDE

If ANY of the following are CHECKED “YES,” Fibrinolysis MAY be contraindicated

<table>
<thead>
<tr>
<th>Condition</th>
<th>Yes</th>
<th>No</th>
<th>Unk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systolic BP greater than 180 mm Hg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diastolic BP greater than 110 mm Hg</td>
<td>Yes</td>
<td>No</td>
<td>Unk</td>
</tr>
<tr>
<td>Right vs. left arm systolic BP difference greater than 15 mm Hg</td>
<td>Yes</td>
<td>No</td>
<td>Unk</td>
</tr>
<tr>
<td>History of structural central nervous system disease</td>
<td>Yes</td>
<td>No</td>
<td>Unk</td>
</tr>
<tr>
<td>Significant closed head/facial trauma within the previous three months</td>
<td>Yes</td>
<td>No</td>
<td>Unk</td>
</tr>
<tr>
<td>Recent (within six weeks) major trauma, surgery (including laser eye surgery), GI/GU bleed</td>
<td>Yes</td>
<td>No</td>
<td>Unk</td>
</tr>
<tr>
<td>Bleeding or clotting problem or on blood thinners</td>
<td>Yes</td>
<td>No</td>
<td>Unk</td>
</tr>
<tr>
<td>CPR greater than 10 minutes</td>
<td>Yes</td>
<td>No</td>
<td>Unk</td>
</tr>
<tr>
<td>Serious systemic disease (e.g., advanced/terminal cancer, severe liver or kidney disease)</td>
<td>Yes</td>
<td>No</td>
<td>Unk</td>
</tr>
<tr>
<td>Is pregnant? Due Date:______________ N/A</td>
<td>Yes</td>
<td>No</td>
<td>Unk</td>
</tr>
</tbody>
</table>

STEMI = ST-elevation myocardial infarction; BP = blood pressure; GI = gastrointestinal; GU = genitourinary; CPR = cardiopulmonary resuscitation

COMMENTS:

EMS Provider Name: ___________________________ Signature __________________________

Tidewater EMS Council, Inc.
Appendix B: How to Perform 12 Lead ECG

Clinical Indications:
- Suspected cardiac patient
- Suspected tricyclic overdose
- Electrical injuries
- Syncope/Near-Syncope
- CHF
- Vomiting
- Chest Pain
- Shortness of Breath
- Abdominal Pain
- Upper back pain (non-muscular)

Procedure:
1. Prepare ECG monitor and connect patient cable with electrodes
2. Expose chest and prep as necessary; modesty of the patient should be respected
3. Apply chest leads and extremity leads using the following landmarks:
   - RA - Right arm or as directed by manufacturer
   - LA - Left arm or as directed by manufacturer
   - 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 mid-clavicular line
   - V5 - Level with V4 at left anterior axillary line
   - V6 - Level with V5 at left mid-axillary line
4. Instruct patient to remain still
5. Press the appropriate button to acquire the 12-Lead ECG
6. Print data as per guidelines and attach a copy of the 12-Lead to the PPCR. Place the name and age of the patient on the paper copy of the ECG.
7. If STEMI suspected, transmit ECG to receiving facility (if possible)
8. Document the procedure, time, and results on/with the patient care report (PPCR)
Medical - Chest Pain AMI ACS 2016

Objectives:
- To assess and appropriately treat patients with chest pain or suspected acute myocardial infarction
- To eliminate patient’s chest pain

General Information:
- Aspirin
  - EMT and AEMT may administer aspirin on standing orders
  - Even if patient has taken aspirin within one day, administer additional aspirin up to the maximum protocol directed dose
  - Patient should be directed to chew and swallow
  - Do not administer aspirin in the following cases:
    - Patient with history of GI bleeding or other bleeding disorders
    - Patient with history of recent surgery (Within 14 days)
    - Patients that have already recently taken maximum dose of aspirin prior to EMS arrival
    - Patients with sensitivity / allergy to aspirin
- Nitroglycerin
  - EMT and AEMT may administer nitroglycerin with physician order
  - Nitroglycerin should not be given to patients with a systolic blood pressure < 110mmHg without IV access
  - Nitroglycerin may be given every 5 minutes (after the initial three doses) with physician orders as long as the systolic blood pressure remains > 90mmHg
  - Sublingual should be given first, whenever possible; transdermal Nitro has a slower onset (> 30 minutes)
- Transdermal nitroglycerin
  - Should be administered if patient cannot tolerate SL nitroglycerin or if SL nitroglycerin fails to relieve pain
- Morphine (I and P only)
  - May be administered concurrently with nitroglycerin if pain is unresolved
  - May administer additional morphine if needed with physician order
  - Implement nausea / vomiting protocol as necessary
- If the patient has cocaine induced chest pain, physician may order Valium 5mg IV/IM

Warnings/Alerts:
- Do not administer nitroglycerin to patients who have taken sexually enhancing medications (Viagra, Levitra, Cialis) within the past 72 hours
- Be cautious of continued nitroglycerin Administration with a > 30mmHg systolic blood pressure drop
- Contact medical control prior to administering ASA if patient is on anticoagulant therapy (Heparin, Lovenox, Coumadin, Effient, Warfarin, Plavix, Paradaxa, Xarelto)

OMD Notes:
- May administer ASA if patient is taking anti thrombolitics (Aggrenox, Ticlid)
- Call medical control if patient has any history of prior sensitivity or allergic reaction to aspirin
- Do not delay patient treatment to obtain a 12-lead EKG

Performance Indicators:
- Chest pain scale 1 to 10
- OPQRST assessment
- 12 lead EKG within 10 minutes
- Vital signs after Drug Administration

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Medical - Chest Pain AMI ACS 2016

Flowchart:

1. Treatment per the Airway/Oxygenation/Ventilation Protocol
2. Hx consistent with cardiac? 
   - No
   - Breathing difficulty?
     - No
     - Monitor and Transport
     - Yes
     - EKG Monitor 12 lead if available.
       - If STEMI, contact medical control and transmit if available
3. [EMT] Aspirin (4 x 81 mg) 324 mg
4. [EMT] If systolic BP > 90
   - Nitroglycerin 0.4 mg SL
     - May repeat every 3-5 minutes up to three (3) doses
5. Implement Vascular Access protocol as needed
6. Systolic BP > 90?
   - Yes
     - Breath sounds clear?
       - Yes
         - Administer 250 mL NS bolus, may repeat up to 1000 mL NS if lung sounds remain clear
       - No
         - Exit to Breathing Difficulty Protocol
    - No
     - Exit to Breathing Difficulty Protocol
8. If pain persists apply 1" Nitropaste
9. Contact Medical Control for additional NTG and morphine as needed (See Note)
10. Transport
Appendix D: Performance Improvement – Performance Measures

There should be Performance Improvement Meetings every 6 months to evaluate outcomes and quality improvement data. Operational issues should be reviewed, problems identified, and solutions implemented. The following measurements should be evaluated on an ongoing basis:

1. EMS-to-balloon time, within 90 minutes;
2. Hospital Door-to-balloon (first device used) time, non-transfer within 90 minutes;
3. STEMI Referral Hospital ED door-to-balloon (first device used) time, transfer within 90 minutes; and,
4. EMS Field bench markers:
   a. Patient contact to 12 acquired;
   b. EMS system on scene time;
   c. Compliance with ASA administration;
   d. Compliance with NTG administration;
   e. Compliance with MS administration;
   f. 12 lead acquired to Medical Control notification;
5. Proportion of patients with EMS diagnosis of STEMI and activation of the Cardiac Catheterization Laboratory (Transmission vs. non transmission) for intended primary PCI that:
   a. do not undergo acute catheterization because of misdiagnosis; and,
   b. undergo acute catheterization and found to have no elevation in cardiac biomarkers and no revascularization in the first 24 hours;
Appendix E- Hospital Designations

**STEMI Receiving Center Hospital** is defined as a hospital with “an emergency interventional cardiac catheterization laboratory capable of providing services to acute STEMI patients.” As defined by the American College of Cardiology and American Heart Association.

The process of STEMI Receiving Center identification is entirely voluntary on the part of the hospitals. As of November 15, 2013 the current STEMI Receiving Center Hospitals are:

- Bon Secours Maryview Hospital
- Bon Secours DePaul Hospital
- Bon Secours Mary Immaculate Hospital (PEMS)
- Chesapeake Regional Medical Center
- Peninsula Regional Medical Center (Salisbury, MD)
- Riverside RMC (PEMS)
- Sentara Careplex Hospital (PEMS)
- Sentara Norfolk General ED (Heart Hospital)
- Sentara Virginia Beach General Hospital
- Sentara Leigh Hospital
- Sentara Williamsburg RMC (PEMS)

**STEMI Receiving Center Capable Hospital w/Surgical Capabilities** is defined as a STEMI Receiving Center Hospital with onsite surgical backup capabilities available 24 hours/7 days.

The process of PCI Center identification is entirely voluntary on the part of the hospitals. As of November 15, 2013, the current PCI Capable Hospital w/ Surgical Capabilities are:

- Bon Secours Maryview Hospital
- Riverside Regional Medical Center (PEMS)
- Sentara Norfolk General ED (Heart Hospital)
- Sentara Virginia Beach General Hospital

**PCI Capable Hospital** is defined in The Tidewater EMS Council region as a hospital with “an emergency interventional cardiac catheterization laboratory, but cannot meet all of the STEMI Receiving Center criteria to become a STEMI Receiving center

The process of PCI Center identification is entirely voluntary on the part of the hospitals. As of November 15, 2013, the current PCI Capable Hospital w/ Surgical Capabilities are:

- Portsmouth Naval Hospital
- Sentara Obici Hospital
- Sentara Princess Anne Hospital

**Non-PCI Hospital** is defined as “a local hospital within the EMS System’s service area which provides emergency care, including thrombolytic administration, to an acute STEMI patient but does NOT provide PCI services.”

As of November 15, 2013, the current Non-PCI Capable Hospitals are:

- Bon Secours Harbour View ED
- Rappahannock General Hospital (PEMS)
- Riverside Shore Memorial Hospital
- Riverside Tappahannock Hospital (PEMS)
- Riverside Walter Reed Hospital (PEMS)
- Sentara BelleHarbour ED
- Southampton Memorial Hospital
- Southern Virginia Regional Medical Center (ODEMSA)
STEMI Receiving Center Designation Process

PURPOSE

To define requirements for designation of a hospital as a ST-elevation myocardial infarction (STEMI) receiving center for the Tidewater EMS Region. This designation authorizes the EMS System to transport patients with an identified or suspected “STEMI” to the designated facility and to bypass closer non-designated facilities.

STANDARD

This standard has been developed in conjunction with regional Mission Lifeline initiatives to ensure all EMS patients with STEMI are transported to designated facilities that are appropriately staffed, equipped and prepared to provide specialized care. The goal is to establish a partnership between EMS and receiving facilities to create STEMI Systems of Care in conjunction with regional and national initiatives designed to reduce morbidity and mortality from STEMI.

DEFINITIONS

A. STEMI: EKG evidence of ST-Segment elevation, as defined by regional AHA Mission Lifeline criteria, suspected to be due to Acute Coronary Syndrome (ACS).

B. STEMI Alert: A communication from EMS personnel that provides early notification to STEMI Receiving Center that a patient with a prehospital 12-lead interpretation of STEMI is in route to their institution.

C. STEMI Receiving Center: A hospital facility licensed for cardiac catheterization by the State Department of Health and Human Services, is able to provide emergency services and is approved by the Office of the Medical Director. Open heart surgical backup is not a requirement for the Center.

SYSTEMS OF CARE APPROACH

A well-organized approach to STEMI care requires system-wide integration between the community, EMS, emergency department services and the cardiac catheterization lab. Mission Lifeline recommendations acknowledge the importance of a multidisciplinary approach including early identification of STEMI by pre-hospital providers and transport to facilities with specialized resources and experience to optimize patient outcomes. In accordance with these guidelines, the Office of the Medical Director (OMD) defines STEMI receiving facilities to allow the EMS System to bypass non-designated facilities and transport potential STEMI patients to the most appropriate receiving facility for definitive treatment. Mission Lifeline also emphasizes the importance of a multidisciplinary approach to implementation of evidence based practice and continuous improvements to the STEMI care process. The STEMI Receiving Center designation process includes a commitment by the OMD and the designated receiving facilities to conduct cooperative review of performance in order to identify opportunities for continuous improvement.
APPLICATION PROCESS

This section provides interested hospitals with a description of the process and requirements for seeking and obtaining designation as an EMS System STEMI Receiving Center.

A. Prerequisites for Designation
   a. The facility is currently designated as an OMD Basic Emergency Department Level 1 receiving facility with the ability to manage Delta and Echo EMS patients (high acuity patients);
   b. The facility has been designated an OMD Basic Emergency Department Level 1 receiving facility for a period not less than six months.
   c. The facility meets all requirements for Mission Lifeline Participation Level.

B. Initiation of Designation Process
   a. An administrative representative should initiate the process by submitting a letter of intent to seek designation via e-mail, US mail, or courier service to the ATCEMS Office of the Medical Director;
   b. The letter should identify the chosen point of contact for the purposes of the designation process and information indicating how the contact may be reached.
   c. The facility may withdraw from the process at any time by indicating their withdrawal in writing. Withdrawal does not bias or prohibit future application.

C. Designation Process
   a. As required by this process, the STEMI Receiving Center must provide documentation of policies, procedures, protocols and/or processes related to STEMI Systems of care in an electronic format, preferably in a PDF file format. (See Initial Designation Criteria)
   b. Submitted documents and/or included explanations should indicate whether the document is a current or proposed practice for the facility. Proposed practice should include a planned implementation date.
   c. After receipt of the hospital’s letter of intent and prior to formal designation, representatives of the Office of the Medical Director and multidisciplinary representatives from the STEMI Receiving Center meet to discuss questions, concerns, capabilities and next steps.
   d. Facilities will receive a written notification of designation status within 45 days once all the required documents are submitted to the Office of the Medical Director.
   e. Notification will be directed to the Center’s identified designation process point of contact and STEMI Champion(s) (Please see Criteria regarding Leadership & Designated Staff).
INITIAL DESIGNATION CRITERIA

There are two main pathways for initial designation - Hospitals with current Mission Lifeline accreditation and all other Hospitals.

**Hospitals with current Mission Lifeline Accreditation**

Hospitals with current Mission Lifeline accreditation will be granted designation as an EMS System STEMI Receiving Center by completing the following:

1. Submit a letter from the Hospital CEO demonstrating commitment to the designation criteria listed in this document.
2. Submit the STEMI Receiving Center points of contact information requested in Appendix D.

**Hospitals without current Mission Lifeline Accreditation**

Hospitals without current Mission Lifeline accreditation must demonstrate the ability to consistently and reliably meet each of the following requirements.

1. Provide written commitment for 24/7/365 availability of cardiac catheterization lab with available interventional cardiology services.
2. Provide written commitment to pre-arrival activation of the cardiac catheterization team, to include the interventional cardiologist, once a possible STEMI Alert is communicated from EMS to the STEMI Receiving Center.
3. Demonstrate implementation of the CATRAC Regional Mission Lifeline Guidelines for STEMI Receiving Centers including best practices for PCI centers contained within the Mission Lifeline Field Guide.
4. Agree to a non-diversion policy except in situations of a hospital internal disaster (e.g. fire, hazardous material emergency, facility lockdown, loss of catheterization lab equipment etc.)
5. Submit a plan for triage & treatment for simultaneous presentation of STEMI patients.
   a. Provide documentation of the Center’s plan for triage and treatment of simultaneous presentation of STEMI patients.
   b. Meet the minimum requirements outlined in the Regional Mission Lifeline Guidelines
6. Provide the required data (See Appendix B) for the two most recent and consecutive quarters.
   a. Demonstrate at least 85% compliance with door-to-first device time within 90 minutes every quarter.
   b. Applicable STEMI data includes EMS scene transports and walk-in patients but excludes transfers.
7. Actively participate in CATRAC Cardiac Care Workgroup (AHA Mission Lifeline) initiatives including active participation in at least one subgroup.
MAINTENANCE CRITERIA

1. Demonstrate at least 85% compliance with door-to-first device time within 90 minutes every quarter.
2. Active participation in the American Heart Association (AHA) Mission Lifeline RAC initiatives including attending quarterly meetings. (Defined as attendance of at least 75% of all CATRAC Cardiac Care Workgroup quarterly meetings and attendance of at least 50% meeting attendance of either the regional Mission Lifeline QI, Education or Protocols subgroups.)
   a. Attendance of Subgroup meetings is met when at least one of the STEMI Receiving Center’s direct staff participates in at least 50% of the Subgroup’s meetings for the calendar year.
   b. Attendance of Workgroup meetings is met when at least one of the STEMI Receiving Center’s direct staff or network staff participates in at least 75% of the Subgroup’s meetings for the calendar year.
3. Provide STEMI case feedback in a timely manner as defined by the QI Subgroup (No PHI) to the EMS Agency’s Office of the Medical Director for distribution to appropriate prehospital providers including dispatchers and first responders.
4. Continue to meet all criteria required of the initial designation.

DESIGNATION STATUS

There are three STEMI Center designation levels.

A. Temporary Designation
   a. The OMD may grant a 1-year temporary designation to facilities that have not completed the Mission Lifeline Accreditation process or for new facilities that lack sufficient data to demonstrate performance measures for initial designation.
   b. At the conclusion of the temporary designation period a facility that meets criteria will be granted Full Designation. If the facility does not meet criteria they may be placed on probation or denied STEMI Receiving Center Designation. This will be determined on a case-by-case basis after review by the OMD.

B. STEMI Receiving Center Designation
   a. Facilities with a current AHA Mission Lifeline Accreditation, those that meet the requirements outlined in this document and those that have successfully completed the designation requirements under Temporary Designation status will be designated as an ATCEMS System STEMI Receiving Center.
   b. Designation is valid for a period of three years from the date of full STEMI Receiving Center Designation as long as maintenance criteria are met. At the end of the three year period facilities may renew their designation with a letter of intent to renew.

C. Probationary Designation
   a. Designated STEMI Receiving Centers that fail to meet the defined performance criteria for two consecutive quarters will be placed on a Probationary Designation Status for a minimum of 6 months to allow implementation of a performance improvement plan.
   b. Probationary status is a performance improvement designation only and does not affect the
published status of the facility as a STEMI receiving center. Facilities are expected to develop performance improvement plans with or without the assistance of the OMD. Facilities will continue to receive STEMI patients while they implement their performance improvement plan.

c. At the conclusion of the probationary period the facility may:
   i. Return to full STEMI Receiving Center designation;
   ii. Continue in a probationary status for a minimum of 3 months.
   iii. Be removed from the Designated STEMI receiving facility list for a period of 1 year.
      (See Loss of Designation)

LOSS OF DESIGNATION

The Office of the Medical Director may deny, suspend or revoke the designation of a STEMI Receiving Center. Facilities that lose designation status cannot reapply for a minimum of 1 year. Loss of designation may result from failure to maintain compliance with the criteria for designation including but not limited to:

A. Failure to meet all designation requirements following a probationary period;
B. Failure to provide required data;
C. Failure to participate in STEMI performance improvement activities with the OMD.

DATA MANAGEMENT & REPORTING: Quality improvement is a vital component of successful STEMI Systems of Care. The AHA/ACC guidelines recommend the use of quality improvement processes that includes measurement, benchmarking, and feedback.

A. Data Sharing
   a. Designated facilities will provide written agreement to:
      i. Share key performance data and patient outcomes with the OMD on a quarterly basis. (See Appendix B)
      ii. Provide individual STEMI case feedback to the OMD for distribution to appropriate prehospital providers including dispatchers and first responders.
      iii. Provide aggregate data as outlined in Appendix B. Submission of an Action Registry or Mission Lifeline report may be used to meet a part of this data requirement
   b. The OMD agrees to share aggregated outcomes reports with all designated centers in a blinded fashion.
   c. Data is submitted during the following time periods: Quarter 1 - June 1 through June 30 of same year Quarter 2 - September 1 through September 30 of same year Quarter 3 - December 1 through December 31 of same year Quarter 4 - March 1 through March 31 of following year

B. Data Analysis
   a. The STEMI Receiving Center and EMS System agree to cooperative identification of performance improvement opportunities based on data analysis or to address provider or patient concerns.
   b. The STEMI Receiving Centers and the OMD agree to meet as a group twice a year to review STEMI performance data (System, blinded or aggregate data only).
PERFORMANCE IMPROVEMENT

A. Designated receiving facilities:
   a. Commit to meeting the agreed upon STEMI systems of care performance measures.
   b. If unable to meet quarterly performance measures agree to develop and implement a written performance improvement plan and to share that plan with the OMD
   c. Agree to participate in Office of the Medical Director STEMI Systems of Care performance improvement initiatives.

B. The Office of the Medical Director:
   a. Commits to meeting the performance metrics identified by the CATRAC Cardiac Care Workgroup and the practices outlined within the Field Guide.
   b. If the EMS System is unable to meet the performance improvement metrics, the OMD will develop a written performance improvement plan and provide that plan to the designated receiving facilities.
   c. Agrees to participate in designated STEMI receiving center performance improvement initiatives when necessary.

EDUCATION & COMMUNICATION

A. For a STEMI System of care to be successful providers from each organization must be knowledgeable in the clinically meaningful elements of STEMI care with the shared goal of optimizing that care.
   a. Education
      i. The STEMI Receiving Center agrees to provide education to its clinical staff members directly involved in STEMI care to facilitate the implementation of and changes to key components of a successful STEMI System of care and the designation criteria in this document.
      ii. The Office of the Medical Director will supervise the provision of education to prehospital providers involved in STEMI care to facilitate the implementation of and changes to key components of STEMI management.
   b. Communications
      i. The STEMI Receiving Center communicates the Designation process and general requirements to its affected staff.
      ii. The identified STEMI champion(s) and Data Coordinator are the points of contact for the STEMI receiving center.
      iii. The Performance Improvement Coordinator is the point of contact for the OMD.
LEADERSHIP & DESIGNATED STAFF

To be a successful, a STEMI Receiving Center must have strong advocacy and leadership as well as staff to manage the day to day requirements.

A. Hospital Leadership
   a. The facility identifies at least one clinical person to serve in the role of STEMI Champion.
   b. The OMD will designate one person to serve in the role of the primary point of contact for the designation process and ongoing communication.

B. Data Coordinator
   a. The facility identifies at least one person serving in the role of data coordinator. The role may be served by the STEMI Champion.
   b. The OMD will designate at least one person serving in the role of data coordinator.
   c. The STEMI center and OMD data coordinators comply with data requests in a timely manner.

C. Contact Information
   a. The STEMI Receiving Center provides the names and contact information for STEMI Champion(s) and Data Coordinator(s) and updates this information in the event of a change.
   b. The ATCEMS Office of the Medical Director will designate a point of contact and provide the name(s) and contact information to existing STEMI Receiving Centers and to those in the designation process. Any changes will be reported to the appropriate facilities.

Forms

A. Form A – Checklist for STEMI Receiving Center Designation
B. Form B - Required Data
C. Form C – STEMI Case Feedback Form/Data
D. Form D – STEMI Receiving Center Point of Contact Information
### Form – A

#### Checklist for Initial STEMI Receiving Center Designation

<table>
<thead>
<tr>
<th>No.</th>
<th>Criteria</th>
<th>Documentation Provided</th>
<th>Meets Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Provide written commitment for 24/7/365 availability of cardiac catheterization lab with available interventional cardiology services.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Provide written commitment to pre-arrival activation of the cardiac catheterization team, to include the interventional cardiologist, once a possible STEMI Alert is communicated from EMS to the STEMI Receiving Center.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Provide STEMI case feedback as defined by the Mission Lifeline QI Subgroup (No PHI) to the Office of the Medical Director for distribution to appropriate prehospital providers including dispatchers and first responders.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>The STEMI receiving center agrees to a non-diversion policy except in situations of a hospital internal disaster (e.g. fire, hazardous material emergency, facility lockdown, loss of catheterization lab equipment etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Submit a plan for triage &amp; treatment for simultaneous presentation of STEMI patients.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Provide documentation of the Center’s process for managing STEMI patients while another patient is prepped in the cardiac catheterization lab.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Provide documentation of the Center’s process for notifying ATCEMS when the catheterization lab will be unavailable for an extended period of time (45 minutes or longer)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Requirement Description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Demonstrate at least 85% compliance with door-to-first device time within 90 minutes every quarter.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Hospital has dedicated comprehensive ICU services and staff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Participation in the CATRAC Cardiac Care Workgroup (AHA Mission Lifeline) initiatives including active participation in at least one subgroup.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Provide a minimum of 2 most recent and consecutive quarters in which performance measures were met.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Demonstrate implementation of the CATRAC Regional Mission Lifeline Guidelines for STEMI Receiving Centers including best practices for PCI Centers included in the regional Field Guide.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 *Not applicable to Hospitals currently accredited by AHA Mission Lifeline*

Documentation should also include (Also see Appendix D):

- STEMI Champion (Primary Point of Contact after designation) (Name, Position, Phone, Email)
- Alternate STEMI Champion (if applicable) (Name, Position, Phone, Email)
- STEMI Center Data Coordinator (if different than the STEMI Champion)
- Hospital Designation Process Primary Point of Contact (if different than the STEMI Champion)
- LOA for Data sharing between the OMD and STEMI Receiving Center
### Form – B

<table>
<thead>
<tr>
<th>Data Number</th>
<th>Data Element or Measure</th>
<th>Definition</th>
<th>Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Total Number of STEMI Alerts rec’d via EMS (preferred data)</td>
<td>The total number of patients communicated to the STEMI Center by any EMS agency as meeting the regional definition of STEMI</td>
<td>Quarterly</td>
</tr>
<tr>
<td>2</td>
<td>Total Number of CANCELLED STEMI Alerts rec’d via EMS (preferred data)</td>
<td>The total number of patients communicated to the STEMI Center by any EMS agency as meeting the regional definition of STEMI that are subsequently cancelled prior to arrival in the cardiac cath lab</td>
<td>Quarterly</td>
</tr>
<tr>
<td>3</td>
<td>Proportion of STEMI patients with first medical contact to first device time &lt; 90 minutes (required data)</td>
<td>The total number of STEMI patients with a first medical contact by (EMS or ED) to first device time interval &lt; 90 minutes divided by the total number of STEMI patients who arrive at the hospital ED by any means including EMS and walk-in patients (excludes transfers from another facility) (expressed as a %)</td>
<td>Quarterly</td>
</tr>
<tr>
<td>4</td>
<td>Proportion (%) of ALL STEMI patients with Hospital Door to First Device Time &lt; 90 minutes (required data)</td>
<td>The total number of STEMI patients with a hospital door-to-first device time interval less than 90 minutes divided by the total number of STEMI patients who arrive at the hospital ED by any means including EMS and walk-in patients (expressed as a %)</td>
<td>Quarterly</td>
</tr>
<tr>
<td>5</td>
<td>Proportion (%) of ALL STEMI patients receiving any reperfusion (PCI or fibrinolysis) (required data)</td>
<td>The total number of STEMI patients treated with a reperfusion technique (including both primary PCI and fibrinolysis) divided by the total number of STEMI patients who arrive at the hospital ED by any means including EMS and walk-in patients (expressed as a %)</td>
<td>Quarterly</td>
</tr>
</tbody>
</table>

**Note:** STEMI patients include all that meet the Mission Lifeline Action Registry definitions and exclusions. Data elements #3 – 5 should be derived from Action Registry data. A Mission Lifeline or Action Registry quarterly report may be used to meet requirements #3-5.
# Form – C

## STEMI Case Feedback Form/Data

**EMS STEMI Alert Feedback Template**

- **Date of Service**
- **Agency Name**
- **Hospital Name**

![Image of first STEMI Positive ECG (EMS - ECG if EMS Activation)](image)

*All Patient Identifiers should be removed.*

<table>
<thead>
<tr>
<th>Interventional ECG Interpretation</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data element</th>
<th>Clock time</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Medical Contact (FMC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st Field 12 lead ECG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st Positive Field ECG for STEMI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cath lab activated by PCI Hospital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCI Hospital Door</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st Device balloon</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interventional Findings</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEMI Confirmed per NHL Criteria</td>
<td></td>
</tr>
<tr>
<td>Target Artery or Non-Accusible Condundor</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data Measure</th>
<th>Time Interval</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMC to 1st Field 12 lead ECG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FMC to 1st Device balloon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st Positive Field ECG to STEMI to Cath lab activated by PCI hospital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCI hospital door to device balloon</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CATRAC Cardiac Care Workgroup (Mission Lifeline) approved EMS Feedback Template, Version 6, Sept 2012
Form – D

STEMI Receiving Center Point of Contact Information

<table>
<thead>
<tr>
<th>Hospital Points of Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
</tr>
<tr>
<td>STEMI Champion - Primary Point of Contact</td>
</tr>
<tr>
<td>STEMI Champion – Secondary Point of Contact (if applicable)</td>
</tr>
<tr>
<td>Designation Process Point of Contact (if applicable)</td>
</tr>
<tr>
<td>STEMI Data Coordinator (if different than the STEMI Champion)</td>
</tr>
</tbody>
</table>

Note: Please complete the shaded boxes for each STEMI Rec
Appendix I
TEMS REGIONAL STROKE PLAN
TEMS, Inc. Stroke Triage Plan

Created by Tidewater EMS Council Stroke Triage Workgroup, June 2010
Adopted, Operational Medical Directors Committee, December, 2010 for Implementation on April 1, 2011
Revised and Readopted by OMD Committee on December 8, 2016
Board of Directors Acknowledgement, December 13, 2012
(with updated certified stroke centers, 02/01/2017)
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Executive Summary

Under the Code of Virginia §32.1-111.3, the Office of Emergency Medical Services acting on behalf of the Virginia Department of Health has been charged with the responsibility of maintaining a Statewide Stroke Triage Plan. The Tidewater EMS Council, Inc. is responsible for establishing a strategy through a formal region wide Stroke Triage System incorporating the transport of “Acute Stroke Patients” to a Joint Commission “certified” Stroke Centers or comparable process of care consistent with the recommendations of the brain attack coalition.

The purpose of the Tidewater EMS Council Regional Stroke Triage Plan is to establish a uniform set of criteria for pre-hospital and interfacility triage and transport of acute stroke patients. The plan augments the state stroke triage plan and incorporates regional geographic variations and acute stroke care capabilities and resources. This Regional Stroke Plan addresses patients experiencing an “acute Stroke,” defined as “- a patient suspected of having an acute cerebral ischemic event or stroke with the onset of any one symptom within a three hour period.” The primary focus of this plan is to provide guidelines to facilitate the early recognition of the acute stroke patient and to expedite transport to a center able to provide definitive care (a Designated Stroke Center) within the three-hour window although acknowledgement of an extension to four and one/half hours may be appropriate within situation where advanced medical consult is available.

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

1. The ability to rapidly and accurately identify patients suffering from Stroke-like presentation and provide transportation to the closest Designated Stroke Center.
2. Patients who have sustained an Acute Stroke event must receive care in a Designated Stroke Center.
3. The plan must provide a plan to transport patients to a Designated Stroke Center. Willingness to meet operational criteria is met via the appropriate designation. This should be achieved by reasonable ground transport, Medevac and then non-designated centers.
4. Provide quality EMS service and patient care to the EMS system’s citizens.
5. Continuously evaluate the EMS system based on established EMS performance measures for Stroke
Field Stroke Triage Decision Scheme

9-1-1 Dispatcher suspects Acute Stroke

Attendant in charge suspects Acute Stroke based on history and physical exam*

Assess blood glucose.
Is Glucose > 60?

Yes

Correct Hypoglycemia

No

Evaluate Cincinnati Pre-hospital Stroke Case / FAST for acute onset of ONE or more positive findings

Discuss Case with on-line medical control as a potential “acute stroke” for assistance in destination determination and mode of transport to closest available Designated Stroke Center; agency to make time and distance decision considerations regarding potential air transport. **

Initiate transport to Designated Stroke Center. The provider must make the effort to bring witness or other individual able to legally provide consent for treatment to hospital, or at a minimum, a phone number for the witness / consenting party.

Interfacility transfer, as needed, to Designated Stroke Center for addition services as appropriate.

(*) See Appendix A for guidance regarding dispatch protocols

(**) If time from symptom onset is more than 3 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 of 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).
**Guidance Materials**

**Cincinnati Pre-hospital Stroke Scale (CPSS)/FAST**

All patients suspected of having an acute stroke should undergo a formal screening algorithm such as the CPSS/FAST. Use of stroke algorithms has been show to improve identification of acute strokes by EMS providers up to as much as 30%. Results of the CPSS/FAST should be noted on the pre-hospital medical record. ANY abnormal (positive) finding which is suspected or known to be acute in onset is considered an indicator of potential acute stroke.

<table>
<thead>
<tr>
<th>F-(Face)</th>
<th>FACIAL DROOP: Have patient smile or show teeth. (Look for facial asymmetry)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Normal: Both sides of the face move equally or not at all.</td>
</tr>
<tr>
<td></td>
<td>Abnormal: One side of the patient's face droops or does not move.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A-(Arm)</th>
<th>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)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Normal: Remain extended equally, drifts equally, or does not move at all.</td>
</tr>
<tr>
<td></td>
<td>Abnormal: One arm drifts down when compared with the other.</td>
</tr>
</tbody>
</table>

| 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).                                               |

<table>
<thead>
<tr>
<th>T-(Time)</th>
<th>Time of SYMPTOM ONSET or LAST known to be NORMAL _________</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If patient awakened with symptoms, when were they last known to be normal?</td>
</tr>
</tbody>
</table>

*Results of the CPSS/FAST should be documented on the patient’s pre-hospital medical record.*
Medical - Cerebral Vascular Accident (CVA or Stroke)

Treatment per Airway/Oxygenation/Ventilation Protocol

Signs & Symptoms of Stroke? 

Yes

EMT AIP

Perform Prehospital Stroke Scale

EMT AIP

Obtain Glucometry

If Glucometry is < 60 mg/dL OR > 500 mg/dL implement Hypo/Hyperglycemia Protocol

EMT AIP

EKG Monitor 12 lead and transmit if available

Transport patient with the head of stretcher elevated unless airway precludes this

EMT AIP

Implement Vascular Access protocol as needed

Contact Medical Control
Medical - Cerebral Vascular Accident  
(CVA or Stroke)

Objectives:

- To assess and appropriately treat patients with suspected cerebrovascular accidents

General Information:

- Obtain CVA-specific history
  - Onset of stroke symptoms
  - Last time seen normal
  - List of signs/symptoms
  - Risk factors
  - Previous CVA
  - Medications
  - New onset dysrhythmias
- Transport patient, even if symptoms have resolved
- Transport a family member or other witness to verify time of onset of stroke symptoms
- Utilize recognized pre-hospital stroke scale (i.e. Cincinnati Pre-Hospital Stroke Scale)
- If possible, transport to a medical facility with the ability to give thrombolytics
- Make contact with medical control early if your closest facility is not a stroke center

Warnings/Alerts:

- Do not delay transport to start IVs or perform other non-life-saving ALS interventions
- Patients with stroke symptoms are at high risk for airway compromise
  - Example: vomiting, gurgling, drooling, snoring, change in breathing pattern, change in head position
  - The airway should be continuously monitored for patency
  - Hypoxemia will worsen stroke outcomes

OMD Notes:

None provided

Performance Indicators:

- Time of symptom onset
- Pre-hospital stroke scale
- Blood glucose level
- EKG monitor
- Previous deficits
Reperfusion Therapy Eligibility

Indications:

Patient suspected CVA or acute stroke symptoms

Policy:

Providers should gather information (e.g. history, etc.) that will assist physician(s) evaluate the suitability for acute reperfusion therapy of any patient presenting with signs/symptoms that suggest stroke or ischemic chest pain.

Procedure:

Depending on patient presentation, fill out the appropriate checklist (if possible) without delay of treatment or transport – this statement should not be interpreted as mandating emergency (Red lights/Siren) transport. It is intended to indicate that transport should be without avoidable delay. Present the completed checklist to the emergency department physician at the receiving facility.

See Appendix B for sample Thrombolytic Checklist
“Acute Stroke Patient” Transport Considerations

MODE OF TRANSPORTATION: The TEMS region is unique in its availability of EMS and acute stroke care resources. Consideration should be given to hospitals available to the region and the resources they have available to “acute stroke patients”.

Stroke patients who meet any of the criteria of the Cincinnati Pre-hospital Stroke Scale/FAST, indicative of an acute stroke, shall be transported to the closest Designated Stroke Center.

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

1. Lessen the time from scene to Stoke Center ED compared to ground transport
   a. Reducing the time of patient onset of stroke symptoms to arrival at a Designated Stroke Center to less than 3 hours

2. Be utilized to achieve the goal of having acute stroke patients expeditiously transported to a Designated Stroke Center, within three hours of symptom onset; unless consultation with on-line medical control has occurred.

3. Be to non-stroke certified hospitals in very unusual circumstances and following consultation with on-line medical control. In general, if HEMS resource is used, the patient will be transported directly to a Designated Stroke Center.

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

RAPID TRANSPORTATION: Because stroke is a time-critical event, time is of the essence, and EMS providers should initiate rapid transport once acute stroke is suspected. Consideration should also be given to pre-hospital resources, including use of helicopter EMS (HEMS), available at the time of the incident, and other conditions such as transport time, road and weather conditions. Use of HEMS can facilitate acute stroke patients reaching Designated Stroke Centers in a timeframe that allows for acute treatment interventions.

The likelihood of benefit of acute stroke therapy decreases with time, but there are several therapy options which offer definite benefit outside the standard 3-hour window; consultation with on-line Medical Control is STRONGLY encouraged in the situation of a patient being unable to arrive at a Designated Stroke Center within the three-hour window from symptom onset.

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

The Commonwealth of Virginia defines a “Designated Stroke Center” as a hospital that has achieved Primary Stroke Center Certification by the Joint Commission or equivalent accrediting body. The process of Stroke Designation/Certification is entirely voluntary on the part of the hospitals and identifies hospitals that have established and maintain an acute stroke program which provides a specific level of medical, technical, and procedural expertise for acute stroke patients as designated by CMS through JC or other CMS deemed status accrediting bodies. 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.

A list of Certified Stroke Centers is located on Appendix C. The list will be updated as needed on the Tidewater EMS Council website (Performance Improvement/TEMS Triage Plans/TEMS Stroke Plan/Primary Stroke Centers-Tidewater Region).

Various hospitals meet many of the components of a Designated Stroke Center based on national survey results and serve as a logical choice. The closest hospital may not be a Designated Stroke Center.

Interfacility Triage Criteria

Non-stroke center hospitals within the TEMS region must develop transfer guidelines and agreements in place for the expeditious and appropriate management of acute strokes when the care required exceeds their capabilities. This is especially critical for transfer of patients following thrombolysis since specific protocols must be followed to diminish the risk of cerebral or systemic hemorrhagic complications. The TEMS Council does not presume to direct hospital with regard to interfacility transfer of patients.
### Stroke Triage Quality Monitoring

The TEMS Council will report aggregate acute stroke triage findings on an intermittent basis, but no less than annually, to assist EMS systems and the Virginia Stroke Systems Task Force improve the local, regional and Statewide Stroke Triage Plans. A de-identified version of the report will be available to the regional agencies and will include, minimally, as defined in the statewide plan, the frequency of:

(i) over- and under- triage to Designated Stroke Centers in comparison to the total number of acute stroke patients delivered to hospitals

(ii) Helicopter EMS utilization

(iii) EMS Benchmarks under development 06-07-10

TEMS Performance Improvement Committee will produce a report which will be used as a guide and resource. This report will have three primary evaluation areas: timeliness of care, treatment provided, and outcomes of care. The fields identified are critical to analyses for the following reasons: they allow linking of EMS data and hospital Stoke data, they allow for “real time” collection of data focused upon process improvement, and they allow for retrospective systemic analyses. The ultimate goal of collecting this data is to provide actionable information to the TEMS Stroke workgroup, Operational Medical Committee (OMD) and Medical Operational Committee (MOC) relative to the care processes and outcomes associated with their treatment of Acute Stroke patients as it relates to EMS.

### Stroke Related Resources


Joint Commission: [http://www.jointcommission.org/CertificationPrograms/PrimaryStrokeCenters/](http://www.jointcommission.org/CertificationPrograms/PrimaryStrokeCenters/)

Appendix A: Dispatch Resources *(to be developed)*
Appendix B: Thrombolytic Checklist
# Appendix C: Designated Stroke Centers

## Certified Primary Stroke Centers – Tidewater Region

As of 1/17/2013

<table>
<thead>
<tr>
<th>Hospital Name</th>
<th>City</th>
<th>Hospital Name</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bon Secours Depaul</td>
<td>Norfolk</td>
<td>Sentara Norfolk General</td>
<td>Norfolk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hospital</td>
<td></td>
</tr>
<tr>
<td>Bon Secours Maryview</td>
<td>Portsmouth</td>
<td>Sentara Virginia Beach</td>
<td>Virginia Beach</td>
</tr>
<tr>
<td>Chesapeake Regional Medical</td>
<td>Chesapeake</td>
<td>Sentara Obici Hospital</td>
<td>Suffolk</td>
</tr>
<tr>
<td>Center</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sentara Leigh Memorial Hospital</td>
<td>Norfolk</td>
<td>Sentara Princess Anne</td>
<td>Virginia Beach</td>
</tr>
</tbody>
</table>

## Non-Stroke Centers – Tidewater Region

As of 1/17/2013

<table>
<thead>
<tr>
<th>Hospital Name</th>
<th>City</th>
<th>Hospital Name</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHKD</td>
<td>Norfolk</td>
<td>Sentara Independence</td>
<td>Virginia Beach</td>
</tr>
<tr>
<td>Sentara Belle Harbour</td>
<td>Suffolk</td>
<td>Southampton Memorial</td>
<td>Franklin</td>
</tr>
<tr>
<td>Riverside Shore Memorial</td>
<td>Nassawadox</td>
<td>Naval Medical Center</td>
<td>Portsmouth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Portsmouth</td>
<td></td>
</tr>
<tr>
<td>Bon Secours Harbour View</td>
<td>Suffolk</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To Find certified Primary Stroke Centers:

Tidewater EMS Region

EMS regions are designated by the Virginia Board of Health. The Code of Virginia, §32.1-111.11, charges regional EMS councils with the development and implementation of an efficient and effective regional emergency medical services delivery system. A board of directors representing the localities served and other related organizations forms a private, nonprofit organization and enters into a contract with the Office of EMS, Virginia Department of Health, to provide various planning and coordination functions within each region. In the Tidewater region, the Tidewater EMS Council, Inc. is the contracted agency.

Geography and Weather

The Tidewater EMS region encompasses six cities and four counties in eastern Virginia. It is bordered by the Atlantic Ocean to the east, North Carolina to the south, Maryland’s Eastern Shore to the North and the James River and several rural counties to the west.

The 2,717 square mile EMS region subdivides into two distinct geographical areas. The rural Eastern Shore (Planning District 22) lies to the north and is separated from the remainder of the region by the Chesapeake Bay and linked by a 17.6 mile toll bridge and tunnel. The Eastern Shore’s two counties are Accomack and Northampton.

To the south, a combination of urban, suburban and rural jurisdictions form the larger portion of the region. This area, known as Southside Hampton Roads (formerly Planning District 20, now part of Planning District 23) includes the cities of Chesapeake, Franklin, Norfolk, Portsmouth, Suffolk and Virginia Beach, and the counties of Isle of Wight and Southampton.

The region is generally low-lying, interspersed with various rivers, lakes, creeks and man-made waterways. A significant number of bridges and tunnels link various areas within the region, and to other parts of the Commonwealth. Combining its coastline location and the various waterway crossings, which are oftentimes primary evacuation routes, the region is vulnerable to coastal storms and hurricanes. Storm surge and widespread flooding in pose significant threats.

Other weather phenomena of significance to the region are infrequent tornadoes, usually spawned by hurricanes or severe thunderstorms, urban and flash flooding caused by severe thunderstorms, and winter snow. The normal annual snowfall is 5.8 inches (National Weather Service, Norfolk location), though over 14 inches fell during one storm in 2010, nearly 19 inches hit the area in one storm in 1892, and 1980 saw nearly 40 inches cumulative snowfall. Overall, the climate is not extreme, moderated by the effect of the Atlantic Ocean and the Chesapeake Bay.

Demography

According to US Census data, the regional population grew approximately 5.4% during the ten-year period from 2000 to 2010, increasing from 1,130,040 to 1,191,101. This growth is similar to the previous 1990-2000 decade but represents a continued moderation of the more robust 12.2% average growth during each of the previous two decades.

During the past decade, the greatest total population growth occurred in the jurisdictions of Chesapeake, Suffolk and Virginia Beach. The greatest rate of growth occurred in Suffolk, Isle of Wight County and Chesapeake. Accomack County and to a lesser extent Northampton County and Portsmouth lost population.
Population projections through 2020 vary quite a bit depending on source. The Virginia Employment Commission predicts an 11.7% regional growth over the decade with Suffolk, Chesapeake and Accomack County showing the greatest growth. The Weldon-Cooper Center for Public Service (UVA) predicts a 5.5% regional growth. A private firm called ProximityOne predicts a conservative 1.5% regional growth. A detailed population table follows.

**EMS and Hospital Profile**

The Tidewater EMS region includes 63 state-licensed EMS agencies. Of the total licensed agencies, 46 of them are 9-1-1 response agencies, including first responder and transporting agencies, and 17 are specialized and commercial EMS agencies. (One additional agency, NASA Wallops, is not licensed by the Commonwealth.) The latter categories include medevac, neonatal/pediatric, industrial, federal and other interfacility BLS or ALS transportation agencies. Regional maps indicating EMS agencies follow below.

There are 635 state-permitted EMS vehicles in the region. This number includes 383 BLS or ALS ground ambulances (including 4 neonatal ambulances), 3 rotary wing air ambulances (includes one as backup), and 249 first response or “chase” cars, fire apparatus which provide first response, and other specialty vehicles. [2015 data]

Reporting numbers of EMS providers is somewhat difficult. The state does not track “primary EMS affiliation” so the only reliable measure is place of residence. There are 4,916 certified EMS providers at all levels who reside in Tidewater. This number does not include those affiliated with EMS agencies in Tidewater who reside outside the region, and likewise does include those who reside in the region but are affiliated with EMS agencies outside the region. Further, some 1,368 of EMS providers residing in the region are not affiliated with any EMS agency resulting in 3,548 who are affiliated with an EMS agency (in or out of the region).

Each jurisdiction within the region provides emergency access to police, fire and EMS via the universal 9-1-1 telephone number. Each locality maintains its own emergency communications center except for the two Eastern Shore Counties which operate a joint Eastern Shore 9-1-1 Center. However, the town of Chincoteague, in Accomack County, maintains its own separate communications center. Each of these communications centers features an “enhanced” 9-1-1 system and several have incorporated text-to-911 service. Three of the communications centers covering four jurisdictions have obtained EMD accreditation from the Commonwealth. They are the Eastern Shore 9-1-1 Center, the City of Chesapeake Emergency Communication Center and the City of Norfolk Emergency Communications Center.

In addition to the emergency medical personnel and equipment provided by each agency and jurisdiction, a number of special teams and specialty resources are available within or hosted at the regional level. These include the Tidewater Regional Technical Rescue Team, the FEMA Urban Search and Rescue Team VA TF-2, the HHS Disaster Medical Assistance Team VA-1, a regional Marine Incident Response Team, a regional Hazardous Materials Team, a regional Metropolitan Medical Strike Team and a regional Incident Management Team.

The region includes 11 civilian and one military acute care hospitals. One of these (Sentara Norfolk General) is a state-designated level 1 Trauma Center and one (Sentara Virginia Beach General) is a level 3 Trauma Center. Eight of the hospitals are certified as "Primary Stroke Centers" by one of three accrediting agencies. There are three additional freestanding emergency departments that receive ambulance patients who don’t otherwise match criteria for transport to a specialty center. A regional map showing acute care hospitals with licensed bed counts and trauma center status follows below.

Revised July 2016
### EMS Providers - Tidewater Region

**As of 02/01/2017**

<table>
<thead>
<tr>
<th>County</th>
<th>EMR</th>
<th>EMT</th>
<th>AEMT</th>
<th>EMT/1</th>
<th>EMT/P</th>
<th>Total</th>
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<tr>
<td>ACCOMACK</td>
<td>0</td>
<td>147</td>
<td>51</td>
<td>16</td>
<td>45</td>
<td>259</td>
</tr>
<tr>
<td>CHESAPEAKE</td>
<td>1</td>
<td>535</td>
<td>173</td>
<td>50</td>
<td>176</td>
<td>935</td>
</tr>
<tr>
<td>FRANKLIN CITY</td>
<td>0</td>
<td>9</td>
<td>7</td>
<td>6</td>
<td>8</td>
<td>30</td>
</tr>
<tr>
<td>ISLE OF WIGHT</td>
<td>1</td>
<td>163</td>
<td>48</td>
<td>38</td>
<td>48</td>
<td>296</td>
</tr>
<tr>
<td>NORFOLK</td>
<td>10</td>
<td>271</td>
<td>45</td>
<td>38</td>
<td>93</td>
<td>507</td>
</tr>
<tr>
<td>NORTHAMPTON</td>
<td>1</td>
<td>35</td>
<td>11</td>
<td>3</td>
<td>16</td>
<td>66</td>
</tr>
<tr>
<td>PORTSMOUTH</td>
<td>0</td>
<td>105</td>
<td>73</td>
<td>15</td>
<td>44</td>
<td>237</td>
</tr>
<tr>
<td>SOUTHAMPTON</td>
<td>1</td>
<td>49</td>
<td>31</td>
<td>24</td>
<td>24</td>
<td>129</td>
</tr>
<tr>
<td>SUFFOLK</td>
<td>1</td>
<td>166</td>
<td>104</td>
<td>20</td>
<td>70</td>
<td>395</td>
</tr>
<tr>
<td>VIRGINIA BEACH</td>
<td>3</td>
<td>1265</td>
<td>822</td>
<td>116</td>
<td>419</td>
<td>2127</td>
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<tr>
<td><strong>Total</strong></td>
<td>10</td>
<td>2785</td>
<td>915</td>
<td>334</td>
<td>949</td>
<td>4981</td>
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## Tidewater EMS Region Population 1970 - 2015 (with 2020 Projection)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Accomack County</td>
<td>449.5</td>
<td>29,004</td>
<td>31,268</td>
<td>31,703</td>
<td>38,305</td>
<td>33,164</td>
<td>(5,141)</td>
<td>-13.42%</td>
<td>33,516</td>
<td>33,432</td>
<td>0.81%</td>
<td></td>
</tr>
<tr>
<td>Chesapeake city</td>
<td>340.8</td>
<td>89,580</td>
<td>114,486</td>
<td>151,976</td>
<td>199,184</td>
<td>222,209</td>
<td>23,025</td>
<td>11.56%</td>
<td>236,283</td>
<td>233,513</td>
<td>14.21%</td>
<td></td>
</tr>
<tr>
<td>Franklin city</td>
<td>8.2</td>
<td>6,880</td>
<td>7,364</td>
<td>8,406</td>
<td>8,562</td>
<td>536</td>
<td>236</td>
<td>2.03%</td>
<td>8,555</td>
<td>9,261</td>
<td>7.16%</td>
<td></td>
</tr>
<tr>
<td>Isle of Wight County</td>
<td>315.6</td>
<td>10,285</td>
<td>21,803</td>
<td>29,726</td>
<td>35,270</td>
<td>5,542</td>
<td>16.04%</td>
<td>36,438</td>
<td>38,626</td>
<td>6.27%</td>
<td>10.09%</td>
<td></td>
</tr>
<tr>
<td>Norfolk city</td>
<td>54.1</td>
<td>307,651</td>
<td>266,079</td>
<td>234,403</td>
<td>242,803</td>
<td>8,400</td>
<td>3.50%</td>
<td>247,189</td>
<td>254,093</td>
<td>2.71%</td>
<td>252.12%</td>
<td></td>
</tr>
<tr>
<td>Northampton County</td>
<td>211.6</td>
<td>14,442</td>
<td>14,625</td>
<td>13,061</td>
<td>12,389</td>
<td>(676)</td>
<td>-5.38%</td>
<td>12,176</td>
<td>12,133</td>
<td>-0.32%</td>
<td>12.13%</td>
<td></td>
</tr>
<tr>
<td>Portsmouth city</td>
<td>33.7</td>
<td>110,963</td>
<td>104,577</td>
<td>103,067</td>
<td>95,535</td>
<td>(7,532)</td>
<td>-6.82%</td>
<td>96,674</td>
<td>95,717</td>
<td>0.95%</td>
<td>14.22%</td>
<td></td>
</tr>
<tr>
<td>Southampton County</td>
<td>599.2</td>
<td>18,582</td>
<td>18,731</td>
<td>17,550</td>
<td>16,570</td>
<td>(11,181)</td>
<td>-6.07%</td>
<td>16,551</td>
<td>16,684</td>
<td>0.67%</td>
<td>14.22%</td>
<td></td>
</tr>
<tr>
<td>Suffolk city*</td>
<td>40.3</td>
<td>45,024</td>
<td>47,621</td>
<td>52,141</td>
<td>61,977</td>
<td>20,858</td>
<td>32.81%</td>
<td>84,585</td>
<td>99,126</td>
<td>17.51%</td>
<td>14.22%</td>
<td></td>
</tr>
</tbody>
</table>

Virginia Beach city   249                    172,106            262,199                363,689                435,257                437,994                12,737                3.00%                  453,500                    438,114                        0.03%                          | 14.22%                         |                 |

Region               2681.9                  812,817            899,397                1,130,040               1,181,101               911,061                5,100%                1,250,488                 1,251,236                    0.06%                          | 14.22%                         |                 |

Virginia             39490.9                 4,651,487          5,346,918               6,187,358               7,030,030               8,010,024              102,984                1.32%                  8,385,080                  8,811,512                     5.05%                          | 14.22%                         |                 |

*includes Nansemond Co annexed in 1975

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**Virginia’s EMS Regions**

**Tidewater EMS Region**

1. Tidewater EMS Agencies—911 Response Tidewater EMS Region
   - Eastern Shore
     1. Accomack VFD
     2. Nansemond VFD
     3. Northumberland VFD
     4. Virginia Beach VFD
   - Western Tidewater
     1. Isle of Wight VFD
     2. Gloucester VFD
     3. Mathews VFD
     4. Northampton VFD
     5. Suffolk VFD

**Regional Stroke Performance Improvement Plan**

Version: February 1, 2017

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Code of Virginia References

Code of Virginia

§ 32.1-111.3. Statewide Emergency Medical Care System

A. The Board of Health shall develop a comprehensive, coordinated, emergency medical care system in the Commonwealth and prepare a Statewide Emergency Medical Services Plan which shall incorporate, but not be limited to, the plans prepared by the regional emergency medical services councils. The Board shall review, update, and publish the Plan triennially, making such revisions as may be necessary to improve the effectiveness and efficiency of the Commonwealth’s emergency medical care system. Publishing through electronic means and posting on the Department website shall satisfy the publication requirement. The objectives of such Plan and the system shall include, but not be limited to, the following:

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

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

... 

C. The Board of Health shall also develop and maintain as a component of the Emergency Medical Services Plan a statewide prehospital and interhospital Stroke Triage Plan designed to promote rapid access for stroke patients to appropriate, organized stroke care through the publication and regular updating of information on resources for stroke care and generally accepted criteria for stroke triage and appropriate transfer. The Stroke Triage Plan shall include:

1. A strategy for maintaining the statewide Stroke Triage Plan through formal regional stroke triage plans that incorporate each region’s geographic variations and stroke care capabilities and resources, including hospitals designated as “primary stroke centers” through certification by the Joint Commission or a comparable process consistent with the recommendations of the Brain Attack Coalition. The regional stroke triage plans shall be reviewed triennially.

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

D. Whenever any state-owned aircraft, vehicle, or other form of conveyance is utilized under the provisions of this section, an appropriate amount not to exceed the actual costs of operation may be charged by the agency having administrative control of such aircraft, vehicle or other form of conveyance.

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

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

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

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

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

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

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

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

Triennial Update by the Tidewater EMS Council Trauma Triage Committee, January 2010
Adopted, Operational Medical Directors Committee, 09/2011
Revised and Readopted 09/11/2017
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Executive Summary

Under the Code of Virginia § 32.1-111.3, the Office of Emergency Medical Services acting on behalf of the Virginia Department of Health is charged with the responsibility of maintaining a Statewide Trauma Triage Plan. Emergency medical services (EMS) agencies are required by EMS Regulation 12 VAC 5-31-390 to participate in regional trauma triage plans. The Statewide Trauma Triage Plan is designed to promote rapid access for pediatric and adult trauma patients to appropriate, organized trauma care through the publication and regular updating of information on resources for trauma care and generally accepted criteria for trauma triage and appropriate transfer. Regional trauma triage plans augment the Commonwealth’s plan by incorporating each region’s geographic variations and trauma care capabilities and resources, including hospitals designated as trauma centers.

The Tidewater EMS Council Inc. has adopted the Commonwealth’s Pre-hospital and Inter-Hospital Trauma Triage Plan as the template for the Tidewater Regional Trauma Triage Plan. This regional plan adds information and guidelines which recognize the region’s medical resources and geography. The development and monitoring of this plan, and of the related trauma triage performance improvement program, is assigned to the TEMS regional Trauma Triage Committee.

The Code directs the collection of data through the EMS and Statewide Trauma Registry and protects its ability to be used by Trauma Committees that report to the Governor’s EMS Advisory Board. In accordance with § 32.1-116.2 of the Code, any such data or information in the possession of or transmitted to the Commissioner (OEMS as the designee), the Governor’s EMS Advisory Board, or any committee acting on behalf of the Governor’s EMS Advisory Board, any hospital or pre-hospital care provider, or any other person shall be privileged and shall not be disclosed or obtained by legal discovery proceedings, unless a circuit court, after a hearing and for good cause shown arising from extraordinary circumstances, orders disclosure of such data.

The statewide and regional trauma system is an inclusive system. The system incorporates healthcare facilities, transportation, human resources, communications, and other components as integral parts of a unified system that serve to improve the delivery of emergency medical services and thereby decrease morbidity, hospitalization, disability, and mortality.

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

These improvements can be accomplished by conducting, promoting, and encouraging programs of education and training designed to upgrade the knowledge and skills of healthcare providers involved in trauma care. These criteria are not meant to supersede applicable laws such as EMTALA and HIPAA.
Our Vision: Victims of injury in the Tidewater EMS region . . .

- Will be promptly entered into the emergency medical services system, when appropriate, by knowledgeable family members or bystanders through the universal 9-1-1 emergency telephone number.
- Will be assisted and reassured by family members or bystanders until emergency medical assistance arrives through guidance provided by trained emergency medical dispatchers with specific emphasis on the maintenance of a viable airway, bleeding control, spinal immobilization, and the prevention of shock.
- Will receive prompt at-scene treatment and stabilization by trained first responders and emergency medical personnel in accordance with regional medical protocols.
- Will receive prompt transportation to the closest, most appropriate emergency department or trauma center using the quickest ground and/or air transportation available.
- Will receive continuing care and rehabilitation in such a manner as to provide for the highest chance of a complete recovery in the shortest time frame possible.

This vision can only be realized with the active involvement of the public, public safety dispatchers, first responder agencies and personnel, public and private emergency medical services agencies and personnel, hospital administrators, physicians, nurses, and the many technicians involved in the daily care of the injured patient.

Trauma Patient Transport & Transfer Criteria

Trauma Victim Defined

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.

Two-Tiered Trauma Triage

Trauma patient recognition and triage is a two-tiered system including:
- Initial triage in the prehospital setting (using the Field Trauma Triage Decision Scheme and Prehospital Trauma Triage Criteria), and
- Secondary triage at all hospitals (including possible transfer to another hospital based on the Inter-Hospital Transfer criteria).

This plan establishes pre-hospital and inter-hospital criteria for the purpose of identifying the trauma patient and identifies the best point of entry plan for these patients. Many factors such as geography, hospital capabilities, air medical services, local EMS resources and others will help to guide how and where the identified trauma patient will be transported or transferred to.
Field Trauma Triage Decision Scheme

1. Assess anatomy of injury
   - Penetrating injuries to head, neck, torso, & extremities proximal to elbow or knee
   - Flail chest
   - Two or more proximal long bone fractures
   - Crushed, defloved, or mangled extremity
   - Amputation proximal to wrist or ankle
   - Pelvic Fractures
   - Open or depressed skull fracture
   - Paralysis
   - High Voltage electrical burns

   1. Yes
      - Take to a Trauma Center. Steps 1 and 2 triage attempts to identify the most seriously injured patients in the field. These patients should be transported preferentially to the highest-level trauma center.
     - No

2. Assess mechanism of injury and evidence of high-energy impact
   - Falls
     - Adult: Greater than 20 ft. (one story is equal to 10 ft.)
     - Children: Greater than 10 ft. or 2-3 times the height of the child
   - High Risk Auto Crash
     - Intrusion greater than 12 in. occupant site; greater 18 in. any site
     - Ejection (partial or complete) from automobile
     - Death in same passenger compartment
     - Auto v. Pedestrian/Bicycle thrown, run over, or with significant (>20 mph) impact
     - Motorcycle crash greater than 20 mph
     - If available to providers, vehicle automatic crash notification data consistent with “High Risk Injury”

   3. Yes
      - Transport to closest trauma center. (Level 1, 2, or 3)
     - No

4. Assess special patient or system considerations
   - Age
     - Older Adults: Risk of injury/death increase after age 55 years
     - Children: Should be triaged preferentially to Pediatric Trauma Center
     - Anticoagulation and Bleeding Disorder
     - Burn Patients - Should be transported to a Burn Center
     - Time Sensitive Extremity Injury
     - End-Stage Renal Decease Requiring Dialysis
     - Pregnancy greater than 20 Weeks
     - EMS provider judgment

   4. Yes
      - Consider Transport to closest trauma center. (Level 1, 2, or 3)
     - No

*Prehospital 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. See notes to follow regarding trauma-related cardiac arrest with electrical activity.
Pre-Hospital Trauma Triage Criteria
Adult /Pediatrics (Less than 15 years of Age)

**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
  - Pediatrics (less than 15 years of age) – 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 / Pediatrics (Less than 15 years of age)

- **Anticoagulation and 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 provides, based on experience and expertise, may always exercise clinical judgment regarding atypical patient presentations

- **Procedure**:
  - Agencies operating **within a 30-minute ground transport time** of a trauma center (e.g., Children’s Hospital of The Kings Daughters, Sentara Norfolk General, Sentara Virginia Beach General and Riverside Regional Medical Center):
    1. Immediate transport (Less than 10 minutes’ scene time) otherwise document the reason for the delay.
    2. Provide appropriate care and initiate immediate transport towards trauma center.
    3. Establish early contact to alert trauma center staff.
    4. Technicians can request air ambulance transport without authorization by medical control.
  - Scenes **outside a 30-minute ground transport time** to a trauma center:
    1. Transport all patients with trauma-center injuries to the closest hospital if air transport is delayed or unavailable
      - On Scene time should not be greater than 10 minutes.
    2. Establish early contact to intended receiving hospital. Facility may divert patient to a trauma center en route or expedite transfer after arrival.
Notes:
1) Transport patients with unmanageable airway problems or uncontrolled hemorrhage to the closest hospital emergency department.

2) **Traumatic cardiac arrest with any electrical cardiac activity**: Transport to designated trauma center if transport time is less than 10 minutes' difference from the closest hospital.

3) Consider transport to a Level 1 Trauma Center for **patients with critical burns**. (e.g. Sentara Norfolk General, or MCV Medical Center)

4) 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)

5) Pregnant patients (Greater than 20 weeks) that do not meet the trauma criteria should be transported to closest OB/GYN facility

6) Consider contacting medical control to address concerns about patient care, appropriate receiving facility, or air transport decisions.

7) When providing a pediatric trauma radio report include the corresponding Broselow Tape color associated with the patient size.

8) When giving 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. The MIST Format is the preferred method of verbal reporting.

---

### Regional EMS Time Out Report

<table>
<thead>
<tr>
<th>M</th>
<th>Age/Gender, Mechanism or Medical Complaint</th>
<th>Age, Gender (Include patient’s name for handover), Mechanism of Injury or Medical Complaint/History</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Injuries or Inspections</td>
<td>Time of Injury, list injuries head to toe; or Inspections (time of onset, brief medical exam/findings)</td>
</tr>
<tr>
<td>S</td>
<td>Vital Signs</td>
<td>Vital signs: first set and significant changes; include glucose.</td>
</tr>
<tr>
<td>T</td>
<td>Treatment</td>
<td>Treatment</td>
</tr>
</tbody>
</table>
Inter-Hospital Criteria for Transfer of a Trauma Patient to a Designated Trauma Center

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

<table>
<thead>
<tr>
<th>Adult</th>
<th>Pediatric</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Respiratory</strong></td>
<td>Any pediatric patient with a Pediatric Trauma Score ≤ 6. * See pediatric trauma score below (less than 15 years of age)</td>
</tr>
<tr>
<td>• Bilateral thoracic injuries</td>
<td>• Bilateral thoracic injuries</td>
</tr>
<tr>
<td>• Significant unilateral injuries in pt's &gt;55 (e.g. pneumothorax, hemo-pneumothorax, pulmonary contusion, &gt;5 rib fractures).</td>
<td>• Significant unilateral injuries in patients with pre-existing cardiac and/or respiratory disease.</td>
</tr>
<tr>
<td>• Significant unilateral injuries in patients with pre-existing cardiac and/or respiratory disease.</td>
<td>• Flail chest.</td>
</tr>
<tr>
<td>• Respiratory compromise requiring intubation.</td>
<td>• Respiratory</td>
</tr>
<tr>
<td>• Flail chest.</td>
<td>• Open skull fracture</td>
</tr>
<tr>
<td><strong>CNS</strong></td>
<td>• Extra-axial hemorrhage on CT.</td>
</tr>
<tr>
<td>• Unable to follow commands</td>
<td>• Focal neurological deficits</td>
</tr>
<tr>
<td>• Open skull fracture</td>
<td></td>
</tr>
<tr>
<td>• Extra-axial hemorrhage on CT, or any intracranial blood.</td>
<td></td>
</tr>
<tr>
<td>• Paralysis</td>
<td></td>
</tr>
<tr>
<td>• Focal neurological deficits</td>
<td></td>
</tr>
<tr>
<td>• GCS ≤ 13</td>
<td></td>
</tr>
<tr>
<td><strong>Cardiovascular</strong></td>
<td></td>
</tr>
<tr>
<td>• Hemodynamic instability as determined by the treating physician.</td>
<td></td>
</tr>
<tr>
<td>• Persistent hypotension.</td>
<td></td>
</tr>
<tr>
<td>• Systolic B/P (&lt;100) without immediate availability of surgical team.</td>
<td></td>
</tr>
<tr>
<td><strong>Injuries</strong></td>
<td></td>
</tr>
<tr>
<td>• 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</td>
<td>• Any penetrating injury to the head, neck, chest abdomen or extremities proximal to the knee or elbows without a surgical team immediately available.</td>
</tr>
<tr>
<td>• The combination of trauma with burns.</td>
<td>• Combination of trauma with burn injuries</td>
</tr>
<tr>
<td>• Significant abdominal to thoracic injuries in patients where the physician in charge feels treatment of injuries would exceed capabilities of the medical center.</td>
<td>• Any injury or combination of injuries where the physician in charge feels treatment of the injuries would exceed the capabilities of the medical center.</td>
</tr>
<tr>
<td><strong>Special Considerations</strong></td>
<td></td>
</tr>
<tr>
<td>• Trauma in pregnancy</td>
<td></td>
</tr>
<tr>
<td>• Adults greater than 55 years of age</td>
<td></td>
</tr>
<tr>
<td>• Pediatric (less than 15 years of age)</td>
<td></td>
</tr>
<tr>
<td>• Bariatric</td>
<td></td>
</tr>
<tr>
<td>• Special needs individual</td>
<td></td>
</tr>
</tbody>
</table>
### Pediatric Trauma Score

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

### Burn Related Injuries

The American Burn Association has identified the following injuries that usually require referral to a burn center.

- Partial thickness and full thickness burns greater than 10% of the total body surface area (BSA) in patients under 10 or over 50 years of age.
- Partial thickness burns and full thickness burns greater than 20% BSA in other age groups.
- Partial thickness and full-thickness burns involving the face, eyes, ears, hands, feet, genitalia or perineum of those that involve skin overlying major joints.
- Full-thickness burns greater than 5% BSA in any age group.
- Electrical burns, including lightning injuries; (significant volumes of tissue beneath the surface may be injured and result in acute renal failure and other complications).
- Significant chemical burns.
- Inhalation injuries.
- Burn injury in patients with pre-existing illness that could complicate management, prolongs recovery, or affects mortality.
- Any burn patient in whom concomitant trauma poses an increased risk of morbidity or mortality may be treated initially in a trauma center until stable before transfer to a burn center.
- Children with burns seen in hospitals without qualified personnel or equipment for their care should be transferred to a burn center with these capabilities.
- Burn injury in patients who will require special social and emotional or long term rehabilitative support, including cases involving child abuse and neglect.
Mass Casualty Incidents – Destination of Patients

This Trauma Triage Plan is intended for normal, daily operations. When mass casualty incidents occur, operations should be guided by the Hampton Roads MCI Response Guide. In that guide, mass casualty incidents are considered in one of five (5) categories:

1. Expanded Medical Incident - Requires the use of local resources and/or mutual aid to manage the incident.
2. Major Medical Incident - Requires the use of regional and/or multi-regional resources to manage the incident.
3. Disaster - Requires the use of state and/or federal resources to manage the incident.
4. Catastrophe - Destruction and loss of local infrastructure, outside resources required.
5. HAZMAT/WMD – Requires the use of the local or regional HAZMAT team may include the Hampton Roads Metropolitan Medical Response System Strike Team (HR-MMST).

After the implementation of the Hampton’s Road MCI plan the following communications will occur to determine the proper destinations of trauma patients.

Ambulance-to-Hospital Communications - During an MCI, routine ambulance to hospital communication procedures are suspended. TRANSPORTATION (or EMS/MEDICAL COMMUNICATIONS COORDINATOR) will communicate patient information directly to the Coordinating ED. The Coordinating ED will relay the information to the receiving hospitals.

Scene-to-Hospital Communications - TRANSPORTATION or EMS/MEDICAL COMMUNICATIONS COORDINATOR) will communicate with the Coordinating ED via the most reliable radio channels.

Coordinating ED - In the early stages of the incident, a Coordinating ED must be established. TRANSPORTATION or INCIDENT COMMANDER should contact the closest hospital to advise them of the emergency. It is anticipated that the nearest facility will receive many patients who leave the scene on their own, so early notification is essential.

The closest hospital should be advised of the situation, number of patients, and types of injuries involved. It will be that hospital’s decision based on their capabilities at the time as to whether they will accept or decline the role of “Coordinating ED.” Should the closest hospital opt not to assume the role of “Coordinating ED,” contact should be made with Sentara Norfolk General for incidents in the TEMS area or Riverside Regional Medical Center for incidents in the PEMS area. Each of these facilities is the default coordination site for their respective areas.

Patient Distribution - Once hospital capacities are provided by the Coordinating ED, TRANSPORTATION will start distributing patients in accordance with those capacities. He/she will determine the destination for each patient on site. The Coordinating ED will serve as an advisor when distributing unique cases (i.e. multiple burn victims more than the capacity of the nearest Burn Center).

Should patients be ready for transport prior to receipt of capacities from the Coordinating ED, TRANSPORTATION will commence distributing patients based on normal transport patterns.
Performance Improvement Program

The TEMS Trauma Triage Committee will be responsible for the effective identification, analysis, and correction (jointly with the region’s EMS medical directors, EMS agency leadership and hospital leadership) of system issues related to the trauma triage and transfer within the Tidewater region. This requires an objective review by qualified, appropriate representatives of EMS, trauma and hospital programs within the TEMS Region, protected by a process which ensures patient confidentiality.

Regional Trauma Triage Analysis (PI – Performance Improvement)

Effective PI is critical to the evaluation of the EMS and trauma system in the Tidewater EMS region. A broad look at what contributes to community health must include data from hospitals and prehospital agencies so comprehensive care at the right time and at the right place can be ensured.

1. The goals of Tidewater EMS Trauma Triage Committee’s PI/QI initiatives are to:
   a. Design and implement PI/QI projects that are practical and can collect patient care statistics to evaluate system effectiveness and identify trends in patient care. This goal relies heavily on the provision of such data by the Office of EMS.
   b. Establish regional clinical benchmarks to measure the regional system effectiveness.
   c. Trend data and outcomes to identify strong and weak points in the region's trauma care system with the goal of no preventable trauma deaths as identified by a multi-disciplinary quality improvement (QI) committee.
   d. Review individual cases brought to the attention of the Trauma Triage Committee.

2. Request for projects may be directed by the Operational Medical Direction (OMD) Committee, Trauma Triage Committee, EMS agencies or hospitals.

3. The Trauma Triage QI Committee Membership is comprised of the following membership:
   - (2) ED Physicians
   - (1) OEMS approved OMD
   - (2) ED nurses
   - (2) Hospital administrators
   - (2) EMS administrators
   - (1) medical examiner
   - (1) TEMS support staff
   - (1) Trauma Nurse Coordinator
   - (1) Prehospital provider from air medical
   - (2) Trauma Surgeons – 1 per designated trauma center
   - (1) Prehospital provider fire based EMS
   - (1) Prehospital provider career based EMS
   - (1) Prehospital provider volunteer based EMS

   Additional representatives of hospitals are added if necessary to ensure that each hospital in the region has at least one representative on the committee.

4. The term for members of the Trauma Triage Committee will be two years, unless determined otherwise by the chairperson, with half of the committee rotating every year. The trauma surgeons, trauma nurse coordinators, and medical examiner will rotate their positions among themselves without specific terms.

5. Each member, or their designated representative, must attend at least 3 meetings in a one year period to remain on the team. If this attendance is not met, an immediate replacement will be sought from the representative organization or group.

6. Meetings will be held bi-monthly and at the Tidewater EMS office or as directed by the committee. A yearly schedule will be posted on the council’s website and distributed to all committee members at the beginning of each year.
## EMS Trauma Centers/Hospitals/Burn Centers

<table>
<thead>
<tr>
<th>Description</th>
<th>Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level I Trauma Centers</strong></td>
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</tbody>
</table>
| 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. | Sentara Norfolk General Hospital  
600 Gresham Drive  
Norfolk, Virginia 23507  
(A Adult Burn Center) |
| **Level I Pediatric Trauma Center** | |
| 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. | Children’s Hospital of the King’s Daughters  
600 Children’s Lane,  
Norfolk, Virginia 23507  
(Pediatric Burn Center) |
| **Level II Trauma Centers** | |
| Level II trauma centers have an organized trauma response and are also expected to provide initial definitive care, regardless of the severity of injury. The specialty requirements may be fulfilled by on call staff that 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. | |
| **Level III Trauma Centers** | |
| Level III centers, through an organized trauma response, can provide 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 centers should also take on responsibility for education and system leadership within their region | Sentara Virginia Beach General Hospital  
1060 First Colonial Road  
Virginia Beach, Virginia 23454 |
| **Non-Trauma Center Hospitals** | |
| Non-trauma centers, can provide prompt assessment, resuscitation, stabilization, and arrange for the transfer of the patient to a facility that can provide definitive trauma care. | |

### Non-Trauma Facilities

- Bon Secours DePaul Medical Center
- Bon Secours Harbourview ED
- Bon Secours Maryview Medical Center
- Chesapeake Regional Medical Center
- Navy Regional Medical Center – Portsmouth
- Riverside Shore Memorial Hospital
- Sentara BelleHarbour ED
- Sentara Independence ED
- Sentara Leigh
- Sentara Obici
- Sentara Princess Anne
- Southampton Memorial Hospital
EMS regions are designated by the Virginia Board of Health. The Code of Virginia, §32.1-111.11, charges regional EMS councils with the development and implementation of an efficient and effective regional emergency medical services delivery system. A board of directors representing the localities served and other related organizations forms a private, nonprofit organization and enters a contract with the Office of EMS, Virginia Department of Health, to provide various planning and coordination functions within each region. In the Tidewater region, the Tidewater EMS Council, Inc. is the contracted agency.

Virginia’s EMS Regions

Geography and Weather

The Tidewater EMS region encompasses six cities and four counties in eastern Virginia. It is bordered by the Atlantic Ocean to the east, North Carolina to the south, Maryland’s Eastern Shore to the North and the James River and several rural counties to the west.

The 2,717-square mile EMS region subdivides into two distinct geographical areas. The rural Eastern Shore (Planning District 22) lies to the north and is separated from the remainder of the region by the Chesapeake Bay and linked by a 17.6-mile toll bridge and tunnel. The Eastern Shore's two counties are Accomack and Northampton.

To the south, a combination of urban, suburban and rural jurisdictions form the larger portion of the region. This area, known as Southside Hampton Roads (formerly Planning District 20, now part of Planning District 23) includes the cities of Chesapeake, Franklin, Norfolk, Portsmouth, Suffolk and Virginia Beach, and the counties of Isle of Wight and Southampton.

The region is generally low-lying, interspersed with various rivers, lakes, creeks and man-made waterways. A significant number of bridges and tunnels link various areas within the region, and to other parts of the Commonwealth. Combining its coastline location and the various waterway crossings, which are oftentimes primary evacuation routes, the region is vulnerable to coastal storms and hurricanes. Storm surge and widespread flooding in pose significant threats.

Other weather phenomena of significance to the region are infrequent tornadoes, usually spawned by hurricanes or severe thunderstorms, urban and flash flooding caused by severe thunderstorms, and winter snow. The normal annual snowfall is 5.8 inches (National Weather Service, Norfolk location), though over 14 inches fell during one storm in 2010, nearly 19 inches hit the area in one storm in 1892, and 1980 saw nearly 40 inches’ cumulative snowfall. Overall, the climate is not extreme, moderated by the effect of the Atlantic Ocean and the Chesapeake Bay.
Demography

According to US Census data, the regional population grew approximately 5.4% during the ten-year period from 2000 to 2010, increasing from 1,130,040 to 1,191,101. This growth is like the previous 1990-2000 decade but represents a continued moderation of the more robust 12.2% average growth during each of the previous two decades.

During the past decade, the greatest total population growth occurred in the jurisdictions of Chesapeake, Suffolk and Virginia Beach. The greatest rate of growth occurred in Suffolk, Isle of Wight County and Chesapeake. Accomack County and to a lesser extent Northampton County and Portsmouth lost population.

Population projections through 2020 vary quite a bit depending on source. The Virginia Employment Commission predicts an 11.7% regional growth over the decade with Suffolk, Chesapeake and Accomack County showing the greatest growth. The Weldon-Cooper Center for Public Service (UVA) predicts a 5.5% regional growth. A private firm called Proximity One predicts a conservative 1.5% regional growth. A detailed population table follows.

### Regional and State Population Growth 1970 - 2010 (with projected 2020)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Accomack</td>
<td>449.5</td>
<td>29,004</td>
<td>31,268</td>
<td>31,703</td>
<td>38,305</td>
<td>33,164</td>
<td>(5,141)</td>
<td>-13.42%</td>
<td>33,516</td>
<td>33,432</td>
<td>0.81%</td>
</tr>
<tr>
<td>Chesapeake</td>
<td>340.8</td>
<td>89,580</td>
<td>114,486</td>
<td>151,982</td>
<td>200,316</td>
<td>222,761</td>
<td>22,445</td>
<td>11.21%</td>
<td>238,283</td>
<td>253,813</td>
<td>13.94%</td>
</tr>
<tr>
<td>Franklin</td>
<td>8.2</td>
<td>6,880</td>
<td>7,308</td>
<td>7,864</td>
<td>8,285</td>
<td>8,586</td>
<td>300</td>
<td>3.63%</td>
<td>8,535</td>
<td>9,261</td>
<td>7.86%</td>
</tr>
<tr>
<td>Isle of Wight</td>
<td>315.6</td>
<td>18,285</td>
<td>21,603</td>
<td>25,053</td>
<td>29,874</td>
<td>35,412</td>
<td>5,538</td>
<td>18.54%</td>
<td>36,438</td>
<td>38,828</td>
<td>9.65%</td>
</tr>
<tr>
<td>Norfolk</td>
<td>54.1</td>
<td>307,951</td>
<td>266,979</td>
<td>261,250</td>
<td>234,521</td>
<td>242,956</td>
<td>8,434</td>
<td>3.60%</td>
<td>247,189</td>
<td>252,128</td>
<td>3.78%</td>
</tr>
<tr>
<td>Northampton</td>
<td>211.6</td>
<td>14,442</td>
<td>14,625</td>
<td>13,061</td>
<td>13,093</td>
<td>12,389</td>
<td>(704)</td>
<td>-5.38%</td>
<td>12,176</td>
<td>12,133</td>
<td>-2.07%</td>
</tr>
<tr>
<td>Portsmouth</td>
<td>33.7</td>
<td>110,963</td>
<td>104,577</td>
<td>103,910</td>
<td>100,408</td>
<td>95,388</td>
<td>(5,020)</td>
<td>-5.00%</td>
<td>96,874</td>
<td>95,717</td>
<td>0.34%</td>
</tr>
<tr>
<td>Southampton</td>
<td>599.2</td>
<td>18,582</td>
<td>18,731</td>
<td>17,550</td>
<td>17,482</td>
<td>18,593</td>
<td>1,111</td>
<td>6.36%</td>
<td>18,551</td>
<td>18,684</td>
<td>0.49%</td>
</tr>
<tr>
<td>Suffolk</td>
<td>400.2</td>
<td>45,024</td>
<td>47,621</td>
<td>52,143</td>
<td>64,200</td>
<td>85,166</td>
<td>20,966</td>
<td>32.66%</td>
<td>90,426</td>
<td>99,126</td>
<td>16.39%</td>
</tr>
<tr>
<td>Virginia Beach</td>
<td>249</td>
<td>172,106</td>
<td>262,199</td>
<td>393,089</td>
<td>426,712</td>
<td>438,207</td>
<td>11,495</td>
<td>2.69%</td>
<td>453,500</td>
<td>438,114</td>
<td>-0.02%</td>
</tr>
<tr>
<td>Hampton Roads</td>
<td>2,662</td>
<td>812,817</td>
<td>889,397</td>
<td>1,057,605</td>
<td>1,133,197</td>
<td>1,192,623</td>
<td>59,426</td>
<td>5.24%</td>
<td>1,235,488</td>
<td>1,251,236</td>
<td>4.91%</td>
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<tr>
<td>Virginia</td>
<td>39490.9</td>
<td>4,651,487</td>
<td>5,346,818</td>
<td>6,189,317</td>
<td>7,107,050</td>
<td>8,025,514</td>
<td>918,464</td>
<td>12.92%</td>
<td>8,382,993</td>
<td>8,811,512</td>
<td>9.79%</td>
</tr>
</tbody>
</table>
EMS and Hospital Profile

Prehospital EMS Agencies—911 Response
Tidewater EMS Region

Eastern Shore
3. Oak Hall Vol. Rescue
5. Saxie Vol. Fire and Rescue
8. Accomack Dept of Public Safety
11. Onley Vol. Fire and Rescue
12. Melfa Vol. Fire and Rescue
15. Northampton Co. Fire and Rescue
16. Cape Charles Rescue Service
17. Northampton Co. Dept of EMS

Western Tidewater

Metro Tidewater
27. Portsmouth Fire, Rescue & ES
28. Norfolk Fire - Rescue
29. Virginia Beach Office of EMS
30. Chesapeake Beach Vol. Rescue
31. Newport News Vol. Rescue
32. Kempsville Vol. Rescue
33. Ocean View Vol. Rescue
34. Plaza Vol. Rescue
35. Princess Anne CH Vol. Rescue
36. Suffolk Vol. Fire
37. Virginia Beach Vol. Rescue
38. Chesapeake Vol. Rescue
39. Blackwater Vol. Rescue
40. Chesapeake Fire Dept.
41. Nansemond-Suffolk Vol. Rescue
42. Chudleigh Vol. Fire Dept (FR)
43. City of Virginia Beach Fire Dept
44. Suffolk Fire and Rescue

ALS transportation agencies. Regional maps indicating EMS agencies follow below.

There are 648 state-permitted EMS vehicles in the region. This number includes 385 BLS or ALS ground ambulances (including 4 neonatal ambulances), 3 rotary wing air ambulances (includes two as backup), and 260 first response or “chase” cars, fire apparatus which provide first response, and specialty vehicles.

The Tidewater EMS region includes 65 state-licensed EMS agencies. Of the total licensed agencies, 46 of them are 9-1-1 response agencies, including first responder and transporting agencies, and 17 are specialized and commercial EMS agencies. (One additional agency, NASA Wallops, is not licensed by the Commonwealth.) The latter categories include medevac, neonatal/pediatric, industrial, federal and other interfacility BLS or
Reporting numbers of EMS providers is somewhat difficult. The state does not track “primary EMS affiliation” so the only reliable measure is place of residence. There are 4,981 certified EMS providers at all levels who reside in Tidewater. This number does not include those affiliated with EMS agencies in Tidewater who reside outside the region, and likewise does include those who reside in the region but are affiliated with EMS agencies outside the region.

<table>
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<th>County</th>
<th>EMR</th>
<th>EMT</th>
<th>AEMT</th>
<th>EMT/I</th>
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Each jurisdiction within the region provides emergency access to police, fire and EMS via the universal 9-1-1 telephone number. Each locality maintains its own emergency communications center except for the two Eastern Shore Counties which operate a joint Eastern Shore 9-1-1 Center. Each of these communications centers features an “enhanced” 9-1-1 system and several have incorporated text-to-911 service. Three of the communications centers covering four jurisdictions have obtained EMD accreditation from the Commonwealth. They are the Eastern Shore 9-1-1 Center, the City of Chesapeake Emergency Communication Center and the City of Norfolk Emergency Communications Center.

In addition to the emergency medical personnel and equipment provided by each agency and jurisdiction, several special teams and specialty resources are available within or hosted at the regional level. These include the Tidewater Regional Technical Rescue Team, the FEMA Urban Search and Rescue Team VA TF-2, the HHS Disaster Medical Assistance Team VA-1, a regional Marine Incident Response Team, a regional Hazardous Materials Team, a regional Metropolitan Medical Strike Team and a regional Incident Management Team.

The region includes 11 civilian and one military acute care hospitals. One of these (Sentara Norfolk General) is a state-designated level 1 Trauma Center, one (Children’s Hospital of The King’s Daughter) is a level 1 Pediatric Trauma Center and one (Sentara Virginia Beach General) is a level 3 Trauma Center. Eight of the hospitals are certified as “Primary Stroke Centers” by one of three accrediting agencies. There are three additional freestanding emergency departments that receive ambulance patients who don’t otherwise match criteria for transport to a specialty center. A regional map showing acute care hospitals with licensed bed counts and trauma center status follows below.
EMS Communications

Each jurisdiction within the region provides emergency access to police, fire and EMS via the universal 9-1-1 telephone number. Each locality maintains its own emergency communications center except for the two Eastern Shore Counties which operate a joint Eastern Shore 9-1-1 Center. Each of these communications centers features an “enhanced” 9-1-1 system and three of the communications centers covering four jurisdictions have obtained EMD accreditation from the Commonwealth. They are the Eastern Shore 9-1-1 Center, the City of Chesapeake Emergency Communication Center and the City of Norfolk Emergency Communications Center.

There are three systems utilized in the region for medical communications: 1. the VHF (or HEAR) radio system, 2. the UHF (or COR) system, and 3. locality-specific 700 and 800 MHz trunking systems.

It is standard in the region that all ambulances have the VHF system and that mobile radios have all four frequencies of the Virginia Office of EMS VHF Initiative (155.205, 155.340, 155.380, 155.400). These frequencies are also the foundation of the regions’ hospital-to-hospital, ambulance-to-ambulance, and scene-to-hospital mass casualty communications plan.

It is the standard in the region that all advanced life support ambulances have the UHF mobile system, accessing all ten MED channels. Many agencies also use the 700-800 MHz radio frequencies as a means of communication to local hospitals.
Trauma Education
All EMS personnel in Virginia require certification by the state. The Code of Virginia assigns the Department of Health the responsibility for ensuring that all providers of emergency medical services are adequately trained to perform their duties as emergency medical technicians. Local EMS agencies and their medical directors then verify training and competency of EMS providers through local orientation and street supervision.

The state Office of EMS has developed examination and certification guidelines for five levels of prehospital care providers. The EMR, EMT, Advanced EMT, Intermediate and Paramedic levels conform to nationally established Department of Transportation (DOT) training standards.


With passage of revised EMS regulations in 2003, the state requires providers of initial Intermediate and Paramedic courses to be accredited training sites. Accreditation follows a detailed application and site review process, with guidelines to ensure adequate educational resources to provide a high quality of advanced level training. Coordinators of these programs must receive additional training as ALS Course Coordinators and be pre-approved by the region.

First Responder, EMT, EMT-Enhanced, EMT-Intermediate classes are conducted throughout the region as needed by the community college, EMS agencies, fire departments or other public and private groups and individuals.

Testing of students who complete initial state certification courses (and for others who are recertifying, re-entering the system or challenging state certification with national or another state’s certification) is coordinated by the council under a contract with the Office of EMS. Known as “consolidated testing”, large test sites are scheduled by the council in coordination with the Office of EMS test site examiners and test site coordinators throughout the region. Site coordination involves the arrangement and preparation of test facilities, evaluators and “victims”; promotion of test dates; student registration; staffing test sites. Office of EMS examiners officiate at the sites. Typically, 12-16 consolidated tests are scheduled annually throughout the region. Those who evaluate candidates during testing are trained by the council, and retrained periodically, in standardized evaluation techniques consistent with state guidelines.

The state requires recertification of all EMS training levels at certain intervals: EMR and EMT, every 4 years; Advanced EMT, Intermediate and Paramedic, every 3 years; and EMS Education Coordinator and ALS Coordinator, every 2 years. Individual agencies have traditionally assumed the responsibility of providing refresher and required continuing education topics. The council also sponsors monthly continuing education courses consistent with Category 1 continuing education requirements of basic and advanced levels.

Full refresher courses are offered by the Tidewater Community College, the Center for EMS Training and Norfolk Fire Rescue. Other continuing education programs, such as various rescue (e.g. vehicle extrication, emergency vehicle operation, etc.) and medical courses (e.g. Basic Trauma Life Support, Advanced Cardiac Life Support, Pediatric Advanced Life Support, etc.) are offered by a variety of organizations and institutions, including the council, on a regular basis.

The council publicizes available continuing education opportunities on its web site, through direct mailings, listserv postings and during various committee meetings. The council also coordinates a range of specialty courses not typically offered by the local agencies or educational institutions (e.g. Infection Control Officer courses, moulage courses, mass casualty management courses, CISM) on an as-needed basis. The state Office of EMS conducts annual EMT Instructor/ALS Coordinator renewal workshops, promoted by the EMS council.
References

Code of Virginia

§ 32.1-111.3. Statewide Emergency Medical Care System (Section A.11, A.12, B.1, B.2)

A. The Board of Health shall develop a comprehensive, coordinated, emergency medical care system in the Commonwealth and prepare a Statewide Emergency Medical Services Plan which shall incorporate, but not be limited to, the plans prepared by the regional emergency medical services councils. The Board shall review, update, and publish the Plan triennially, making such revisions as may be necessary to improve the effectiveness and efficiency of the Commonwealth’s emergency medical care system. Publishing through electronic means and posting on the Department website shall satisfy the publication requirement. The objectives of such Plan and the system shall include, but not be limited to, the following:

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

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

B. The Board of Health shall also develop and maintain as a component of the Emergency Medical Services Plan a statewide prehospital and inter-hospital Trauma Triage Plan designed to promote rapid access for pediatric and adult trauma patients to appropriate, organized trauma care through the publication and regular updating of information on resources for trauma care and generally accepted criteria for trauma triage and appropriate transfer. The Trauma Triage Plan shall include:

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

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


Any licensed physician, licensed health care provider, or licensed health care facility may disclose to an emergency medical services provider, emergency medical services physician, or their licensed parent agency the medical records of a sick or injured person to whom such emergency medical services provider or emergency medical services physician is providing or has rendered emergency medical care for the purpose of promoting the medical education of the specific person who provided such care or for quality improvement initiatives of their agency or of the EMS system as a whole. Any emergency medical services provider or emergency medical services physician to whom such confidential records are disclosed shall not further disclose such information to any persons not entitled to receive that information in accordance with the provisions of this section.
§ 32.1-116.2. Confidential nature of information supplied; publication; liability protections.

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

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

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

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

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

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

EMS Regulation

12 VAC 5-31-390. Destination/trauma triage.

An EMS agency shall participate in the Regional Trauma Triage Plan established in accordance with § 32.1-111.3 of the Code of Virginia.

Tidewater Regional Trauma Triage Performance Improvement Referral

Purpose: The purpose of this referral is to improve the performance and efficiency of trauma care in the Tidewater region. This form is intended for positive and negative comments regarding incidents in the Tidewater region. The intent of this form is to identify “system” issues. Information obtained will be used by the Trauma Triage Performance Improvement Committee to identify and offer solutions to improve the trauma system with the goal being improved patient care. The form can be found online at https://www.tidewaterems.org/online-forms/tems-online-pi-form All information obtained through this process will remain confidential.
APPENDIX J

HRMMRS

CBRNE & HAZMAT

PROTOCOLS

2016 Edits
Reviewed by Kirk Cumpston, D.O., FACEP, FACMT
Associate Professor, Division of Clinical Toxicology
Medical Director, Virginia Poison Center
Contents

The following Protocols and Procedures are included:

**CBRNE Protocols**

- Chemical Agent
  - Blister Agent
  - Choking Agent
  - Nerve Agent
  - Riot Control Agent

- Biological Agent
- Radiological Agent
- Nuclear
- Explosives

**HAZMAT Protocols**

- General Protocol for Haz-Mat Medical Care
  - Asphyxiant Toxidrome
  - Cholinergic Toxidrome
  - Hydrofluoric Acid Toxidrome
  - Phenol (Carbolic Acid) Toxidrome
  - Respiratory Irritant Toxidrome

- Procedures
  - Calcium Gluconate Paste Procedure
  - Ocular Decontamination Procedure
  - Preemptive Vascular Access Procedure

- Hampton Roads Haz-Mat Drug Box and Haz-Mat Support Box Contents
- HRMMRS Nerve Agent Antidote Kit (Duodote)
- Hampton Roads Haz-Mat Medications
- Hampton Roads Haz-Mat/WMD Victim Decontamination Guide
Scene Safe and Secure?

Yes

Use Incident Command

Consider need for Decontamination (agent dependant)
- Use Decontamination Guide

No

Patient Decontaminated

Yes

* Treat patient in cold zone

Suspected Chemical Agent?

Exit to CBRNE Blister Agents Protocol

Exit to CBRNE Choking Agents Protocol

Exit to CBRNE Nerve Agents Protocol

Suspected Biological Agent?

Exit to CBRNE Biological Agent Protocol

Suspected Radiation?

Exit to CBRNE Radiological Dispersal Device (RDD) Protocol

Suspected Nuclear Radiation?

Exit to CBRNE Nuclear (IND) Protocol

Explosion

Exit to CBRNE Explosives Protocol

*Treatment may be required in the Hot Zone in the event of Nerve Agents and Cyanide.

- Stage a safe distance from the incident
- Notify Fire Service
Blister

Objectives:

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

General Information:

- **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 irritant 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 a 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

- **Warnings/Alerts:**
  - 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

OMD Notes:

- 

References:


**Performance Indicators:**

Signs and Symptoms indicating exposure
Vital Signs
Treatment and Response to Treatment
Suspected Blister Agent Exposure?

- No → Exit to appropriate protocol
- Yes → Decontamination Required

Decontamination Required

- Treatment per Airway/Oxygenation/Ventilation Protocol

  - Albuterol (Proventil, Ventolin) 2.5mg HNH

  - If no improvement or if severe distress
    - Albuterol (Proventil, Ventolin) 2.5mg HNH
    - Atrovent (Ipatroplum Bromide) 0.5mg HNH

Chemical Burns > 10% BSA

- Yes → Refer to Burn protocol
- No → Implement Vascular Access protocol as needed

  - Apply EKG Monitor

  - Contact Med Control

  - Transport to most appropriate facility
Choking Agents

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

General Information:
- **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
    - Atrovent and Lasix administration ARE INAPPROPRIATE in this protocol
  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

- **Resource**
  a) Poison Control Center - 1 (800) 222-1222

**Warnings/Alerts:**
- 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

**OMD Notes:**

**References:**

**Performance Indicators:**
- Signs and Symptoms indicating exposure
- Vital Signs
- Treatment and Response to Treatment
Exposure to Choking Agent?

No → Exit to appropriate protocol

Yes → Consider Decontamination

→ Treatment per Airway/Oxygenation/Ventilation Protocol

→ Albuterol 2.5 mg HHN

→ Implement Vascular Access protocol as needed

→ Confirmed Chlorine Exposure?

Yes → 4 ml of 4.2% solution Sodium Bicarbonate via HHN (Mix 2ml 8.4% Sodium Bicarbonate + 2ml Normal Saline)

No → Apply EKG Monitor

→ Contact Med Control

→ [Continuous Albuterol 2.5 mg HHN]

→ Contact Med Control and Transport
Nerve Agent (Adult)

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

General Information:
- **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, defection, 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

Warnings/Alerts:
- 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

OMD Notes:
- □

References:

Performance Indicators:
- Signs and Symptoms indicating exposure
- Vital Signs
- Treatment and Response to Treatment
Exposed to a Nerve Agent with constricted pupils and loss of muscle tone?

Yes

(1) Mark 1 Kit or (1) DuoDote

Decontaminate – Not required prior to administration of antidotes

No

Treatment per Airway/Oxygenation/Ventilation Protocol

Persistent weakness, secretions, and respiratory distress?

Yes

(1) Mark 1 Kit or (1) DuoDote

Persistent weakness, secretions, and respiratory distress?

No

Contact Med Control and Transport

Yes

Contact Med Control and Transport

Persistent Symptoms?

No

Implement Vascular Access protocol as needed

Atropine 2mg (5.0 ml) IV/IO every 2-5 minutes until symptoms resolve

Diazepam (Valium) 10 mg (2 ml) IM/IV/IO every 10 minutes if seizures persist

No

Exit to appropriate protocol
Nerve Agent (Pediatric)

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

General Information:
- **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.)
- **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)**

Warnings/Alerts:
- 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

OMD Notes:
- 

References:
- 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

Performance Indicators:
- Signs and Symptoms indicating exposure
- Vital Signs
- Treatment and Response to Treatment
CBRNE – Nerve Agent Pediatric

Exposure to a Nerve Agent with constricted pupils and/or loss of muscle tone?

Yes

(1) Mark I Kit Of (1) DuoDote

Decontaminate – Not required prior to administration of antidotes

Treatment per Airway/Oxygenation/Ventilation Protocol

Implement Vascular Access protocol as needed

Persistent weakness, secretions And Respiratory distress?

No

Contact Med Control and Transport

Yes

Birth – 2 yrs (1-13 kg)

Atropine 0.5 mg (1.2 ml) IM/IV/IO every 2-5 minutes Until symptoms resolve

Diazepam (Valium) 2 mg (0.4 ml) IM/IV/IO

Contact Med Control and Transport

3 – 7 yrs (13-25 kg)

Atropine 1 mg (2.5 ml) IM/IV/IO every 2-5 minutes Until symptoms resolve

Diazepam (Valium) 4 mg (0.8 ml) IM/IV/IO

8 – 14 yrs (26-55 kg)

(1) Mark I Kit Of (1) DuoDote

Persistent symptoms?

No

Yes

Atropine 1 mg (2.5 ml) IM/IV/IO every 2-5 minutes Until symptoms resolve

Diazepam (Valium) 6 mg (1.2 ml) IM/IV/IO

Once a CHEMPACK IS ACCESSED Pediatric Atropens are available:
AtroPen 0.5 mg (blue)
AtroPen 1 mg (dark red)
Riot Control Agents

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

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 Chlorobenzalmalononitrile 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

Warnings/Alerts:
- 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 Chlorobenzalmalononitrile (CS) to form a combination that is more irritating to the skin than CS alone.

OMD Notes:

References:

Performance Indicators:
Signs and Symptoms indicating exposure
Vital Signs
Treatment and Response to Treatment
Exposure to Riot Control Agent?  

- No → Exit to appropriate protocol
- Yes → Treatment per Airway/Oxygenation/Ventilation Protocol
  
  - Copious Irrigation
  
  - Consider neutralizing agents*
    
    - Wheezing?  
      - No → Imply Vascular Access protocol as needed
        
        - Apply EKG Monitor
          
          - Solu-Medrol 125 mg IV
            
            - Continuous Albuterol 2.5 mg HHN
              
              - Contact Med Control and Transport
                
                - No → Albuterol 2.5 mg HHN
                  
                  - Yes → Implement Vascular Access protocol as needed
                    
                    - EKG Monitor
                      
                      - Solu-Medrol 125 mg IV
                        
                        - Continuous Albuterol 2.5 mg HHN
                          
                          - Contact Med Control and Transport

*The use of commercially available decontamination wipes for OC and most CS/CN exposures can provide a means of neutralization.
Biological Agents

Objectives:

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

General Information:

- **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 multi-organ failure and death within 3 days.

**Warnings/Alerts:**

- 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.

OMD Notes:

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

**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.

**Performance Indicators:**

- Signs and Symptoms indicating exposure
- Vital Signs
- Treatment Response to Treatment
Suspected Biological Exposure

Yes

Consider decontamination (Use Decontamination Guide)

*Treatment per Airway/Oxygenation/Ventilation Protocol

If Patient presents with flu-like symptoms, place surgical mask on patient

Notify Medical Control of Suspected Biological Exposure

Transport

No

Exit to appropriate protocol

*Refer to jurisdictional guidelines for specific disease guidance.
Radiological

Objectives:
- 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

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.

Warnings/Alerts:
- 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 health care providers

OMD Notes:

References:

Performance Indicators:
Signs and Symptoms indicating exposure
Vital Signs
Treatment and Response to Treatment
Radiation detected or suspected from and RDD*

No → Exit to appropriate protocol

Yes → Treatment per Airway/Oxygenation/Ventilation Protocol

Life Threatening injury/illness?

No → Contaminated?

Yes → Decontaminate

No → Treat without regard for contamination

Contact Med Control and Transport

Yes → Implement appropriate protocol
Nuclear

Objectives:
- Early recognition and appropriate intervention of patients injured following a nuclear event.
- Protect responders from inhalational exposure to radioisotopes during patient care

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.

Warnings/Alerts:
- 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)

OMD Notes:
- 

References:
- Department of Health and Human Services, Center for Disease Control and Prevention, Potassium Iodide Fact Sheet, February, 2006

Performance Indicators:
Signs and Symptoms indicating exposure
Vital Signs
Treatment and Response to Treatment
CBRNE – Nuclear

Exposure to radioactive iodine from nuclear power accident, nuclear detonation, or IND*?

- Yes
  - Life threatening Injury/illness?
    - Yes
      - Treat without regard for contamination
    - No
      - Contaminated?
        - Yes
          - Decontaminate
        - No
          - Exit to appropriate protocol

- No
  - Exit to appropriate protocol

Treatment per Airway/Oxygenation/Ventilation Protocol

Implement appropriate protocols as needed

Potassium Iodide tablet 130 mg each P.O. Only

<table>
<thead>
<tr>
<th>Birth – 1 mo (1-5 kg)</th>
<th>1 mo – 3 yrs (6-7 kg)</th>
<th>4 – 17 yrs (8 – 70 kg)</th>
<th>&gt; 18 yrs (&gt;70 kg)</th>
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<tbody>
<tr>
<td>N/A</td>
<td>¼ tablet 32.5 mg</td>
<td>½ tablet 65 mg</td>
<td>1 tablet 130 mg</td>
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</table>

*Improvised Nuclear Device

Yes

No

Contact Med Control and Transport
Explosives

Objectives:

- 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.

Warnings/Alerts:

- Responder 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.

OMD Notes:

- Early recognition and appropriate intervention of patients exposed to explosives.
- Protect responders from secondary exposure to explosives during patient care

References:

Adapted from:

Performance Indicators:
Priority of interventions appropriate.
Response to treatment noted
Suspected Explosive Exposure

- **Massive Hemorrhage (M)**
  - Direct Pressure (Use knee if needed)
    - Tourniquet(s)
    - Expose Wound
    - Wound Packing (Hemostatic Gauze)
    - Pressure Dressing

- **Airway (A)**
  - Roll on Side
  - Nasopharyngeal Airway

- **Respirations (R)**
  - Assess Chest – Rise and Fall
  - Oxygen to 94-98% SPO2

- **Circulation (C)**
  - Peripheral Pulse?
    - Implement Vascular Access protocol as needed
    - Normal Saline Solution until Peripheral Pulse is present
  - Head Injury (H1)
    - Monitor/Record level of consciousness

- **Head Injury (H1)**
  - Hypothermia (H2)
    - Hypothermic Wrap (Mylar Blanket)
    - Do Not Hypervenolate

- **Massive Hemorrhage (M)**
  - Direct Pressure (Use knee if needed)

- **Head Injury (H1)**
  - Hypothermia (H2)
    - Hypothermic Wrap (Mylar Blanket)
    - Do Not Hypervenolate

- **Suspected Explosive Exposure**
  - Exit to appropriate protocol

- **Transport to Appropriate Facility per Trauma Triage Criteria**

- **Occlusive Dressing for wounds – Neck to Navel**
  - Normal Saline Solution until Peripheral Pulse is present
  - Needle Decompression
Scene Safe and Secure?

- Stage a safe distance from the incident
- Notify Fire Service

Yes

Use Incident Command

Consider need for Decontamination (agent dependant)
- Use Decontamination Guide

No

Patient Decontaminated

Yes

*Treat patient in cold zone

Suspected Asphyxiant Agent?
- Exit to Asphyxiant Toxidrome

Suspected Cholinergic Agent?
- Exit to Cholinergic Toxidrome

Suspected Hydrofluoric Acid?
- Exit to Hydrofluoric Acid Toxidrome

Suspected Phenol?
- Exit to Phenol Toxidrome

Suspected Respiratory Irritant?
- Exit to Respiratory Irritant Toxidrome

*Treatment may be required in the Hot Zone in the event of Nerve Agents and Cyanide.
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 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

Objectives:
• Early recognition and appropriate intervention of patients poisoned with asphyxiants
• Protect responders from secondary exposure to asphyxiants during patient care

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

Warnings/Alerts:
• 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

OMD Notes:

References:
WebWISER Version: Web Application: 4.5.154; Web Services: 4.5.70; Database: 4.6.3

Performance Indicators:
Signs and Symptoms indicating exposure to asphyxiant
Vital Signs
Treatment and Response to Treatment
Asphyxiant Toxidrome

Exposure to Asphyxiant

Yes

Consider Decontamination Only if Gross Visible Contamination Present (See Decontamination Guide)

Treatment per the Airway/Oxygenation/Ventilation Protocol

Notify Nearest Hospital ED ASAP if More Than One Patient

EKG Monitor

Implement Vascular Access protocol as needed

Hydrogen Sulfide

Amyl Nitrate Inhaler (Before IV/IO Access)

Yes

SpCO >10% smoker

>5% non-smoker

*Administer high flow oxygen regardless of pulse oximetry

3% Sodium Nitrate 300 mg IV over 2-5 minutes

No

Carbon Monoxide

SpCO >10% smoker

>5% non-smoker

*Administer high flow oxygen regardless of pulse oximetry

Cyanide

Concomitant Carbon Monoxide Exposure

No (Optional)

Hydrococobalamin (Cyanokit)

Adult - 5 Grams IV/IO over 15 minutes

Sodium Thiosulfate Adult - 12.5 Grams in Separate IV Line

Persistant Seizures?

2 mg Ativan IV/IM/IO

Contact Med Control and Transport

Methemoglobin

SpMET >20% healthy

>10% w/cardiac disease

Yes

*Administer high flow oxygen regardless of pulse oximetry

1% Methylene Blue 1-2 mg/kg up to 7 mg/kg

No

*Consider transport to a hyperbaric facility
Cholinergic Toxidrome

Objectives:

- Early recognition and appropriate intervention of patients poisoned with Cholinergic toxin
- Protect responders from secondary exposure to cholinergic toxin during patient care

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)

- Variations of Nerve Agents
  - 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.)

**Warnings/Alerts:**

- 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

OMD Notes:

References:

  - WebWISER Version: Web Application: 4.5 .154; Web Services: 4.5 .70; Database: 4.6.3
  

Performance Indicators:

- Signs and Symptoms indicating exposure to cholinergic toxins
- Vital Signs
- Treatment and Response to Treatment
Cholinergic Toxidrome

Exit to Appropriate Protocol

- Exposed to a Cholinergic Toxin With Constricted Pupils and Loss of Muscle Tone?
  - Yes
    - Decontamination (See Decontamination Guide)
    - Notify Closest Hospital ASAP if More Than One Potential Patient
    - Single Mark I Kit or Duodote Autoinjector, If Available
    - Treatment per the Airway/Oxygenation/Ventilation Protocol
    - Atropine 2 mg (Concentration Dependant on Packaging) IM/IV/IO
    - Persistent Weakness, Secretions and Respiratory Distress
      - Yes
        - Implement Vascular Access protocol as needed
        - Atropine 2 mg (Concentration Dependant on Packaging) IM/IV/IO
        - Diazepam (Valium) 10 mg IM/IV/IO
        - Lorazepam (Ativan) 2 mg IM/IV/IO every 5 min up to 8 mg total
        - Altered LOC (Including Seizures)
          - Yes
            - EKG Monitor
            - Contact Medical Control and Transport
          - No
            - Repeat Atropine 2 mg IM/IV/IO every 5 min until ease of ventilation or significant reduction in secretions AND Pralidoxime Chloride 600mg IM/IV/IO up to a Total Dose of 1800 mg given pre-hospital
            - Up to 3 Total Mark I Kits or DuoDote Autoinjectors And Additional 2mg Atropine until ease of ventilation or significant reduction in secretions
      - No
        - Or
          - Repeat Atropine 2 mg IM/IV/IO every 5 min until ease of ventilation or significant reduction in secretions AND Pralidoxime Chloride 600mg IM/IV/IO up to a Total Dose of 1800 mg given pre-hospital
          - Up to 3 Total Mark I Kits or DuoDote Autoinjectors And Additional 2mg Atropine until ease of ventilation or significant reduction in secretions
    - No
      - Or
        - Atropine 2 mg (Concentration Dependant on Packaging) IM/IV/IO
        - Single Mark I Kit or Duodote Autoinjector, If Available
        - Altered LOC (Including Seizures)
          - Yes
            - EKG Monitor
            - Contact Medical Control and Transport
          - No
            - Repeat Atropine 2 mg IM/IV/IO every 5 min until ease of ventilation or significant reduction in secretions AND Pralidoxime Chloride 600mg IM/IV/IO up to a Total Dose of 1800 mg given pre-hospital
            - Up to 3 Total Mark I Kits or DuoDote Autoinjectors And Additional 2mg Atropine until ease of ventilation or significant reduction in secretions
  - No
    - Potential Exposure without Clinical Signs Listed
      - Monitor for Developing Symptoms
      - Contact Medical Control and Transport

See Drug Cards For Pediatric Dosages
Hydrofluoric Acid Toxidrome

Objectives:
• Early recognition and appropriate intervention of patients poisoned with Hydrofluoric Acid
• Protect responders from secondary exposure to Hydrofluoric Acid during patient care

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 mucosal irritation, dyspnea, cough and wheezing.
  d) Severe exposure:
    i) Dermal - Tissue destruction or necrosis may be caused by dermal exposures 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.

Warnings/Alerts:
• 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

OMD Notes:

References:

Performance Indicators:
Signs and Symptoms indicating exposure to Hydrofluoric Acid
Vital Signs
Treatment and Response to Treatment
Exposed to Hydrofluoric Acid

- Decontamination
  (See Decontamination Protocol)
- Notify the Closest Hospital ASAP if More Than One Potential Patient
- Treatment per the Airway/Oxygenation/Ventilation Protocol
- Implement Vascular Access protocol as needed

Inhalation Exposure

Mild to Moderate
- 2.5 mg Albuterol HHN
- Calcium Gluconate 10% Solution 2 mL plus 2 mL Sterile H2O via HHN
- Severe
- EKG Monitor
- Hypocalcemia Indicated by EKG Changes (i.e., Prolonged Q-T) or Cardiac Arrest
  - Calcium Gluconate 0.1-0.2 mL/kg
  - Up to a 10 mL (1 Gram)
  - May repeat if needed
- Consider Calcium Chloride 10% 500 mg (5mL) IV/IO

Eye Exposure

Ocular Decontamination
(See Ocular Decontamination Procedure)

Dermal Exposure

Mild to Moderate
- Topical Calcium Gluconate (See Procedure for Compounding)
- Severe
- EKG Monitor
- Hypocalcemia Indicated by EKG Changes (i.e., Prolonged Q-T) or Cardiac Arrest
  - Calcium Gluconate 0.1-0.2 mL/kg
  - Up to a 10 mL (1 Gram)
  - May repeat if needed
- Consider Calcium Chloride 10% 500 mg (5mL) IV/IO

Exit to Appropriate Protocol

Contact Med Control and Transport
Phenol (Carbolic Acid) Toxidrome

Objectives:
- Early recognition and appropriate intervention of patients poisoned with Phenol
- Protect responders from secondary exposure to Phenol during patient care

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.

Warnings/Alerts:
- Victims whose skin or clothing is contaminated with Phenol can contaminate rescuers by direct contact or through off-gassing vapor

OMD Notes:

References

Performance Indicators:
Signs and Symptoms indicating exposure to phenol
Vital Signs
Treatment and Response to Treatment
Exposed to Phenol

Decontamination with Soapy Water and/or Isopropyl Alcohol

Treatment per the Airway/Oxygenation/Ventilation Protocol

Notify Nearest Hospital ASAP if more than One Potential Patient

EKG Monitor

Implement Vascular Access protocol as needed

Dermal Exposure

Mild to Moderate (Phenol Burns <5% TBSA)

Use Isopropyl Alcohol for Initial Decontamination

Severe (Phenol Burns >5% TBSA)

Rapid Decontamination with Copious Amounts of Soapy Water

Eye Exposure

Ocular Decontamination (See Ocular Decontamination Procedure)

Inhalation

Supportive Treatment

Seizures?

Yes

Dysrhythmias?

Yes

Methemoglobinemia?

No

See Drug Cards For Pediatric Dosages

Exit to Appropriate Protocol

Contact Med Control and Transport

Exit to Appropriate Protocol

Contact Med Control and Transport
Respiratory Irritant

Objectives:
- Early recognition and appropriate intervention of patients poisoned with respiratory irritants.
- Protect responders from secondary exposure to respiratory irritants during patient care

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

Warnings/Alerts:
- 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

OMD Notes:

References:

Performance Indicators:
Signs and Symptoms indicating exposure to respiratory irritant
Vital Signs
Treatment and Response to Treatment
Confirmed Chlorine Exposure?

Consider Decontamination
(See Decontamination Protocol)

Treatment per the Airway/Oxygenation/
Ventilation Protocol

Notify Closest Hospital if More Than
One Potential Patient

2.5 mg Albuterol HHN IF
Wheeze and/or Stridor Present

4 mL 4.2% Solution
Sodium Bicarbonate HHN
(2mL 8.4% Sodium Bicarbonate +
2 mL Normal Saline)

Confirmed Chlorine Exposure?

Non Cardiogenic Pulmonary
Edema?

Persistent Cough After HHN
Treatment?

CPAP

EKG Monitor

Continuous
Albuterol 2.5mg doses HHN

Contact Med
Control and
Transport

Go to Appropriate
Protocol

Exposed to Listed Irritant

Yes

No

Consider
Lidocaine 2% 40 mg
(2 mL) via HHN

Implement Vascular
Access protocol as
needed

Yes

No

See Drug Cards For Pediatric
Dosages
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:
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)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Concentration</th>
<th>Amount</th>
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<tbody>
<tr>
<td>ALBUTEROL INH</td>
<td>0.83 mg/ml</td>
<td>2 packs w/ five 3 ml vials</td>
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<tr>
<td>AMYL NITRITE INH</td>
<td></td>
<td>2 boxes w/ 12 inhalants</td>
</tr>
<tr>
<td>ATROPINE LJT</td>
<td>0.4 mg/ml</td>
<td>10 vials w/ 20 ml</td>
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<tr>
<td>CALCIUM GLUCONATE</td>
<td>3 grams per bottle</td>
<td>3 bottles/powder</td>
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<tr>
<td>CALCIUM GLUCONATE 10%</td>
<td>10ml vial</td>
<td>5 vials IV Solution</td>
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<tr>
<td>CYANOKIT</td>
<td>5 gram vial</td>
<td>1 vials</td>
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<td>EYE WASH</td>
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<td>2 bottles</td>
</tr>
<tr>
<td>KY JELLY</td>
<td>2 oz per bottle</td>
<td>3 bottles</td>
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<tr>
<td>METHYLENE BLUE</td>
<td>1%</td>
<td>3 vials w/ 10 ml</td>
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<tr>
<td>TETRACAINE</td>
<td>0.50%</td>
<td>2 bottles w/ 15 ml</td>
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<tr>
<td>SOD BICARB</td>
<td>8.40%</td>
<td>4 luer-jets w/ 50 ml</td>
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<tr>
<td>SOD NITRITE</td>
<td>30 mg/ml</td>
<td>4 10 ml vials in 2 boxes</td>
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<tr>
<td>SOD THIOSUL</td>
<td>25% (250 mg/ml)</td>
<td>2 boxes w/ 50 ml</td>
</tr>
<tr>
<td>LIDOCAINE 1%</td>
<td>10mg/ml</td>
<td>50ml vial</td>
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# Haz-Mat Medical Support Box

## CONTENTS

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<th>Top Tray</th>
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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 incident.
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 (June 2015)

<table>
<thead>
<tr>
<th>Southside Agencies/Hospitals</th>
<th>DuoDote Boxes</th>
<th>Peninsula Agencies/Hospitals</th>
<th>DuoDote Boxes</th>
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<td>Franklin</td>
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<td>Surry County</td>
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<td>Virginia Beach</td>
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<td>Bon Secours DePaul Medical Center</td>
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<td>Riverside Walter Reed Hospital</td>
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<td>Sentara Leigh Hospital</td>
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<th>Southside Agencies</th>
<th>WMD Boxes</th>
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<td>Chesapeake Hazmat (orange box w/50)</td>
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<td>Norfolk Hazmat (orange box w/50)</td>
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<td>HRMMST Equipment Cache – Southside (Norfolk) (orange box w/50)</td>
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<td>HRMMST Equipment Cache – Peninsula (York) (orange box w/50)</td>
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<tr>
<td>Portsmouth Hazmat (orange box w/50)</td>
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<td>Virginia Beach Hazmat (orange box w/50)</td>
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<td><strong>Total</strong></td>
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MEDICATIONS
Albuterol

• **MAJOR ACTIONS**
  o Relaxation of bronchial smooth muscle by stimulating beta_2_-adrenergic receptors.
  o May cause some vasodilation.

• **INDICATIONS**
  o Toxic exposure accompanied by bronchospasm (e.g. wheezing).
  o Reversible bronchospasm.
  o Asthma
    o Bronchospasm that occurs in association with bronchitis and emphysema.

• **DOSAGE**
  o 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).
  o 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**
  o Administer with caution in patients with hypertension, hyperthyroidism, renal insufficiency, hepatic insufficiency, or sensitivity to sympathomimetic amines.
  o May cause tachycardia, hypertension, palpitations, nervousness, tremor, nausea, vomiting, muscle cramps, hypotension and hypokalemia, and hyperglycemia.
  o May cause paradoxical bronchospasm as a result of repeated excessive use.
  o Store in light-resistant containers.

• **HOW SUPPLIED**
  o 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-mediated neuromuscular junctions.
  - Increases heart rate by blocking vagal stimulation.
  - Increases 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).
  - Atropen – 2mg/0.7ml autoinjector
  - Atropen – 1mg autoinjector (CHEMPACK)
  - Atropen – 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 12.5 g 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
Hydroxocobalamin (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 Hydroxocobalamin**

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 25 mg/ml

<table>
<thead>
<tr>
<th>Weight in kg / lbs</th>
<th>Amount in mg</th>
<th>Volume in ml</th>
<th>Infusion method of choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 kg / 4.4 lbs</td>
<td>140 mg</td>
<td>5.6 ml</td>
<td>Syringe Pump</td>
</tr>
<tr>
<td>3 kg / 6.6 lbs</td>
<td>210 mg</td>
<td>8.4 ml</td>
<td>Syringe Pump</td>
</tr>
<tr>
<td>4 kg / 8.8 lbs</td>
<td>280 mg</td>
<td>11.2 ml</td>
<td>Syringe Pump</td>
</tr>
<tr>
<td>5 kg / 11 lbs</td>
<td>350 mg</td>
<td>14 ml</td>
<td>Syringe Pump</td>
</tr>
<tr>
<td>10 kg / 22 lbs</td>
<td>700 mg</td>
<td>28 ml</td>
<td>Syringe Pump</td>
</tr>
<tr>
<td>15 kg / 33 lbs</td>
<td>1050 mg</td>
<td>42 ml</td>
<td>Syringe Pump</td>
</tr>
<tr>
<td>20 kg / 44 lbs</td>
<td>1400 mg (1.4 gm)</td>
<td>56 ml</td>
<td>Syringe Pump</td>
</tr>
<tr>
<td>25 kg / 55 lbs</td>
<td>1750 mg (1.8 gm)</td>
<td>70 ml</td>
<td>Withdraw 30 ml infuse the remaining 70 ml from vial</td>
</tr>
<tr>
<td>30 kg / 66 lbs</td>
<td>2100 mg (2.1 gm)</td>
<td>84 ml</td>
<td>Withdraw 16 ml infuse the remaining 84 ml from vial</td>
</tr>
<tr>
<td>35 kg / 77 lbs</td>
<td>2450 mg (2.5 gm)</td>
<td>98 ml</td>
<td>Infuse 1 entire vial</td>
</tr>
<tr>
<td>40 kg / 88 lbs</td>
<td>2800 mg (2.8 gm)</td>
<td>112 ml</td>
<td>Infuse 1 entire vial + 12 ml</td>
</tr>
<tr>
<td>45 kg / 99 lbs</td>
<td>3150 mg (3.2 gm)</td>
<td>126 ml</td>
<td>Infuse 1 entire vial + 26 ml</td>
</tr>
<tr>
<td>50 kg / 110 lbs</td>
<td>3500 mg (3.5 gm)</td>
<td>140 ml</td>
<td>Infuse 1 entire vial + 40 ml</td>
</tr>
</tbody>
</table>
Methylene Blue 1%

• MAJOR ACTIONS
  o Methylene blue is a thiazine dye.
  o Two opposite actions on hemoglobin:
    o Low doses of methylene blue reduce methemoglobin to hemoglobin.
    o 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
  o Poisoning causing methemoglobinemia greater than 30%.
  o Methemoglobinemia with signs/symptoms of hypoxia.

• DOSAGE
  o 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.
  o Pediatric: Same as adult.

• PRECAUTIONS
  o Must be injected slowly over a period of 5 minutes to prevent local high concentration of the compound from producing additional methemoglobin.
  o Do not exceed recommended dosage.
  o Large doses may produce nausea, chest and abdominal pain, dizziness, headache, profuse sweating, mental confusion, and the formation of methemoglobin.
  o Tissue infiltration may cause neurotic abscesses.
  o Contraindicated in patients with glucose-6-phosphate deficiency (G6PD).
  o Provides reversible oxidation-reduction by red blood cell methemoglobin reductase to its colorless form, leukomethylene blue. Leukomethylene blue reduces methemoglobin to hemoglobin. Reaction may go both ways.
  o Gives urine, feces, and glandular secretions blue-green color.
  o May stain skin.
  o Relative Contraindications renal impairment

• HOW SUPPLIED
  o 10-mg/1 ml ampule.
  o 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 1 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:**
  - Bradycardia
  - Hypotension
  - Dizziness
  - Numbness
  - Drowsiness
  - Confusion
  - Seizure

- **HOW SUPPLIED**
  - Lidocaine HCL 1% -10mg/ml – 20ml vial
Hampton Roads
Haz-Mat/WMD Victim
Decontamination Guide
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

☐ Determines what additional resources are needed on scene
  - See resources below
☐ Determines wind direction and establish safe area for decontamination set up.
☐ Determines 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
  - York ECC
  - Norfolk ECC
- Virginia Haz-Mat Officer/VEOC 1-800-674-2400
- Poison Control 1-800-222-1222

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 number/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).
Mass Decontamination Process

1. Victims evacuated from Hot Zone and directed to safe refuge.
2. Perform scene 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.

Temperature Decontamination Guide

- COLD ZONE
- WARM ZONE
- HOT ZONE

Generic Guidelines for Unknown Contaminates

- Known Agent
- Unknown Agent
- Solid, Biological or Radiological Particles
- Liquid
- Gas
- Unknown or Combination

DECONIMATION DEFINITIONS

- Mass (casualty) Decontamination—Decontamination of a large number of people, is the event of contamination by a harmful substance.
- Secondary Decontamination with Confirmation—Through removal of contamination, usually manually by responders, followed by a controlled survey with detection equipment.
- Emergency Decontamination—The urgent removal of contamination from First Responders and/or First Responders following incident contamination during initial response. Usually involves the first available high volume/low pressure clean water spray (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 may be used to describe the "Virginia 9-site" decontamination system.

COLD WEATHER DECONIMATION (<65°F) CHECK LIST

- Conduct some form of decontamination regardless of temperature conditions.
- Remove clothing outdoors.
- If victims are outdoors in very low temperatures (<36°F), use a dry method of decontamination (e.g., 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/scopy water high-volume, low pressure water shower and to mitigate the effects of cold weather.
- Physically identify decontaminated victims with purple armband.

Position two trucks parallel to each other approximately 25 feet apart.

Position Ladder-Pipe truck if available.

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.
Appendix K
TEMS
MEDICATION
INFORMATION
Adenosine (Adenocard)

A chemical hyperpolarization agent and diagnostic aid for Narrow-Complex Tachycardias

Narrow-Complex Tachycardia

6 mg/2 mL vial × 3 (Drug Box)

- 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)
- Fast rhythms of the heart that are confined to the atria (e.g., atrial fibrillation, atrial flutter) or ventricles (e.g., monomorphic ventricular tachycardia) and do not involve the AV node as part of the re-entrant circuit are not typically converted
  - ventricular response rate is temporarily slowed with adenosine in such cases and may be of use as diagnostic aid
- 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
- Will not affect atrial fibrillation, atrial flutter or ventricular tachycardia

Indications for use

- Symptomatic Paroxysmal Supraventricular Tachycardia

Contraindications for use

- Second or third degree A-V 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 hyper sensitivity 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, if desired effect not obtained within 1-2 minutes, then consider repeat dosage of 12 mg
- Pediatric dosage - initial dosage 0.1 mg/kg rapid IV push with 10 ml NS flush, if desired effect is not obtained within 1-2 minutes then consider 0.2 mg/kg not to exceed 12 mg
Albuterol Sulfate (Proventil)
A sympathomimetic for bronchial dilation or potassium transport agent in Crush Allergic/Anaphylactic Reaction, Difficulty Breathing, Crush Syndrome, Dialysis-Renal Failure

2.5 mg bullet × 6 (3 Drug Box and 3 IV Box)

- Albuterol produces bronchodilation by relaxing bronchial smooth muscle through beta-2 receptor stimulation. In addition, it can help drive potassium back in to cells afflicted by Crush Syndrome injuries, combating hyperkalemia-associated complications
- For severe distress and/or breathing difficulty which has not responded to home treatments, a cocktail of 2.5 mg Albuterol and 0.5 mg Atrovent may be a more appropriate first-line treatment
- May commonly 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, status asthmaticus
- Crush injury
- 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
- Blood pressure, pulse should be monitored

Dosage

- Adult Breathing Difficulty 2.5 mg HHN
- Adult Allergic Reaction/Anaphylaxis 2.5 mg HHN
- Crush Syndrome 2.5 mg HHN continuous treatments
- Pediatric Breathing Difficulty 2.5 mg HHN
- Pediatric Allergic Reaction Anaphylaxis 2.5 mg HHN
- Renal Failure 2.5 mg HHN continuous treatments
**Amiodarone (Cordarone)**

*A dysrhythmia for wide-complex tachycardias and ventricular fibrillation*

**Wide-Complex Tachycardia, Ventricular Fibrillation, ROSC**

150 mg/3 mL vial × 3 (Drug Box)

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, and never given via ETT
- 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, heparin or sodium bicarbonate
- Use Zofran with caution due risk of dysrhythmias due to prolonged Q-T intervals

**Indications**

- Ventricular fibrillation
- Pulseless ventricular tachycardia
- Ventricular tachycardia with a pulse

**Contraindications**

- Hemodynamically significant bradycardia
- 2nd and 3rd degree heart blocks unless patient has a functioning pacemaker
- Any known hypersensitivity to the drug

**Precautions**

- Use with caution with patients that are currently taking
  - Beta blockers
  - Calcium channel blockers
  - Anticoagulants
- Heart failure

**Dosage**

- **Wide Complex Tachycardia** 150 mg in 100 ml NS given over 10 min
- **Ventricular Fibrillation** 300 mg IVP
- **2nd dose** 150 mg IVP
- **Pediatric Wide Complex Tachycardia** 5 mg/kg over 20 min
- **Pediatric Ventricular Fibrillation** 5 mg/kg over 10 min
Aspirin (acetylsalicylic acid, ASA)
An antiplatelet for suspected cardiac ischemia and barotrauma

Chest Pain/AMI/ACS

81 mg tablets × 8 (IV Box)

- Aspirin's antiplatelet property works by inhibiting the production of thromboxane, 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-B may administer with physician orders as well as your agency OMD approval
- If patient has taken aspirin within 1 day, administer additional aspirin up to the maximum protocol directed dose
- Contraindicated with history of GI bleeding or other bleeding disorders, recent surgery (within 14 days), recently taken maximum dose of aspirin prior to EMS arrival and sensitivity/allergy to aspirin. Contact medical control for guidance

Indications

- Suspected acute myocardial infarction
- Diving medical disorders

Contraindications

- Aspirin should be used cautiously in patients with peptic ulcer disease or poor kidney function
- Patients with hypersensitivity to aspirin and other non-steroidal anti-inflammatory drugs should not receive aspirin
  - NSAID Examples
    - Motrin®
    - Aleve®
    - Advil®

Precautions

- Aspirin should be avoided by patients with peptic ulcer disease or poor kidney function
- Aspirin should be avoided by patients taking blood thinning medications (Coumadin)

Dosage

- Chest Pains 4-81 mg tablets (324 mg)
**Ativan (Lorazepam)**
*A potent benzodiazepine anticonvulsant for seizures and seizures proximal to chemical exposure*

**Seizures, Combative Patient**

2 mg/mL vial × 2 (Drug Box)

Ativan (lorazepam) is the preferred drug for seizures due to efficacy and duration
- Dilute in an equal amount of NS for IV/IO administration
- Dose 2 mg slow IV push (over 2 minutes)
- May be administered IM if IV/IO access is not available. Do not dilute if administering IM
- May repeat with physician order up to max dose of 8 mg
- Action is potentiated in conjunction with Haldol
- Medical control may order 1 mg for post seizure patients to prevent further seizures
- Risk for respiratory depression and bradycardia, and should be administered with ECG and SPAO₂ monitoring.
- Inadvertent arterial injection may result in arteriospasms
- Ineffective if administered rectally; administer Valium instead

**Indications**

- Status epilepticus
- Major motor seizure
- Premedication prior to cardioversion
- Combative patients

**Contraindications**

- Patients with a known hypersensitivity to the medication

**Precautions**

- Should be diluted with normal saline prior to IV/IO administration
- Use with caution in patients with acute narrow angle glaucoma
- Coma, shock or suspected drug abuse
- Has a short duration of effect

**Dosage**

- Seizure 2 mg IV/IM/IO, may repeat with a physician order up to a max. 8 mg
- Pediatric Seizure 0.1 mg/kg IV/IM/IO 2 mg max., may repeat with a physician order
- Combative patient 2 mg IM in large muscle mass
- OB/GYN Pre-Eclampsia 2 mgIV/IM/IO
Atropine
An antimuscarinic to increase heart rate or dry secretions

Asystole, PEA, Bradycardia, RSI, Chemical Exposure

1 mg/10 mL preloaded syringe × 3 (Drug Box)

Increases firing of the sinoatrial node (SA) and conduction through the atrioventricular node (AV) of the heart.
- May be less/not effective in PEA with rates above 60
- Not an actual antidote for organophosphate 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 sinus bradycardia
- Asystole
- Organophosphate poisoning

Contraindications
- None when used in emergency situations

Precautions
- Dose of 3 mg should not be exceeded except in cases of organophosphate poisoning
- May cause tachycardia (caution in acute MI)
- May cause hypertension
- May be ineffective in patients that have 2nd degree type II or 3rd degree heart blocks with a widened QRS complex

Dosage
- Bradycardia 0.5mg every 3 to 5 minutes, as needed up to a max. of 3 mg
- Organophosphate poisoning 2 to 5 mg
- Pediatric Bradycardia 0.02 mg/kg (0.1 mg minimum dose; maximum single dose 0.5 mg in a child; 1 mg in an adolescent)
- RSI- Bradycardia Adult 1mg IV/IO
- RSI- Pediatric 0.02mg/kg IV/IO Minimum dose 0.1 mg
Atrovent (ipratropium bromide)
An anticholinergic for bronchial dilation

Difficulty Breathing (Asthma/COPD)

1.5 mg bullet × 2 (1 Drug Box and 1 IV Box)

- 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 1/min or 8-10 1/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

Contraindications

- Patients with known hypersensitivity to the drug or to atropine

Precautions

- Caution when used in elderly and those with cardiovascular disease or hypotension

Dosage

- Adult Dosage 0.5 mg in 2.5 ml (unit dose) mixed in nebulizer with 2.5 mg/3 ml (unit dose) Albuterol Sulfate (Proventil)
- Pediatric Dosage 0.5 mg in 2.5 ml (unit dose) mixed in nebulizer with 2.5 mg/3 ml (unit dose) Albuterol Sulfate (Proventil)
Benadryl (diphenhydramine)
An antihistamine for allergic reaction and anticholinergic for dystonic reaction

Allergic Reaction, Combative Patient

50 mg/1 mL vial × 2 (Drug Box)

- 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 Combative Patient protocol
  - Although an antihistamine, also possesses significant anticholinergic properties; it may help in balancing cholinergic and dopaminergic activity

Indications

- Anaphylaxis
- Allergic reactions
- Dystonic reactions after Haldol administration

Contraindications

- Asthma
- Nursing Mothers
- Glaucoma
- Patients taking MAOI medications

Precautions

- Hypotension

Dosage

- Adult Dosage: 50 mg IV/IO/Deep IM
- Pediatric Dosage: 1 mg/kg up to a total dose of 50 mg, may repeat once
Calcium Chloride

An ionic agent for cardiac arrest in dialysis/renal failure patients, and cellular stabilizing agent in Crush Syndrome

Trauma-Crush, Dialysis-Renal Failure

1 g/10 mL vial × 1 (Drug Box)

- May help to correct or blunt the effects of abnormal blood chemistry (K, Ca, Na)
- Temporary cellular stabilizing agent in Crush Syndrome, but Calcium Gluconate is preferred
- Flush lines and administration site when used in conjunction with sodium bicarbonate

Indications

- Full arrest in renal dialysis patient
- Magnesium Sulfate overdose
- Acute hypocalcemia
- Acute hyperkalemia
- Verapamil and other calcium channel blocker overdose

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

- Adult dosage 1 gram (5-10 ml), slow IVP over 3 minutes
- Pediatric dosage 20 mg/kg
- Crush Injury 1 gram over 3 min IVP. Flush line with 40-60 ml NS (MUST flush IV line thoroughly when administered in the same IV line as Sodium Bicarbonate to prevent precipitation of medication
- Post Dialysis Peaked T-waves with widened QRS 0.5-1 gram in 100 ml NS over 10 minutes
**D50W (Dextrose 50%)**
*A concentrated sugar suspension for hypoglycemia complications, and in conjunction with insulin for hyperkalemia in Crush Syndrome*

**Seizures, Hypoglycemia, Crush Syndrome**

25 g/50 mL prefilled syringe × 2 (Drug Box)

- Must ensure patency of IV line prior to administration as infiltration may lead to local tissue necrosis.
- May be administered rectally with physician order

**Indications**

- Hypoglycemia

**Contraindications**

- Few when used in the emergency setting
- Intracranial hemorrhages

**Precautions**

- Blood sample should be drawn before administration in adults

**Dosage**

- Hypoglycemia 25 grams (50 ml)
- Crush Syndrome 25 grams IV (if insulin is unavailable)
- Pediatric dosage- Newborn 2 ml/kg D10 (To make Dextrose 10% expel 40 ml of the preloaded syringe and draw up 40 ml of NS)
- Pediatric dosage- < 2 years old 2 ml/kg D25 (To make Dextrose 25% expel 25 ml of the preloaded syringe and draw up 25 ml of NS)
- Pediatric dosage- > 2 years old 2 ml/kg D50
**Dopamine (Intropin)**

*A potent catecholamine to increase blood pressure and heart rate*

*ROSC, Bradycardia,*

400 mg/10 mL vial × 1 (Drug Box)

- Dopamine, a complex neurotransmitter which acts on the sympathetic nervous system to increase blood pressure via vasoconstriction and increased heart rate
- Peripheral effects outside the CNS are dose dependent:
  - 2 to 5 μg/kg/min dilate blood vessels, increase blood flow to renal, mesenteric, and coronary arteries, and increase overall renal perfusion. Begins to affect the heart at the lower doses, from about 3 mcg/kg/min IV
  - 5 to 10 mcg/kg/min additionally have a positive inotropic and chronotropic effect through increased β₁ receptor activation
  - 10 to 20 mcg/kg/min additionally cause vasoconstriction, increased systemic vascular resistance, and increased blood pressure through α₁ receptor activation.
- Care must be exercised in titrating and calculating dosage as higher dosages may be detrimental to internal organs
- Contraindicated in hypovolemia

**Indications**

- Cardiogenic Shock
- Non-hypovolemic shock (when fluid resuscitation is ineffective)

**Contraindications**

- Hypovolemic shock

**Precautions**

- Should not be administered to patients with severe tachydysrhythmias
- Should not be administered to patients with ventricular fibrillation or ventricular irritability

**Dosage**

- **Adult dosage** 2-10 mcg/kg/min
- **Pediatric dosage** 2-10 mcg/kg/min
**Epinephrine 1:1000**  
*A profound α and β agonist to open airways or increase heart rate*

**Allergic/Anaphylactic Reaction, Breathing Difficulty (Asthma), Bradycardia, Pediatric Asystole/PEA, Pediatric Bradycardia, Pediatric V-Fib / Pulseless V-Tach**

**1 mg/1 mL ampule × 3 (Drug Box)**

Bronchodilator, vasoconstrictor that increases the rate and force of cardiac contractions

- Asthma, not responsive to HHN therapies. IM/SQ epinephrine should be considered in the acute, severe asthma attack
- In hemodynamic instability, Epinephrine 1:1000 IM is the preferred route of administration due to perfusion/uptake issues
- Symptomatic bradycardic patient not responsive to pacing or atropine may need epinephrine drip
- Contact medical control before use in patients with preexisting cardiac history or over the age of 40
- 1:1000 is not indicated for IV/IO injection.

**Indications**

- Anaphylaxis
- Bronchial Asthma
- Exacerbation of some forms of chronic obstructive pulmonary disease (COPD)

**Contraindications**

- Hypertension
- Pregnancy
- Patients with tachydysrhythmias

**Precautions**

- Should be protected from light
- Blood pressure, pulse and EKG must be constantly monitored
- Must call medical control for physicians order in patients older than 40 years of age or patients with a cardiac history

**Dosage**

- Anaphylaxis 0.5 mg IM
- Pediatric Anaphylaxis 0.01 mg/kg (max dose 0.5 mg)
- Pediatric Breathing Difficulty 2 ml in 2 ml NS HHN
- Pediatric Asystole / PEA 0.1 mg/kg
- Pediatric Bradycardia 0.1 mg/kg
- Pediatric V-Fib/Pulseless V-Tach 0.1 mg/kg
- Adult Bradycardia 2-10 mcg/min IV Drip
**Epinephrine 1:10000**

*A profound α agonist for vasoconstriction*

**Asystole, PEA, Ventricular Fibrillation, Pulseless Ventricular Tachycardia**

1 mg/10 mL preloaded syringe × 8 (Drug Box)

Bronchodilator, vasoconstrictor that increases the rate and force of cardiac contractions

- Dosing is repeated every 3-5 minutes during CPR with no maximum
- A significant side effect is increased cardiac irritability

**Indications**

- Fine ventricular fibrillation
- Asystole
- Pulseless Electrical Activity
- Severe anaphylaxis with hypotension and vascular collapse
- In cases of severe anaphylaxis medical control may order 1:10,000 epinephrine

**Contraindications**

- None when used as indicated above

**Precautions**

- Should be protected from heat and light
- Can be deactivated by alkaline solutions (i.e., Sodium Bicarbonate)

**Dosage**

- Adult cardiac arrest 1.0 mg (10 ml) every 3 to 5 minutes
- Adult ETT route 2 to 2.5 mg 1:1,000 diluted in 10 ml saline
- Adult severe anaphylaxis 0.3 mg (3 ml)
- Pediatric Allergic/Anaphylactic 0.01 mg/kg max dose 0.5 mg IM
- Pediatric ETT route 0.1 mg/kg added to 2-5 ml NS, maximum 10 ml fluid
**Fentanyl Citrate (Sublimaze)**

Fentanyl is a powerful synthetic opiate with a mechanism of action similar to Morphine, though it is considered both faster acting and of shorter duration than Morphine. Fentanyl interacts with opiate receptors decreasing pain impulse transmission at the spinal cord level and higher in the CNS while also being a potent µ-opiate receptor agonist. Peripheral vasodilation is also caused by fentanyl’s ability to increase venous capacitance and decreases venous return (chemical phlebotomy) by depressing the responsiveness of alpha-adrenergic receptors. Since it decreases both preload and afterload it may also decrease myocardial oxygen demand. Fentanyl is metabolized in the liver, excreted by the kidneys, and stored in body fat.

*Chest Pain/AMI/ACS, Pain Management, Burns, Trauma, Trauma-Crush*

### 50 mcg / mL vial × 2 (Drug Box)

- Fentanyl is an opioid receptor agonist, and causes profound analgesia and sedation
- May cause respiratory depression
- Must be administered slow IV, IN, IM or IO to avoid inducing apnea
- Narcan may be administered to reverse overdose
- May administer additional fentanyl if needed with physician order
- May cause nausea; implement Nausea/Vomiting protocol as necessary

### Indications

- Moderate to severe pain
- Sedation maintenance for mechanically ventilated patients

### Contraindications

- Patients with known history of hypersensitivity to the drug

### Precautions

- Respiratory depression
- Severe heart disease
- 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) Respiratory depression (narcan should be available)

### Dosage

- **Adult dosage** Pain Management 1.0 - 3.0 mcg / kg slow IVP, every 20-30 minutes PRN
  1 mcg/kg INTRANASAL (first dose max of 50 mcg) ½ dose in each nostril. May consider additional dose of up to 100 mcg after 5 minutes if pain persists.
- **Pediatric dosage** *Morphine IV is to be used first. If no IV then*
  1 mcg/kg INTRANASAL (first dose max of 50 mcg) ½ dose in each nostril. May consider additional dose of up to 50 mcg after 10 minutes if pain persists.
Glucagon for Injection (rDNA origin)

A human hormone which prompts glycogen stores in the body to be converted to glucose

Seizures, Hypoglycemia

1 mg/1 mL (succinate and 1 mL diluent) vial × 1 (Drug Box)

- Treatment for hypoglycemia, may be given when IV access is unavailable to administer D50
- Prolonged hypoglycemia and/or other conditions which have consumed all available glycogen stores (principally concentrated in the liver and large muscle groups) 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
  - Renal disease

Dosage

- Adult 1 mg IM/IN
- Pediatrics < 20 kg 1 mg IM/IN
- Pediatrics >20 kg 1 mg IM/IN
**Haldol (Haloperidol)**

*A typical neuroleptic for chemical restraint of the combative patient*

**Combative Patient**

10 mg/2 mL vial × 3 (Drug Box)

- Its principle inclusion to the TEMS drug box to chemically restrain combative patients
- 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

**Indications**

- Managing combative patients in the field

**Contraindications**

- Parkinson's disease
- Seizure disorder
- Coma
- CNS depression

**Precautions**

- Elderly
- Previous cardiac history
- Patients receiving Lithium treatments
- Impaired liver function
- Orthostatic Hypotension

**Dosage**

- Adult dosage 10 mg IM or 5 mg IV
Lasix (Furosemide Sulfate)
A loop diuretic for fluid shifting in Breathing Difficulty

**Breathing Difficulty**

100 mg/10 mL vial × 1 (Drug Box)

- Lasix is a diuretic which works by sodium excretion in the ascending limb of the Loop of Henle in the kidney, and with a weak vasodilatory effect seen sooner after administration than diuresis
- 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

**Dosage**

- Adult dosage 40 mg slow IVP
- Pediatric dosage 2 mg/kg IV/IO
Levophed (Norepinephrine)

Sympathetic agonist

**Hypotension not related to hypovolemia**

4 mg/4 mL vial × 1 (Drug Box)

- Potent peripheral vasoconstrictor
- Constricts renal and mesenteric blood vessels

**Indications**

- Hypotension refractory to other sympathomimetics not related to hypovolemia
- Neurogenic shock

**Contraindications**

- Hypotension due to hypovolemia

**Precautions**

- Imperative to measure blood pressure every 3-5 minutes
- Fluid replacement must be initiated prior to administration of Levophed
- Can cause local tissue necrosis, should be administered through the largest vein available
- Use in caution with patients experiencing cardiac ischemia, may cause increased myocardial oxygen demand

**Dosage**

- Adult dosage 2-10 mcg/min titrated to effect
**Lidocaine**

*A dysrhythmic for wide-complex tachycardias and ventricular fibrillation, or pain management associated with IO*

**Wide-Complex Tachycardia, Ventricular Fibrillation, RSI, Vascular Access**

100 mg/5 mL prefilled syringe × 4 (Drug Box)

- A sodium channel blockade and second-line dysrhythmic, it may be given via ETT
- Pain management of IO

**Indications**

- Ventricular tachycardia (sustained)
- Ventricular fibrillation
- Pre-intubation in head trauma (RSI only)

**Contraindications**

- High degree heart blocks
- PVCs in conjunction with bradycardia

**Precautions**

- Monitor for CNS toxicity
  - Slurred speech
  - Decreased LOC
  - Muscle twitch
- Patients > 70 years of age
- Liver disease
- Congestive heart failure
- Shock

**Dosage**

- Adult V-Fib / Pulseless V-Tach: No response to Amiodorone 1-1.5 mg/kg
- Cardiac arrest: 1.5 mg/kg initial bolus, rebolus once 1.5 mg/kg in 3-5 minutes (3 mg/kg max. dose)
- PVCs / V-Tach: 1 to 1.5 mg/kg initial bolus, rebolus at 0.5 to 0.75 mg/kg every 5-10 minutes (3 mg/kg maximum dose)
- Pediatric V-Fib/Pulseless V-tach: Vascular access fails 2 mg/kg ETT
- Pre-intubation (RSI only): 1 mg/kg up to 100 mg maximum dose
- Adult EZ-I0 insertion: 20-40 mg
- Pediatric EZ-I0 insertion: .5 mg/kg
Magnesium Sulfate
A dysrhythmic for wide-complex tachycardias and ventricular fibrillation, or smooth muscle relaxant for severe breathing difficulty (asthma, COPD) and (pre)eclampsia

Wide-Complex Tachycardia, Ventricular Fibrillation, Breathing Difficulty, OB/GYN Pregnancy – Pre-Eclampsia

1 g/2 mL vial × 4 (Drug Box)

- Second-line dysrhythmic
- Drug of choice for Torsadés de Pointes
- Contraindicated in heart blocks
- Exercise caution in renal failure patients as drug is eliminated exclusively by kidneys

Indications

- Refractory ventricular fibrillation or ventricular tachycardia
- Torsades de pointes; polymorphic ventricular tachycardia
- Severe pre-eclampsia, eclampsia

Contraindications

- Heart block
- Renal disease
- Shock

Precautions

- Monitor EKG and respiratory status closely
- May cause Altered Mental Status and respiratory depression
- Loss of deep tendon reflexes in the eclamptic patient may indicate over administration
- Use with caution in patients receiving digitalis
- May cause hypotension

Dosage

- Adult cardiac arrest 2 grams in 10 ml NS given over 5 minutes
- Breathing Difficulty 2 grams in 100 ml NS given over 5 minutes
- Pre-eclampsia 4 grams in 100 ml NS given over 5 minutes
- Eclampsia 4 grams in 100 ml NS given at 1 gram/minute
- Pediatric Ventricular Fibrillation 20-50 mg in 10 ml NS IVP
- Pediatric breathing difficulty 50 mg/kg, maximum dose 2 grams in 250 ml NS over 20 minutes
Morphine
*A opioid analgesic for pain management and a weak vasodilator to reduce preload*

*Chest Pain/AMI/ACS, Pain Management, Burns, Trauma, Trauma-Crush*

10 mg/1 mL Carpuject or vial × 2 (Drug Box)

- Morphine is an opioid receptor agonist, and causes profound analgesia and sedation
- May cause respiratory depression
- Must be administered slow IV push to avoid inducing apnea
- Narcan may be administered to reverse overdose
- May be administered concurrently with nitroglycerin to patients with chest pain if pain is unresolved
- May administer additional morphine if needed with physician order
- May cause nausea; implement Nausea/Vomiting protocol as necessary

**Indications**

- Cardiac chest pain refractory to nitroglycerin
- Severe pain
- Pulmonary edema

**Contraindications**

- Head injury
- Depressed respiratory drive
- Hypotensive patient
- Asthma
- Undiagnosed abdominal pain
- Patients with known history of hypersensitivity to the drug

**Precautions**

- Respiratory depression (narcan should be available)
- Hypotension
- Nausea / vomiting
- Bradycardia

**Dosage**

- Adult dosage Burns, Trauma, Pain Management 5 mg IV, repeated as necessary with a maximum dosage of 10 mg
- Adult dosage Chest Pain / AMI 2 mg slow IV/IV/IO maximum dosage 10 mg
- Pediatric dosage 0.1 to 0.2 mg/kg IV, maximum dose 5 mg, may repeat once in 10 minutes
Narcan (Naloxone)
An opioid receptor blockade for potential or suspected opioid overdose

Toxicological Emergencies (Overdose),

2 mg/2 mL prefilled syringe or vial × 4 (Drug Box)

- Narcan works by preferentially binding to opioid receptors in the CNS
- Extremely high receptor affinity, can also displace existing bound opioids to reduce their effect, specifically apnea and/or respiratory depression
- Can precipitate seizures in patients with a seizure history or in long term narcotic addicts
- Can precipitate dysrhythmias in patients with cardiac disease, including ventricular fibrillation or ventricular tachycardia
- Goal of Narcan administration is to establish an adequate respiratory rate, not to return the patient to full consciousness
  - titrate to effect
- Administer before attempting intubation in the patient with suspected opiate overdose

Indications

- Narcotic overdoses including
  - Morphine
  - Demerol
  - Heroin
  - Dilaudid
  - Paregoric
  - Fentanyl
  - Methadone
  - Oxycodone
- Synthetic analgesic overdoses including
  - Nubain
  - Talwin
  - Stadol
  - Darvon

Contraindications

- Patients with known hypersensitivity to the drug

Precautions

- Should be administered with caution to patients addicted to narcotics, as it may cause withdrawal effects
- Short duration of effect

Dosage

- Adult dosage  2 mg, up to a total dose of 8 mg (larger doses may be required for Darvon overdose)
- Pediatric dosage  0.1 mg/kg (maximum dose 2 mg)
Nitroglycerin SL tablets

A potent vasodilator for decreasing oxygen demand in chest pain, and fluid shifting in CHF

Chest Pain, AMI, ACS, Breathing Difficulty (CHF)

1.4 mg tablets - 25 tablet vials x2 (1 Drug Box and 1 IV Box)

- Nitroglycerin works principally in chest pain to reduce total peripheral vascular resistance by vasodilation of the coronary vessels, and thus decrease the oxygen demand placed on an ischemic heart. The reduced demand presumably leads to reduced tissue infarct and better post-event outcome
- Do not administer if the patient has taken sexually enhancing medications (e.g., Viagra, Levitra, Cialis, Stiff Nights, RockHard Weekend) within the past 72 hours because it may cause an unsafe and fatal drop in blood pressure
- SL tablets are ineffectual if swallowed. In such an event, administer another tablet
- Do not administer if the patient has non-cardiac related pulmonary edema
- It is acceptable to briefly remove the CPAP mask to administer nitroglycerin
- EMT-B may administer with physician order and agency OMD approval

Indications

- Angina Pectoris
- Chest pain of suspected cardiac origin
- Pulmonary edema
- Congestive heart failure

Contraindications

- Children <14
- Hypotension
- hypersensitivity

Precautions

- Frequently monitor blood pressure
- Syncope
- Drug must be protected from light
- Expires quickly once bottle is open
- Recent use of Viagra or other erectile dysfunction drugs within past 72 hours

Dosage

- Adult dosage 1- 0.4 mg tablet SL, repeated every 3 to 5 minutes with a maximum of 3 tablets via standing order; you may contact medical control for additional doses
**Nitroglycerin TD paste**  
*A potent vasodilator for decreasing oxygen demand in chest pain*

**Chest Pain, AMI, ACS, Breathing Difficulty (CHF)**

1 gram unit dose x 1 (Drug Box)

- A new medication to the TEMS drug box, transdermal nitroglycerin is an alternative to SL tablets; it is, however, much slower onset but indicated if patients cannot tolerate tablets or if tablets are unable to relieve chest pain within 15 minutes
- Nitroglycerin works principally in chest pain to reduce total peripheral vascular resistance by vasodilation of the coronary vessels, and thus decrease the oxygen demand placed on an ischemic heart. The reduced demand presumably leads to reduced tissue infarct and better post-event outcome
- Do not administer if the patient has taken sexually enhancing medications (e.g., Viagra, Levitra, Cialis, Stiff Nights, RockHard Weekend) within the past 72 hours because it may cause an unsafe and fatal drop in blood pressure
- Do not administer if the patient has non-cardiac related pulmonary edema
- It is acceptable to briefly remove the CPAP mask to administer nitroglycerin
- If using CPAP in breathing difficulty, use in conjunction and concurrently with SL tablets if appropriate

**Indications**

- Angina Pectoris
- Chest pain of suspected cardiac origin in patients receiving CPAP therapy
- Persistent chest pain associated with MI

**Contraindications**

- Children less than 14 years of age
- Hypotension

**Precautions**

- Frequently monitor chest pains
- Syncope
- Drug must be protected from light
- Always wear gloves when handling nitro paste

**Dosage**

- 1 inch applied transdermally, cover with a biocclusive dressing
Sodium Bicarbonate

An ionic agent for late cardiac arrest and Crush Syndrome to help reverse acidosis.

Wide-Complex Tachycardia, Ventricular Fibrillation, PEA, Asystole, Crush, Dialysis-Renal Failure, Toxicological Emergencies

50 mEq/50 mL prefilled syringe x 2 (Drug Box)

- Flush lines and administration site when used in conjunction with Calcium Chloride
- Flush IV line thoroughly when administered in same IV line as Amiodarone
- Must ensure adequacy of ventilation/respiration when used in cardiac arrest

Indications

- Severe acidosis
- Cardiac arrest (asystole, PEA)
- Tricyclic antidepressant overdose
- Crush syndrome
- Cardiac arrest in renal dialysis patient

Contraindications

- Alkalotic states

Precautions

- Can deactivate catecholamines
- Can precipitate with calcium
- Delivers a large sodium load

Dosage

- Adult 1 mEq/kg initially, repeat at ½ mEq/kg every 10 minutes until blood gas studies are available
- Crush injuries 1-2 mEq IV/IO over 2 minutes
- Dialysis-Renal 1 mEq/kg IV / IO
- Post Dialysis Peaked T-Waves widened QRS- 1 mEq IV / IO
- Pediatric dose 1 mEq initially with repeat of ½ mEq/kg every 10 minutes
- Toxicological 50 mEq IV / IO over 2 minutes
**Solu-Medrol (methylprednisolone, prednisolone)**

* A corticosteroid for inflammation in breathing difficulty

**Allergic Reaction, Breathing Difficulty**

125 mg/2 mL (succinate and 2 mL diluent) vial × 1 (Drug Box)

- Solu-Medrol is a potent anti-inflammatory steroid used to reduce inflammation in Allergic Reactions and breathing difficulty due to asthma or COPD
- Solu-medrol onset of action is 1-2 hours 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**

- Pregnant women

**Dosage**

- Asthma / COPD
  - 125 mg slow IV over 2 to 3 minutes
- Anaphylaxis
  - 125 mg slow IV over 2 to 3 minutes
- Pediatric dosage
  - **Should not be routinely administered to pediatric patients; however it may be considered for extended transports (physician order only)** - 2 mg/kg up to 125 mg
**Versed (Midazolam)**

*A benzodiazepine used to treat and provide sedation*

*Combative Patient, Pediatric Seizures, Chemical Exposure, Narrow-Complex Tachycardia, Wide-Complex Tachycardia, RSI, Airway/Oxygenation/Ventilation*

**5 mg/1 mL vial × 2 (Drug Box)**

- Alternative drug for seizures
- Dose slow IV push (over 1 minute); fast IV push may result in apnea
- May be administered IM if IV/IO access is not available
- Risk for respiratory depression and bradycardia, and should be administered with ECG and SPAO₂ monitoring

**Indications**

- Pre and post-intubation sedation
- Combative patient
- Premedication prior to cardioversion
- Sedation for pacing
- Seizures

**Contraindications**

- Shock
- Coma
- Acute alcohol intoxication with depression of vitals
- Patients with a known hypersensitivity to the drug

**Precautions**

- Respiratory depression is more common with versed than other benzodiazepines
- COPD patients are usually sensitive to the respiratory depressant effect
- Does not protect against increase in ICP, heart rate or blood pressure associated with intubation
- Adverse reactions may increase when used with
  - Barbituates
  - Alcohol
  - CNS depressants
  - Cimetidine (Tagamet)
  - Ranitidine (Zantac)
  - Diltiazem (Cardizem)
- All patients receiving versed must also receive continuous monitoring for
  - Early signs of hypoventilation
  - Airway obstruction
  - Apnea

**Dosage**

- **Combative Patient**
  - 5 mg IN, 10 mg IM, 2 mg IV
- **Pre-medication for cardioversion**
  - 2 mg slow IVP
- **Post intubation sedation**
  - 2 mg IVP
- **Pediatric dosage**
  - 0.2 mg/kg IN (maximum dose 2 mg)
Zofan (Ondansetron)

A serotonin antagonist antiemetic for nausea and vomiting

Nausea/Vomiting

4 mg vial × 2 (Drug Box)

- A new medication to the TEMS box, it may be administered prophylactically when vomiting could produce an airway obstruction (for example, in back boarded patients) or for patient comfort when the patient is repeatedly vomiting
- Has little effect on motion sickness-related illness
- Administer slow IV push (over 2-5 minutes)
- Repeated doses generally are not effective; however, if the patient is still vomiting 20 minutes after the first dose, a repeat dose may be given
- Use caution in conjunction with Amiodarone and Haldol as prolonged Q-T intervals may increase risk of dysrhythmias
- May be administered IM if IV is not available

Indications

- Treatment of profound nausea, active vomiting or profound vertigo with vomiting

Contraindications

- Known hypersensitivity to the drug

Precautions

- Pediatric patients less than one year of age
- Liver disease

Dosage

- Adult dosage 4 mg over 2-5 minutes, may repeat dose in 20 minutes if needed
- Pediatric dosage 0.15 mg/kg up to total dose of 4 mg slow IV push (over 2-5 minutes) or IM if IV is not available, may be repeated at same dose in 20 minutes
Appendix L
TEMS
HIGHLY INFECTIOUS DISEASE REGIONAL PLAN
Notes
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

<table>
<thead>
<tr>
<th>Location</th>
<th>EMS Agency Name</th>
<th>Dispatch Number</th>
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<tbody>
<tr>
<td>Abingdon</td>
<td>Abingdon Ambulance Service</td>
<td>(276) 628-8470</td>
</tr>
<tr>
<td>Charlottesville</td>
<td>UVa Medical Transport</td>
<td>(434) 982-3500 x1672</td>
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<td>Farmville</td>
<td>Paladin Medical Transport</td>
<td>(434) 315-5620 x1</td>
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<td>Fredericksburg</td>
<td>LifeCare Medical Transport</td>
<td>(540) 752-5883</td>
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<tr>
<td>Herndon</td>
<td>Physician Transport Services</td>
<td>(703) 941-7025</td>
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<tr>
<td>Roanoke</td>
<td>First Call Ambulance Service</td>
<td>(540) 986-2030</td>
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<tr>
<td>Roanoke</td>
<td>Carilion Clinic Patient Transport #468</td>
<td>(540) 981-8600</td>
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<tr>
<td>Virginia Beach</td>
<td>Medical Transport LLC</td>
<td>(757) 671-8911</td>
</tr>
<tr>
<td>Winchester</td>
<td>Valley Medical Transport</td>
<td>(540) 536-0082</td>
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