<table>
<thead>
<tr>
<th>TOPIC</th>
<th>PAGE</th>
<th>TOPIC</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-LEAD Study Guide</td>
<td>50</td>
<td>Fever</td>
<td>38</td>
</tr>
<tr>
<td>2015 Changes</td>
<td>149</td>
<td>Field Termination</td>
<td>4</td>
</tr>
<tr>
<td>Abbreviations</td>
<td>58</td>
<td>Frostbite</td>
<td>27</td>
</tr>
<tr>
<td>Abdominal Pain</td>
<td>35</td>
<td>GCS</td>
<td>26</td>
</tr>
<tr>
<td>Administering Nerve Agent Antidotes</td>
<td>48</td>
<td>Hazardous Drug Exposure</td>
<td>45</td>
</tr>
<tr>
<td>Airway Maintenance</td>
<td>7</td>
<td>HazMat</td>
<td>44</td>
</tr>
<tr>
<td>Allergic Reactions</td>
<td>31</td>
<td>Haz-mat, Biological</td>
<td>46</td>
</tr>
<tr>
<td>Altered Level of Consciousness</td>
<td>32</td>
<td>HazMat, Cyanide</td>
<td>46</td>
</tr>
<tr>
<td>AMIs</td>
<td>18</td>
<td>HazMat, Hydrofluoric Acid</td>
<td>47</td>
</tr>
<tr>
<td>Antidote Resources</td>
<td>48</td>
<td>HazMat, Organophosphate/Nerve Agent</td>
<td>47</td>
</tr>
<tr>
<td>APGAR Chart</td>
<td>37</td>
<td>HazMat, Pepper Spray</td>
<td>49</td>
</tr>
<tr>
<td>Asthma/Emphysema/COPD</td>
<td>31</td>
<td>Head Injury</td>
<td>25</td>
</tr>
<tr>
<td>BAAM</td>
<td>9</td>
<td>Heat Exposure</td>
<td>29</td>
</tr>
<tr>
<td>Bradycardia</td>
<td>18</td>
<td>Hemorrhage Control</td>
<td>25</td>
</tr>
<tr>
<td>Burns/Smoke Inhalation</td>
<td>28</td>
<td>Hospital Capabilities</td>
<td>142</td>
</tr>
<tr>
<td>Capnography</td>
<td>8</td>
<td>Hypothermia</td>
<td>27</td>
</tr>
<tr>
<td>Carbon Monoxide Poisoning</td>
<td>29</td>
<td>Initial Care</td>
<td>4</td>
</tr>
<tr>
<td>Cardiac Alert Program</td>
<td>17</td>
<td>Internal Dialysis Fistula</td>
<td>12</td>
</tr>
<tr>
<td>Cardiac Arrest—Asystole/PEA</td>
<td>15</td>
<td>Intubation</td>
<td>9</td>
</tr>
<tr>
<td>Cardiac Arrest—Intra Arrest Protocol</td>
<td>16</td>
<td>IO Insertion</td>
<td>10</td>
</tr>
<tr>
<td>Cardiac Arrest—Pregnancy</td>
<td>35</td>
<td>Maintenance of Existing IV Pump</td>
<td>12</td>
</tr>
<tr>
<td>Cardiac Arrest—Renal Dialysis Patient</td>
<td>14</td>
<td>Major Trauma</td>
<td>24</td>
</tr>
<tr>
<td>Cardiac Arrest—Smoke Inhalation</td>
<td>14</td>
<td>Nebulized Meds</td>
<td>10</td>
</tr>
<tr>
<td>Cardiac Arrest—VFib/Pulseless VT</td>
<td>15</td>
<td>Newborn Resuscitation</td>
<td>37</td>
</tr>
<tr>
<td>Cardiovascular Emergencies</td>
<td>13</td>
<td>Non-Initiation of Care</td>
<td>3</td>
</tr>
<tr>
<td>Central Venous Catheters</td>
<td>11</td>
<td>Obstetrical Emergencies</td>
<td>35</td>
</tr>
<tr>
<td>CHEMPACK</td>
<td>48</td>
<td>Pain Control Protocol</td>
<td>6</td>
</tr>
<tr>
<td>Chest Pain</td>
<td>16</td>
<td>Poisoning and Overdose</td>
<td>33</td>
</tr>
<tr>
<td>Child Abuse</td>
<td>38</td>
<td>Prehospital Field Triage</td>
<td>22</td>
</tr>
<tr>
<td>Childbirth</td>
<td>36</td>
<td>PSW Chart</td>
<td>143</td>
</tr>
<tr>
<td>Combative Patient</td>
<td>39</td>
<td>Pulmonary Edema</td>
<td>30</td>
</tr>
<tr>
<td>Communicating with the Hospital</td>
<td>2</td>
<td>Reroute Policy</td>
<td>136</td>
</tr>
<tr>
<td>CPR Chart</td>
<td>13</td>
<td>Regional Hospital Notification System</td>
<td>49</td>
</tr>
<tr>
<td>Crisis Standards of Care</td>
<td>44</td>
<td>Respiratory Distress</td>
<td>30</td>
</tr>
<tr>
<td>Crush Syndrome</td>
<td>25</td>
<td>Rights of Medication Administration</td>
<td>62</td>
</tr>
<tr>
<td>CVA/TIA Checklist</td>
<td>61</td>
<td>Run Documentation Requirements</td>
<td>62</td>
</tr>
<tr>
<td>Delivery Complications</td>
<td>36</td>
<td>Safe Harbor</td>
<td>38</td>
</tr>
<tr>
<td>Diabetic Refusal of Transport</td>
<td>32</td>
<td>Salt Triage</td>
<td>40</td>
</tr>
<tr>
<td>DNR-Comfort Care/Comfort Care Arrest</td>
<td>3</td>
<td>Sedate to Intubate</td>
<td>9</td>
</tr>
<tr>
<td>Drowning</td>
<td>27</td>
<td>Seizures</td>
<td>32</td>
</tr>
<tr>
<td>Drug Bag Exchange Program</td>
<td>121</td>
<td>Shock</td>
<td>20</td>
</tr>
<tr>
<td>Drug Sheets</td>
<td>63</td>
<td>Skill Sheets</td>
<td>102</td>
</tr>
<tr>
<td>EDD</td>
<td>8</td>
<td>Spinal Immobilization Protocol</td>
<td>5</td>
</tr>
<tr>
<td>Elder Abuse</td>
<td>38</td>
<td>Stipulations</td>
<td>2</td>
</tr>
<tr>
<td>End Tidal CO2--Colorimetric</td>
<td>8</td>
<td>Stroke</td>
<td>20</td>
</tr>
<tr>
<td>Exsanguinating Hemorrhage</td>
<td>20</td>
<td>Tachycardia</td>
<td>19</td>
</tr>
<tr>
<td>Extrapyramidal Reactions</td>
<td>33</td>
<td>Tension Pneumothorax</td>
<td>9</td>
</tr>
<tr>
<td>Extremity Injuries</td>
<td>26</td>
<td>Transport Guidelines</td>
<td>24</td>
</tr>
<tr>
<td>Eye Injuries</td>
<td>30</td>
<td>Trauma Criteria</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trauma Emergencies</td>
<td>21</td>
</tr>
</tbody>
</table>
STIPULATIONS

- This protocol is for use by those individuals operating in and under the authority of the Greater Miami Valley EMS Council (GMVEMSC) Drug Bag Exchange Program and certified by the State of Ohio as a Paramedic.
- This protocol is to be used in the field only. Communications must be attempted as soon as practical for potentially unstable patients, or for hospitals that request contact on all patients being transferred to their facility.
- Procedures marked with a diamond (♦) are never to be performed without a physician's order. The diamond provides identification of procedures and medications that require on-line medical control authorization.
- No procedures, techniques, or drugs will be used without the proper equipment or beyond the training or capabilities of the prehospital personnel. Nothing in this protocol may be used without specific pre-approval of the Medical Director for the local department or agency.
- It is the recommendation of the Standing Orders Committee that departments be able to access the humeral head via IO in the adult population.
- Items enclosed in braces ({} ) are at the option of the department and its Medical Director.
- EMS personnel of any level are not authorized to intubate, unless they have and can use appropriate confirmation devices: End tidal carbon dioxide (ETCO₂) detectors or monitors, or Esophageal Detection Devices (EDD).
- Infrequently, stepwise adherence to specific protocols may not be in the patient’s best interest. No protocol can substitute for the EMS professional’s judgment. However, at no time should treatment options exceed those authorized without direct consultation with the Medical Control Physician (MCP). In all such cases, contact with MCP should be considered as soon as possible.
- The Adult and Pediatric Orders (“Peds”) are combined. Sections that apply only to Adults are bulleted with an “A”.
- All Pediatric treatments will be in Pink and bulleted with a “P”.
- Sections which apply to both Adult and Peds are indicated with standard bullets.
- There are also sections which apply to only Geriatric patients and are bulleted with a bold “G.”

COMMUNICATING WITH HOSPITAL OR MEDICAL CONTROL

- There are several reasons to contact the hospital.
  - To notify the hospital when time is needed to set-up for the patient. Examples include major trauma, cardiac arrest, hazardous materials, bedbugs, and Cardiac or Stroke Alerts.
  - Hospitals that request to be notified on every patient transported to their facility are: Children’s Medical Center, Good Samaritan Maternity, Grandview, Greene Memorial, Huber Heights, Jamestown Emergency Department, McCullough-Hyde, Miami Valley Maternity, Miami Valley South, Soin, Southview, Springfield Regional Medical Center, Upper Valley Medical Center, Veterans Adm. Medical Center, Wayne, and WPAFB Medical Center.
  - Contact MVH and GSH with all serious patients, e.g., stroke, MI, respiratory distress, shock and major traumas.
  - To obtain orders, such as for procedures or medications indicated by the diamond in these Standing Orders.
  - To obtain advice. For example, guidance from the MCP might be needed before a medication is given, even though Standing Orders allow it to be used without permission. Another situation could be a patient with an unfamiliar condition.
- When contacting the hospital, make sure a clear picture is painted. The crew can see the patient; the hospital personnel cannot. The ability to communicate findings will directly impact the hospital’s response.
When calling about a trauma patient, include MIVT, ETA, the components of the GCS, and patient assessment findings, especially those relevant to the decision to transport to a Trauma Center.

If consultation with a physician is desired, the medic should specifically request Medical Control.

Paramedics should read the EKG, and then decide whether it should be transmitted. Paramedics who have transmitted an EKG are expected to call and to speak with the MCP.

EMTs and AEMTs must call the hospital whenever they transmit an EKG.

When calling with an alert (Trauma, Cardiac, or Stroke) say, “We recommend a ______ Alert.”

Remember that the hospital may have more information, and may or may not decide to act on your recommended alert. Examples:

- Patients who meet Trauma Destination Protocols do **NOT** always warrant the hospital calling in a surgical team immediately.
- A patient who meets Cardiac Alert criteria may have prior EKGs in their hospital record that indicate that the alert is unnecessary.

Every crew transporting a patient is expected to provide a full run sheet to the hospital.

**NON-INITIATION OF CARE**

**Non-Initiation of Care**

- Resuscitation will not be initiated in the following circumstances:
  - Deep, penetrating, cranial injuries
  - Massive truncal wounds
  - DNR Order—present and valid
  - Frozen body
  - Rigor mortis, tissue decomposition, or severe dependent lividity
  - Triage demands
  - Blunt trauma found in cardiac arrest **unless** one of the following conditions is present:
    - Patient can be delivered to an emergency department within 5 minutes.
    - The arrest is caused by a medical condition
    - Focused blunt trauma to the chest (such as a baseball to the chest)
      - An example is Commotio cordis, a form of sudden cardiac death seen most often in boys and young men playing sports. It occurs as the result of a blunt, non-penetrating impact to the precordial region from a ball, bat or other projectile.
  - Penetrating trauma found in cardiac arrest when the patient cannot be delivered to an emergency department within 15 minutes.
    - Resuscitation will be initiated on victims of penetrating trauma who arrest after they are in EMS care.
  - Once en route, continue care even if the above time limits cannot be met.
  - If care began and it is readily apparent to EMS that the patient met non-initiation of care criteria, resuscitation efforts may cease.

**DNR: COMFORT CARE/COMFORT CARE ARREST**

**Do Not Resuscitate-Comfort Care (DNR-CC)**

*(Permits any medical treatment to diminish pain or discomfort that is not used to postpone the patient’s death)*

- The following treatments are permitted:
  - Suctioning
  - Oxygen
  - Splinting/immobilization
  - Bleeding control
  - Pain control
The following treatments are **not** permitted:
- Chest compressions
- Airway adjuncts including CPAP and respiratory assistance
- Resuscitative drugs
- Defibrillation, cardioversion, monitoring

**Do Not Resuscitate-Comfort Care Arrest (DNR-CCA)**
- Permits any Standing Orders treatment until cardiac or respiratory arrest or agonal breathing occurs.

**NOTE:** When a Durable Power of Attorney for Healthcare (DPA-HC) is present and the “Living Will and Qualifying Condition” box is checked, the DPA-HC cannot override the patient’s DNR status. A patient may change their DNR status at anytime verbally, in writing or by action.

**FIELD TERMINATION OF RESUSCITATION EFFORTS**

**P FIELD TERMINATION DOES NOT APPLY TO PEDIATRICS**

- Paramedics are expected to provide resuscitative care at the scene. In most cases, cardiac arrests should not be transported if the patient has failed to respond to Advanced Life Support (ALS). The following criteria must be met:
  - The victim must:
    - Be 18 years or older
    - Be in PEA or asystole
    - Not be in arrest due to hypothermia
    - Have an advanced airway
    - Have vascular access
  - PEA rate of higher than 40 should be given additional consideration before field termination is initiated. Pre-hospital care providers should be aware that patients in PEA with a rate equal to or greater than 40 may not be in true cardiac arrest. The patient may not have palpable pulses due to being hemodynamically unstable. MCP may not approve field termination of a patient in PEA based on these criteria.
  - If no ALS equipment is available at the scene, and transport time to a medical facility will exceed 20 minutes, consider field termination of cardiac arrest patients age 18 years or older who are not in arrest due to hypothermia.
  - **EMS must contact MCP directly to receive consent for field termination.**
  - Send a copy of the run sheet to the EMS Coordinator of the authorizing MCP’s hospital.

**NOTE:** If family requests any information about organ donations have them call Life Connection of Ohio @ 800-535-9206.

**NOTE:** PEDIATRIC PATIENTS MAY MEET NON-INITIATION OF CARE CRITERIA.

**INITIAL CARE**

- Follow BLS or ALS and airway algorithms as indicated based on current AHA Guidelines.
- Obtain chief complaint (OPQRST, see Abdominal Pain), SAMPLE history, and vital signs per patient condition.
  - SAMPLE: Signs and Symptoms, Allergies, Medications, Past medical history, Last oral intake, Events leading up to present illness or injury.
- Utilize cardiac monitor or other monitoring device {pulse oximeter, etc.} as appropriate.
- {IN} medication administration must be via {Mucosal Atomizer Device (MAD)}.
- Start IV of Normal Saline (NS) or Saline Lock (SL) as appropriate.
- IVs: Follow shock protocol on page 20.
  - Shock (not related to penetrating trauma): run wide-open using macro-drip or blood tubing. Decrease fluid rate if systolic blood pressure (SBP) >100.
**IV NS, 20 ml/kg using macro-drip tubing. Titrate to maintain adequate perfusion.**
- Medical emergencies, head trauma, cardiac problems with stable BP: Use TKO rate.
- IV medication administration: **Slow IV = over 2 minutes**, unless otherwise specified.
- Any medication given IV can also be given intraosseous {IO}.
  - {IV pump} IV pump is an option of the department and its Medical Director.
  - Use of IO devices for both Adults and Peds is limited to patients who are unresponsive or hemodynamically unstable, and only when less invasive means are not available or are ineffective (e.g., Glucagon IM, {Narcan IN, and Versed IN}).
  - Existing central venous catheters, dialysis catheters, fistulas, or grafts may be utilized for infusion of IV fluids and medication if the patient is hemodynamically unstable. These may also be used when the patient is deteriorating rapidly.
  - If a patient with an existing IV pump experiences an allergic reaction, call the MCP for an order to discontinue the pump. Otherwise, the IV pump must be maintained.
  - Bring medications or a list of the medications with the patient to the hospital; include the dose and frequency administered.
  - For treatment of hypoglycemia:
    - D10: 250 ml, (250 ml = 25 grams of dextrose and 500 ml = 50 grams of dextrose).
    - D10: 5 ml/kg to a max dose of 250 ml.
    - For newborn, D10 2 ml/kg if BS < 40.

**NOTE:** Pedi-Wheel may be used as a reference for pediatric vital signs.

**NOTE:** Take extra tubing and medication packets to the receiving facility for patients with insulin pumps.

## SPINAL IMMOBILIZATION PROTOCOL

### Introduction
Traditionally, EMS has immobilized all patients with potential spinal injury to include backboards and associated adjuncts (B/AA). However, studies indicate that traditional spinal immobilization with B/AA has risks and may even cause harm in select cases. As such, the spinal immobilization protocol has been modified to more accurately reflect appropriate indications and methods for spinal immobilization. Spinal precautions for at risk patients remain paramount. This protocol DOES NOT indicate that EMS no longer immobilizes the spine; it simply provides a different means of immobilization in selected patients.

### Blunt trauma (falls, MVC)

1. All patients with clinical indications of a spinal injury (such as focal neurologic deficit including paralysis) and/or with altered levels of consciousness (including those who are combative, confused, or intoxicated, i.e. patients who are unable to follow commands) must be immobilized with both a C-collar and a spinal immobilization device (e.g., spine board, KED, vacuum splint).
2. Additionally pediatric trauma patients less than 3 years of age with a GCS of < 15 must be immobilized with both a C-collar and a spinal immobilization device (e.g., spine board, KED).
3. Other alert trauma patients, including all those listed below, should have a c-collar placed and moved in-line as a unit to the cot. This is referred to as, “Move patients on hard things; transport on soft things.”
   - Neck pain
   - Midline neck or spinal tenderness
   - Pain on motion of the neck
   - Age ≥ 70
   - High risk mechanism (high speed MVC, fall > 10 feet, axial loading injury)
   - Patients who are non-ambulatory (sitting, lying on ground) are to be moved in-line as a unit.
   - Patients who are ambulatory may ambulate to the cot, and then be assisted onto the cot in-line as a unit.
Penetrating Trauma

- Patients with penetrating trauma to the torso or neck with focal neurological signs or paralysis should be immobilized in a c-collar and with a spinal immobilization device.
- Patients without focal neurological signs or paralysis need NOT be immobilized.
- Delays in transport for immobilization are to be minimized.

Airway / Ventilatory Management

Patients who are immobilized and require airway and / or ventilatory intervention (including intubation) may have the collar removed, with in-line stabilization performed during the intervention. The collar should then be reapplied.

Other

- Patients who do not tolerate immobilization (e.g., shortness of breath, anxiety, and body habitus) should have immobilization adjusted to the point of removal if necessary based on clinical response. They should be maintained in the manner of immobilization that they can tolerate (e.g., a patient may not tolerate a backboard but may tolerate sitting up with a c-collar).

- Spinal immobilization devices may be utilized for movement from a site of injury to the cot. Patients who do not require immobilization as above should be removed from the device prior to transport and kept in-line during transport.

PAIN CONTROL PROTOCOL

General Considerations

- This protocol is for management of ACUTE moderate to severe pain, including pain from suspected cardiac events, trauma (including thermal and chemical burns, crush syndrome, frostbite, fractures, dislocations, and sprains), and abdominal pain including unilateral flank pain.
- MCP approval required before administration of Fentanyl in pediatric patients with abdominal pain.
- It is NOT for treatment of exacerbations of CHRONIC pain.
- Call for orders if you feel narcotics are needed for pain from a chronic condition.
- Prehospital pain management is important. It significantly reduces time to pain relief, avoids exacerbation of pain during movement and transport, is compassionate, and is good medical care.
- Document patient’s reported pain during initial patient contact, during treatment, and after any intervention.
- Use ice packs, position of comfort, and splinting to reduce pain as indicated.

Specific Care

A For pain relief when the patient is alert, consider Fentanyl 50 mcg slow IV provided SBP > 100.
A If unable to obtain IV, give Fentanyl 50 mcg IM or {Fentanyl 100 mcg IN}.
A May repeat slow IV Fentanyl 50 mcg after 5 minutes provided SBP > 100.
A Repeat dose of Fentanyl 50 mcg IM (repeat no sooner than 30 minutes).
A {IN Fentanyl} may be repeated, if a second drug bag is available.

P FENTANYL IS NOT TO BE ADMINISTERED TO ANYONE < 2 YEARS OF AGE.
P For severe pain relief when the patient is conscious and alert, consider Fentanyl 1 mcg/kg, slow IV (max dose 50 mcg) provided appropriate normal SBP.
P If unable to obtain IV, give Fentanyl 1 mcg/kg IM (max dose 50 mcg) or Fentanyl 1 mcg/kg {IN} (max dose 100 mcg).
P {Fentanyl 1 mcg/kg, slow IV after 5 minutes (max dose 50 mcg) if still in pain and appropriate SBP.
P Repeat dose of Fentanyl 1 mcg/kg IM (max dose 50 mcg, repeat no sooner than 30 minutes).
AIRWAY MAINTENANCE

- **O₂** as needed. Use the following rates as guidelines:
  - 2 LPM by nasal cannula (NC) for patient with COPD, unless prescribed higher.
  - 4-6 LPM by NC for other patients
  - 8-10 LPM for nebulized medications
  - 12-15 LPM by non-rebreather mask (NRM) for severe trauma patients, distressed cardiac patients, patients with respiratory distress, and other patients who need high flow O₂.
- Ventilate patients who are symptomatic with an insufficient respiratory rate or depth.

**RESPIRATORY RATES BY AGE**

<table>
<thead>
<tr>
<th>Age</th>
<th>Respiratory Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 1 year</td>
<td>30-60</td>
</tr>
<tr>
<td>1-3 years</td>
<td>20-40</td>
</tr>
<tr>
<td>4-6 years</td>
<td>20-30</td>
</tr>
<tr>
<td>7-9 years</td>
<td>16-24</td>
</tr>
<tr>
<td>10-14 years</td>
<td>16-20</td>
</tr>
<tr>
<td>15+ years</td>
<td>12-20</td>
</tr>
</tbody>
</table>

- Consider patient airway anatomy for the appropriate selection of the airway adjunct.
- If two attempts with an ETT are not successful, move to an adjunct device.
  - If approved, adjuncts considered “rescue airways” such as the {LMA} or {Dual Lumen Airways} may be appropriate primary airway devices.
- **P** {LMA} is recommended as the primary airway except in extreme cases such as airway edema.
- When deciding whether to intubate, consider the following:
  - Insufficient respiratory rates, < 10 or > 29, that are not rapidly controlled by other measures
  - Irregular respiratory rhythm
  - Abnormal breath sounds
  - Inadequate chest expansion and respiratory depth
  - Excessive effort to breathe
  - Use of accessory muscles
  - Nasal flaring
  - Pallor or cyanosis
  - Cardiac dysrhythmias
- Confirm correct placement of advanced airways by at least **five methods**.

**CONFIRMATION METHODS:**

- CO₂ detection methods are recommended and Capnography is the “gold standard.”
- Auscultation of the epigastrium, anterior chest, midaxillary areas, and then the epigastrium again
- Rise and fall of the chest
- Repeat visualization of the tube between the vocal cords
- Condensation in the tube
- Depth placement/measurements:
  - Keeping an oral endotracheal tube at the 20-22 cm mark at the teeth will prevent inserting the ETT too far and greatly reduces the chances of a right mainstem bronchus intubation. Don’t confuse right mainstem intubation for a pneumothorax.
  - **P** Proper depth placement of tracheal tube in the pediatric patient can be calculated by the following formula: Depth of insertion (length of tube at teeth or gum line) = tube size x 3.
  - A nasotracheal tube that is 22 cm at the nose is unlikely to reach the glottis.
  - Nasotracheal tubes need to be placed deeper, or the tube will only reach the pharynx, not the trachea. When a nasotracheal tube is correctly placed, there is often only an inch or so between the nose and the ET adapter. Avoid nasal intubation after trauma if there is central facial movement or CSF present. EDDs and ETCO2 detectors can help prevent esophageal intubation, but they cannot identify placement in a mainstem bronchus. That requires physical assessment, including depth of the tube, and auscultation.
CONFIRMATION DEVICES:

Electronic End Tidal CO₂ (ETCO₂) Monitors—Capnography

Waveform ETCO₂ is the preferred confirmation device. These devices measure the amount of carbon dioxide in the exhaled ventilations of patients. They can use mainstream sensors, which are located directly on the endotracheal tube, or sidestream sensors, which sample the ventilation more remotely. Capnography can also be used with patients who are not intubated. In-line EtCO₂ monitors can be used on patients with or without adequate perfusion. Electronic monitors show changes in real-time.

Capnography or capnometry is considered the “gold standard” of tube placement confirmation. If this equipment is available, it should be used on EVERY intubation, and always be one of the five confirmation steps. Ventilations should be titrated to ETCO₂ of 35-45 mm/Hg. To increase CO₂, slow down ventilations, and to decrease CO₂, speed up ventilations. MAINTAIN THIS DEVICE UNTIL PATIENT CARE IS TRANSFERRED TO THE RECEIVING HOSPITAL.

End Tidal CO₂ Detector (ETCO₂) -- Colorimetric

Colorimetric Limitations:
- The Colorimetric ETCO₂ detector may be utilized as a confirmation device for patients in cardiac arrest, IF it shows the presence of CO₂ (color change to yellow). If there is no color change, use other confirmation methods. The absence of color change be caused by a lack of perfusion, but it may also indicate esophageal intubation.
- Secretions, emesis, etc. can ruin the device.
- A patient with large amounts of carbonated beverage (e.g., beer) in their stomach can give a false positive result. The device may sense the CO₂ given off by that beverage and indicate that the tube is in the trachea, when it is in the esophagus.
- The device can be used for no more than two hours.
- Follow manufacturer’s recommendations for weight restrictions.

Medication Issues:
- If medication is administered via ETT, remove the ETCO₂ detector for several ventilations until no medication returns through the tube during exhalation. Medications splashing up the tube can alter color change.
- Intravenous Sodium Bicarbonate will produce more carbon dioxide enhancing the color.

Esophageal Detector Device (EDD)

This device confirms tube placement mechanically. It is based on the principle that the esophagus is a collapsible tube, while the trachea is rigid. An EDD looks like a bulb syringe. Collapse the bulb first and then place the device on the end of the ETT prior to first ventilation. As the bulb tries to refill with air, it creates suction. If the tube is in the esophagus, the soft tissues will collapse around the holes in it preventing expansion of the bulb. When the bulb does not refill (or refills very slowly), the tube is presumed to be in the esophagus. If the tube is in the trachea, there is nothing to occlude the movement of air. The bulb will rapidly refill, indicating that the ETT is properly placed.

EDD Limitations:
- A large amount of gastric air (e.g., caused by carbonated beverage, aggressive ventilations, misplacement of ETT) can give a false positive finding. Tracheal obstructions in patients with morbid obesity, late pregnancy, status asthmaticus, or copious endotracheal secretions may yield misleading results.
- A cold device may give a false negative result. If the rubber bulb is stiff from the cold, it will fail to fill with air. The ETT will seem to be in the esophagus, when it is actually in the trachea.
- It cannot be used continuously. It must be removed after confirmation, though it may be used again after patient movement.
- Use only for confirmation of endotracheal tube placement, not for any other airways (LMA, King, etc.)

P EDD may only be used on pediatric patients who are older than 5 years of age who weigh at least 20 kg (44 pounds).
Beck Airway Airflow Monitor (BAAM)

The BAAM is a device to assist with nasotracheal tube placement. The BAAM is a small plastic device that attaches to the endotracheal tube. It emits a whistle sound when the patient inhales and exhales which should become notably louder with cuff inflation.

INTUBATION

- Always secure the ET tube in place, preferably with a commercial tube-securing device.
- A cervical collar is effective in maintaining patient’s head in a neutral position.
- Reassess ET tube placement every time the patient is moved.
- {Digital Intubation} or {Lighted Stylet Intubation} or {Camera Assisted} may be utilized.
- {Dual Lumen Airways, (e.g., Combitube, Pharyngotraceal Lumen Airway (PtL)), King Airway, or Laryngeal Mask Airways (LMA)}, are acceptable airway devices and satisfy the “rescue airway” component for {StI}. Use of these devices is limited to patients who need an artificial airway, and who are able to tolerate the device.
- If routine ventilation procedures are unsuccessful, try to visualize obstruction with laryngoscope. If a foreign body is seen, attempt to remove it using suction or Magill forceps.
- If a conscious patient requires intubation, consider the following:
  - Apply Lidocaine Jelly to the ET tube.
    A  Lidocaine 100 mg {IN} (half dose per nostril) or nebulized with 8-10 LPM O₂.
    P  Lidocaine 1.5 mg/kg nebulized with 8-10 LPM O₂ or {IN}. Maximum dose is 100 mg.

NOTE: Nebulized Lidocaine can be administered simultaneously with Albuterol and Ipratropium. If feasible, wait one to two minutes before intubating.

  A  If the patient is resisting the tube after confirmed intubation and SBP > 100, consider Midazolam 2 mg slow IV.
  P  If SBP is appropriate, and the patient is resisting consider Midazolam 0.1 mg/kg (max dose 2 mg), slow IV.
  A  If a patient would benefit from intubation but is combative, agitated, or has jaws clenched, use {Sedate to Intubate or RSI} procedures.
- Whenever all reasonable attempts to provide an adequate airway by less invasive means have failed, perform a cricothyrotomy or approved surgical airway utilizing an approved method.

TENSION PNEUMOTHORAX RELIEF

- If there are indications of tension pneumothorax and the patient is hemodynamically unstable, decompress the chest with a 14-gauge, 3 1/4 inch angiocath placed in the second or third intercostal space in the mid-clavicular line (MCL). The MCL is parallel to the sternum, extending down from the midpoint of the clavicle. Placement of a needle too high, too low, too medial, or too lateral increases the risk of complications. Tracheal deviation is a very late sign and therefore an unreliable indicator.
- 3 ¼” angiocaths may not be available from emergency departments. EMS agencies may need to purchase them.

{SEDATE TO INTUBATE}

{Sedate to intubate may only be utilized with department and medical director approval. Do not attempt if successful intubation is unlikely due to foreseeable complications.}

ADULT ONLY:
  A  Must be trained on, approved on and have equipment to perform a cricothyrotomy either open surgical or by device.
A Pre-oxygenate the patient. In order to reduce gastric distention, avoid using a BVM.
A Apply a cardiac monitor and pulse oximeter.
A With suspected stroke, intracranial hemorrhage, head injury, or signs of increased intracranial pressure, administer **Lidocaine 100 mg, IV**.
A Administer **Etomidate 0.3 mg/kg, IV** (average initial dose is 15-25 mg). Repeat initial dose within 2 minutes as needed. Apply cricoid pressure to reduce the possibility of aspiration and to facilitate intubation.
A **OR** as an alternative drug, administer **Ketamine 100 mg IV**. Repeat initial dose within 5 minutes as needed. The patient may appear to be awake, will continue to breathe but should not respond to commands. Ketamine will not impair airway protective reflexes, so this may help facilitate nasal intubation.
A **OR** Ketamine **500 mg IM** (2 doses of 250 mg), may repeat in 10 minutes.
A After the jaw relaxes (30-60 seconds), intubate. Confirm tube placement as above.
A If the patient is resisting and SBP >100 after intubation, **Midazolam 2 mg, slow IV**.
A If you are unable to intubate the patient, immediately begin ventilating with a BVM with cricoid pressure or a rescue ventilation device (e.g., LMA, Combitube).
A For problems, contact medical control.

**NEBULIZED MEDICATION**

Nebulized medication may be administered while ventilating a patient with a BVM. The process ideally requires two oxygen sources, one attached to the nebulizer and one attached to bag-valve device and an extra elbow. If only one oxygen source is available, attach it to the nebulizer until nebulized medication delivery is complete, and then attach to BVM. Refer to the diagram on the skill sheet for further info.

**{IO INSERTION}**

- Use of IO devices is limited to patients who are unresponsive or hemodynamically unstable; and then, only when less invasive means are ineffective or not available (e.g., IM Glucagon, {IN Narcan or Versed}).
A For an adult in cardiac arrest, the preferable order of vascular access is EJ, AC, proximal humeral IO, and as a last resort, proximal tibial IO.
A An adult cardiac arrest patient’s circulation differs from a pediatric cardiac arrest patient’s, and also differs from an adult in deep shock. With the approval of the department’s Medical Director, it is recommended that the proximal humerus be the site for IO insertions for adults in cardiac arrest. IV/IO accesses below the diaphragm may be ineffective for patients greater than 8 years old who are receiving CPR. Flow rates are better in the proximal humerus due to decreased bone density. The longer yellow (45 mm) needle should be used for humeral IOs in adults.
- In summary:

<table>
<thead>
<tr>
<th>Adults</th>
<th>Pediatric</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arrest:</strong></td>
<td>Humerus</td>
</tr>
<tr>
<td><strong>Non-arrest:</strong></td>
<td>Tibia</td>
</tr>
</tbody>
</table>

![Diagram of IO insertion]

- Acromion
- Coracoid Process
- Greater Tuberosity
Proximal Tibia
Find the "flat spot" on the medial aspect of the tibial shaft two finger widths below (distal) the tibial tuberosity. Remember, "Big Toe IO" means to look on the big toe side of the leg for the tibial plateau (the flat spot). Use a similar technique as for the Pediatric tibial insertion.

• {IO Insertion at Proximal Tibia Site}
  1. Identify the tibial tuberosity by palpating just below the knee.
  2. Locate the consistent flat area of bone 2 cm distal and slightly medial to the tibial tuberosity (to avoid growth plate).
  4. Prep the skin and insert needle according to manufacturer’s directions.
  5. Use 10-15° caudal angulation to further decrease risk of hitting growth plate.
  6. Needle will stand up on its own with proper placement.
  7. Attach syringe and aspirate bone marrow (to further confirm placement).
  8. Connect the IV line. If flow is good and extravasation is not evident secure needle with gauze pads and tape.
  9. A pressure bag may facilitate infusion.
  10. Lidocaine 1.5 mg/kg up to 100 mg via IO for pain associated with infusion.

NOTE: The administration of other drug therapy should not be delayed due to the administration of Lidocaine for pain management.

Humeral Head
The greater tuberosity is located by placing the patient’s hand on their navel and relaxing their shoulder and elbow. Draw a straight line between the coracoid process and the acromion. Complete the drawing of a perfect triangle by using the previous line as the base of the triangle and extending the "point" of the triangle over the humeral head. The site is at the downward point of the triangle.

A {IO Insertion at Humeral Head Site}

  1. Position patient so shoulder is adducted (moved toward the middle of the body) and the greater tuberosity is most prominent by lying patient supine, arm at their side with palm on their navel.
  2. Palpate proximal humerus and identify the greater tuberosity.
  3. Prep the skin.
  4. Insert the needle at 90-degree angle directly into the greater tuberosity.
  5. Needle will stand up on its own with proper placement.
  6. In most patients, the longer yellow IO needle should be used for humeral IOs.
  7. Attach syringe and aspirate bone marrow to further confirm placement.
  8. Connect the IV line. If flow is good and extravasation is not evident, secure needle with gauze pads and tape.
  9. Pressure bags may facilitate infusion.

CENTRAL VENOUS CATHETERS

Patients who require long-term intravascular therapy may have Central Vascular Access Devices (CVAD). CVADs may be used for IV access if the patient is hemodynamically unstable or in arrest.

• Central catheter: Catheter placed through chest wall into the internal jugular or subclavian vein. Central catheters can be single or multilumen. Distal portion of catheter is external with access ports, either of which may be used for access.
• PICC Line: Catheter placed in arm. Distal portion of catheter is external with access port. Do not force fluids or drugs through the device or failure could result in an embolism. PICC line diameter creates significant resistance to fluid flow making it difficult to infuse large quantities of fluids. D10 by PICC is preferable to IM Glucagon.
• Subcutaneously Implanted Port: Device surgically placed under the skin on the chest. No external access. PARAMEDICS ARE NOT PERMITTED TO ACCESS THIS DEVICE.
Complications of CVADs

- Infection: Thorough cleaning of the selected port must be done three times during the procedure: before attaching each syringe and before attaching the IV tubing.
- Air Emboli: The catheter must be clamped with its clamp before attaching and before removing the syringes.
- Heparin Bolus: These catheters remain in place without fluids continually flowing through them. To prevent blood clot formation, a bolus of Heparin or other anticoagulating agents will be in the catheter. Remove 5 ml of blood to insure that the Heparin is not systemically administered to the patient resulting in a potentially significant complication.
- Catheter Damage: Use a 10 ml syringe or larger when drawing off the blood. Smaller syringes create too much pressure. After verifying blood return, flush catheter with 10 ml of NS with a 10 ml or larger syringe utilizing a pulsating technique. Administer medications slowly to avoid creating too much pressure. Do not use catheter if unable to get blood return.
- DO NOT USE A PRESSURE INFUSION DEVICE ON CVADs.

INTERNAL DIALYSIS FISTULA

A dialysis fistula is an artificial passage between an artery and a vein used to gain access to the bloodstream for hemodialysis. In hemodialysis, the patient's blood is pumped through the internal arteriovenous fistula. These internal shunts may be an artery and vein being sutured directly together (anastomosis) or a graft, joining the artery and vein. They are usually located in the inner aspect of the patient's forearm, a bulge under the skin that should be visible or easily palpated.

In cardiac arrest or with a profoundly unstable, rapidly deteriorating patient, a dialysis fistula may be used to administer IV fluids or medication.

- Use aseptic technique.
- Be careful not to puncture back wall of vessel.
- Use IV pressure bag.
  - Blood may still back-up into tubing.
- Control bleeding with direct pressure.
  - Dialysis patients are usually on anticoagulants.

MAINTENANCE OF EXISTING MEDICATION PUMPS

Do not stop the flow of medication except under direct orders from Medical Control. There are some drugs such as Flolan that could kill the patient if stopped. If the patient is experiencing an allergic reaction, call Medical Control.

For a diabetic patient with an insulin pump who is hypoglycemic, treat the hypoglycemia.
CARDIOVASCULAR EMERGENCIES
BASIC LIFE SUPPORT

- Assess patient for pulse and respirations.
- If no pulse, initiate CPR and use {AED/Defibrillator} using the most current American Heart Association Guidelines.
- Consider {Impedance Threshold Device}.
- Transport patient as appropriate.

General Considerations:
- CPR should not be interrupted for more than 10 seconds until spontaneous pulse is established.
- Paramedics are expected to provide resuscitative care at the scene. Cardiac arrests should not be transported unless the patient has Return of Spontaneous Circulation (ROSC), an airway cannot be secured, vascular access is not established, or the MCP refuses to authorize Field Termination.

---

<table>
<thead>
<tr>
<th>2010 AHA CPR GUIDELINES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPR ORDER</strong></td>
</tr>
<tr>
<td>Compression, Airway, Breathing</td>
</tr>
<tr>
<td><strong>COMPRESSION DEPTH</strong></td>
</tr>
<tr>
<td><strong>COMPRESSION RATE</strong></td>
</tr>
<tr>
<td><strong>COMPRESSION NOTES</strong></td>
</tr>
<tr>
<td><strong>COMPRESSION TO BREATHS RATIO</strong></td>
</tr>
<tr>
<td>1 OR 2 Person CPR</td>
</tr>
<tr>
<td><strong>ADVANCED AIRWAY</strong></td>
</tr>
<tr>
<td>About 1 sec per breath duration</td>
</tr>
<tr>
<td><strong>RESCUE BREATHING</strong></td>
</tr>
</tbody>
</table>

NOTES:
- Use jaw-thrust method to open airway on trauma patients.
- Allow the chest to fully recoil after each compression.
- Change person compressing chest every 2 minutes.
- Attach and use AED as soon as possible.
- Utilize AED as it is programmed. (Even if it is not to AHA guidelines.)
- If available, use age appropriate AEDs or pads.
- Minimize interruptions to compressions before and after each shock to less than 10 seconds.
- Resume CPR beginning with compressions.
- For pregnant patient in arrest consider need for manual uterine displacement and perform chest compressions slightly higher on the sternum than normal.
• In all cardiac arrests, consider the ACLS “Treatable Causes”: i.e., “Hs” and “Ts”

<table>
<thead>
<tr>
<th>H’s</th>
<th>T’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypovolemia</td>
<td>Toxicity</td>
</tr>
<tr>
<td>Hypoxia</td>
<td>Tension Pneumothorax</td>
</tr>
<tr>
<td>Hypo-/hyperkalemia</td>
<td>Thrombosis (Coronary, Pulmonary)</td>
</tr>
<tr>
<td>Hydrogen Ion (Acidosis)</td>
<td>Trauma</td>
</tr>
<tr>
<td>Hypoglycemia</td>
<td></td>
</tr>
<tr>
<td>Hypothermia</td>
<td></td>
</tr>
</tbody>
</table>

CARDIAC ARREST: RENAL DIALYSIS

• For renal dialysis patients in arrest or presenting in wide complex bradycardia:
  A Calcium Chloride 10% (1,000 mg) IV
  P Calcium Chloride 10%, 0.2 ml/kg (20 mg/kg) IV, max dose 500 mg Calcium Chloride
  ▪ Flush IV line thoroughly between Calcium and Sodium Bicarb. It is critical that these drugs not be given together, as they will precipitate.

  A Sodium Bicarb 100 mEq IV
  P Sodium Bicarb 1 mEq/kg IV

CARDIAC ARREST: SMOKE INHALATION OR SUSPECTED CYANIDE POISONING

• For patients in cardiac arrest from smoke inhalation or suspected cyanide poisoning:

NOTE: ♦ MCP order NOT needed for Hydroxocobalamin or Sodium Thiosulfate when patient is in cardiac arrest.
  A ♦ Administer Hydroxocobalamin (Cyanokit) 5 grams, via slow IV infusion, over 15 minutes. **DO NOT ADMINISTER** both Hydroxocobalamin and other cyanide antidotes to the same patient. Follow package directions.
  ▪ Reconstitute: Place the vial in an upright position.
  ▪ Add 200 mL of 0.9% Sodium Chloride Injection to the vial using the transfer spike. Fill to the line.
  ▪ Mix: The vial should be repeatedly inverted or rocked, not shaken, for at least 60 seconds prior to infusion.
  ▪ Infuse Vial: Use vented intravenous tubing, hang and infuse over 15 minutes.
  ▪ One 5 g vial is a complete starting dose.

  P Pediatric dose is 70 mg/kg IV; max dose of 5000 mg; may repeat a dose of 35 mg/kg; max dose 2500 mg, depending on severity of poisoning and clinical response.

NOTE: Hydroxocobalamin is incompatible with numerous drugs carried by EMS, including Diazepam. Whenever possible, administer Hydroxocobalamin through a separate IV line.

• ♦ OR administer Sodium Thiosulfate
  A If > 25 kg, 50 ml of 25% solution (12.5 grams), slow IV.
  P If < 25 kg then 1.65 ml/kg (412.5 mg/kg) of the 25% solution, slow IV not to exceed 50 ml (12.5 grams).

• It is critical to control any seizure activity, using Diazepam or Midazolam

NOTE: Cyanide antidotes are no longer carried in the Drug Bags. They are located in multiple caches in each of the eight counties throughout the region, and are available by contacting 937-333-USAR (8727), who will contact the cache agency closest to your incident, which will respond on a mutual aid basis with both a Cyanokit and Sodium Thiosulfate, to provide for the potential of multiple patients. It is strongly recommended that agencies immediately call for the cyanide antidote cache whenever any of the following occur:
  • Dispatched on a report of a person trapped in a structure fire
  • Dispatched on a report of an incident involving cyanide
  • Report of a Mayday or firefighter down in a structure fire
CARDIAC ARREST: V-FIB/PULSELESS V-TACH

- If witnessed or unwitnessed arrest, initiate quality CPR and proceed to first defibrillation as soon as possible.
- **First Defib:**
  - A 360 J for monophasic, use manufacturer’s recommendations for biphasic.
  - P Defib: 2 J/kg or biphasic equivalent.
- CPR for 1-2 minutes
- **Second Defib:**
  - A 360 for monophasic use manufacturer’s recommendations for biphasic.
  - P Defib: 4 J/kg or biphasic equivalent.
- **Epinephrine 1 mg 1:10,000, IV/IO**, repeat every 3-5 minutes.
  - A If unable to establish IV, Epinephrine 2 mg, ETT, repeat every 3-5 minutes (1 mg 1:10,000 and 1 mg 1:1,000).
  - P Epinephrine (1:10,000) 0.01 mg/kg, IV/IO or Epinephrine (1:1,000) 0.1 mg/kg ETT, repeat every 3-5 minutes.
- CPR for 1-2 minutes
- **Third Defib:**
  - A Defib: 360 for monophasic, manufacturer’s recommendations for biphasic.
  - P Defib: 6 J/kg or biphasic equivalent.
- **Amiodarone:**
  - A 300 mg, IV/IO, if unable to establish IV, Lidocaine 1.5 mg/kg ETT
  - P 5 mg/kg IV/IO (Max first dose 300 mg)
    - If unable to establish IV, Lidocaine 1.5 mg/kg ETT (max dose 100 mg)
- Repeat cycles of CPR-shock-drug
- CPR for 1-2 minutes
- **Fourth Defib:**
  - A Defib: 360 for monophasic, to manufacturer’s recommendations for biphasic.
  - P Defib: 8 J/kg or biphasic equivalent.
- Repeat **Amiodarone, IV/IO** after 10 minutes:
  - A 150 mg, if unable to establish IV, Lidocaine 0.75 mg/kg ETT up to 3 mg/kg
  - P 5 mg/kg, (Max second dose 150 mg)
    - If unable to establish IV, Lidocaine 0.75 mg/kg ETT (max dose 100 mg)
- {12-lead EKG}
- Continue CPR and repeat treatment as indicated
- **Fifth and successive defibrillations will be at 10 J/kg or biphasic equivalent**
- Consider treatable causes.

A If patient converts from a ventricular arrhythmia and no anti-arrhythmic has been given, then administer **Amiodarone 150 mg in 250 ml NS, IV over 10 minutes using 60 drop/ml tubing.**

CARDIAC ARREST: ASYSTOLE/PEA

- CPR for 1-2 minutes
- **Epinephrine 1 mg, IV/IO**, repeat every 3-5 minutes.
  - A If unable to establish IV, Epinephrine 2 mg, ETT, repeat every 3-5 minutes (1 mg 1:10,000 and 1 mg 1:1000).
  - P Epinephrine (1:10,000) 0.01 mg/kg, IV/IO, if unable to establish IV, Epinephrine (1:1,000) 0.1 mg/kg, ETT repeat every 3-5 minutes
- CPR for 1-2 minutes
- A Consider **Atropine 1 mg, IV/IO** for asystole or slow PEA (repeat every 3-5 minutes x 3 doses)
- Continue CPR and repeat treatment as indicated
- Consider treatable causes.
- {12-lead EKG}
CARDIAC ARREST: {INTRA-ARREST THERAPEUTIC HYPOTHERMIA}

A {Cardiac Monitor with 12-lead as soon as possible}
A {If evidence of AMI, transport to interventional cath center if it indicates STEMI.}
A {Intra-Arrest Therapeutic Hypothermia}

P ♦ INTRA-ARREST protocol may be beneficial to pediatric patients.

- Trauma is a contraindication to this protocol.
- {Do NOT start protocol if patient is hypothermic (<34°C/93.2°F) or if patient is conscious.}
- {Place ice packs in axillae, groin and neck. Protect skin with towels. Change ice packs every 15 minutes or when needed. Do not delay transport to cool.}
- Complete neurologic exam including GCS and pupil response.
- {As soon as possible in the cardiac arrest algorithm begin chilled (4°C/39.2°F) Normal Saline bolus to a total of 2 L max as rapidly as possible}
- {Treat for appropriate rhythm with medications given in normothermic IV}
- {Notify hospital so they are ready to continue patient cooling}. If SBP remains < 100, Norepinephrine 30 drops/min, (max dose 44 drops/min). Titrate to maintain SBP ~100.
A {Treat for shivering.}
- {Midazolam 2 mg slow IV and may repeat as needed for shivering (SBP > 100)}.
- {Etomidate 0.3 mg/kg IV (up to 20 mg max) as needed for shivering}

CLINICAL PEARLS:

A Protocol begins with a patient in arrest.
A Inclusion Criteria:
- Arrest not related to blunt/penetrating trauma or hemorrhage.
- Age 16 or older
- Advanced airway in place with an {ETCO2 > 20}
  - Patients may develop metabolic alkalosis with cooling. DO NOT HYPERVENTILATE
- ♦ If advanced airway cannot be obtained, cooling may only be initiated with MCP order.
- GCS < 8 (No purposeful response to pain.)
- No known DNR order exists.
A Goal temperature 32-34°C (89.7-93.2°F)
P For patients less than age 16, contact MCP.

SUSPECTED CARDiac CHEST PAIN

P Chest pain in the pediatric patient is rarely related to a cardiac event. Assessment for other causes (e.g., muscle pain, respiratory difficulties, injury) should be completed to determine the source of pain. Application of supplemental oxygen and transport should be the mainstay of care for these patients. Contact MCP for further advice when needed.

P THE REST OF CHEST PAIN ALGORITHM DOES NOT APPLY TO PEDS.
A An unstable cardiac patient is one who is hypotensive, or has chest pain with poor skin color or diaphoresis.
A Ask male and female patients if they have taken Viagra, Cialis, Levitra, Revatio, or similar medications within the last 24 hours. Do not administer Nitroglycerin (NTG) if they have taken the above medications. NTG may cause profound hypotension in these patients.
A Give Aspirin (ASA) 324 mg to every patient ≥ 25 y/o with symptoms of Acute Coronary Syndrome (ACS) including anginal chest pain, shortness of breath, syncope, diaphoresis, weakness, nausea, or vomiting. Patient MUST CHEW the ASA.
A Prior to moving patient, acquire a supine {12-lead EKG} on all patients with ACS symptoms. Some patients (elderly, or diabetics) often may have atypical symptoms.
A {Transmit} EKG with two identifiers, such as name, DOB, Medic number, age and sex to MCP any {12-lead EKG} that meets Cardiac Alert criteria, or any that is questionable.
A The MCP shall be contacted after any {12-lead EKG transmission} is completed.
A {If evidence of an AMI, transport to an interventional cath center if it indicates STEMI.}
A If SBP >100, and the patient is ≥ 25 y/o, administer Nitroglycerin 0.4 mg SL, every 5 minutes
to a total of three pills with vital signs between doses. Prior to NTG administration, establish vascular access for patients who have not previously had NTG.

A Consider Pain Control Protocol, provided SBP > 100 after first nitro. **DO NOT WAIT UNTIL 3 NITROS ARE GIVEN BEFORE CONSIDERING FENTANYL.**

A NS, up to 500 ml, may be administered to a patient with SBP < 100 without pulmonary edema. If RVI is suspected with hypotension, consult MCP for fluid bolus.

A Consider repeat {12-lead EKGs} during transport.

**NOTE:** Revatio is a drug approved for treatment of pulmonary arterial hypertension (PAH), a disease that may be treated with Flolan at end stage. The drug contains Sildenafil which is Viagra. Organic nitrates are contraindicated with Revatio. Revatio is prescribed for both men and women. Providers should ask patients, especially PAH patients, about both Viagra and Revatio before giving NTG.

**CARDIAC ALERT PROGRAM**

The Intent of the Cardiac Alert Program is to decrease the “Door to Balloon” time for Pre-Hospital AMI Patients. EMS Providers who have patients experiencing symptoms of an AMI, and confirm the AMI with Diagnostic 12-Lead will make early notification to the receiving facility and speak directly with MCP. The receiving facility may activate a Cardiac Alert, prompting the response of the On-Call Cath Lab team members.

Rerouting of Interventional Facilities does not apply to Cardiac Alerts. Follow the appropriate treatment considerations for specific AMI types.

**Inclusion Criteria**

- All patients presenting with anginal-type chest pain or an equivalent anginal event may be candidates. The paramedic will perform an initial 12-lead EKG to determine the presence of an AMI.
- All patients with evidence of an AMI (>1mm ST elevation in 2 contiguous leads) on a diagnostic 12-lead EKG. The EMS Provider will complete the Cardiac Alert Checklist and contact the receiving facility as soon as possible.

**Exclusion Criteria For The Cardiac Alert Program:**

- Patient with a LBBB (QRS greater than 120 ms).
- Patients with a Pacemaker rhythm

Hospitals expect the paramedic to read the 12-lead EKG! Do not simply depend on the computer chip in the monitor to read it for you.

If you read the strip one way, and the computer reads it another, give both pieces of information to the MCP when you call, but have the courage of your convictions.

Patients with Anterior Wall Acute Myocardial Infarctions, especially with ST elevation in three leads are at higher risk for Cardiac Arrest. They are also at high risk for developing CHF or cardiogenic shock, and may develop BBB’s, PVC’s or 3º blocks.

Performance Improvement/Quality Improvement (PI/QI) is an important part of a 12-lead EKG program, as it is with every aspect of EMS. Paramedics should be able to interpret 12-lead EKGs to the level of the Cardiac Alert Checklist with at least 80% accuracy. The most important element of the Cardiac Alert program is recognition of an AMI patient by EMS.

**DESTINATION CONSIDERATIONS**

- An Interventional Facility is a hospital that provides PCI 24 hours a day.
- Patients with ROSC should be transported to an Interventional Facility.
- ST Elevation MI (STEMI) only patients should be transported directly to an Interventional Facility even if other hospitals are closer. Consider air medical transport if the Interventional Facility is over 30 minutes away.
- Exceptions:
  - It is medically necessary to transport the patient to the closest hospital for stabilization.
  - It is unsafe to transport the patient directly to an Interventional Facility due to adverse
weather or ground conditions or excessive transport time.
- Transporting the patient to an Interventional Facility would cause a critical shortage of local EMS resources.
- Patient requests transport to a different facility, despite EMS education of patient.
- Contact MCP to discuss the appropriate destination for resuscitated cardiac arrest patients who have evidence of AMI.

CARDIAC INTERVENTIONAL FACILITIES

The following hospitals have PCI capabilities:

- Atrium Medical Center
- Good Samaritan Hospital
- Grandview Hospital
- Southview
- Kettering Medical Center
- Miami Valley Hospital
- Springfield Regional Medical Center
- Reid Memorial Hospital

TREATMENT CONSIDERATIONS FOR AMI

Inferior Wall
(_Leads II, III, aVF supplied by the Right Coronary Artery_)
- Aggressive fluid administration may be required (i.e. fluid boluses) due to cardiogenic shock. Reassess lungs frequently.
- Attempt to capture Lead V4R to determine right ventricular involvement.
- Patient may be sensitive to NTG and Fentanyl administration. Monitor BP frequently.
  - Treat hypotension with a fluid challenge and administer NTG or Fentanyl with caution.
- If 2° type II or 3° block, prepare to pace immediately.
  - Consider Atropine _0.5 mg IV up to 3 mg_ while awaiting pacer.
  - Consider Midazolam _2 mg slow IV_ prior to pacing.
  - Start pacing at 70 BPM, 20 mA and increase until mechanical capture is obtained.
- If patient is still hypotensive, begin Norepinephrine _30 gtts/min (max 44 drops)_; Titrate to effect.

Anterior Wall
(_Leads V1-V4; supplied by Left Anterior Descending Artery_)
- Patients with ST elevation in more than 2 leads are at higher risk for sudden cardiac death.
- High risk for developing CHF or cardiogenic shock.
- May also develop BBB’s, PVC’s or 3° blocks.
- If patient is hypotensive, begin Norepinephrine _30 gtts/min (max 44 drops)_; Titrate to effect.

Lateral Wall
(_Leads I, aVL, V5-V6; supplied by Circumflex_)
- May have some LV dysfunction but not as severe as anterior wall AMI.
- May also develop AV Nodal Block.

CARDIAC DYSRHYTHMIAS BRADYCARDIA

- Obtain {12-lead EKG}.
- Wide complex bradycardia in a renal dialysis pt should spark consideration of treatment of hyperkalemia: _1 amp of Calcium Chloride_.
- For adequate perfusion, observe and monitor.
- For poor perfusion:
  - Consider Atropine _0.5 mg IV, may repeat x 5 (up to total of 3 mg)_.
  - If treatments are ineffective begin pacing:
    - If time permits, Midazolam _2 mg slow IV_ prior to pacing.
    - Set at 70 BPM, 20 mA and increase until mechanical capture is obtained.
Pediatric patients are considered unstable if they have bradycardia that adversely affects their cardiac output and vital signs.

**P** For adequate perfusion, observe, monitor and apply oxygen if needed.

**P** For poor perfusion:
- Perform CPR if HR < 60/min.
- **Epinephrine** (1:10,000) 0.01 mg/kg, IV or Epinephrine (1:1,000) 0.1 mg/kg, ETT repeat every 5 minutes.
- If AV block:
  - Consider **Atropine 0.02 mg/kg** IV (minimum dose 0.1 mg, maximum single dose 0.5 mg), may repeat dose x 1 for a max total dose of 1 mg.
  - Consider pacing:
    - Pediatric electrodes should be used on patients < 15 kg.
    - Consider **Midazolam 0.1 mg/kg** (max dose 2 mg) **slow IV** prior to pacing.
    - Start with 5 mA increasing as needed to 200 mA at a rate of 80 bpm until capture is verified.

**TACHYCARDIA: ADULT ONLY**

**A** Obtain {12-lead EKG}.

**Stable:**

- **A** Narrow Complex - Regular
  - Vagal maneuvers
  - **Adenosine 6 mg rapid IVP**
    - If patient has history of Paroxysmal Supraventricular Tachycardia (PSVT) and advises it takes 12 mg of Adenosine, then skip the 6 mg dose.
  - May repeat **Adenosine 12 mg rapid IVP** x 2.

- **A** Wide Complex – Regular or Irregular
  - **Amiodarone 150 mg in 250 cc NS, IV over 10 minutes using 60 drop tubing wide open with 18 gauge needle.**

**Unstable:**

An unstable patient is defined as a patient who is hypotensive or unconscious when the hypotension or altered mental status is thought to be due to the patient’s tachycardia. Do not cardiovert patients without hemodynamic changes or patients whose hemodynamic changes have other apparent causes (e.g., blood loss).

- **A** Consider **Midazolam 2 mg slow IV** prior to cardioversion.
- **A** Cardioversion: 100, 200, 300, 360 J for monophasic or biphasic equivalent

**TACHYCARDIA: PEDS ONLY**

**Stable:**

- **P** Vagal maneuvers (blowing through a straw or oxygen tubing, etc.)

**Unstable:**

A patient who is hypotensive or unconscious when the hypotension or altered mental status is thought to be due to the patient’s tachycardia is considered unstable. Do not cardiovert patients without hemodynamic changes or patients whose hemodynamic changes have other apparent causes (e.g., blood loss).

- **P** Vagal maneuvers (Blowing through a straw or oxygen tubing, etc.)
- **P** **Adenosine 0.1 mg/kg rapid IVP** (max dose 6 mg)
- **P** If no response, **Adenosine 0.2 mg/kg rapid IVP** (max dose 12 mg). **May repeat x 1.**
- **P** Consider cardioversion.
  - If time permits, **Midazolam 0.1 mg/kg slow IV** (max dose 2 mg).
  - Cardioversion 1 J/kg
- **P** If no response, Cardioversion 2 J/kg
SHOCK

Perform manual BP on all pts presenting with S/S of shock. SBP is only one component of the overall clinical picture, which may include tachycardia, tachypnea, diaphoresis, restlessness, decreased mentation. Skin may be pale, ashen, cyanotic, cool, or clammy. Be sure to include S/S in report if SBP is < 100.

Only give fluids for specific S/S of shock and not to every trauma patient.

Without Pulmonary Edema: Patient does not have JVD, edema, or rales

A NS 500 ml IV. May repeat x 1.
P NS 20 ml/kg IV.
P Titrate to maintain adequate perfusion.
A ♦ Additional NS 500 ml IV, if needed.
P ♦ Additional NS 20 ml/kg IV, if needed.
A For persistent shock, establish additional vascular access.
A If SBP remains < 100, begin Norepinephrine 30 gtts/min (max 44 drops). Titrate to effect, SBP ~ 100.

With Pulmonary Edema: Patient may have JVD, edema, or rales present.

A Treat arrhythmias as indicated.
A Consider NS 250 ml IV.
A If SBP remains < 100, Norepinephrine 30 gtts/min (max 44). Titrate to maintain SBP ~ 100.

Exsanguinating Hemorrhage:

A Control external bleeding and treat for hypovolemic shock as indicated.
A NS to maintain SBP ~ 100 en route to hospital. Do not get SBP too high.
P NS 20 ml/kg IV. May repeat x 2. Titrate to maintain adequate perfusion

STROKE

A Be prepared to assist ventilations with oral or nasal airway and BVM or {FROPVD (Flow Restricted Oxygen Powered Ventilation Device)}.
A If signs of cerebral herniation are present, ventilate at a rate of 20 respirations per minute.
  o {If signs of cerebral herniation are present and numeric EtCO₂ readings are available, ventilate at a rate to maintain readings at approximately 30 mmHg (30 torr)}.
P Ventilate at a rate of ten faster than normal respiratory rate when the signs of cerebral herniation are present.
A If one or more signs of Cincinnati Prehospital Stroke Scale is abnormal, call a Stroke Alert.
  o Cincinnati Prehospital Stroke Scale: (normal or abnormal)
    ▪ Facial Droop (pt. shows teeth or smiles).
    ▪ Arm Drift (pt. closes eyes and holds both arms straight out for about 10 seconds).
    ▪ Abnormal Speech (have pt. say “You can’t teach an old dog new tricks.”)
• If glucose < 60, or there is strong suspicion of hypoglycemia despite glucometer readings:
  A Administer D10, IV 250 ml at wide open rate. (500 ml = 50 gm of Dextrose)
P D10, IV (5 ml/kg) maximum single dose of 250 ml
  o Document amount of D10 administered in milliliters.
  o If unable to establish vascular access, Glucagon, 1 mg IM
• D10 may be repeated in ten minutes if blood sugar remains < 60
A Strongly consider transport to a Stroke Center.
A If patient’s symptoms occurred > 4 hours and < 8 hours from last time they were known to be free of stroke symptoms or awoke abnormal, transport to an Interventional Facility.
  o Contact MCP with a Stroke Alert for advice regarding transport destination if greater than 8 hours since last seen normal.
• Transport the patient with the bed flat, if able to tolerate. If showing signs of increased ICP, do not lie pt flat.
• Transport historian with patient both to provide patient history and for permission to treat.
Complete the “EMS CHECKLIST: SUSPECTED Stroke/CVA/TIA” for every stroke/TIA patient. Copies can be found in emergency rooms.

**Stroke Interventional Facilities**
- Miami Valley Hospital
- Kettering Medical Center

**Disorders Mimicking Stroke**
- Seizure
- Subdural hematoma
- Brain tumor
- Syncope
- Toxic or metabolic disorders (i.e., hypoglycemia)

**TRAUMA EMERGENCIES**

**General Considerations:**
- Use of on-line MCP for medical direction in the field for difficult cases is encouraged.
- Minor trauma patients may be transported to non-trauma centers.
- Major trauma patients are to be transported as soon as possible to the nearest appropriate facility.
- Scene size-up, with rapid assessment and recognition of major trauma/multiple system trauma and effective evaluation of the mechanism of injury are essential to the subsequent treatment.
- Hypothermia is a significant and frequent problem in shock for major trauma patients. Maintain patient’s body temperature.
- If patient condition changes, notify hospital.
- When patient is transported by helicopter, the EMS run sheet should be faxed to the receiving trauma center.
- The only procedures that should take precedence to transport of major trauma patients are:
  - Airway management
  - Stabilization of neck/back or obvious femur and pelvic fractures on a backboard
  - Exsanguinating hemorrhage control
  - Extrication
- After the trauma patient’s extrication, the on-scene time should be limited to **10 minutes or less**, except when there are extenuating circumstances.
- **Pre-arrival notification of the receiving facility is essential!** Give Mechanism of Injury, Injuries, Vital signs, Treatment (MIVT), GCS with components, and ETA.
  - IVs should be attempted en route to the hospital unless the patient is trapped, transport is otherwise delayed, or patient has no life threatening injuries, and transport prior to analgesia would be extremely painful. Start the IV with a large bore catheter, macro drip tubing and 1000 ml of 0.9% NS.
  - Start IV with a large bore catheter, macro drip tubing and 20 ml/kg of NS.
  - IV flow rates are as follows:
    - Keep open rate for major head trauma with adequate perfusion
    - IV wide open if the patient has inadequate perfusion (including head trauma) utilizing {IV Pressure Infusion Pump or Bag} or similar equipment if available.
  - Titrate IV flow rates to maintain SBP ~ 100.
- **For penetrating trauma to the chest and abdomen:**
  - If a radial pulse is present and the patient is conscious and mentating, load and go.
  - If no radial pulse, infuse **NS in 250 ml boluses** en route until radial pulse is present and then stop fluid.
- Consider Pain Control Protocol.
- **NOTE:** Studies indicate that surgical emergencies with increased fluid administration cause dilution, lower body temperatures and increase coagulopathies, all of which increase mortality. This is referred to as “permissive hypotension,” and means that IV fluids are not administered to these patients unless there is loss of radial pulse.
PRE-HOSPITAL FIELD TRIAGE

- Patients to be taken to the nearest hospital:
  - Unstable airway
  - Blunt trauma arrest ≤ 5 minutes or penetrating trauma arrest ≤ 15 minutes of hospital
- Drowning; near drowning; strangulation; burns; electromagnetic, chemical, or radiation exposure; heat or cold injury or illness; and asphyxia are considered trauma and these patients should be transported to a Trauma Center.
- List in the EMS run report which of the State Trauma Triage Criteria the patient met.

TRAUMA CRITERIA

G Patients 70 years of age or older will be triaged for evaluation in a Trauma Center for:
- GCS < 15 with suspected traumatic brain injury (TBI)
- Systolic BP < 100 mmHg
- Falls, even from a standing position, with evidence of TBI
- Pedestrian struck by motor vehicle.
- Known or suspected proximal long bone (femur/humerus) fracture sustained in MVC.
- Multiple body regions injured.

G Special consideration should be given for the geriatric trauma patient to be evaluated at a Trauma Center if they have diabetes, cardiac disease, clotting disorders, immunosuppressive disorder, are on anticoagulants, or require dialysis.

Anatomy of Injury:
- All penetrating trauma to head, neck, torso, and extremities proximal to elbow or knee with neurovascular compromise.
- Abdominal injury with tenderness, distention, or seat belt sign
- Chest injury: flail chest or tension pneumothorax
- Two or more proximal long bone fractures
- One proximal long bone fracture in MVC only
- Evidence of pelvic fracture (exception: isolated hip fracture)
- Spinal cord injury with paralysis

G Burns greater than 10% total body surface area (BSA) or other significant burns involving the face, feet, hands, genitals or airway

P Burns greater than 5% total BSA or other significant burns involving the face, feet, hands, genitals or airway
- Amputation proximal to wrist or ankle
- Evidence of serious injury to 2 or more body systems
- Crush injury to head, neck, torso, or extremities proximal to knee or elbow

<table>
<thead>
<tr>
<th>YES = Transport to Trauma Center</th>
<th>NO – Assess Physiologic Alert Trauma Team</th>
</tr>
</thead>
</table>

Physiological Adult:
- GCS less than or equal to 13
- Loss of consciousness greater than five minutes at any time
- Alteration in level of consciousness with evidence of head injury at time of exam or thereafter
- Failure to localize pain
- Respirations < 10 or > 29
- Intubation
- Tension pneumothorax
- Pulse > 120 in combination with any other physiologic criteria
- SBP < 90 or absent radial pulse with carotid pulse present
Physiological Pediatric:
- GCS less than or equal to 13
- Loss of consciousness greater than five minutes at any time
- Alteration in level of consciousness with evidence of head injury at time of exam or thereafter
- Failure to localize pain
- Evidence of poor perfusion (e.g., weak distal pulse, pallor, cyanosis, delayed capillary refill, tachycardia)
- Evidence of respiratory distress or failure (e.g., stridor, grunting, retractions, cyanosis, nasal flaring, hoarseness, or difficulty speaking)

Physiological Geriatric:
- GCS < 15 with evidence of TBI
- Loss of consciousness greater than five minutes at any time
- Alteration in level of consciousness with evidence of head injury at time of exam or thereafter
- Failure to localize pain
- Respiration < 10 or > 29
- Intubation
- Tension pneumothorax
- Pulse > 120 in combination with any other physiologic criteria
- SBP < 100 or absent radial pulse with carotid pulse present

<table>
<thead>
<tr>
<th>YES = Transport to Trauma Center</th>
<th>NO = Evaluate Mechanism of Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alert Trauma Team</td>
<td></td>
</tr>
</tbody>
</table>

Mechanism of Injury:
- Auto-pedestrian/auto-bicycle injury with significant (> 5 mph) impact
- Death in same passenger compartment
- Ejection from motor vehicle
- Extrication time > 20 minutes
- Fall > 20 feet
- Fall greater than 3 times child’s height
- High-speed auto crash
  - Speed > 40 mph
  - Intrusion into passenger compartment > 12 inches
  - Major auto deformity > 20 inches
- Open motor vehicle crash > 20 mph or with separation of rider from vehicle
- Pedestrian thrown or run over.
- Unrestrained rollover

<table>
<thead>
<tr>
<th>YES = Consider Trauma Center</th>
<th>NO = Check Special Situations</th>
</tr>
</thead>
<tbody>
<tr>
<td>May consult with Medical Control Physician if needed</td>
<td></td>
</tr>
</tbody>
</table>

Special Situations:
- Pre-existing cardiac or respiratory disease
- Insulin dependent diabetes, cirrhosis, morbid obesity, seizure disorder
- Patient with bleeding disorder or on anticoagulants
- Immuno-suppressed patients (renal dialysis, transplant, cancer, HIV)
- Congenital disorders

<table>
<thead>
<tr>
<th>YES = Consider Trauma Center</th>
<th>NO = To Local Hospital</th>
</tr>
</thead>
</table>
TRANSPORT GUIDELINES

Trauma Center/Facility Capabilities:
- Level I and II Trauma Centers can care for the same trauma patients.
- Level III Trauma Centers offer services, based on individual hospital resources that provide for initial assessment, resuscitation, stabilization, and treatment of the trauma patient.
- In some areas of the region a Level III Trauma Center is the only trauma facility within 30 minutes ground transport time. This hospital may act as the primary receiving facility for the critically injured patient.
- In areas where the trauma patient is closer to a Level III Trauma Center, but a Level I or Level II Trauma Center is still within 30 minutes, the EMS Provider should decide whether the patient would benefit more from an immediate evaluation, stabilization, and treatment at the Level III Trauma Center, or from direct transport to a Level I or Level II Trauma Center.
- In areas of the region where there are no Trauma Centers within 30 minutes ground transport time, the acute care hospital may act as the primary receiving facility for critically injured trauma patients, or EMS Provider may arrange for air medical transport from the scene.
- If a pediatric patient meets the trauma triage guidelines, transport to a Pediatric Trauma Center. If transportation time is > 30 minutes, transport to the nearest acute care hospital, or EMS providers may arrange for air medical transport from the scene.
- All pregnant trauma patients should be transported to the nearest Adult Trauma Center, unless transport time > 30 minutes.

Air Medical Transportation:
- Prolonged delays at the scene waiting for air medical transport should be avoided.
- Cardiac arrest is not appropriate for air transport.
- In the rural environment, direct transfer of trauma patients by air medical transport may be appropriate and should be encouraged.

Exceptions to Transportation Guidelines:
- It is medically necessary to transport the victim to another hospital for initial assessment and stabilization before transfer to a Trauma Center.
- It is unsafe to transport the victim directly to a Trauma Center due to adverse weather or ground conditions or excessive transport time.
- Transporting the victim to a Trauma Center would cause a shortage of local EMS resources.
- No appropriate Trauma Center is able to receive and provide trauma care to the victim without undue delay.
- Before transport begins, the patient requests to be taken to a particular hospital even if it is not a Trauma Center. If the patient is a minor or otherwise considered incapable of making medical decisions, an adult relative or other legal representative may make this request.

MAJOR TRAUMA

Patients meeting criteria for transport to a Trauma Center are considered “Load and Go.”
- Place the patient in a correct position to maintain the airway.
- Open pneumothorax: cover wound with an occlusive dressing, tape down three sides.
- Tension pneumothorax:
  - Lift one side of any occlusive dressing.
  - Use caution not to confuse right mainstem intubation for a pneumothorax.
  - Perform needle decompression.
- If patient in arrest has potential chest trauma, perform bilateral relief of tension pneumothorax.
- Flail chest: immobilize with a bulky dressing or towels taped to the chest.
- Contact MCP and advise of patient condition with MIVT, ETA, and GCS components.
- For pregnant patient in arrest consider need for manual uterine displacement and perform chest compressions slightly higher on the sternum than normal.
CRUSH SYNDROME TRAUMA

- **History:** Entrapped or under an extreme load and crushed for greater than 60 minutes
- **Contact MCP**
- **Signs and symptoms:** hypotension, hypothermia, abnormal ECG findings, pain and anxiety

**A** 1 liter NS bolus IV. Then **500 ml/hour IV**

**P** NS, 20 ml/kg IV

- Follow pain management protocol

- **If hypotensive and the pt has been entrapped > 1 hour:**
  - **A** Give additional NS, 1 Liter IV.
  - **P** Give additional NS, 20 ml/kg IV.

- **12 lead**

- **Normal ECG/hemodynamically stable, immediately prior to extrication:**
  - **A** Sodium Bicarb 100 mEq IV
  - **P** Sodium Bicarb 1mEq/kg IV

- **Abnormal ECG/hemodynamically unstable:**
  - ♦ If after release, there are EKG changes consider **Calcium Chloride**.
  - o Peaked T waves with a QRS greater than or equal to 0.12 seconds.
  - o QT ≥ 0.46 seconds.
  - o Loss of P-wave.
  - **A** Sodium Bicarb 100 mEq IV.
  - **P** Sodium Bicarb 1mEq/kg IV.

- **Consider Midazolam:**
  - **A** 2 mg IV
  - **P** 0.1 mg/kg IV, max dose of 2 mg

- Monitor and reassess
- Monitor for fluid overload

- **Special considerations:**
  - o Potential for multiple system trauma
  - o Potential for hypo/hyperthermia.
  - o Hyperkalemia from crushed syndrome can produce ECG changes, and may also cause a bizarre wide complex rhythm.

HEMORRHAGE CONTROL

- Control of life-threatening external hemorrhage takes priority over any other treatment.
- Constant, direct pressure is the primary method of bleeding control.
- If direct pressure fails to control bleeding from extremities, use a tourniquet.
  - {Commercial tourniquets such as the CAT or SOFTT are recommended.}
  - o Only use wide, flat materials such as cravats or BP cuffs as improvised tourniquets.
  - o Any tourniquet should be placed as proximal on the arm or leg as possible. For injuries to the lower leg or forearm, place two tourniquets as proximal as possible on the femur or humerus.
  - o Tighten the tourniquet until the bleeding stops.
  - o Document time and location. Be sure that the ER staff is aware of the tourniquet.
- {For life-threatening hemorrhage that can’t be controlled by a tourniquet, consider hemostatic dressings, e.g., Combat Gauze or ChitoFlex PRO. These can be used on or in the chest or abdomen. Place in direct contact with the source of bleeding and apply a pressure dressing.}  
- **DO NOT USE GRANULAR AGENTS.**
- Treat for hypovolemic shock as indicated.

HEAD INJURY

- Evaluate patient condition:
  - o Level of consciousness
  - o Pupillary size and reaction
  - o Glasgow Coma Scale
### GLASGOW COMA SCALE

<table>
<thead>
<tr>
<th>EYES</th>
<th>&lt; 2 YEARS OLD</th>
<th>ADULT &amp; PEDIATRIC &gt; 2 YEARS OLD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SPONTANEOUSLY</td>
<td>SPONTANEOUSLY</td>
</tr>
<tr>
<td></td>
<td>TO VOICE</td>
<td>TO VOICE</td>
</tr>
<tr>
<td></td>
<td>TO PAIN</td>
<td>TO PAIN</td>
</tr>
<tr>
<td></td>
<td>NO RESPONSE</td>
<td>NO RESPONSE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VERBAL</td>
<td>COOS, BABBLIES</td>
<td>ORIENTED</td>
</tr>
<tr>
<td></td>
<td>IRRITABLE CRY, CONSOLABLE</td>
<td>CONFUSED</td>
</tr>
<tr>
<td></td>
<td>CRIES TO PAIN</td>
<td>INAPPROPRIATE WORDS</td>
</tr>
<tr>
<td></td>
<td>MOANS TO PAIN</td>
<td>GRUNTS, GARbled SPEECH</td>
</tr>
<tr>
<td></td>
<td>NO RESPONSE</td>
<td>NO RESPONSE</td>
</tr>
<tr>
<td></td>
<td>NORMAL MOVEMENTS</td>
<td>OBEYS COMMANDS</td>
</tr>
<tr>
<td></td>
<td>WITHDRAWS TO TOUCH</td>
<td>LOCALIZES PAIN</td>
</tr>
<tr>
<td></td>
<td>WITHDRAWS TO PAIN</td>
<td>WITHDRAWS TO PAIN</td>
</tr>
<tr>
<td></td>
<td>FLEXION (DECORTICATE)</td>
<td>FLEXION (DECORTICATE)</td>
</tr>
<tr>
<td></td>
<td>EXTENSION (DECEREBRATE)</td>
<td>EXTENSION (DECEREBRATE)</td>
</tr>
<tr>
<td></td>
<td>NO RESPONSE</td>
<td>NO RESPONSE</td>
</tr>
</tbody>
</table>

- Signs of cerebral herniation:
  - Dilated and unresponsive pupils, bradycardia, posturing, and decreased mental status.
  - Ventilate at 20 breaths per minute when signs of cerebral herniation are present.
  - Ventilate at a rate of ten faster than normal respiratory rate when the signs of cerebral herniation are present.
  - Hypoventilation increases the level of CO₂ in the brain, causing cerebral vasodilatation and increased swelling. Hyperventilation decreases the level of CO₂ and causes cerebral vasoconstriction, hypoxia and ischemia. Both hyperventilation and hypoventilation could cause cerebral hypoxia and increased mortality.
  - In cerebral herniation, there is a sudden rise in intracranial pressure. Portions of the brain may be forced downward, applying great pressure on the brainstem. This is a life-threatening situation characterized by a decreased LOC that rapidly progresses to coma, dilation of the pupill, an outward-downward deviation of the eye on the side of the injury, paralysis of the arm and leg on the side opposite the injury, or decerebrate posturing. When this occurs, the vital signs frequently reveal increased blood pressure and bradycardia. The patient may soon cease all movement, stop breathing, and die. If these signs are developing in a head injury patient, cerebral herniation is imminent and aggressive therapy is needed. Hyperventilation will decrease intracranial pressure (ICP). In this situation, the danger of immediate herniation outweighs the risk of ischemia.

#### EXTREMITY FRACTURES, DISLOCATIONS, SPRAINS

- Assess and document pulse, motor, and sensation pre/post splinting and during transport.
- For open fractures, control bleeding with direct pressure and cover with dry, sterile dressing.
- Apply appropriate splinting device.
- Apply ice to reduce swelling.
- Consider Pain Control Protocol.
GOOD SPLINTING PRACTICES

- Document distal sensation and circulation pre & post splinting, and pre & post spinal immobilization.
- If the extremity is severely angulated and pulses are absent, apply gentle traction in an attempt to bring the limb back into a natural anatomic position. If resistance is encountered, splint the extremity in the angulated position.
- Open wounds should be covered with a sterile dressing before splinting.
- Apply a well-padded splint to immobilize above and below the injury.
- If in doubt, splint any possible injuries.

NOTE: The patient who requires a load and go approach can be adequately immobilized by careful packaging on the long spine board. Do additional splinting en route to the hospital as time and the patient’s condition permit.

DROWNING AND NEAR DROWNING

- Consider spinal immobilization.
- Consider possibility of hypothermia.
- Establish vascular access.
- Evaluate neurological status.
- Near drowning patients should be transported to a Trauma Center.

HYPOTHERMIA

- Move patient to warm environment, remove all wet clothing, dry the patient, cover with blankets.
- Avoid any rough movement as that may cause cardiac dysrhythmias or cardiac arrest. It may be beneficial to immobilize the patient.
- Minimize movement.
- Assess neurological status.
- It may be necessary to assess pulse and respirations for up to 45 seconds to confirm arrest.
- Consider possibility of other medical conditions (e.g., overdose, hypoglycemia).
- Do not initiate CPR if there is any pulse present, no matter how slow.
- Use the least invasive means possible to secure airway. Intubate if necessary, as gently as possible.
- Hypothermic patients should be transported to a Trauma Center.
- Complete the following steps during transport:
  o Establish vascular access and consider {warmed} fluids.
  o Treat bradycardia only if hypotensive.
- If patient arrests:
  o CPR continuously
  o If severe hypothermia (< 86° F (30° C)) is suspected, limit defibrillation attempts to one and withhold medications except on orders from MCP.
  o If body temperature is > 86° F (30° C), follow normal arrest protocols.
  o Intubate and oxygenate the patient with {warmed and humidified} 100% O₂.
  o Continue resuscitative efforts while in transit, even if there is no response.

FROSTBITE

- Protect injured area. Remove clothing and jewelry from injured parts.
- Do not attempt to thaw injured part with local heat.
- Maintain core temperature.
- Severe frostbite injuries should be transported to a Burn Center.
- Consider vascular access and consider {warmed} fluids.
- Consider Pain Control Protocol.
BURNS/SMOKE INHALATION

General Considerations
- Stop the burning and minimize contamination.
- Severe burns should be transported to a Burn Center unless transport time > 30 minutes.
- Keep patient warm. Patients with extensive burns must be monitored for hypothermia.
- Superficial and partial thickness burns < 10% BSA may have wet dressings applied.
- Burns > 10% BSA may be covered with clean, dry sheets or dressings.
- Remove clothing and jewelry from injured parts.
- **Do not remove items which have adhered to the skin.**
- Inhalation injuries with an unsecured airway should be transported to the nearest facility.
- Chemical burns are Haz-Mat situations and must be grossly decontaminated at the scene.
- BP may be taken over damaged tissue if no other site is accessible.

Specific Care
- Assess for respiratory distress, stridor, hoarseness, sooty sputum, singed eyebrows and nares, or burns of the face or airway.
- Apply cardiac monitor, especially if patient has suffered a lightning strike or electrical burn.
- Determine type of burn and treat as follows:
  - Radiation burns:
    - Treat other medical emergencies first.
    - Treat as thermal burns except when burn is contaminated with radioactive materials, and then treat as a Haz-Mat situation, and contact Haz-Mat for assistance.
  - Inhalation Burns:
    - Provide O₂ [humidified with Saline].
    - If no humidifier is available, administer a Saline Nebulizer, 3 ml. Repeat as needed.
    - Provide early endotracheal intubation as indicated. Do not wait for complete airway obstruction or respiratory arrest to intubate!
- **{CO oximeter}**

Patients Where Cyanide is a Likely Component of the Smoke:
- Provide 100% O₂ by BVM.

NOTE: ♦ MCP order not needed for use of either Hydroxocobalamin (Cyanokit) or Sodium Thiosulfate when Adult or Pediatric patient is in cardiac arrest.

- For non-arrested patients who may have been exposed to smoke from structure fires presenting with altered mental status, seizures, shock, or dyspnea, cyanide antidotes are indicated.

<table>
<thead>
<tr>
<th>A</th>
<th>Administer Hydroxocobalamin (Cyanokit) 5 grams, slow IV infusion, over 15 minutes. Follow package directions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>o</td>
<td>Reconstitute: Place the vial in an upright position. Add 200 mL of 0.9% Sodium Chloride to the vial using the transfer spike. Fill to the line.</td>
</tr>
<tr>
<td>o</td>
<td>Mix: The vial should be repeatedly inverted or rocked, not shaken, for at least 60 seconds prior to infusion.</td>
</tr>
<tr>
<td>o</td>
<td>Infuse Vial: use vented intravenous tubing, hang and infuse over 15 minutes.</td>
</tr>
<tr>
<td>o</td>
<td>One 5-g vial is a complete starting dose.</td>
</tr>
</tbody>
</table>

| P | Pediatric dose is 70 mg/kg IV; max dose of 5000 mg; may repeat a dose of 35 mg/kg; max dose 2500 mg, depending on severity of poisoning and clinical response. |

- Hydroxocobalamin is incompatible with numerous drugs carried by EMS including Diazepam. Whenever possible, administer Hydroxocobalamin through a separate IV line.

| A | OR Administer Sodium Thiosulfate 50 ml of 25% solution (12.5 grams), slow IV. |

- **DO NOT ADMINISTER** both Hydroxocobalamin and other Cyanide antidotes to the same patient in the field.

<table>
<thead>
<tr>
<th>P</th>
<th>Administer Sodium Thiosulfate:</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>If &gt; 25 kg, <strong>50 ml (12.5 g) slow IV.</strong></td>
</tr>
<tr>
<td>P</td>
<td>If &lt; 25 kg, then <strong>1.65 ml/kg (412.5 mg/kg) of the 25% solution,</strong> not to exceed 50 ml (12.5 grams), slow IV.</td>
</tr>
</tbody>
</table>
NOTE: Cyanide antidotes are no longer carried in the Drug Bags. They are located in multiple caches in each of the eight counties throughout the region, and are available by contacting 937-333-USAR (8727), who will contact the cache agency closest to your incident, which will respond on a mutual aid basis with both a Cyanokit and Sodium Thiosulfate, to provide for the potential of multiple patients. It is strongly recommended that agencies immediately call for the cyanide antidote cache whenever any of the following occur:

- Dispatched on a report of a person trapped in a structure fire
- Dispatched on a report of an incident involving cyanide
- Report of a Mayday or firefighter down in a structure fire
- It is critical to control any seizure activity, using Diazepam or Midazolam.
- CPR if indicated.
  - In cases of cardiac arrest associated with cyanide poisoning, the cyanide antidotes must have a high priority. Only CABs, defibrillation, intubation and Epinephrine should precede use of the cyanide antidotes.
- Consider Hyperbaric Oxygen treatment for the following:
  - Underlying cardiovascular disease or symptoms such as chest pain or shortness of breath
  - > 60 years of age
  - Obvious neurological symptoms (e.g., any interval of unconsciousness, loss of time, inability to perform simple motor tasks, loss of memory)
  - Pregnancy
- In MCIs with suspected cyanide involvement:
  - Contact 937-333-USAR (8727) to request cyanide antidotes.

CARBON MONOXIDE (CO) POISONING

- Provide high flow O₂ to all suspected CO poisonings.
- Pulse oximeter will give false readings and should not be utilized.
- [CO oximeter]
- Consider Hyperbaric Oxygen treatment for the following patients with suspected CO exposure:
  - Underlying cardiovascular disease or symptoms such as chest pain or shortness of breath
  - > 60 years of age
  - Obvious neurological symptoms (e.g., any interval of unconsciousness, loss of time, inability to perform simple motor tasks, or loss of memory)
  - Smoke inhalation victims.
  - Pregnancy
- Contact MCP to discuss transport considerations.

HEAT EXPOSURE

General Considerations
- Geriatric patients, pediatric patients and patients with a history of spinal injury or diabetes mellitus are most likely to suffer heat-related illnesses. Other contributory factors may include heart medications, diuretics, cold medications and psychiatric medications.
- Heat exposure can occur from increased environmental temperatures, prolonged exercise, or a combination of both. Environments with temperatures above 90°F and humidity over 60% present the most risk.

Specific Care
- Move patient to a cool environment.
- Remove patient’s clothing. Apply water to the skin to cool the patient.
- Apply cold packs to underarms and groin area.
- Cold water submersion is an acceptable method for cooling heat stroke patients. You may encounter patients in cooling body bags. The goal is to lower temperature to < 102.5°F.
- If conscious and not vomiting or extremely nauseous, provide oral fluids. A NS 500 ml IV if hypotensive or mental status changes. May repeat x 1.
NS 20 ml/kg IV (max 500) if hypotensive or mental status changes.
- Additional NS IV, if indicated.
- Be prepared for seizures.
- Consider other medical conditions (e.g., overdose, hypoglycemia, CVA) and treat accordingly.
- Hyperthermia patients should be transported to a Trauma Center.

**EYE INJURIES**

- If possible, contact lenses should be removed. Transport contacts with patient.
- Chemical Burns:
  - Irrigate immediately with NS or water for a minimum of 30 minutes or until patient transport is completed
  - Determine chemical involved. Bring MSDS, if available.
- Major Eye Trauma:
  - Do not irrigate or use Tetracaine if penetrating trauma.
  - Cover both eyes to limit movement.
  - Do not use a pressure or absorbent dressing on or near any eye that may have ruptured, or has any penetrating trauma.
  - Transport with head elevated at least 30°.
- Prior to irrigation with NS or for significant eye pain, **Tetracaine 2 drops** in affected eye.
- Use {Morgan Lens} or nasal cannula with IV tubing for irrigation.

**RESPIRATORY DISTRESS**

- Evaluate breath sounds:
  - Clear: treat cause (e.g. MI, pulmonary embolism, metabolic disturbance, hyperventilation).
  - Wheezes: treat cause (e.g. pulmonary edema, FBAO, asthma, allergic reaction).
  - Rales: treat cause (e.g. pulmonary edema, pneumonia).
  - Diminished or absent:
    - Unilateral: treat cause (e.g., pneumothorax, hemothorax, pneumonia, surgically removed lung).
    - Bilateral: treat cause (e.g., respiratory failure, COPD, asthma).
- Obtain {Pulse Oximeter or capnography} reading.
- Cardiac monitor and {12-lead EKG}.

**PULMONARY EDEMA**

- Consider need for possible early endotracheal intubation.
- Assess for and note cyanosis, clammy skin, absence of fever, coughing, wheezing, labored breathing, diaphoresis, pitting edema, rales in bilateral lower lung fields, tachypnea, apprehension, JVD, and inability to talk.
  - If {CPAP} or {Bi-PAP} is available, its use is encouraged prior to the initiation of drug therapy.
  - If patient has SBP > 100, **Nitroglycerin 0.4 mg SL** up to 3, 1 every 5 minutes.

**NOTE:** At times, pneumonia may look like CHF with pulmonary edema. However, the pneumonia patient is often dehydrated and has an elevated temperature.
• Consider **Albuterol 2.5 mg** and **Ipratropium 0.5 mg, nebulized** with O₂ @ 8-10 LPM.
  A  If a conscious patient requires intubation, consider **Lidocaine 100 mg** {IN half dose per nostril} or added to above nebulizer.
  P  **Lidocaine 1.5 mg/kg nebulized** with 8-10 LPM O₂ or {IN}. Maximum dose is 100 mg.
• May repeat **Albuterol 2.5 mg nebulized X 2**.
• If patient is intubated, **Albuterol 2.5 mg** by nebulizer into the ETT. If **Ipratropium** not given before intubation, add to first **Albuterol**.
  A  **COPD**: {CPAP or Bi-PAP}
• After intubation of an asthma patient, limit rate of ventilation to avoid auto-PEEP and hypotension, provided that you can adequately oxygenate the patient at below rate.
  A  8-10 breaths per minute for adults
  P  10-15 breaths per minute for pediatric patients.
• Consider bilateral needle decompression if:
  o  Patient arrests.
  o  Patient has unilateral or bilateral diminished breath sounds and is hemodynamically unstable.
• For asthmatics in distress:
  •  If ≥ 30 kg, give both **Adult EpiPen and EpiPen Jr or Epi (1:1,000) 0.5 mg IM**
  •  ♦ May repeat **Epi (1:1,000) 0.5 mg IM** after 5 minutes.
  P  ♦ May repeat **Epi (1:1,000) 0.01 mg/kg IM** (max 0.5 mg).
• If patient remains hypotensive after IV fluid, **Epi (1:10,000) 0.5 mg, slow IV.**
  A  For patients unresponsive to **Epi, administer Glucagon 1mg IV/IM**

**NOTE:** National guidelines now recommend higher Epinephrine dosing for asthma and anaphylaxis in the 0.5 mg range as an initial dose for the average adult. That is the reason for the orders change to use either both of the EpiPens in the Drug Bag (0.3 mg + 0.15 mg = 0.45 mg) or ~ 0.5 mg IM. Auto-injector dosing will be absorbed more rapidly.

**ALLERGIC REACTION/ANAPHYLAXIS**

A  If severe allergic reaction:
  A  If ≥ 30 kg, give both **Adult EpiPen and EpiPen Jr or Epi (1:1,000) 0.5 mg IM.**
  A  ♦ May repeat **Epi (1:1,000) 0.5 mg IM** after 5 minutes.
  P  ♦ May repeat **Epi (1:1,000) 0.01 mg/kg IM** (max 0.5 mg).
• If applicable, apply {ice pack}.
• If patient deteriorating or unresponsive, consider early intubation, possibly with smaller than normal ETT.
• If patient is wheezing: **Albuterol 2.5 mg and Ipratropium 0.5 mg** in nebulizer with O₂ flowing at 8-10 LPM.
• If a conscious patient requires intubation, consider:
  o  Applying **Lidocaine Jelly** to the ET tube.
  A  **Lidocaine 100 mg** {IN half dose per nostril} or nebulized with 8-10 LPM O₂
  P  **Lidocaine 1.5 mg/kg nebulized or {IN} with 8-10 LPM O₂. Maximum dose is 100 mg.**
• **Albuterol** may be repeated x 2.
• If patient is intubated, **Albuterol 2.5 mg** by nebulizer into the ETT. If **Ipratropium** not given before intubation, add to first **Albuterol**.
  A  If hypotensive, NS IV to maintain SBP >100.
  P  If hypotensive, NS IV 20 ml/kg to maintain adequate perfusion.
  A  **Diphenhydramine 50 mg IM/IV**
  P  **Diphenhydramine 1 mg/kg IM/IV (max Dose 50 mg)**
  A  If patient remains hypotensive after IV fluid, **Epi (1:10,000) 0.5 mg, slow IV.**
ALTERED LEVEL OF CONSCIOUSNESS: DIABETIC OR UNKNOWN CAUSE

- If glucose < 60, or there is strong suspicion of hypoglycemia despite glucometer readings:
  A Administer D10, 250 ml at wide open rate, (500 ml = 50 gm of Dextrose)
  P D10 (5 ml/kg), maximum single dose of 250 ml.
  o Document amount of D10 administered in milliliters.
  o If unable to establish vascular access, **Glucagon, 1 mg IM.**

- D10 may be repeated in ten minutes if blood sugar remains < 60.
- In a diabetic patient with an insulin pump and a glucose < 60, treat the hypoglycemia.
- Maintain normothermia. Unconscious diabetics are often hypothermic.
- Consider patient restraint before administration of **Naloxone:**
  A If respirations are impaired, or there is suspicion of narcotic overdose, administer **Naloxone,**
    up to 2 mg {IN} or 2 mg IV or 4 mg IM. Titrate to adequate respirations. May repeat.
  P **Naloxone:**
    o ≤ 20 kg 0.1 mg/kg {IN}, IV, IM, ETT (max dose 2 mg) may repeat x one
    o > 20 kg 2 mg, {IN}, IV, IM, ETT, may repeat x one
    o Naloxone IV is preferred, but it may be given {IN} before IV is established.
    o Titrate to adequate respirations.
  P If using {IN} route, if respirations don’t improve after 3 minutes, establish IV and administer
    IV dose.

- After administration of Naloxone, patient transport by EMS is encouraged.

**NOTE:** Oral glucose is indicated for any conscious but disoriented patient with BS < 60, or a strong
suspicion of hypoglycemia despite blood sugar readings. Oral glucose may also be administered
carefully under the tongue or between the gum and cheek of an unresponsive patient who must be
placed in the lateral recumbent position to promote drainage of secretions away from the airway.

**DIABETIC EMERGENCIES: REFUSAL OF TRANSPORT**

A Patients 18 years of age or older may be permitted to refuse transport after treatment. Follow
these guidelines:
  o Repeat physical examination and vital signs. Patient must be alert and oriented (A&O) x3.
  o Warn the patient that there is a significant risk of going back into hypoglycemia, especially if
    on oral hypoglycemics.
  o Advise the patient to eat something substantial immediately.
  o Advise the patient to contact their family physician as soon as possible to minimize future
    episodes.
  o Advise the patient to stay with someone.
  o Follow normal patient refusal procedures including documentation of all above points.
  o Continue **D10 infusion** (minimum of 250 ml) during the refusal process to provide a “buffer”
    and reduce the risk of refractive hypoglycemia.

**NOTE:** Send a copy of the run sheet to the EMS Coordinator of the hospital that replaces your Drug Bag
and supplies.

**SEIZURES**

- BVM and nasopharyngeal airway during seizure as needed.
  A If seizing, **Diazepam 5 mg slow IV** or **Midazolam 10 mg, {IN}** (5 mg in each nostril) or 2
    mg slow IV, or **4 mg IM**
  A Persistent seizing, repeat **Diazepam 5 mg slow IV,** or **Midazolam {5 mg IN} (2.5 mg in each
    nostril) or 2 mg slow IV** or **4 mg IM.**
  A If no vascular access or {MAD}, **Diazepam 10 mg PR**
  P If seizing, **Diazepam 0.2 mg/kg (max dose 5 mg) slow IV,** or **Midazolam 0.2 mg/kg {IN}** (max
dose 4 mg) or **Midazolam 0.1 mg/kg slow IV,** (max dose 2 mg) or **Midazolam 0.2 mg/kg IM** (max dose 4 mg).
P If still seizing, repeat Diazepam 0.2 mg/kg slow IV, or repeat one-half of all initial Midazolam doses except NO IM REPEAT.
P If no vascular access or {MAD}, Diazepam 0.5 mg/kg PR (max dose 10 mg)
- If glucose < 60, or there is strong suspicion of hypoglycemia despite glucometer readings:
  A. Administer D10, 250 ml at wide open rate, (500 ml = 50 gm of Dextrose)
- D10 (5 ml/kg), maximum single dose of 250 ml.
  o Document amount of D10 administered in milliliters.
  o If unable to establish vascular access, Glucagon, 1 mg IM.
- D10 may be repeated in ten minutes if blood sugar remains < 60.
- In a diabetic patient with an insulin pump and a glucose < 60, treat the hypoglycemia.
- Maintain normothermia.
- When obtaining history be sure to include the following:
  o Description of seizures, areas of body involved, and duration
  o Other known medical history (e.g., head injury, diabetes, drugs, alcohol, stroke, heart disease)

EXTRAPYRAMIDAL (DYSTONIC) REACTIONS

- A patient who is currently on a phenothiazine (e.g., Phenergan, Thorazine Compazine) or a butyrophenone (e.g., Haldol, Droperidol) and exhibiting signs of acute muscle spasm or motor restlessness may be suffering from an Extrapyramidal Reaction.
- Physical examination findings may include any of the following:
  o Oculogyric crisis (spasmodic deviation of eyes in all directions generally fixed upward.)
  o Buccolingual crisis (protrusion of tongue with slurred speech)
  o Trismus (closing of the jaw due to spasm of the muscles also called lockjaw.)
  o Difficulty in speaking
  o Facial grimacing
  o Torticollis crisis (stiff neck with deviation of the head with the chin pointing to the other side)
  o Opisthotonus (extreme back arching)
  o Tortipelvic crisis—typically involves hip, pelvis, and abdominal wall muscles, and causes difficulty with walking.
  o Mental status is unaffected.
  o Vital signs are usually normal.
  o Remaining physical examination findings are normal.
- Initiate IV of NS to maintain adequate BP.
- If glucose < 60, or there is strong suspicion of hypoglycemia despite glucometer readings
  A. Administer D10 at wide open rate, 250 ml (500 ml = 50 gm of Dextrose)
  P. D10 (5 ml/kg) (max single dose 250 ml)
  o Document amount of D10 administered in milliliters.
  o If unable to establish vascular access, Glucagon, 1 mg IM.
- D10 may be repeated in ten minutes if blood sugar remains < 60.
  A. Consider Diphenhydramine 50 mg IV or IM.
  P. Diphenhydramine 1 mg/kg IV or IM (max dose 50 mg)

POISONING/OVERDOSE

EMS personnel should contact MCP for suspected poisonings. Poison Control is intended for use by the general public.

Narcotic Overdose
- If patient has a pulse, Naloxone should be administered before inserting an ETT.
- Consider patient restraint before administration of Naloxone:
  A. If respirations are impaired, or there is suspicion of narcotic overdose, administer Naloxone, up to 2 mg {IN} or Naloxone 2 mg IV or 4 mg IM. Titrate to adequate respirations.
**Naloxone**:  
- ≤ 20 kg: 0.1 mg/kg {IN}, IV, IM, ETT (max dose 2 mg) may repeat x one  
- > 20 kg: 2 mg, {IN}, IV, IM, ETT, may repeat x one  
- Naloxone IV is preferred, but it may be given {IN} before IV is established.  
- Titrate to adequate respirations.

**If using {IN} route, if respirations don’t improve after 3 minutes, establish IV and administer IV dose.**

- After administration of Naloxone, patient transport by EMS is encouraged.

**Crack/Cocaine**

- If chest pain:
  - Nitroglycerine 0.4 mg SL, if SBP > 100, **every 5 minutes to a total of three pills** with vital signs between doses
  - Diazepam 5 mg slow IV, if SBP > 100 or Midazolam 10 mg, {IN} (5 mg in each nostril) or 2 mg slow IV, or 4 mg IM
  - Repeat Diazepam 5 mg slow IV, or Midazolam 5 mg {IN} (2.5 mg in each nostril) or 2 mg slow IV or 4 mg IM.

**Tricyclic Overdose:**

- **Sodium Bicarbonate 100 mEq, slow IV**
- **Repeat Sodium Bicarbonate 50 mEq, slow IV** for persistent QRS prolongation.

**Tricyclic Antidepressant Examples:**

- Amitriptyline (Elavil, Endep, Etrafon, Limbitrol)
- Nortriptyline (Pamelor, Aventyl)
- Amoxapine (Asendin)
- Clomipramine (Anafranil)
- Desipramine (Norpramine)
- Doxepin (Sinequan)
- Imipramine (Tofranil)
- Protriptyline (Vivactil)
- Trimipramine (Surmontil)

**NOTE:** Overdose with tricyclic antidepressant medications may be evidenced by bradycardia, tachycardia, hypotension or prolongation of the QRS complex. Risk of rapid deterioration or sudden onset VFib is high.

**Calcium Channel Blocker Overdose:**

- **Calcium Chloride, 1 gm slow IV**
- **Calcium Chloride 10% 0.2 ml/kg (20 mg/kg) slow IV** (max dose 500 mg)

**Calcium Channel Blocker examples:**

- Amlodipine (Norvasc)
- Diltiazem (Cardizem, Dilacos)
- Felodipine (Plendil)
- Isradipine (Dynacirc)
- Nifedipine (Procardia, Adalat)
- Verapamil (Calan, Isoptin, Verelan)

**Beta Blocker Overdose:**

- **Glucagon 1 mg IM or IV**

**Beta Blocker examples:**

- Acebutolol (Sectral)
- Atenolol (Tenormin)
- Carvedilol (Coreg)
- Corzide, Inderide, Lopressor, HCT, Tenoretic, Timolide, Ziac
- Labetalol (Normodyne, Trandate)
- Metoprolol (Topral, Lopressor)
- Nadolol (Corgard)
- Pindolol (Viskin)
- Propranolol (Inderal)
- Sotalol (Betapace)
- Timolol (Blocadren)

**ABDOMINAL PAIN**

- Use inspection, auscultation and palpation to assess the patient with abdominal pain.
- Assess and document pain using the OPQRST acronym:
  - O = Onset
    - Was the onset sudden or gradual?
  - P = Provocation and Palliation
    - What causes it?
    - What makes it better or worse?
  - Q = Quality
    - What kind of pain is it?
  - R = Region and Radiation
    - Where is the pain located?
    - Does it radiate?
  - S = Severity and Scale
    - Does it interfere with activities?
    - How does it rate on a severity scale of 1 to 10?
  - T = Timing
    - When did it begin?
    - How often does it occur?

A Consider **Ondansetron 4 mg slow IV**, preferred route for active vomiting as pt may need hydration. If no IV, may use 4 mg dissolving tablet or administer the IV form PO.

P **Ondansetron 0.1 mg/kg IV** (max 4 mg).

A For pain relief, including unilateral flank pain, consider Pain Control Protocol.

**OBSTETRICAL EMERGENCIES**

- Consider the possibility of Ectopic Pregnancy in females of child-bearing age.
- Aggressively treat for hypovolemic shock (do not rely on standard vital sign parameters).
- Give psychological support to patient and family.
- Ask for first day of last menstrual period.
- Be sure to take all expelled tissue with you to the hospital.
- Pregnant patients ≥ 20 weeks gestation should be taken to maternity department; < 20 weeks gestation should go to the emergency department.

**CARDIAC ARREST IN PREGNANCY**

- Causes of cardiac arrest include: pulmonary embolism, trauma, hemorrhage, congenital or acquired cardiac disease.
- Load and go to closest hospital and follow all cardiac arrest protocols en route.
- To minimize effects of the fetus pressure on venous return, apply continuous manual displacement of the uterus to the left, or place a pillow under the right abdominal flank and hip.
- Administer chest compressions slightly higher on the sternum than normal.

**THIRD TRIMESTER BLEEDING**

- Aspirin is contraindicated in third trimester.
- Place patient in left lateral recumbent position.
- Apply continuous manual displacement of the uterus to the left, or place a pillow under the right abdominal flank and hip.
General Considerations
- Transport to a hospital with obstetrical capabilities unless delivery is imminent (the baby is crowning during a contraction).
- Visualize the perineal area only when contractions are less than five minutes apart.
- Establish an IV for patients in active labor.
- Place a gloved hand inside the vagina only in the case of breech delivery with entrapped head, or a prolapsed umbilical cord.
- Apply gentle pressure on the baby’s head with a flat hand to prevent an explosive delivery.
- Run reports must be completed for each patient. The newborn is a separate patient from the mother.

Specific Care
- Obtain history of patient condition and pregnancy, including contraction duration and interval, due date, first day of last menstrual period, number of pregnancies, number of live births, prenatal care, multiple births, possible complications, and drug use.
- Keep newborn warm.
- Cut the umbilical cord, and then place the baby to begin breast feeding and help stimulate the body’s release of oxytocin to reduce vaginal bleeding.
- Obtain one, five and ten minute APGAR scores if time and patient condition permit.

NOTE: Fundal Height refers to the level of the upper part of the uterus.

Changes in fundal height during pregnancy:
- Above the symphysis pubis: >12-16 weeks gestation
- At the level of the umbilicus: 20 weeks
- Near the xiphoid process: within a few weeks of term

DELIVERY COMPLICATIONS
- Place mother on O₂ by NRB.

Cord Around Baby’s Neck:
- As baby’s head passes out of the vaginal opening, feel for the cord.
- Initially try to slip cord over baby’s head.
- If too tight, clamp cord in two places and cut between clamps.

Breech Delivery:
- When an appendage or buttocks first becomes visible, transport patient immediately to the nearest facility.
- If the head is caught, support the body and insert two fingers forming a “V” around the mouth and nose.

Excessive Bleeding:
- Treat for shock.
- Post delivery, massage uterus firmly and put baby to mother’s breast.

Prolapsed Cord:
- When the umbilical cord is exposed prior to delivery, check cord for pulse.
- Transport immediately with hips elevated and a moist dressing around cord.
- Insert two fingers to elevate presenting part away from cord, distribute pressure evenly if occiput presents.
- Do not attempt to reinsert cord.
Obtain APGAR scores at 1, 5, and 10 minutes post delivery

<table>
<thead>
<tr>
<th>SCORE</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Blue or pale</td>
<td>Body pink; extremities blue</td>
<td>Completely pink</td>
</tr>
<tr>
<td>Pulse</td>
<td>Absent</td>
<td>Slow (&lt; 100)</td>
<td>&gt; 100</td>
</tr>
<tr>
<td>Grimace</td>
<td>No response</td>
<td>Grimace</td>
<td>Cough or sneeze</td>
</tr>
<tr>
<td>Activity</td>
<td>Limp</td>
<td>Some flexion of extremities</td>
<td>Active motion</td>
</tr>
<tr>
<td>Resp. effort</td>
<td>Absent</td>
<td>Slow or Irregular</td>
<td>Good crying</td>
</tr>
</tbody>
</table>

NEWBORN CARE & RESUSCITATION

General Considerations

- **P** As soon as the baby is born:
  - Dry.
  - Warm.
  - Maintain airway.
  - Place in the sniffing position (1” towel under shoulders).
  - Suction infant until airway is clear of all secretions.
- **P** If the newborn delivers with meconium-stained amniotic fluid but is vigorous, with strong respirations, good muscle tone, and heart rate > 100 BPM; follow the same suctioning procedures as for infants with clear fluid.
- **P** If the newborn delivers with meconium-stained amniotic fluid and is depressed, has poor respiratory effort, decreased muscle tone, or heart rate < 100 BPM, suction the trachea before taking other resuscitative steps. Lower airway suction is achieved by intubating the infant and suctioning directly through the ET Tube, re-intubate with a new tube each time.
- **P** Bulb suctioning is preferred. Mechanical suction may be used on infants only if the suction pressure does not exceed 100mmHg or 136cmH2O.
- **P** If drying and suctioning has not provided enough tactile stimulation, try flicking the infant’s feet or rubbing the infant’s back. If this stimulation does not improve the infant’s breathing, then BVM assist may be necessary.
- **P** Avoid direct application of cool oxygen to infant’s facial area as this may cause respiratory depression due to a strong mammalian dive reflex present immediately after birth.
- **P** Use length-based resuscitation tape (e.g., Broselow Tape).

Specific Care

- **P** After delivery of the infant;
  - Assess the airway and breathing.
  - Dry.
  - Position head lower than body.
- **P** Ventilate with BVM at 40-60/min:
  - To increase HR if < 100
  - For apnea or persistent central cyanosis.
- **P** HR < 60 begin CPR.
  - Compress at 120/min.
  - Compression to Ventilation ratio of 3:1
  - Epinephrine 1:10,000, 0.01 mg/kg IV or Epinephrine (1:1,000) 0.1 mg/kg ETT
  - If no response, repeat Epinephrine 1:10,000 every 3-5 minutes.
- **P** If hypovolemic, NS 10 ml/kg over 5-10 minutes
- **P** Consider Naloxone 0.1 mg/kg; slow IV, ETT every 3 minutes until respirations improve.
- **P** NEWBORN: D10 (2 ml/kg) if blood glucose < 40
SAFE HARBOR

Voluntary Separation of Newborn Infant

Safe Harbor (Ohio House Bill 660) is designed to allow desperate parents to separate from their babies to hospitals, EMS, or law enforcement agencies, confidentially.

Stipulations of separation:
- Infant can be no older than be 30 days old.
- Infant can have no signs of abuse or neglect

History which should be obtained:
- Date and time of birth
- Any pertinent family medical history
- Information regarding prenatal care
- Information concerning the birth.
- Information should be obtained in a manner, which will not lead to the revealing of the identity of the parents. Information collected should be based on patient (infant) care needs and assure confidentiality.

Transport the infant to the hospital.

FEVER

Transport all infants < 2 months of age with a history or reported temperature of > 38.0°C (100.4°F) or < 35.6°C (96.0°F).

CHILD ABUSE/NEGLECT

Report all alleged or suspected child abuse or neglect to the appropriate agency. Ohio Revised Code requires providers to report incidents of abuse to their county’s public children services agency or a municipal or county peace officer. Hospitals have copies of the EMS Social Services Referral Form, supplied by GDAHA, for documenting cases of abuse. Use of this form can help providers in providing information needed to their reporting agency, as well as provide for a continuum of care with hospital social services departments.

Simply notifying hospital personnel about concerns of maltreatment does not meet mandated EMS reporting responsibilities.

<table>
<thead>
<tr>
<th>Pediatric Public Social Services Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>Butler</td>
</tr>
<tr>
<td>Champaign</td>
</tr>
<tr>
<td>Clark</td>
</tr>
<tr>
<td>Darke</td>
</tr>
<tr>
<td>Greene</td>
</tr>
<tr>
<td>Miami</td>
</tr>
<tr>
<td>Montgomery</td>
</tr>
<tr>
<td>Preble</td>
</tr>
<tr>
<td>Shelby</td>
</tr>
<tr>
<td>Warren</td>
</tr>
</tbody>
</table>

ELDER ABUSE/NEGLECT

EMS MUST, by law, report all alleged or suspected adult abuse or neglect to the appropriate agency. Ohio Revised Code requires providers to report incidents of abuse to their county’s adult protective services agency or local law enforcement as soon as possible. Notifying hospital personnel about concerns of maltreatment does NOT meet the mandated EMS
A Hospitals have copies of the EMS Social Services Referral Form, supplied by GDAHA, for documenting cases of abuse. Use this form to provide information to the appropriate agency so the receiving hospital social services staff can provide a continuum of care. GDAHA (228-1000 or www.gdaha.org) can also send this form to each department to have on hand.

- White copy—send to the appropriate agency (call as well).
- Yellow copy—leave with the hospital records.
- Pink copy—retain with EMS copy of run sheet.

A Document on the run sheet, all efforts that EMS made to report the suspected abuse; include name of agency notified, method used, and name of person contacted.

<table>
<thead>
<tr>
<th>County</th>
<th>Phone</th>
<th>After Hours Phone</th>
<th>Fax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butler</td>
<td>(513) 887-4081</td>
<td>Not Listed (County SO: 513-785-1000)</td>
<td>(513) 785-5969</td>
</tr>
<tr>
<td>Champaign</td>
<td>(937) 484-1500</td>
<td>Contact County SO (937) 484-6092</td>
<td>(937) 484-1506</td>
</tr>
<tr>
<td>Clark</td>
<td>(937) 327-1700</td>
<td>(937) 324-8687</td>
<td>(937) 327-1910</td>
</tr>
<tr>
<td>Darke</td>
<td>(937) 548-7129</td>
<td>(937)-348-2020</td>
<td>(937) 548-4928</td>
</tr>
<tr>
<td>Greene</td>
<td>(937) 562-6315</td>
<td>Not Listed (County SO: 937-562-4800)</td>
<td>(937) 562-6177</td>
</tr>
<tr>
<td>Miami</td>
<td>(937) 440-3471</td>
<td>Contact County SO (937) 440-3965</td>
<td>(937) 335-2225</td>
</tr>
<tr>
<td>Montgomery</td>
<td>(937) 225-4906</td>
<td>Not Listed (County SO: 937-225-4357)</td>
<td>(937) 496-7464</td>
</tr>
<tr>
<td>Preble</td>
<td>(937) 456-1135</td>
<td>(937) 456-1135 (same as daytime)</td>
<td>(937) 456-6086</td>
</tr>
<tr>
<td>Shelby</td>
<td>(937) 498-4981</td>
<td>Contact County SO (937) 498-1111</td>
<td>(937) 498-1492</td>
</tr>
<tr>
<td>Warren</td>
<td>(513) 695-1420</td>
<td>(513) 425-1423</td>
<td>(513) 695-2940</td>
</tr>
</tbody>
</table>

**PATIENT COMPETENCY, CONSENT, PSYCHIATRIC and COMBATIVE PATIENTS**

Per Ohio Revised Code, an EMT, AEMT or a Paramedic may not “pink slip” an individual (transport a person to the hospital against their will for mental health evaluation) who is alert and oriented even if they are threatening harm to themselves or others. Only a health officer such as a police officer, crisis worker, psychiatrist or licensed physician can “pink slip” a person. The GMVEMSC strongly recommends that each EMS department, in consultation with its medical director and local law enforcement, have a procedure to deal with these types of situations.

This does not preclude EMS from taking action to prevent imminent harm to the patient or others, if it is safe to do so.

- Determine patient competency and consent.
- Obtain medical history:
  - Suicidal or violent history
  - Previous psychiatric hospitalization, when and where
  - Location where patient receives mental health care
  - Medications
  - Recreational drugs/alcohol: amount, names
- Do not judge, just treat.
- Transport all patients who are not making rational decisions and who are a threat to themselves or others for medical evaluation. Threat of suicide, overdose of medication, drugs or alcohol or threats to the health and well being of others are considered not rational.
- Consider a patient to be incapable to make medical decisions if they are:
  - Suicidal
  - Confused
  - Severely developmentally or mentally disabled
  - Intoxicated
  - Injured/ill with an altered mental status
  - Physically/verbally hostile
• Unconscious
  - Consider and treat possible medical causes for patient’s condition:
    - Hypoxia
    - Hypoglycemia
    - Drug intoxication, side effects, drug withdrawal
    - Seizures and postictal states
    - Intracranial hemorrhage
  - Consider staging until police have made the scene safe.
  - Search patient for weapons.
  - Do not transport a restrained patient in the prone position with hands and feet behind their back or sandwiched between backboards or other items.
  - Recheck often a restrained patient’s ability to breathe and distal circulation.
  - Have the ability at hand to remove restraints if the patient vomits or develops respiratory distress.
  - Explain the need for restraint to the patient. Severe agitation is a medical emergency, and should be treated aggressively with medication.
  - Document thoroughly the restraints used, on which limbs, and the justification for restraints.
  A {Ketamine 500 mg IM (2 separate doses of 250 mg in large muscles) (anterolateral thigh) or 100 mg slow IV}
  A OR Midazolam 10 mg {IN} (5 mg in each nostril), 2 mg slow IV, or 4 mg IM may be needed to transport a patient who is violent.
  A Repeat {Ketamine 500 mg IM after 10 minutes or Ketamine 100 mg IV after 5 minutes }, or Midazolam 10 mg {IN} (5 mg in each nostril), or Midazolam 2 mg IV after 5 minutes or Midazolam 4 mg IM after 10 minutes.
  P Consider {Ketamine, if patient is age 8 or greater, 1 mg/kg slow IV (max dose 100 mg) or Ketamine 5 mg/kg IM (max dose 500 mg)}.
  P OR Midazolam 0.2 mg/kg {IN} (Max dose 4 mg) or Midazolam 0.1 mg/kg slow IV (max dose 2 mg), or 0.2 mg/kg IM (max dose 4 mg) as a chemical restraint.
  P ♦ Call MCP for repeat {Ketamine}, Midazolam.

SALT TRIAGE SYSTEM (MCI)

The SALT (Sort, Assess, Life-Saving Intervention, Treatment/Transport) triage system was developed by the Centers for Disease Control and Prevention (CDC) to address limitations in START and other triage systems. It has been endorsed by numerous national EMS groups. It is designed to reduce triage time and has an additional triage category to better utilize resources, and CDC has proposed SALT as the national standard for MCI triage.

Use SALT triage to assess any significant number of victims rapidly. It can be used easily and effectively by all EMS personnel. Triage materials, such as new tags, were provided to EMS agencies throughout our region by a federal grant through Dayton MMRS.

Primary and Secondary Triage Prior to Transport

• Initial Triage:
  - Use triage ribbons (color-coded strips), not triage tags, during initial triage. One should be tied to an upper extremity in a VISIBLE location (on the right wrist, if possible).
    - RED – Immediate
    - YELLOW – Delayed
    - GREEN – Minimal
    - GRAY – Expectant*
    - BLACK – Dead (both ribbons and triage tags use a black & white Zebra stripe rather than black for easier visibility in low light
    - ORANGE and Polka Dot Ribbon - used in addition to one of the above ribbons to indicate victim has been contaminated with a hazardous material. The dots are to make the Orange easier to distinguish from Red.
o Move as quickly and safely as possible, making quick decisions. Remember that the victim will be re-triaged, probably multiple times, and the category will be revised, up or down, whenever needed.
o Over-triage can be as harmful as under-triage. If everyone is tagged red, those who are truly red will receive delayed treatment, delayed transport, and delayed definitive care.
o *Note: Expectant does NOT mean dead.
  ▪ It means the patient is unlikely to survive given the current resources.
  ▪ Treatment and transport should be delayed until more resources, field or hospital, are available. If there are delays in the field, consider requesting orders for palliative care, e.g., pain medications if time and resources allow.

• Secondary Triage:
o Secondary Triage must be performed on all victims prior to transport.
o Treatment Area may also be the Casualty Collection Point (CCP), or the CCP may be separate.
  ▪ Patients should be reassessed periodically, including when moved to a CCP, or when their condition or resources change.
o Utilize Triage Tags and complete pertinent and available information on the tag.
  ▪ Affix the tag to the victim using the triage ribbon.
  ▪ Tags are applied after patients enter the Treatment Area or CCP, or by Transport Group if the patient is being directly removed without going to the Treatment Area.
o Orange Ribbons (indicating contaminated patients) are removed during decon.
  ▪ EMS always has responsibility for performing primary decontamination prior to transport, however, the hospital must be aware of both contamination and decontamination.
  ▪ When contaminated patients are discovered, each of those patients initially receives two ribbons: one with a triage category (R, Y, Grn, Gry, or Black {Zebra}), and the other the Orange polka-dot ribbon.
  ▪ Make sure to decon under the ribbons.
  ▪ After patients are deconed, the orange ribbon is removed
  ▪ Triage Tags for such patients get two check marks on the Orange strip: both Dirty and Decontaminated. That way the hospitals know the patient has had field decon, but may still be somewhat “dirty”.
  ▪ Notify hospitals of an MCI involving victim contamination. Consider use of the Regional Hospital Notification System.
o Use Triage Tags with individual barcodes consistent with this Standing Order and the Ohio patient tracking system (OHTrac).

• Priority for transport is determined in the Treatment Area or by the Transport Group.
• Patient allocation, that is, distribution of patients among various hospitals, is one of EMS’ most crucial tasks.
o Do not overload any hospital, regardless of transport distance to other hospitals.
o In an MCI, many trauma patients will need to be transported to non-Trauma Centers. All hospitals will accept and stabilize trauma patients during MCIs.
o As Transport assigns patient allocation, consider the likelihood that the closest hospital(s) may be overwhelmed by patients who were not transported by EMS.
o In large scenarios, consider activation of the Forward Movement of Patients Plan.
  ▪ An introduction to Forward Movement of Patients is included in these Standing Orders under the heading Crisis Standards of Care in Massive Events. Full information on the process can be found in the Dayton MMRS Regional MCI Plan Template.

SORT, ASSESS, LIFE-SAVING INTERVENTION, TREATMENT/TRANSPORT PROCESS
S – Sort
• Global Sorting: Action 1
  o Action: “Everyone who can hear me please move to [designated area] and we will help you” (use loud speaker if available)
Goal: Group ambulatory patients using voice commands
Result: Those who follow this command – last priority for individual assessment (Green)
Assign someone to keep them together (e.g., PD, FD, a bystander) and notify Incident Command or EMS Group/Branch of number of patients and their location. Do not forget these victims. Someone must re-triage them as soon as possible.
In smaller incidents, such as a motor vehicle crash with a few victims where you do not want any of them to move on their own, skip Action 1, and go to Global Sorting Action 2

Global Sorting: Action 2
Action: “If you need help, wave your arm or move your leg and we will be there to help you as soon as possible”
Goal: Identify non-ambulatory patients who can follow commands or make purposeful movements
Result: Those who follow this command – second priority for individual assessment

Global Sorting: Result
Casualties are now prioritized for individual assessment
- Priority 1: Still, and those with obvious life threat
- Priority 2: Waving/purposeful movements
- Priority 3: Walking

Global Sorting: Global Sorting
Begin assessing all non-ambulatory victims where they lie, performing the four Life Saving Interventions (LSIs) as needed, but only within your scope of practice, and only if the equipment is readily available.
Each victim must be triaged as quickly as possible.

Assess:

Is the patient breathing?
- If not, open the airway. In children, consider giving two rescue breaths.
- If the patient is still not breathing, triage them to BLACK, using a zebra-striped ribbon. Do not move the patient except to gain access to a living patient.
- If patient is breathing, conduct next assessment.

Assess for the following:
- Can the patient follow commands or make purposeful movements?
- Does the patient have a peripheral pulse?
- Is the patient not in respiratory distress?
- Is hemorrhaging under control?
  - If the answer to any of those questions is no and the patient is likely to survive given current resources, tag them as RED (Immediate).
  - If the answer to any of those questions is no and the patient is NOT likely to survive given current resources, tag them as GRAY (Expectant).
  - If the answer to all of those questions is yes but injuries are not minor and require care, tag patient as YELLOW (Delayed).
  - YELLOWs have serious injuries and need care, though not as urgently as REDs. On secondary triage, some Yellows will need higher priority transport than others.
    - If the answers to all of those questions is yes and the injuries are minor, tag patient as GREEN (Minimal).

Two mnemonics for the four Assess Questions:
- CRAP:
  - C – Follows Commands
  - R – No Respiratory Distress
  - A – No (uncontrolled) Arterial bleeding
  - P – Peripheral Pulse Present
A second mnemonic is the use of good or bad. Don’t be confused by the double negatives in two of the questions. Instead, think of the questions in terms of “bad” or “good”. If the answer to the questions is “bad” (i.e., can’t follow commands, absent peripheral pulse, respiratory distress, or uncontrolled hemorrhage are all “bad”), then the patient is tagged either RED or GRAY.

**Life Saving Interventions:**
- Only correct life-threatening problems during triage.
  - Control major hemorrhage
  - Open airway (if child, consider giving two rescue breaths)
  - Needle chest decompression
  - Auto injector antidotes

**Treatment/Transport:**
- Transport/treatment priority is typically given to RED (Immediate), YELLOW (Delayed), then GREEN (Minimal).
  - GRAY (Expectant) patients should be treated/transported as resources allow.
- Patients should be reassessed periodically, including when moved to the CCP, or when their condition or resources change.

**Special Considerations:**
- Even after applying Triage Tags, the main indicator of patient condition is the Triage Ribbon. If the patient’s condition or the triage priority changes, indicate that on the tag. **Continue to use the same tag, even if the condition changes repeatedly, changing the ribbon to indicate the patient’s current condition.**

---

**SALT Mass Casualty Triage**

---

---
Some incidents are so large as to require extraordinary EMS procedures. Those scenarios are sometimes referred to as Mass Casualty Events (MCEs), instead of Mass Casualty Incidents (MCIs). This Standing Order introduces EMS procedures which could be utilized in very large emergency scenarios, or when the duration is extended.

“Crisis Standards of Care” is a new term, but not a new concept. EMS uses altered standards during triage. With concerns about pandemics, there is more planning for possible crises. Crisis Standards of Care during an MCE may be partially issued by the State, and could result in a temporary expansion of the EMS scope of practice.

In some circumstances, EMS may be authorized to triage selected patients for transport to other healthcare facilities. These could include Urgent Care Centers, an “Acute Care Center” (ACC) or a “Neighborhood Emergency Help Center” (NEHC), or a Disaster Medical Assistance Team (DMAT).

Dayton MMRS is required to have a plan called, “Forward Movement of Patients.” The intent of this plan is to relieve the burden on local hospitals by transporting patients, possibly directly from the scene, to more distant hospitals.

In the event of an MCE, especially one lasting days or longer, Greater Miami Valley EMS Council, with the approval of the Regional Physicians Advisory Board (RPAB), may promulgate “Just in Time Standing Orders” (JITSO). With approval from Ohio Department of Public Safety, these orders might include triage standards for transport to other healthcare facilities and other crisis standards of care; possibly exceeding the standard scope of practice for EMS.

A regional protocol for Functional Needs Shelter Triage has been added to the Optional Standing Orders Manual and is also available at gmvemsc.org on the Training Materials page. The protocol is used to help determine whether individuals with functional needs can be safely sheltered in a Red Cross Shelter during a disaster.

This Shelter Triage Protocol is a pre-approved Just-In-Time Standing Order (JITSO), authorized by the RPAB for use by an EMS agency assisting the Red Cross with shelter Triage. It is intended to be printed and given to paramedics, nurses, and other healthcare personnel at the time of a shelter operation.

At the option of local department chiefs and medical directors, the same protocol can be used during a disaster to determine patients who would be more appropriate for transport to Red Cross Shelters than to hospitals. That concept was endorsed by RPAB, and was used on the East Coast during Hurricane Sandy. In those cases, EMS should, if possible, contact the shelter before transporting. If locations or contact information for shelters is not known, contact the County EMA or the Red Cross. When transporting these non-emergency patients to shelters, it is critical that the patients bring their medications and medical equipment with them.

HAZ-MAT

Initial Actions
- Personnel safety
  - Consider potential for secondary devices.
  - PPE
  - Personnel & Equipment staging
- Call for additional resources.
  - (Medic Units, Engines for personnel/resources/Decon, Haz-Mat, Law Enforcement, etc.)
- Field Decontamination
  - Remove all contaminated clothing. This action may remove as much as 85% of solid or liquid and virtually all of gaseous contaminants.
  - Thoroughly wash with {Dawn} dishwashing detergents paying special attention to skin folds and other areas where simple irrigation may not remove it.
  - If a patient has been contaminated with any fuel, irrigate well. For example, diesel fuel can cause chemical burns if left in contact with the skin.
  - Do not transport a patient until gross decon is completed.
  - Obtain permission from any hospital upon arrival before entering with a potentially contaminated patient or crew.
  - Decontaminate EMS vehicle prior to leaving hospital.
• Contact Medical Control and the hospital immediately to allow time for their set-up of decontamination equipment.
  o Provide the following information:
    ▪ Estimated number of confirmed or potential adult and pediatric patients
    ▪ Signs and symptoms exhibited by the patients
    ▪ Name and identification information of the contaminant if known, or as much information as possible
    ▪ Form of the contaminant (liquid, gas, etc.) if known
    ▪ Routes of exposure of the patients (percutaneous, inhalation, ingestion, etc.) if known
    ▪ Additional anticipated decontamination needs if necessary
  o ♦ In the event of a large MCI involving cyanide or nerve agents, request an “Antidote free” order, allowing you to treat all of the patients on the scene with the appropriate antidote, rather than calling for patient orders individually.

HAZARDOUS DRUG: EXPOSURES AND SPILLS

• Hazardous drug situations include:
  o Patients who have continuous IV chemotherapy at home.
  o Patients who have just had IV chemotherapy at the clinic or hospital and their body fluids could have traces of hazardous drug for 48 hours.
  o Patients taking oral chemotherapy drugs.

• Potential routes of exposure include:
  o Absorption through skin or mucous membranes
  o Accidental injection by needle stick or contaminated sharps
  o Inhalation of drug aerosols, dust, or droplets
  o Ingestion through contaminated food, tobacco products, beverage, or other hand-to-mouth behavior

• EMS should don PPE whenever there is a risk of hazardous drug being released into the environment.
  o Handling leakage from tubing, syringe, and connection sites
  o Disposing of hazardous drugs and items contaminated by hazardous drugs
  o Handling the body fluids of a patient who received hazardous drugs in the past 48 hours
  o Cleaning hazardous drug spills

• Guidelines for PPE:
  o Gloves: Double gloves are recommended. Latex gloves provide no chemical protection. Nitrile gloves are recommended for routine patient care of Haz-mat patients including chemo patients. Change gloves every 30 minutes.
  o Disposable non-permeable gowns
  o Respirators: NIOSH-approved respirator mask
  o Eye and face protection: wear a face shield whenever there is a possibility of splashing.

• Procedures:
  o Use universal precautions when handling any body fluids of a patient who has received chemotherapy within 48 hours.
  o Accidental skin exposure: Remove contaminated garments, place in leak-proof plastic bag, and immediately wash contaminated skin with soap and water. Rinse thoroughly.
  o Accidental eye exposure: immediately flush eye with saline solution or water for at least 30 minutes or until patient transport is completed.
  o Wipe up liquids with an absorbent pad or spill-control pillow.
  o Disposal of hazardous drugs and materials contaminated with hazardous drugs per MSDS or Haz Mat Team direction
  o Report and document spills as required.

• For more information, contact:
  o The homecare agency that is supplying the infusion.
  o The physician who ordered the infusion.
o A hospital pharmacy, if necessary (there should be a label on the IV bag with the drug’s name, concentration and dosage.
o Consult with the appropriate Haz-Mat team.

HAZMAT: BIOLOGICAL

• {In preparation for the possibility of a bioterrorist attack, Departments may store a supply of Ciprofloxacin (Cipro) or Doxycycline. They can provide prophylaxis against Anthrax, Cholera, and some protection against Plague.}
• Dayton MMRS maintains a supply of Cipro and Doxy sufficient to provide treatment for the first three days for all firefighters, EMS personnel, law enforcement officers, EMA personnel, public safety dispatchers, public health personnel, and coroner’s personnel, and their immediate families for use in a bioterrorist attack. These may be obtained when needed by contacting 937-333-USAR (8727).

HAZ-MAT: CYANIDE

• ♦ In any case of known or strongly suspected cyanide intoxication, paramedics will utilize the following Cyanide antidotes.
• Provide 100% O₂
  o If unconscious, provide 100% O₂ by BVM, preferably via endotracheal tube.
• CPR if indicated. In cases of cardiac arrest associated with cyanide poisoning, the cyanide antidotes must have a high priority. Only ABCs, defibrillation, intubation, and Epinephrine should precede use of the cyanide antidotes as authorized by MCP.
o If possible establish two IV lines, one for standard code drugs, and one for cyanide antidotes.

NOTE: MCP order NOT needed for Hydroxocobalamin or Sodium Thiosulfate when patient is in cardiac arrest.

• For non-arrested patients, cyanide antidotes are indicated if there is a known or strongly suspected cyanide exposure. The patient may have been exposed to smoke from structure fires and presents with altered mental status, seizures, shock, or difficulty breathing.
   A ♦ Administer Hydroxocobalamin (Cyanokit) 5 grams, via slow IV infusion, over 15 minutes. DO NOT ADMINISTER both Hydroxocobalamin and other cyanide antidotes to the same patient. Follow package directions.
   o Reconstitute: Place the vial in an upright position. Add 200 mL of 0.9% Sodium Chloride to the vial using the transfer spike. Fill to the line.
   o Mix: The vial should be repeatedly inverted or rocked, not shaken, for at least 60 seconds prior to infusion.
   o Infuse Vial: Use vented intravenous tubing, hang and infuse over 15 minutes.
   o One 5-g vial is a complete starting dose.
   P ♦ Pediatric dose is 70 mg/kg IV; max dose of 5000 mg; may repeat a dose of 35 mg/kg; max dose 2500 mg, depending on severity of poisoning and clinical response.

NOTE: Hydroxocobalamin is incompatible with numerous drugs carried by EMS, including Diazepam. Whenever possible, administer Hydroxocobalamin through a separate IV line.

· ♦ OR administer Sodium Thiosulfate
   A If > 25 kg, 50 ml of 25% solution (12.5 grams), slow IV.
   P If < 25 kg then 1.65 ml/kg (412.5 mg/kg) of the 25% solution, slow IV not to exceed 50 ml (12.5 grams).
• It is critical to control any seizure activity, using Diazepam or Midazolam

NOTE: Cyanide antidotes are no longer carried in the Drug Bags. They are located in multiple caches in each of the eight counties throughout the region, and are available by contacting 937-333-USAR (8727), who will contact the cache agency closest to your incident, which will respond on a mutual aid basis with both a Cyanokit and Sodium Thiosulfate, to provide for the potential of multiple patients. It is strongly
recommended that agencies immediately call for the cyanide antidote cache whenever any of the following occur:

- Dispatched on a report of a person trapped in a structure fire
- Dispatched on a report of an incident involving cyanide
- Report of a Mayday or firefighter down in a structure fire

HAZ-MAT: HYDROFLUORIC ACID (HF)

- Deaths have been reported from burns involving < 3% Body Surface Area. Ensure safety of EMS.
- Begin decon and irrigate the chemical burn with water as quickly as possible. When feasible, use {Magnesium Sulfate solution (Epsom salt)} as an additional irrigating solution for affected skin (not for eyes or mucous membranes).
  - Getting water on the burn is more urgent than the use of Epsom salt. DON’T DELAY IRRIGATION/DECON! Flush affected eyes and skin with copious amounts of water or Normal Saline for a minimum of 30 minutes or until patient transport is completed. If available, use {Epsom salt solution} on the skin for at least 30 minutes.
- If ingested, do not induce vomiting. Dilute with water or milk, and give {3-4 ounces of magnesium-containing antacid (i.e., Maalox or Mylanta)}.
- Intubate if unconscious or at first sign of pulmonary edema or respiratory distress.
- Perform a 12-lead EKG and monitor for prolonged QT interval, and cardiac arrest.
- Apply {magnesium-containing antacid (Maalox or Mylanta)} topically to burned areas. Omit topical treatment if industry has already applied topical agents.
- Consider Pain Control Protocol.
- ♦ If patient with HF exposure experiences tetany or cardiac arrest, administer 10 ml Calcium Chloride 10%, IV. Calcium Chloride 10% should be considered a first line drug in cardiac arrest associated with Hydrofluoric Acid. Only ABCs, defibrillation, intubation and Epinephrine should precede its administration.
- ♦ If victim was exposed to high concentration HF (> 40%), discuss prophylactic 4 ml Calcium Chloride 10% (400 mg), slow IV with MCP.

HAZMAT: ORGANO-PHOSPHATE or NERVE AGENT ORGANO-PHOSPHATE/NERVE AGENT EXPOSURE TREATMENT

General Considerations:

- Signs and Symptoms:
  - SLUDGEMM: Salivation, Lacrimation, Urination, Defecation, GI Upset, Emesis, Miosis, Muscle Twitching
- Recognize that patients with severe poisoning may or may not be bradycardic.
- Mild to moderate cases should be treated with one or two doses of Atropine and 2-PAM
- Severe cases will generally require repeating every 5 minutes up to 3 doses.
- Atropine in these circumstances is not for bradycardia, which may or may not be present.
- Primary endpoints for treatment are diminished airway secretions (lungs are clear to auscultation), hypoxia improves, airway resistance decreases, and dyspnea improves
- Organophosphate poisonings may require more Atropine (> 3 Mark I Kits or 3 DuoDotes).
- Ohio law and GMVEMSC Standing Orders permit First Responders and EMTs to administer Organophosphate/nerve agent antidotes by autoinjector only.
- Nerve agent/organophosphate antidotes are to be used to treat symptomatic patients, not given prophylactically

Specific Care: Organophosphate or Nerve Gas Poisoning

- DECON. Removing contaminated clothing may remove as much as 85% of solid or liquid contamination, and virtually all gas.
- Oxygen
• Treat any case of known or suspected Organophosphate or Carbamate (e.g., insecticides such as Parathion or Malathion); or nerve agent (e.g., Tabun, Sarin, Soman, VX) exposure as below:

♦ Administer Atropine every 5 minutes, as available until lungs are clear to auscultation. Atropine may be given IV, IM, IO or by Mark I autoinjector #1 (adults and children weighing under 90 pounds), by AtroPen autoinjector for children, or by DuoDote.

♦ Adults and children > 90 pounds, give Mark I Atropine and 2-PAM autoinjector, DuoDote, or Atropine 2 mg, IV, IM

P ♦ Children weighing 40 - 90 pounds, give 1.0 mg Atropine, or the 1.0 mg AtroPen autoinjector.

P ♦ Children weighing less than 40 pounds, give 0.5 mg Atropine, or the 0.5 mg AtroPen autoinjector.

♦ Follow Atropine with 2-PAM (Pralidoxime) 600 mg IM, which is Mark I autoinjector Item 2 for older children and adults > 90 pounds, or 1 gram IV drip or IM. If DuoDote was used, no second autoinjector is needed.

P ♦ Infants and young children should receive Pralidoxime, 25-50 mg/kg IV drip or IM, if available.

• Treat seizures with Diazepam, Midazolam, or Diazepam Autoinjector (CANA).

Administering the Nerve Agent Antidote Auto-Injector Kit:

• Anterolateral thigh is the recommended auto-injector site for both adults and pediatrics.

• Using the Mark I
  1. Grasp syringe #1 (Atropine) and position the green tip of the AtroPen on victim’s outer thigh. Push firmly until auto-injector fires. Hold in place for 10 seconds to ensure Atropine has been properly delivered.
  2. Grasp syringe #2 (2-Pam) and position the black tip of the Combo Pen on victim’s outer thigh. Push firmly until auto-injector fires. Hold in place for 10 seconds to ensure Pralidoxime has been properly delivered.

• Procedures for DuoDotes, pediatric AtroPens, and Diazepam autoinjectors are similar.

Antidote Resources:

• EMS Departments are authorized to stockpile large quantities of Atropine, 2-PAM, autoinjectors, and supplies (e.g., needles, syringes).

• GMVEMSC drug bags include:
  o 2 DuoDotes (Atropine) (2 mg) and 2-PAM (600 mg) administered through a single auto-injector.
  o 2 Pediatric AtroPens (1 each: 0.5 mg, 1.0 mg)
  o 1 Multi-dose 1 mg vial of Atropine

• Dayton MMRS maintains additional supplies of organophosphate and cyanide antidotes in each county in Ohio Homeland Security Region 3.
  o To obtain Dayton MMRS antidotes: call 937-333-USAR (8727). The closest department with an antidote cache will respond as a mutual aid request.
  o Dayton MMRS antidotes may be requested for incidents too small to require a CHEMPACK.
  o If requesting a CHEMPACK, simultaneously call 937-333-USAR (8727) and request MMRS antidotes.

CHEMPACK Resources:

• Containers with enough antidotes to treat about 500 victims of a nerve agent or organophosphate incident.

• CHEMPACK procurement:
  ♦ In an MCI, contact OSP Central Dispatch 866-599-LERP (5377) and request a CHEMPACK and indicate that it meets both of the following criteria:
    o The Organophosphate or nerve agent has been identified, or patients are exhibiting signs and symptoms of exposure.
    o AND the need for antidotes is greater than the available resources.
  o Simultaneously contact 937-333-USAR (8727) and request additional Nerve Agent Antidotes:
Regional MMRS drug cache in each county to be used for incidents too small for a CHEMPACK  
- Has additional drugs that are not available in the CHEMPACK (e.g., Cyanide antidotes)

- OSP Central Dispatch will:
  - Notify closest CHEMPACK hospital
  - Dispatch Troopers to deliver the CHEMPACK to the MCI’s staging area.
  - Troopers will expect EMS to sign a form indicating receipt.

- CHEMPACK contains:
  - **Atropine**—blocks effects of excess acetylcholine
    - 0.5 mg AtroPen autoinjectors (for patients < 40 pounds)
    - 1.0 mg AtroPen autoinjectors (for patients 40-90 pounds)
    - Multi-dose vials
  - **Pralidoxime Chloride (2-PAM)**—reduces levels of acetylcholine
    - 600 mg autoinjectors
    - Multi-dose vials
  - **Diazepam (Valium)**—treats seizures.
    - **Convulsive Antidote, Nerve Agent (CANA)** (10mg Diazepam autoinjector)
    - Multi-dose vials
  - **Mark I Kits** (for patients > 90 pounds)
    - 2 mg Atropine autoinjector
    - 600 mg 2-Pam autoinjector

- CHEMPACK types (both contain same drugs)
  - Hospital CHEMPACK contains more multi-dose vials for more precise dosing of children and long-term patients. Hospital CHEMPACKs are partitioned into thirds, each being marked with a red, yellow, or blue dot. Hospitals have the option to keep the red dot materials for potential use at their hospital. If a hospital opens its CHEMPACK, it must notify OSP Central Dispatch. (Hospitals may also request material from Dayton MMRS by calling 937-333-USAR (8727).)
  - EMS CHEMPACK contains more auto-injectors for ease of administration in the field.

- Limitations of CHEMPACKs:
  - Only useful against nerve agents or organophosphate
  - Only to be utilized when other resources are inadequate for number of victims.
  - CHEMPACKs opened contrary to guidelines will not be replaced by CDC and will result in the loss of a $250,000 asset.

**HAZMAT: PEPPER SPRAY**

- **Sudecon Wipes** can assist in the decontamination of patients or public safety personnel who have been sprayed with Pepper Spray.

**REGIONAL HOSPITAL NOTIFICATION SYSTEM (RHNS)**

Our area now has a Regional Hospital Notification System. The purpose is to provide one number for EMS, hospitals, and EMAs to call that will make rapid, simultaneous notifications in a Mass Casualty Incident/Event (MCI/MCE), or other major emergency.

The system can be used when an incident could involve a significant number of the region’s hospitals. To activate the system, an incident commander calls **937-333-USAR (8727)**, and requests a “Regional Hospital Notification.” The agency calling must ask for a Dispatch Supervisor, and should provide the information below:

- Name of agency
- Nature of emergency
- Location of emergency
- General statement on severity, such as approximate number of victims
- Any other information to be conveyed

The Montgomery County Regional Dispatch Center (RDC) will immediately put out a computerized message to the RHNS Group with that information.

Activation of the RHNS will send simultaneous notifications to all of the following:
OBJECTIVES

- Understand need to note on chart and EKG if non-standard position (heart moves when patient sits up).
- Understand use of negative complex in aVR as “test” for lead placement.
- Artifact and what to do about it
- Be able to recognize EKG findings which indicate an AMI.
- Be able to localize the MI by the EKG findings.
- Be able to recognize the MI “mimics” on the EKG.
- Be able to list, from memory, which leads are “anterior leads,” which are “inferior leads,” which are “lateral leads,” and which are the “septal leads.”
- Be able to explain the significance of the lead groupings listed above.

NOTE: If the monitor gives a reading of “MI, age indeterminate,” this is less likely to be acute. You should still notify and treat appropriately, but tell the hospital what it says.

PURPOSE AND BENEFITS OF PREHOSPITAL 12-LEAD EKGS

Performing a 12-lead in the field can have a tremendous impact on patient care. You’ve heard the expression, “Time is muscle.” Every minute that goes by after a patient starts having symptoms of myocardial ischemia increases the risk of permanent damage to the heart. It also increases the risk of death.

The American Heart Association states that the prehospital 12-lead is cost-effective, and often underused.

If we get the 12-lead, it may slightly increase the time we spend in the field, but it shortens the time the patient has to wait in the hospital for treatment. Typically, the 3-5 minutes (or less) we spend to get the 12-lead saves 20-30 minutes in the hospital. The advantage comes from our being able to diagnose the MI, and call them with the information. The ER can then get medications ready, call in a cardiologist, prepare the Cath Lab, and take other steps to treat the MI patient as quickly as possible.

Even when you are only blocks from the hospital, the 12-lead EKG is like airway management, defibrillation, CPR, or Dextrose. It should not wait until you arrive at the hospital. Do the 12-lead at the scene, as quickly as possible, and then notify the ER ASAP!

12-leads can also change the way we treat patients in the field. As just one example, patients with inferior MIs can be sensitive to nitroglycerine.

DEFINITIONS

Stenosis: Constriction or narrowing of a passage or orifice. The narrowing of a coronary artery caused by plaque buildup is an example of stenosis. A stenotic artery is a narrowed artery.

Aggregation: Clustering, or coming together, of a group of parts. When there is a plaque rupture in a coronary artery, platelets “aggregate” as one part of the clotting process, which may cause a blockage (occlusion) of the coronary artery. Since that blockage is the cause of a myocardial infarction, we want to reduce platelet aggregation, and one way to do that is with aspirin.
Thrombus: A blood clot that obstructs a blood vessel or a cavity of the heart.
Vasoconstriction: Vaso refers to blood vessels. Constriction is narrowing. Vasoconstriction is a tightening or narrowing of a blood vessel. Severe coronary artery vasoconstriction can cause an MI.
Ischemia: Temporary lack of blood supply to a part of the body because of obstructed circulation.
Injury: Trauma or damage to some part of the body
Infarct: An area of tissue that dies because of inadequate blood supply.

PATHOPHYSIOLOGY OF MYOCARDIAL INFARCTION, AND IN-HOSPITAL TREATMENT

A “typical” myocardial infarction begins with an arteriosclerotic coronary artery. That artery may or may not be stenosed (see stenosis, above). A portion of the “plaque” lining the artery ruptures. That rupture leads to the formation of a clot, or thrombus.

At that point, the myocardium (heart muscle) becomes ischemic. The muscle is not injured yet, and no tissue has died (infarcted). It is simply not getting as much blood as it needs. In time, this will result in injury to the cardiac muscle, and later to tissue death (infarction).

Therefore, the first EKG changes are signs of ischemia, including hyperacute (big) T waves. Later, the T-waves may become inverted. The patient may also have brief ST depression.

As the ischemia becomes prolonged, some of the heart’s muscle tissue is injured by the lack of blood supply. As a result, you’ll begin to see ST elevation in that part of the heart. An EKG finding of injury in the presence of cardiac symptoms is good enough evidence to give clot-busting drugs or consider a trip to the cath lab. You should know the technical term for clot-busters: thrombolytics. The main thrombolytic drug is some form of tPA.

The idea of clot-busters or balloon angioplasty is to prevent the next stage: infarction. If the patient doesn’t get help in time, tissue starts to die, or infarct. At that point, the EKG may show Q-waves from that section of the heart. Eventually, the ST elevation goes away, and we’re left with just the Q-waves. If we reach the patient before the ST elevation disappears, even if they have Q-waves, we may still be able to save some of the tissue with tPA or angioplasty.

Angioplasty is also called Percutaneous Coronary Interventions (PCI). Angioplasty (PCI) is another method of treating an MI. The patient is taken to the Cath Lab, where a cardiologist inserts a catheter into the arteries of the heart. When the stenotic (narrowed) area of the artery is reached, the cardiologist inflates a balloon to push the plaque out of the way, and open up the artery. When available, PCI is mostly preferable to tPA. Equally importantly to us, PCI can be used to treat MI patients when tPA is contraindicated. That’s why our Standing Orders emphasize transport to interventional facilities.

There are situations other than a thrombus that can result in MI. One example is cocaine use, where the heart is simply working too hard for the amount of blood, and oxygen, that is available. Unstable Angina can also require immediate treatment. The overall group of myocardial emergencies is referred to as “Acute Coronary Syndromes”, or ACS.

**SIGNS AND SYMPTOMS OF ACUTE CORONARY SYNDROMES (ACS)**

The “classic” MI patient complains of chest pain lasting more than 20 minutes. It is often (not always) described as a pressure pain. The pain may radiate to the left arm, right arm, or both. Pain may also radiate to the neck, jaw, or back. Dyspnea and nausea (with or without vomiting) are often associated. Other symptoms include anxiety, a sense of doom, agitation, and palpitations. MI patients frequency experience “prodromal symptoms”: milder pain or other symptoms that occur hours or days before the actual MI.

However, many patients having MIs do not have any significant chest pain. Some (as many as 30%) MI patients do not have severe chest pain as their primary symptom. Those patients may complain only of abdominal pain, dyspnea, feeling faint, or confusion. They may also have any of the other associated symptoms described above. The majority of those patients fall into one or both of two categories: the elderly or diabetics.

Anginal equivalents are other signs and symptoms that should prompt you to consider performing a 12-lead. They include: Dyspnea, general weakness, syncope or pre-syncope, palpitations, and DKA.
Although it can occur at any age, males over 35, and females over 40 are at significant risk for ACS. Risk increases as age increases. Vital signs vary widely from patient to patient. However, patients with inferior MI’s are more likely to be bradycardic, and patients with anterior MI’s are more likely to be tachycardic. Asking about the patient’s medical and family history can also be helpful. The presence of Cardiac risk factors should increase your index of suspicion for ACS:

- Diabetes
- Family history of CAD
- Smoking
- Obesity
- Hypertension
- Stress
- Age
- Sedentary

Ischemia can cause dysrhythmias and varying degrees of ventricular failure. Symptoms of these complications may be the only presenting complaints when chest pain is absent. As we said, diabetic and elderly patients are most likely to present with atypical presentations which include atypical pain and anginal equivalents.

The elderly present more often with dyspnea secondary to sudden decompensated ventricular failure.

Diabetics frequently present with weakness and DKA.

Up to 40% of ACS patients will present with an anginal equivalent as their primary symptom.

EMS personnel must learn to recognize these symptoms as potential ACS patients.

Another consideration is the value of checking BPs in both arms. It helps identify patients with dissecting thoracic aneurysm.

**PRE-HOSPITAL 12-LEADS**

As quickly as you can after your history, physical, monitor, O2, NTG, and Aspirin, obtain a 12-lead EKG, with the patient supine if that can be tolerated. It is important that you get 12-leads on patients in any of the following categories:

- Adults with potentially cardiac non-traumatic chest pain
- Any suspected AMI
- Be especially liberal with 12-leads on diabetics, and elderly.

Generally, the 12-lead EKG should be taken before moving to the Medic Unit. Give four baby aspirin, and notify the hospital if you think you have a possible MI patient. Transport as rapidly as is possible and safe, starting an IV or Saline Lock while en route.

Provide Fentanyl or a fluid challenge if needed. Patients with evidence of an acute inferior MI may be sensitive to Nitroglycerin and Fentanyl administration: Monitor BP frequently.

As you have the opportunity, obtain additional 12-lead EKGs during transport, especially after Nitro or other meds. EKGs can change rapidly, and having a record of those changes can be invaluable for the patient’s physician, and for the patient. Besides, it’s simple to do. Once the leads are in place, all that’s required is to press the button (and maybe have your driver stop for a few seconds).

Finally, it is critical that you understand that some patients have MI’s with NO EKG changes at all. A normal 12-lead EKG does not rule out AMI.

**12-LEAD DOCUMENTATION ISSUES**

When you arrive, give the 12-lead EKGs to ER personnel, preferably to the treating physician. **Each 12-lead should have the patient’s name, and the date and time it was obtained.** If you get multiple EKGs, number them, circling the sequential numbers. If you have to take an EKG in a non-standard position, note the patient’s position on the EKG, since the heart moves when patient sits up. Make sure you document all of your 12-lead findings.

**12-LEAD EKGs**

12-lead EKGs are different. That is not only because they offer more views of the heart. They also provide “Diagnostic Quality” vs. “Monitor Quality.” Diagnostic quality is needed to evaluate ST
An ST segment that is absolutely flat when you’re looking at Lead II, may show significant elevation in Lead II on the 12-lead.

Obtaining a 12-lead EKG

- **Limb leads:**
  - Left and right shoulders, or anywhere on their arms
  - Leg electrodes anywhere below the waist

- **Chest leads:**
  - **V1:** The Angle of Louis is the prominence on the sternum where the manubrium (top third of the sternum), sternal body (bottom two thirds), and the second rib all come together. Locate it by palpating the “bump” on the sternum, then move out along the second rib to the patient’s right. Just below the second rib is the second intercostal space. Move down two more intercostal spaces, and position electrode V1 in the fourth intercostal space, just to the right of the patient’s sternum.
  - **V2:** Place an electrode in the fourth intercostal space on the left side of the sternum.
  - **V3:** Place V4 first, see below.
  - **V4:** From V2, move down to the fifth intercostal space on the patient’s left, then move laterally to the mid-clavicular line. V4 goes at the intersection of the fifth intercostal space, and the mid-clavicular line.
  - **V3:** Halfway between V4 and V2
  - **V5:** Find the anterior axillary line by locating the crease where the arm joins the chest. Move down that line to a point just lateral to V4.
  - **V6:** V6 is placed on the midaxillary line, level with V5.

- **Skin preparation**
  - Use alcohol preps to prep the skin for monitoring electrodes and for 12-lead EKGs.
  - DO NOT use alcohol preps with therapeutic electrodes, such as QuikCombo pads.
  - Shave excess hair.
  - Dry skin.

- **Primary ways to reduce artifact:**
  - Thoroughly prep the skin.
    - Remove excess hair.
  - Attach each electrode solidly.
  - Prevent patient movement.
  - Prevent cable movement.
  - Stop the squad.
  - Eliminate electromagnetic interference (EMI):
    - Turn off or move away from electrical devices.
    - Do not allow patient cables to touch power cords.
    - Make sure patient cables and electrodes are in good shape.

**RIGHT VENTRICULAR INFARCTS**

According to the “Treatment Considerations for Inferior Wall AMI (IWMI)” section of the Standing Orders, paramedics should attempt to capture Lead V4R to check for the possibility of a right ventricular infarction (RVI) in all patients with IWMI. Some paramedics may be unfamiliar with V4R.

Lead V4R is simply Lead V4 on the patient’s Right side, instead of his left. It provides a better picture of the right side of the heart.

**Lead V4R**
1. Perform a normal 12-lead EKG.
2. If there is 12-lead evidence of an Inferior MI, place one additional electrode on the patient’s right side, in the same anatomical location as V4 on the patient’s left.
3. Move the V4 Lead from the left, to your new electrode on the right.
4. Complete another 12-lead EKG.
5. **Label** this EKG with the patient’s name, and the time. **Label V4 prominently as V4R.**
READING THE 12-LEAD EKG

One of the biggest changes in going from arrhythmia recognition to reading 12-leads is that, instead of viewing an entire strip, with 12-leads, we concentrate on just one good complex in each lead. Our primary interest in 12-leads is MI, although it can be helpful in diagnosing many other conditions. As we discussed earlier, in most cases an MI occurs as a result of obstructed blood flow somewhere in the coronary arteries. The location of the clot determines which part of heart muscle is affected.

The Left Coronary Artery (sometimes called the Left Main), carries 85% of the myocardial blood supply. It branches into the Left Anterior Descending Artery (LAD), and the Circumflex Artery. The remainder of the heart’s blood supply is provided by the Right Coronary Artery.

That means an obstruction in the Left Main Artery of the heart will affect a huge portion of heart muscle. On the other hand, if the obstruction is in a distal portion of the Right Coronary Artery, a much smaller portion of heart muscle will be knocked out, and the location of injured muscle will also be very different. A Left Main obstruction would cause big changes in the septal, anterior, and lateral leads (see below), and is called “the widow maker.”

The muscle that is injured will usually cause changes on the EKG. However, those changes show up primarily in the leads that look at the location of the injury. So the first level of 12-lead interpretation is simply a matter of knowing two facts:

1. What changes an AMI can cause on the 12-lead {what to look for}, and
2. Knowing which part of the heart each lead “sees” {where to look}

You must know what EKG changes represent the three I’s: ischemia, injury, and infarct. The first sign of an MI is the presence of ischemia, or ischemic changes. Ischemia is reduced blood flow to one portion of heart muscle. On the EKG, it is represented by ST depression, or by the so-called “Ischemic T”, where the T-wave is inverted (upside down).

The next changes that occur are signs of injury. For the heart muscle to be injured, it has been deprived of blood flow for a longer period. Injury is worse than mere ischemia. ST elevation in two or more contiguous leads indicates injury, and is considered good evidence that the patient is having an MI. ST Elevation is presumptive evidence of an MI. It is the criteria used to start thrombolytics, or to take the patient for angioplasty.

ST elevation is measured in comparison to the EKG baseline, also called the isoelectric line. We use the T-P segment, the line between the end of the T-wave and the start of the next P-wave, as that baseline. Do not use the P-R segment: it can be elevated or depressed, so it can’t be compared to the ST segment.

Sometimes, the ST segment is not only elevated or depressed, but also tilted at an angle. To determine which part of the ST you compare to the T-P segment, look for the “J-Point.” The J-Point is the junction between the end of the QRS and the beginning of the ST segment. The J-point is found by looking for the point where the QRS stops and makes a sudden sharp change of direction.

After you find the J-Point, ST segment, and the TP segment, measure elevation or depression by counting the number of boxes that the ST is higher or lower than the TP. Each little box is 1 millimeter (mm.). When is ST Elevation significant?

- 1 mm. or more of elevation
- Present in two or more contiguous leads

By the way, when we say “ST elevation is significant” (according to the two criteria just above), it means that we presume the patient is having an Acute Coronary Syndrome, and needs reperfusion (either tPA or PCI).

Finally, Q-waves indicate the patient has actual tissue death, or infarction. If we restore blood flow while the heart is ischemic or injured (with PCI or tPA), then a true infarction never occurs. Even if Q-waves are present, it doesn’t necessarily mean that the infarct is complete. It may still be possible to save some heart tissue, even though some has died. In fact, during the evolution of an infarct, Q waves, ST elevation, and T inversion may occur together.

There are, of course, times when people have Q-waves in their QRS complexes that are normal. How do you tell the difference? Pathologic (meaning produced by disease) Q-waves are wide. They are ≥ to 40 ms. duration. Physiologic Q waves are < 40 ms.

Make sure you are able to convert seconds to milliseconds. One large block on the EKG paper is equal to 0.20 seconds, or 200 ms.
A mnemonic to remember the EKG changes for the three I’s is “alphabetical order.” Infarction, injury, and ischemia are in alphabetical order, and so are the changes: Q-waves (infarct); ST elevation (injury); and ST depression or inverted T-waves (ischemia). Just remember, though, that the signs occur over time, and in reverse order: first ischemia, then injury, and finally infarct.

“Contiguous leads” simply means the leads are anatomically located next to each other. Here are the groups of contiguous leads:

- Leads II, III, and aVF look at the “bottom” of the heart. They are called the “inferior leads.”
- Leads I, aVL, V5, and V6 all look at the left side, or left lateral heart wall. They are called the four “lateral leads.”
- Leads V3 and V4 look at the front or anterior heart. They are called the two “anterior leads.”
- Leads V1 and V2 are located on the sternal borders. They look at the septum or dividing wall of the heart. They are called the two “septal leads.”

A mnemonic for the precordial leads is “SAL”:

- V1 & 2 – Sternal
- V3 & 4 – Anterior
- V5 & 6 – Lateral

Given a lead, you should be able to name the portion of the heart that it coincides with. Given an area of the myocardium, you should be able to say which leads would view it.

Don’t forget that higher blockages will hit more of the heart. That means you can have combinations of the groups, such as an “inferolateral” MI (involving some or all of the inferior and lateral leads). A posterior MI is usually associated with an inferior MI.

**RECIPROCAL CHANGES**

We have been looking for infarct based upon the presence of ST elevation. As mentioned, not every lead is elevated when AMI is present, only the leads looking at the infarct site. In fact, those leads which look at the infarct site from the opposite perspective tend to produce opposite changes. When a lead “sees” the AMI directly, the segment becomes elevated in that lead. However, when a lead “sees” the infarct from the opposite perspective, the ST segment may be depressed in that lead. Those are called reciprocal changes. Because of the way the leads are oriented on the patient’s body, II, III and aVF are on the bottom looking up. All the other leads are on the top, looking in. So when AMI produces elevation in II, III, and aVF, it also tends to produce depression in the opposing leads:

- II, III, aVF vs. I, aVL

**NOTE:** Not every lead on each side of the seesaw must be elevated or depressed in order to assume reciprocal changes. It is more a matter of some leads on one end of the seesaw being elevated and some being depressed. Also, not all AMIs with ST elevation produce reciprocal depression. Quite simply… some do and some don’t. When reciprocal depression *is* noted, the likelihood of AMI is dramatically increased.

You may have noticed that one lead, aVR, is not in any of the contiguous lead groups. Our principle use for aVR is to “test” lead placement (though it’s not perfect). Lead aVR is normally negative. If you look at aVR on a 12-lead, and the QRS is predominantly upright, it means one of two things:

- Some limb leads are misplaced
- The patient has altered cardiac conduction

**MI MIMICS**

There are conditions other than AMI that can cause ST elevation on the EKG. Some imitators of infarct include:

- Left ventricular hypertrophy (LVH)
- Bundle Branch Block (BBB)
- Ventricular beats
- Pericarditis
- Early repolarization
- Other causes
LVH

Left Ventricular Hypertrophy (LVH) can be the result of an enlarged left ventricle, pumping against increased resistance, or chronic overfilling of the ventricles. Unlike BBB and ventricular rhythms, LVH does NOT usually widen the QRS to 120ms or more. Instead of abnormally widening the QRS, LVH increases its amplitude. There are many formulas for suspecting the presence of LVH. The three step method described here is one of the simpler means of suspecting LVH.

- **STEP 1**
  - Compare V1 and V2
  - Determine which is the deepest negative deflection
  - In the deepest lead, count the millimeters of negative deflection.

- **STEP 2**
  - Compare V5 and V6.
  - Determine which is the tallest.
  - In the tallest lead, count the millimeters of positive deflection.

- **STEP 3**
  - Add the two numbers together.
  - If their sum equals 35 or more, suspect LVH is present.

**BUNDLE BRANCH BLOCKS (BBB)**

For decades the presence of BBB has made it tough to identify AMI, because BBB can both mimic and mask EKG changes used to identify AMI. For now, it is sufficient to know that when a patient’s clinical presentation suggests an ACS, and the EKG shows a new, or presumed new, BBB the patient is a candidate for acute reperfusion therapy.

The QRS is widened in BBB due to asynchronous firing of the ventricles. Asynchronous firing of the ventricles also occurs with beats of ventricular origin. It is important to distinguish supraventricular beats from ventricular beats. Evidence of supraventricular activity is needed to differentiate BBB from beats of ventricular origin.

**BBB IDENTIFICATION SUPRAVENTRICULAR RHYTHM**

BBB widens the QRS (120ms or more). This widening is due to the fact that the ventricles are forced to contract sequentially, thus requiring more time. Other conditions widen the QRS; a common one would be ventricular rhythms, either paced or spontaneous. A differentiating factor between BBB and ventricular rhythms would be the presence of an underlying supraventricular rhythm. Therefore, when a QRS of 120ms or more is produced by a supraventricular rhythm, think BBB. This rule applies in all leads.

The “classic” pattern for RBBB in V1 is an RSR (“rabbit ears”). The “classic” pattern of LBBB in V1 is a QS complex. There are many variations to these classic patterns, complicating the process of distinguishing RBBB from LBBB. In addition, each form of BBB produces a different set of changes in V6. A commonly held misconception is that any notch or distortion of the QRS indicates a BBB. While BBB can cause a notch, a notch does not ensure the presence of a BBB. Therefore, other criteria for BBB recognition are needed. Fortunately, a simple approach does exist.

**NOTE:** Always remember, the rules below for differentiating RBBB from LBBB apply only to V1.

**DIFFERENTIATION OF LBBB FROM RBBB**

After BBB has been determined to exist, look at lead V1. Identify the terminal force of the QRS in V1, and determine if it is positive or negative. To identify the terminal force, first locate the J-point. From the J-point, back up about 40 ms into the QRS. Now determine if the terminal force (tail end) is pointing up or down.
After BBB has been determined to exist, look at terminal force of QRS in V1
Positive = RBBB
Negative = LBBB
Turn signal mnemonic – up is right, and down is left

VENTRICULAR RHYTHMS

Like BBB, ventricular rhythms can not only imitate an ACS, but can mask the evidence as well.

PERICARDITIS

There are numerous causes of pericarditis, including viral and bacterial infections, and metabolic causes. The purpose of the following description is not to rule out AMI, but to help the care provider suspect the possibility of pericarditis. The “classic” pericarditis presentation has some distinguishing features.

Classic presentation:
- Sharp chest pain (meaning a stabbing nature, not meaning intense)
- Pain can often be localized with one finger.
- Pain may radiate to the base of the neck or between the shoulder blades (trapezius area).
- Pain is affected by patient movement and respiration
- Pain is affected by patient position

One of the tricks to suspect pericarditis is to lean the patient forward and see if the pain improves. Another is to see if the pain worsens when they take a drink of fluids. Pericarditis can occur post MI and post cardiac surgery. Also have a high index of suspicion if the patient has had a recent viral or bacterial infection, or IV drug abuse is suspected.

EKG findings can include ST elevation in any lead, and it can be in all leads. The ST elevation of pericarditis is caused by inflammation of the epicardium secondary to inflammation of the pericardium. This process is not related to coronary artery disease and, therefore, ST changes do not tend to follow anatomical groups typically seen with ACS. J-point notching with a “fish hook” appearance is often present, as it is with BER (below).

BENIGN EARLY REPOLARIZATION

Benign Early Repolarization (BER) is an example of a normal variant, which produces ST elevation and tall T waves. Changes can occur in any lead, but are more common in the lateral and anterior chest leads (sometimes lead II and other limb leads).

Anyone, male or female, of any ethnic background can have this pattern on their EKG. However, this pattern is most commonly seen in young adult African-American males.

One EKG sign that should make you consider BER is the notched J-point, creating a fish hook like appearance of the ST segment.

OTHER CAUSES

Finally, there are many other factors that can increase the difficulty of 12-lead interpretation. Numerous medications impact the EKG. One of the most common is digitalis, which causes ST depression with sag.

Conclusion
This has been a short primer/refresher on 12-lead EKGS. It is not a complete course. We hope you will spend some time with the many books and videos available, and learn more.
12-lead EKG Format

<table>
<thead>
<tr>
<th>I</th>
<th>aVR</th>
<th>V1</th>
<th>V4</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>aVL</td>
<td>V2</td>
<td>V5</td>
</tr>
<tr>
<td>III</td>
<td>aVF</td>
<td>V3</td>
<td>V6</td>
</tr>
</tbody>
</table>

Lead Localization

<table>
<thead>
<tr>
<th>Lateral</th>
<th>aVR</th>
<th>V1:</th>
<th>V4:</th>
</tr>
</thead>
<tbody>
<tr>
<td>I:</td>
<td></td>
<td>Septal</td>
<td>Anterior</td>
</tr>
<tr>
<td>II:</td>
<td>aVL:</td>
<td>V2:</td>
<td>V5:</td>
</tr>
<tr>
<td>III:</td>
<td>aVF:</td>
<td>V3:</td>
<td>V6:</td>
</tr>
</tbody>
</table>

AMI Recognition/Lead Localization

<table>
<thead>
<tr>
<th>Lateral</th>
<th>I, aVL, V5, &amp; V6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inferior</td>
<td>II, III, &amp; aVF</td>
</tr>
<tr>
<td>Septal</td>
<td>V1 &amp; V2</td>
</tr>
<tr>
<td>Anterior</td>
<td>V3 &amp; V4</td>
</tr>
</tbody>
</table>

PCI vs. THROMBOLYTICS:
HOW FAR SHOULD YOU TRANSPORT A PATIENT?

Research shows Angioplasty is superior to Thrombolytics as a reperfusion strategy. Patients with 12 Lead EKG findings consistent with AMI must be treated in an aggressive manner to reduce damage to the myocardium.

This is comparable to what we know about trauma patients. Trauma patients also do better if they are transported to the right facility that is further away, than to be transported to a hospital without full capabilities that is closer. The same is true for AMI patients.

ABBREVIATIONS

Some abbreviations are case sensitive while others are content sensitive. Any words that can be readily abbreviated using a period have been left out of this list.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>abdomen</td>
<td>abd</td>
</tr>
<tr>
<td>abdominal aortic aneurysm</td>
<td>AAA</td>
</tr>
<tr>
<td>abortion</td>
<td>AB</td>
</tr>
<tr>
<td>acute coronary syndrome</td>
<td>ACS</td>
</tr>
<tr>
<td>acute myocardial infarction</td>
<td>AMI</td>
</tr>
<tr>
<td>acute pulmonary edema</td>
<td>APE</td>
</tr>
<tr>
<td>acute renal failure</td>
<td>ARF</td>
</tr>
<tr>
<td>acute respiratory distress/syndrome</td>
<td>ARD/ARDS</td>
</tr>
<tr>
<td>administer rectally</td>
<td>p.r.</td>
</tr>
<tr>
<td>advanced cardiac life support</td>
<td>ACLS</td>
</tr>
<tr>
<td>advanced directive</td>
<td>AD</td>
</tr>
<tr>
<td>advanced life support</td>
<td>ALS</td>
</tr>
<tr>
<td>after</td>
<td>p</td>
</tr>
<tr>
<td>against medical advice</td>
<td>AMA</td>
</tr>
<tr>
<td>alcohol</td>
<td>ETOH</td>
</tr>
<tr>
<td>alert &amp; oriented</td>
<td>A&amp;O</td>
</tr>
<tr>
<td>alert/verbal/pain/unresponsive</td>
<td>AVPU</td>
</tr>
<tr>
<td>antecubital fossa</td>
<td>AC</td>
</tr>
<tr>
<td>arteriosclerotic heart disease</td>
<td>ASHD</td>
</tr>
<tr>
<td>as necessary or needed</td>
<td>prn</td>
</tr>
<tr>
<td>as soon as possible</td>
<td>ASAP</td>
</tr>
<tr>
<td>aspirin</td>
<td>ASA</td>
</tr>
<tr>
<td>at</td>
<td>@</td>
</tr>
<tr>
<td>at bedtime</td>
<td>h.s.</td>
</tr>
<tr>
<td>atrial fibrillation</td>
<td>a-fib</td>
</tr>
<tr>
<td>atrial flutter/ tachycardia</td>
<td>AF/AT</td>
</tr>
<tr>
<td>atrioventricular</td>
<td>AV</td>
</tr>
<tr>
<td>automatic external defibrillator</td>
<td>AED</td>
</tr>
<tr>
<td>automatic transport ventilator</td>
<td>ATV</td>
</tr>
<tr>
<td>backboard</td>
<td>BB</td>
</tr>
<tr>
<td>bag-valve mask</td>
<td>BVM</td>
</tr>
<tr>
<td>basic life support</td>
<td>BLS</td>
</tr>
<tr>
<td>before</td>
<td>a</td>
</tr>
<tr>
<td>below the knee amputation</td>
<td>BKA</td>
</tr>
<tr>
<td>births, number of</td>
<td>para</td>
</tr>
<tr>
<td>black</td>
<td>B</td>
</tr>
<tr>
<td>blood pressure</td>
<td>BP</td>
</tr>
<tr>
<td>blood sugar</td>
<td>BS</td>
</tr>
<tr>
<td>body substance isolation</td>
<td>BSI</td>
</tr>
<tr>
<td>Term</td>
<td>Abbreviation</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>body surface area</td>
<td>BSA</td>
</tr>
<tr>
<td>bowel movement</td>
<td>BM</td>
</tr>
<tr>
<td>bradycardia</td>
<td>brady</td>
</tr>
<tr>
<td>breaths per minute</td>
<td>bpm</td>
</tr>
<tr>
<td>by mouth</td>
<td>po</td>
</tr>
<tr>
<td>by or through</td>
<td>per</td>
</tr>
<tr>
<td>cancer</td>
<td>CA</td>
</tr>
<tr>
<td>capillary refill time</td>
<td>CRT</td>
</tr>
<tr>
<td>carbon dioxide</td>
<td>CO2</td>
</tr>
<tr>
<td>carbon monoxide</td>
<td>CO</td>
</tr>
<tr>
<td>centimeter</td>
<td>cm.</td>
</tr>
<tr>
<td>cerebral palsy</td>
<td>CP</td>
</tr>
<tr>
<td>cerebrospinal fluid</td>
<td>CSF</td>
</tr>
<tr>
<td>cerebrovascular accident</td>
<td>CVA</td>
</tr>
<tr>
<td>cervical immobilization device</td>
<td>CID</td>
</tr>
<tr>
<td>cervical spine</td>
<td>C-spine</td>
</tr>
<tr>
<td>change</td>
<td>∆</td>
</tr>
<tr>
<td>chest pain</td>
<td>CP</td>
</tr>
<tr>
<td>chief complaint</td>
<td>CC</td>
</tr>
<tr>
<td>chronic obstructive pulmonary disease</td>
<td>COPD</td>
</tr>
<tr>
<td>chronic renal failure</td>
<td>CRF</td>
</tr>
<tr>
<td>circulatory/sensory/motor disease</td>
<td>CSM</td>
</tr>
<tr>
<td>clear to auscultation bilaterally</td>
<td>CTAB</td>
</tr>
<tr>
<td>complaining of</td>
<td>c/o</td>
</tr>
<tr>
<td>congestive heart failure</td>
<td>CHF</td>
</tr>
<tr>
<td>coronary artery bypass graft</td>
<td>CABG</td>
</tr>
<tr>
<td>coronary artery disease</td>
<td>CAD</td>
</tr>
<tr>
<td>cubic centimeter</td>
<td>cc.</td>
</tr>
<tr>
<td>date of birth</td>
<td>DOB</td>
</tr>
<tr>
<td>dead on arrival</td>
<td>DOA</td>
</tr>
<tr>
<td>decreasing</td>
<td>↓</td>
</tr>
<tr>
<td>degree(s)</td>
<td>°</td>
</tr>
<tr>
<td>delirium tremens</td>
<td>DTs</td>
</tr>
<tr>
<td>Dextrose in water – 50%</td>
<td>D50</td>
</tr>
<tr>
<td>Dextrose in water - 10%</td>
<td>D10</td>
</tr>
<tr>
<td>diabetes mellitus</td>
<td>DM</td>
</tr>
<tr>
<td>diagnosis</td>
<td>Dx</td>
</tr>
<tr>
<td>dilation &amp; curettage</td>
<td>D&amp;C</td>
</tr>
<tr>
<td>discontinue</td>
<td>d/c</td>
</tr>
<tr>
<td>disease</td>
<td>DZ</td>
</tr>
<tr>
<td>do not resuscitate</td>
<td>DNR</td>
</tr>
<tr>
<td>drop(s)</td>
<td>gtt (s)</td>
</tr>
<tr>
<td>dyspnea on exertion</td>
<td>DOE</td>
</tr>
<tr>
<td>electrocardiogram</td>
<td>ECG / EKG</td>
</tr>
<tr>
<td>emergency department</td>
<td>ED / ER</td>
</tr>
<tr>
<td>endotracheal tube</td>
<td>ETT</td>
</tr>
<tr>
<td>epinephrine</td>
<td>EPI</td>
</tr>
<tr>
<td>Equal to or greater than</td>
<td>≥</td>
</tr>
<tr>
<td>Equal to or less than</td>
<td>≤</td>
</tr>
<tr>
<td>esophageal detection device</td>
<td>EDD</td>
</tr>
<tr>
<td>esophageal obturator airway</td>
<td>EOA</td>
</tr>
<tr>
<td>estimated</td>
<td>Est.</td>
</tr>
<tr>
<td>estimated time of arrival</td>
<td>ETA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Term</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>every</td>
<td>q</td>
</tr>
<tr>
<td>external jugular vein</td>
<td>EJV</td>
</tr>
<tr>
<td>fever of unknown origin</td>
<td>FUO</td>
</tr>
<tr>
<td>for example</td>
<td>e.g.</td>
</tr>
<tr>
<td>foreign body</td>
<td>FB</td>
</tr>
<tr>
<td>four times a day</td>
<td>qid</td>
</tr>
<tr>
<td>fracture</td>
<td>fx</td>
</tr>
<tr>
<td>French</td>
<td>Fr.</td>
</tr>
<tr>
<td>gallbladder</td>
<td>GB</td>
</tr>
<tr>
<td>gastrointestinal</td>
<td>GI</td>
</tr>
<tr>
<td>gauge</td>
<td>Ga</td>
</tr>
<tr>
<td>Glasgow Coma Scale</td>
<td>GCS</td>
</tr>
<tr>
<td>gram</td>
<td>Gm</td>
</tr>
<tr>
<td>greater than</td>
<td>&gt;</td>
</tr>
<tr>
<td>gunshot wound</td>
<td>GSW</td>
</tr>
<tr>
<td>hazardous materials</td>
<td>HazMat</td>
</tr>
<tr>
<td>head, ears, eyes, nose, throat</td>
<td>HEENT</td>
</tr>
<tr>
<td>Headache</td>
<td>H/a</td>
</tr>
<tr>
<td>heart block</td>
<td>HB</td>
</tr>
<tr>
<td>heart rate</td>
<td>HR</td>
</tr>
<tr>
<td>history</td>
<td>Hx</td>
</tr>
<tr>
<td>hypertension</td>
<td>HTN</td>
</tr>
<tr>
<td>Incident Command</td>
<td>IC</td>
</tr>
<tr>
<td>increasing</td>
<td>↑</td>
</tr>
<tr>
<td>inferior</td>
<td>inf.</td>
</tr>
<tr>
<td>insulin dependent diabetes</td>
<td>IDDM</td>
</tr>
<tr>
<td>intercostal space</td>
<td>ICS</td>
</tr>
<tr>
<td>intracranial pressure</td>
<td>ICP</td>
</tr>
<tr>
<td>intramuscular</td>
<td>IM</td>
</tr>
<tr>
<td>intranasal</td>
<td>IN</td>
</tr>
<tr>
<td>intravenous</td>
<td>IV</td>
</tr>
<tr>
<td>intravenous push</td>
<td>IVP</td>
</tr>
<tr>
<td>joule</td>
<td>J</td>
</tr>
<tr>
<td>jugular venous distension</td>
<td>JVD</td>
</tr>
<tr>
<td>Kendrick Extrication Device</td>
<td>KED</td>
</tr>
<tr>
<td>kilogram</td>
<td>kg</td>
</tr>
<tr>
<td>labor &amp; delivery</td>
<td>L&amp;D</td>
</tr>
<tr>
<td>last normal menstrual period</td>
<td>LNMP</td>
</tr>
<tr>
<td>left</td>
<td>(L)</td>
</tr>
<tr>
<td>Left lower/upper extremity</td>
<td>LLE/LUE</td>
</tr>
<tr>
<td>Left lower/upper lobe</td>
<td>LLL / LUL</td>
</tr>
<tr>
<td>left lower/upper lobe</td>
<td>LLLQ/LUL</td>
</tr>
<tr>
<td>left bundle branch block</td>
<td>LBBB</td>
</tr>
<tr>
<td>less than</td>
<td>&lt;</td>
</tr>
<tr>
<td>lights and siren</td>
<td>L&amp;S</td>
</tr>
<tr>
<td>liters per minute</td>
<td>lpm</td>
</tr>
<tr>
<td>liter</td>
<td>L.</td>
</tr>
<tr>
<td>loss or level of consciousness</td>
<td>LOC</td>
</tr>
<tr>
<td>mass casualty event</td>
<td>MCE</td>
</tr>
<tr>
<td>mechanism of injury</td>
<td>MOI</td>
</tr>
<tr>
<td>medial</td>
<td>med.</td>
</tr>
<tr>
<td>medical control physician</td>
<td>MCP</td>
</tr>
<tr>
<td>metered dose inhaler</td>
<td>MDI</td>
</tr>
<tr>
<td>Term</td>
<td>Abbreviation</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>microgram</td>
<td>mcg.</td>
</tr>
<tr>
<td>milliequivalent</td>
<td>mEq</td>
</tr>
<tr>
<td>milligram</td>
<td>mg.</td>
</tr>
<tr>
<td>milliliter (same as cc.)</td>
<td>ml.</td>
</tr>
<tr>
<td>motor vehicle collision</td>
<td>MVC</td>
</tr>
<tr>
<td>multiple casualty incident</td>
<td>MCI</td>
</tr>
<tr>
<td>multiple sclerosis</td>
<td>MS</td>
</tr>
<tr>
<td>myocardial infarction</td>
<td>MI</td>
</tr>
<tr>
<td>nasal cannula</td>
<td>NC</td>
</tr>
<tr>
<td>nasopharyngeal airway</td>
<td>NPA</td>
</tr>
<tr>
<td>nausea &amp; vomiting</td>
<td>N&amp;V</td>
</tr>
<tr>
<td>newborn</td>
<td>NB</td>
</tr>
<tr>
<td>nitroglycerine</td>
<td>NTG</td>
</tr>
<tr>
<td>no known drug allergies</td>
<td>NKDA/NKA</td>
</tr>
<tr>
<td>non-rebreather mask</td>
<td>NRM</td>
</tr>
<tr>
<td>nonsteroidal anti-inflammatory</td>
<td>NSAID</td>
</tr>
<tr>
<td>normal saline</td>
<td>NS</td>
</tr>
<tr>
<td>normal saline lock</td>
<td>NSL</td>
</tr>
<tr>
<td>normal sinus rhythm</td>
<td>NSR</td>
</tr>
<tr>
<td>not applicable / available</td>
<td>n/a</td>
</tr>
<tr>
<td>nothing by mouth</td>
<td>NPO</td>
</tr>
<tr>
<td>O2 % of arterial blood</td>
<td>SpO2</td>
</tr>
<tr>
<td>obstetrics</td>
<td>OB</td>
</tr>
<tr>
<td>oropharyngeal airway</td>
<td>OPA</td>
</tr>
<tr>
<td>over the counter</td>
<td>OTC</td>
</tr>
<tr>
<td>overdose</td>
<td>OD</td>
</tr>
<tr>
<td>packs per day</td>
<td>p/d</td>
</tr>
<tr>
<td>parts per million</td>
<td>ppm</td>
</tr>
<tr>
<td>past medical history</td>
<td>PMH</td>
</tr>
<tr>
<td>patient</td>
<td>pt.</td>
</tr>
<tr>
<td>pelvic inflammatory disease</td>
<td>PID</td>
</tr>
<tr>
<td>penicillin</td>
<td>PCN</td>
</tr>
<tr>
<td>peptic ulcer disease</td>
<td>PUD</td>
</tr>
<tr>
<td>peripheral inserted central cath</td>
<td>PICC</td>
</tr>
<tr>
<td>pharyngo tracheal lumen airway</td>
<td>PtL</td>
</tr>
<tr>
<td>pregnancies, number of</td>
<td>Gravida</td>
</tr>
<tr>
<td>premature ventricular complex</td>
<td>PVC</td>
</tr>
<tr>
<td>prior to my arrival</td>
<td>PTA</td>
</tr>
<tr>
<td>pulmonary embolism</td>
<td>PE</td>
</tr>
<tr>
<td>pulse</td>
<td>P</td>
</tr>
<tr>
<td>pulse, motor, sensation</td>
<td>PMS</td>
</tr>
<tr>
<td>pulseless electrical activity</td>
<td>PEA</td>
</tr>
<tr>
<td>pupils (=), round, reactive to light &amp; accommodation</td>
<td>PERRLA</td>
</tr>
<tr>
<td>right bundle branch block</td>
<td>RBBB</td>
</tr>
<tr>
<td>right lower/upper extremity</td>
<td>RLE/RUE</td>
</tr>
<tr>
<td>right lower/upper lobe</td>
<td>RLL/RUL</td>
</tr>
<tr>
<td>right middle lobe</td>
<td>RML</td>
</tr>
<tr>
<td>rapid sequence induction</td>
<td>RSI</td>
</tr>
<tr>
<td>respiratory rate</td>
<td>RR</td>
</tr>
<tr>
<td>returned to service</td>
<td>RTS</td>
</tr>
<tr>
<td>rheumatic heart disease</td>
<td>RHD</td>
</tr>
<tr>
<td>right</td>
<td>R</td>
</tr>
<tr>
<td>right lower/upper quadrant</td>
<td>RLQ/ RUQ</td>
</tr>
<tr>
<td>secondary / second degree</td>
<td>2°</td>
</tr>
<tr>
<td>sedate to intubate</td>
<td>StI</td>
</tr>
<tr>
<td>sexually transmitted disease</td>
<td>STD</td>
</tr>
<tr>
<td>shortness of breath</td>
<td>SOB</td>
</tr>
<tr>
<td>signs/symptoms</td>
<td>S/S</td>
</tr>
<tr>
<td>sino-atrial</td>
<td>SA</td>
</tr>
<tr>
<td>sinus bradycardia</td>
<td>SB</td>
</tr>
<tr>
<td>sinus tachycardia</td>
<td>ST</td>
</tr>
<tr>
<td>standard operating procedure</td>
<td>SOP</td>
</tr>
<tr>
<td>standing orders</td>
<td>SO</td>
</tr>
<tr>
<td>ST elevation MI</td>
<td>STEMI</td>
</tr>
<tr>
<td>subcutaneous</td>
<td>SQ</td>
</tr>
<tr>
<td>sublingual</td>
<td>SL</td>
</tr>
<tr>
<td>sudden infant death syndrome</td>
<td>SIDS</td>
</tr>
<tr>
<td>supraventricular tachycardia</td>
<td>SVT</td>
</tr>
<tr>
<td>symptoms</td>
<td>Sxs</td>
</tr>
<tr>
<td>systolic blood pressure</td>
<td>SBP</td>
</tr>
<tr>
<td>tachycardia</td>
<td>tach(y)</td>
</tr>
<tr>
<td>temperature</td>
<td>T</td>
</tr>
<tr>
<td>temporomandibular joint</td>
<td>TMJ</td>
</tr>
<tr>
<td>that is</td>
<td>i.e.</td>
</tr>
<tr>
<td>three times a day</td>
<td>tid</td>
</tr>
<tr>
<td>tibia</td>
<td>Tib</td>
</tr>
<tr>
<td>times</td>
<td>×</td>
</tr>
<tr>
<td>to keep open</td>
<td>TKO</td>
</tr>
<tr>
<td>tourniquet</td>
<td>TQ</td>
</tr>
<tr>
<td>tracheal deviation</td>
<td>TD</td>
</tr>
<tr>
<td>transport</td>
<td>Tx</td>
</tr>
<tr>
<td>transcutaneous pacing</td>
<td>TCP</td>
</tr>
<tr>
<td>transfer</td>
<td>x-fer</td>
</tr>
<tr>
<td>transient ischemic attack</td>
<td>TIA</td>
</tr>
<tr>
<td>treatment/medication</td>
<td>Rx</td>
</tr>
<tr>
<td>tuberculosis</td>
<td>TB</td>
</tr>
<tr>
<td>twice a day</td>
<td>bid</td>
</tr>
<tr>
<td>unconscious</td>
<td>unc.</td>
</tr>
<tr>
<td>unequal / not equal</td>
<td>≠</td>
</tr>
<tr>
<td>Unified command</td>
<td>UC</td>
</tr>
<tr>
<td>unknown</td>
<td>unk.</td>
</tr>
<tr>
<td>upper/lower</td>
<td>U/L</td>
</tr>
<tr>
<td>upper respiratory infection</td>
<td>URI</td>
</tr>
<tr>
<td>urinary tract infection</td>
<td>UTI</td>
</tr>
<tr>
<td>ventricular fibrillation</td>
<td>VF/ VFib</td>
</tr>
<tr>
<td>ventricular tachycardia</td>
<td>VT/ VTach</td>
</tr>
<tr>
<td>vital signs</td>
<td>VS</td>
</tr>
<tr>
<td>warm &amp; dry</td>
<td>w/d</td>
</tr>
<tr>
<td>week</td>
<td>wk.</td>
</tr>
<tr>
<td>weight</td>
<td>wt.</td>
</tr>
<tr>
<td>white</td>
<td>W</td>
</tr>
<tr>
<td>with c¯</td>
<td>c</td>
</tr>
<tr>
<td>within normal limits</td>
<td>WNL</td>
</tr>
<tr>
<td>without s¯ or w/o</td>
<td>≠</td>
</tr>
<tr>
<td>Wolff Parkinson-White</td>
<td>WPW</td>
</tr>
<tr>
<td>year</td>
<td>yr.</td>
</tr>
<tr>
<td>years old</td>
<td>y/o or yo</td>
</tr>
</tbody>
</table>
EMS CHECKLIST: SUSPECTED Stroke/CVA/TIA

Patient Name:__________________________________ EMS Agency/Unit:__________________________________
Date:_________________________ Run #:____________ Time Onset of S/S:_____________________

(Y)es or (N)o

_____ 1. HISTORY compatible with CVA?

_____ 2. PHYSICAL EXAM compatible with acute CVA?

Cincinnati Prehospital Stroke Scale:
Facial Droop (pt. shows teeth or smiles): _____ Normal _____ Abnormal
Arm Drift (pt. closes eyes and holds both arms straight out for about 10 seconds): _____ Normal _____ Abnormal
Abnormal Speech (have pt. say “you can’t teach an old dog new tricks”): _____ Normal _____ Abnormal

Glasgow Coma Component Scores (Scores of 8 or less have poor prognosis and need ALS ASAP).
_____ EYE OPENING (1 – 4) _____ Total GCS (3 – 15)
_____ BEST VERBAL RESPONSE (1 – 5)
_____ BEST MOTOR RESPONSE (1 – 6)

_____ 3. Time of onset of signs and symptoms: __________

_____ 4. INITIAL THERAPY per Standing Orders:
Oxygen, Blood Sugar, EKG, Monitor, IV or Saline Lock.
Intubate if indicated. Hyperventilation if signs of herniation.

_____ 5. TRANSPORT patient and HISTORIAN WITHOUT DELAY to most appropriate hospital.
NOTIFY hospital ASAP.
Contact hospital and advise them of a “Stroke Alert” if you can arrive within eight hours of time patient was last seen normal. Select groups of patients may receive thrombolytics after as much as 4.5 hours. Consider air transport for Stroke patients with long transport times.

_____ 6. POTENTIAL CONTRAINDICATIONS to Thrombolytic Therapy (i.e. tPA) to be communicated to hospital (no influence on transport destination): (Check only those with a positive history.)

_____ a) Active internal bleeding.
_____ b) Hx of CVA in past three months.
_____ c) Spinal or intracranial surgery or trauma within three months.
_____ d) Intracranial neoplasm, AV malformation or aneurism.
_____ e) Known bleeding disorder
_____ f) Pregnancy (certain lytic agents)
_____ g) Seizure at time of onset of symptoms.
_____ h) History of intracranial hemorrhage.
_____ i) Abnormal blood glucose (< 60 or > 400 mg/dl).
_____ j) Recent major surgery or trauma (<2 months).
_____ k) BP > 200/ > 120.
_____ l) Active peptic ulcer or guaiac positive stools (GI or GU bleeding).
_____ m) Recent prolonged or traumatic CPR.
_____ n) Hx of CVA, or brain tumor/injury/surgery.
_____ o) Current use of anticoagulants (i.e., Coumadin)
RIGHTS OF MEDICATION ADMINISTRATION

1. Right Medication
   a. Make sure that the medication is the correct medication indicated by the GMV Standing Orders and check it against the medication label.
   b. Double-check the generic vs. non-generic names of medications. Many names are similar and have a potential for error. If you aren’t sure, reference your SO Manual or Quick Reference Guide!
   c. Check the expiration date on the label.
2. Right Patient:
   a. Confirm patient ID and confirm absence of allergies or other contraindications for your patient.
   b. In multiple patient or mass casualty situations, confirm that the medication is being delivered to the correct patient.
3. Right Dose:
   a. Check the SO dose against the medication label for the correct concentration.
   b. Recheck dosage calculations and verify accuracy.
   c. Confirm that the correct dose has been drawn up.
   d. Use your references!
4. Right Route:
   a. Check the standing order and the medication label for the correct route.
   b. Confirm the route of administration for the medication; IM, IV, PO, {IN}, PR, IO, ETT, Neb, ocular.
   c. Confirm that the dose is correct for the chosen route, since some dosages vary depending on the route.
   d. Make sure the route is accessible; e.g., is the IV site patent?
5. Right Time:
   a. Give the medication over the proper time duration per the Standing Orders.
6. Right Documentation:
   a. Document medication, dose, time of administration and duration of administration, route, and patient response.

RUN DOCUMENTATION REQUIREMENTS

Every crew transporting a patient is expected to provide a full run sheet to the hospital. An abbreviated version of a run report, sometimes called a “quick sheet” may be left at the time of transport, but the hospital MUST receive a full, final copy of the run sheet within three hours (with rare exceptions, e.g., major incidents). When a quick sheet is used, it MUST include (at a minimum) all the following:

- Patient’s full name
- Age
- Chief complaint
- History of the Present Illness/MOI
- PMH
- Medications
- Allergies
- Vital signs with times
- Prehospital assessment and interventions along with the timing of any medication or intervention and patient response to such interventions
**ADENOSINE**  
*(Adenocard)*

**PACKAGED:** 6 mg (1 in drug bag) and 12 mg (2 in drug bag) prefilled syringes

**INDICATION:**
Stable PSVT

**ADULT:**
6 mg rapid IV as quickly as possible  
If not successful, may repeat 12 mg rapid IV.  
If not successful, may repeat 12 mg rapid IV.  
All doses of Adenosine are followed by 20 ml bolus of NS.  
Go directly to 12 mg if patient with history of PSVT advises it takes 12 mg.  May repeat x one.

**PEDI:**
0.1 mg/kg rapid IV followed by 10 ml rapid saline flush.  Max single dose 6 mg.  
If unsuccessful, 0.2 mg/kg rapid IV followed by 10 ml rapid saline flush.  Max single dose 12 mg.  May repeat x one.

**THERAPEUTIC ACTION:**
Decreases electrical conduction through the AV node without causing negative inotropic effects  
Acts directly on SA node to decrease chronotropic activity

**CONTRAINDICATIONS:**
Second or third degree AV block or sick sinus syndrome  
Hypersensitivity to Adenosine

**PRECAUTIONS AND SIDE EFFECTS:**
Lightheadedness, paresthesia, headache, diaphoresis, palpitations, chest pain, hypotension, shortness of breath, transient periods of sinus bradycardia, sinus pause, or asystole, ventricular ectopy, nausea, metallic taste. May produce bronchoconstriction in patients with asthma and in patients with bronchopulmonary disease

**REQUIRES MCP:**
**ADULT:** No  
**PEDI:** No
**ALBUTEROL**  
*(Proventil)*

**PACKAGED:** 2.5 mg in 3 ml plastic ampule (4 in drug bag)

**INDICATIONS:**
- Asthma/Emphysema/COPD
- Bronchospasm in Asthma/COPD
- Allergic reaction with wheezing

**ADULT:**
- 2.5 mg (3 ml), nebulized with O₂ at 8-10 LPM.
- Combine Ipratropium with first dose of Albuterol.
- May repeat Albuterol up to 2 times for a total of 3 doses

**PEDI:**
- 2.5 mg (3 ml), nebulized with O₂ at 8-10 LPM.
- Combine Ipratropium with first dose of Albuterol.
- May repeat Albuterol up to 2 times for a total of 3 doses

**THERAPEUTIC ACTION:**
Bronchodilator

**CONTRAINDICATIONS:**
- Prior hypersensitivity reaction to Albuterol
- Cardiac dysrhythmias associated with tachycardia.

**PRECAUTIONS AND SIDE EFFECTS:**
- Once initiated, the patient should be removed by EMS.
- Side effects are usually dose related: restlessness, apprehension, dizziness, palpitations, tachycardia, and dysrhythmias. May precipitate angina pectoris and dysrhythmias.

**REQUIRES MCP:**
- **ADULT:** No
- **PEDI:** No
AMIODARONE
(Cordarone)

PACKAGED: 150 mg in 3 ml vial, 50 mg/ml (3 in drug bag)

INDICATIONS:
VFib/Pulseless VTach
Stable Wide Complex VT

ADULT:
VFib/Pulseless VTach: 300 mg IV or IO. May repeat ½ initial dose (150 mg) no faster than 10 min.
Stable Wide Complex Tachycardia: IV Infusion—add 150 mg to 250 ml bag of NS with microdrip tubing run wide open (over 10 min) using an 18 gauge angio.

PEDI:
VFib/Pulseless VTACH: 5 mg/kg IV/IO. Max first dose 300 mg
May repeat 5 mg/kg in 10 min. if VFib persists or reoccurs. Max repeat dose 150 mg
Stable Wide Complex Tachycardia: N/A

THERAPEUTIC ACTION:
Antidysrhythmic agent with multiple mechanisms of action

CONTRAINDICATIONS:
Pulmonary congestion
Cardiogenic shock
Hypotension
Sensitivity to Amiodarone

PRECAUTIONS AND SIDE EFFECTS:
Hypotension, headache, dizziness, bradycardia, AV conduction abnormalities, flushing, abnormal salivation
Continuous EKG monitoring is required.

REQUIRES MCP:
ADULT: No
PEDI: No
ASPIRIN
(Abbreviated as ASA)

PACKAGED: 81mg tablets in blister pack, times 4

INDICATION:
Suspected cardiac chest pain, must be at least 25 years old.
Give as soon as possible to the patient with AMI.

ADULT:
324 mg = 4 chewable 81 mg tablets—MUST CHEW!

PEDI:
N/A

THERAPEUTIC ACTION:
Anti-platelet

CONTRAINDICATIONS:
Hypersensitivity to salicylates
Active ulcer disease
Bleeding disorders
Third Trimester

PRECAUTIONS AND SIDE EFFECTS:
Stomach irritation, heartburn or indigestion, nausea or vomiting, allergic reaction

REQUIRES MCP:
ADULT: No
PEDI: N/A
ATROPINE

PACKAGED: 1mg in 10ml prefilled syringe; (3 in drug bag)
1 mg in 1 ml vial; (HM bag in drug bags)
2 mg AtroPen autoinjector; (in Chempack, Drug Caches and HM bag in drug bags)
1 mg AtroPen autoinjector; (in Chempack, Drug Caches and HM bag in drug bags)
0.5 mg AtroPen autoinjector (in Chempack, Drug Caches and HM bag in drug bags)
Multidose vial 8 mg in 20 ml, 0.4 mg/ml; (in Chempack)
Duodote: Autoinjector Atropine 2 mg and 2-Pam 600 mg

NOTE: Atropine is also one component of the Mark 1 kits or as a Duodote (in with the HazMat Drugs in GMVEMSC Drug Bags).

INDICATIONS:
Symptomatic bradycardia, asystole, PEA with slow rate
Organophosphate or Nerve Agent poisoning (regardless of cardiac rate)

ADULT:
Bradycardia: 0.5 mg IV up to 3 mg
Asystole, PEA with bradycardia: 1 mg, IV/IO
For asystole or slow PEA (repeat every 5 minutes up to 3 doses)
Organophosphate or Nerve Gas poisoning: 2 mg IV, IO or IM every 5 min OR Mark 1 Kit item one, or Duodote until lungs are clear to auscultation. There is no max dose for Atropine for Organophosphate or Nerve Agent poisoning.

PEDI:
Bradycardia: 0.02 mg/kg IV/IO (minimum single dose of 0.1 mg, max single dose 0.5 mg) every 5 min.
Max total dose 1 mg
Organophosphate or Nerve Gas poisoning: Atropine or (AtroPen) autoinjector
<40 lbs: 0.5 mg Atropine, IV, IM or (AtroPen) Autoinjector
40 lbs to 90 lbs: 1.0 mg Atropine, IV, IM or (AtroPen) Autoinjector
> 90 lbs: 2.0 mg Atropine, IV, IM or (AtroPen) Autoinjector
There is no max dose for Atropine for Organophosphate or Nerve Agent poisoning.

THERAPEUTIC ACTION:
Anticholinergic

CONTRAINDICATIONS:
None for severe organophosphate exposure.
Tachycardia, hypersensitivity to atropine, obstructive disease of GI tract, obstructive neuropathy, unstable cardiovascular status in acute hemorrhage with myocardial ischemia, narrow angle glaucoma, thyrotoxicosis

PRECAUTIONS AND SIDE EFFECTS:
Tachycardia, paradoxical bradycardia when pushed too slowly or when used at doses less than 0.5 mg, palpitations, dysrhythmias, headache, dizziness, anticholinergic effects (dry mouth, nose, skin, photophobia, blurred vision, urinary retention, constipation), nausea, vomiting, flushed, hot, dry skin, allergic reactions. Atropine causes papillary dilation rendering the pupils nonreactive. Pupil response may not be useful in monitoring CNS status.

REQUIRES MCP:
ADULT: Brady—No
Organophosphate Nerve Agent Poisoning—Yes

PEDI: Brady—No
Organophosphate Nerve Agent Poisoning—Yes
**CALCIUM CHLORIDE 10%**

**PACKAGED:** 1 gram in 10 ml vial, 100 mg/ml

**INDICATIONS:**
Renal dialysis patient in cardiac arrest or ♦ bradycardia
Calcium Channel Blocker OD
Hydrofluoric Acid exposure with tetany OR cardiac arrest.
   Tetany may present as: overactive neurological reflexes, spasms of the hands and feet, cramps, and laryngospasm.
Prophylactically, after exposure to Hydrofluoric Acid

**ADULT:**
Cardiac Arrest, CCB OD and Hydrofluoric Acid exposure with tetany or cardiac arrest: 1 g (10 ml) IV
**PEDI:**
Cardiac Arrest, CCB OD: 20 mg/kg IV (max dose 500 mg in Calcium Channel Blocker OD)

Hydrofluoric Acid Exposure Prophylaxis: 400 mg IV (4 ml)

**THERAPEUTIC ACTION:**
Antagonizes cardiac toxicity in hyperkalemia associated with dialysis patients. Reverses symptoms of Calcium Channel Blocker

**CONTRAINDICATIONS:**

**PRECAUTIONS AND SIDE EFFECTS:**
Bradycardia (may cause asystole), hypotension, metallic taste, severe local necrosis and sloughing following IV infiltration; may produce vasospasm in coronary and cerebral arteries. Hypertension and bradycardia may occur with rapid administration. Do not administer with Sodium Bicarbonate because if the two substances are mixed, a precipitate develops. Flush tubing between drugs.

**REQUIRES MCP:**

**ADULT:**
- Arrest—No
- Renal dialysis patient in bradycardia—Yes
- Calcium Channel Blocker OD—Yes
- Hydrofluoric Acid Exposure—Yes
- Prophylaxis—Yes

**PEDI:**
- Arrest—No
- Calcium Channel Blocker OD—Yes
**CALCIUM GLUCONATE**

**JITSO**

**PACKAGED:** 1 gram in 10 ml vial, 100 mg/ml

**INDICATIONS:**
Renal dialysis patient in cardiac arrest or bradycardia.
Calcium Channel Blocker OD
Hydrofluoric Acid exposure with tetany OR cardiac arrest.
   Tetany may present as: overactive neurological reflexes, spasms of the hands and feet, cramps, and laryngospasm.
Prophylactically, after exposure to Hydrofluoric Acid

**ADULT:**
Cardiac Arrest, CCB OD and Hydrofluoric Acid exposure with tetany or cardiac arrest: 1 g (10 ml) IV
Hydrofluoric Acid Exposure Prophylaxis: 400 mg IV (4 ml)

**PEDI:**
Cardiac Arrest & OD: 20 mg/kg IV (max dose 500 mg in Calcium Channel Blocker OD)

**THERAPEUTIC ACTION:**
Antagonizes cardiac toxicity in hyperkalemia associated with dialysis patients. Reverses symptoms of Calcium Channel Blocker

**CONTRAINDICATIONS:**

**PRECAUTIONS AND SIDE EFFECTS:**
Bradycardia (may cause asystole), hypotension, metallic taste, severe local necrosis and sloughing following IV infiltration; may produce vasospasm in coronary and cerebral arteries. Hypertension and bradycardia may occur with rapid administration. Do not administer with Sodium Bicarbonate because if the two substances are mixed, a precipitate develops. Flush tubing between drugs.

**REQUIRES MCP:**
**ADULT:** Arrest—No
Calcium Channel Blocker OD—Yes
Hydrofluoric Acid Exposure—Yes
Prophylaxis—Yes

**PEDI:** Arrest—No
Calcium Channel Blocker OD—Yes
PACKAGED: Tablet

INDICATION: As prophylaxis against Anthrax, Cholera or Plague

ADULT: 500 mg tablet by mouth, twice a day

PEDI: Dosage will be specified at time of incident.

THERAPEUTIC ACTION: Antibiotic

CONTRAINDICATIONS: Allergy to quinolones, Tendon pain or inflammation, Pediatrics, Pregnancy

PRECAUTIONS AND SIDE EFFECTS: Atrial flutter, hypotension, PVCs, QT prolongation, Torsade De Pointes, Tendon pain/inflammation

REQUIRES MCP: ADULT: Yes PEDI: Yes
PACKAGED: 500 ml of D10W, contains 50 mg Dextrose

INDICATIONS:
Diabetic with mental status changes
Evidence of hypoglycemia in cardiac arrest
Generalized hypothermia with or without arrest
Altered level of consciousness of unknown cause
Seizures with BS < 60
No blood sugar monitor is available or a strong suspicion of hypoglycemia despite BS readings.

ADULT:
D10 250 ml IV at wide open rate
May repeat in 10 min. if pt. fails to respond or BS remains < 60.
Max dose is 500 ml.

PEDI:
D10, 5ml/kg
Max dose is 250 ml

NEWBORN:
D10 2ml/kg if BS < 40

THERAPEUTIC ACTION:
Principal form of carbohydrate utilized by the body

CONTRAINDICATIONS:
Known or suspected CVA in the absence of hypoglycemia

PRECAUTIONS AND SIDE EFFECTS:
Warmth, pain, burning from medication infusion, hyperglycemia, thrombophlebitis
May precipitate severe neurologic symptoms in thiamine deficient patients

REQUIRES MCP:
ADULT: No
PEDI: No
DIAZEPAM
(Valium)

PACKAGED: 10 mg in 2 ml vial (1 in drug bag), 5 mg/1ml

INDICATIONS:
Seizures
SBP > 100 or hemodynamically significant tachycardia (HR>100) after recent cocaine/crack use.

ADULT:
Seizures: 5 mg slow IV; may repeat dose once.
If unable to start IV, consider Diazepam 10 mg rectally using syringe with needle removed.
Cocaine/crack use: 5 mg slow IV, may repeat dose once.

PEDI:
Seizures: 0.2 mg/kg slow IV over 2 min. (max. dose 5 mg IV)
OR 0.5 mg/kg rectally, (max. dose 10 mg. rectally)
May repeat 0.2 mg/kg slow IV over 2 min up to 5 mg max slow IV.

THERAPEUTIC ACTION:
Treats alcohol withdrawal and grand mal seizure activity; used to treat anxiety and stress.

CONTRAINDICATIONS:

PRECAUTIONS AND SIDE EFFECTS:
Hypotension, reflex tachycardia (rare), respiratory depression, ataxia, psychomotor impairment,
confusion, nausea, may cause local venous irritation

REQUIRES MCP:
ADULT: No
PEDI: No

DIAZEPAM
(Valium) CANA Pen

PACKAGED: 10 mg autoinjector
Seizures associated with Organophosphate or Nerve Agent MCI

NOTE: Available in CHEMPACK and Drug Cache

DOSE:
ADULT: 10 mg IM Autoinjector
PEDI: 10 mg IM Autoinjector.

REQUIRES MCP:
ADULT: Yes
PEDI: Yes
DIPHENHYDRAMINE
(Benadryl)

PACKAGED: 50 mg in 1ml vial

INDICATIONS:
Allergic reaction/Anaphylaxis
In anaphylaxis patient who goes into arrest if not already given
Extrapyramidal Reaction

ADULT:
50 mg IM or slow IV

PEDI:
1 mg/kg (max dose 50 mg) IM or slow IV

THERAPEUTIC ACTION:
Prevents the physiologic actions of histamine by blocking histamine receptors

CONTRAINDICATIONS:

PRECAUTIONS AND SIDE EFFECTS:
Dose related drowsiness, sedation, disturbed coordination, hypotension, palpitations, tachycardia, bradycardia, thickening of bronchial secretions, dry mouth and throat
Use cautiously in patients with CNS depression or lower respiratory diseases such as asthma.

REQUIRES MCP:
ADULT: No
PEDI: No
DOPAMINE
(JITSO)

PACKAGED: Premixed 250 ml bag, 400 mg/250 ml, 1600 mcg/ml

INDICATIONS:
Shock with or without Pulmonary Edema
Bradycardia with BP < 100

ADULT:
Shock: Dopamine drip, 5 to 20 mcg/kg/min of 400 mg/250 ml; increase by increments of 5 mcg/kg/min.
Bradycardia: Start at 5 mcg/kg/min; increase up to 20 mcg/kg/min. Titrate to keep BP > 100.
DO NOT EXCEED 20 mcg/kg/min.

PEDI:
Shock: Dopamine drip, 5 to 20 mcg/kg/min of 400 mg/250 ml; start at 5 mcg/kg/min. Titrate to maintain adequate perfusion.

THERAPEUTIC ACTION:
Acts on alpha, beta and dopaminergic receptors in dose dependent fashion; increases cardiac output in higher doses

CONTRAINDICATION:
None in the emergency setting.

PRECAUTIONS AND SIDE EFFECTS:
Dose related tachydysrhythmias, hypertension, increased myocardial oxygen demand (ischemia). Infuse through large stable vein to avoid possibility of extravasation injury. Correct hypovolemia prior to using Dopamine.

REQUIRES MCP:
ADULT: No
PEDI: No
**PACKAGED:** Tablet

**INDICATION:**
As prophylaxis against Anthrax, Cholera & Plague

**ADULT:**
100 mg tablet by mouth, twice a day

**PEDI:**
Dosage will be specified at time of incident.

**THERAPEUTIC ACTION:**
Antibiotic

**CONTRAINDICATIONS:**
Pregnancy
Allergy to other Tetracycline antibiotics.
Age < 8

**PRECAUTIONS AND SIDE EFFECTS:**
May make birth control pills less effective.
Use with caution in patients with liver disease, kidney disease and asthma.
Can cause headache, blurred vision and flu symptoms

**REQUIRES MCP:**
ADULT: Yes  
PEDI: Yes
DUODOTE

PACKAGED: Autoinjector 2 mg Atropine and 600 mg Pralidoxime Chloride (2-Pam)

NOTE: Available in CHEMPACK and Drug Cache

INDICATION:
Organophosphate or Nerve Agent poisoning

ADULT:
Single autoinjector containing 2 mg Atropine and 600 mg 2-Pam > 90 pounds
(See individual drug listing for specific information on drugs)

PEDI:
Single autoinjector containing 2 mg Atropine and 600 mg 2-Pam > 90 pounds

THERAPEUTIC ACTION:
Anticholinergic as a result of WMD MCI; also reactivates cholinesterase.

CONTRAINDICATIONS:

PRECAUTIONS AND SIDE EFFECTS:
Tachycardia, paradoxical bradycardia when pushed too slowly or when used at doses less than 0.5 mg, palpitations, dysrhythmias, headache, dizziness, anticholinergic effects (dry mouth/nose/skin/photophobia. blurred vision, urinary retention, constipation), nausea, vomiting, flushed, hot, dry skin, allergic reactions
Atropine causes papillary dilation rendering the pupils nonreactive. Pupil response may not be useful in monitoring CNS status.
Use with caution in myasthenia gravis, renal impairment, pregnancy, lactation or children.

REQUIRES MCP:
ADULT: Yes
PEDI: Yes
EPINEPHRINE EPIPEN

PACKAGED: 1:10,000—1 mg/10ml (8 in drug bag) 10 ml prefilled syringe
1:1,000—30 ml vial, 1 mg/ml
Autoinjector: Adult 0.3 mg
Or JR. 0.15 mg

INDICATIONS:
VF, pulseless VT, asystole, PEA
Asthma in severe distress
Anaphylaxis/allergic reaction in patients who remain hypotensive after fluid bolus

ADULT:
VF, pulseless VT, asystole and PEA:
1 mg IV 1:10,000
If no IV access, 2 mg in 11 ml via ETT (10 ml of 1:10,000 and 1 ml of 1:1,000 mixed prior to giving).

Asthma, anaphylaxis:
If ≥ 30 kg, give both Adult EpiPen and EpiPen Jr or Epi (1:1,000) 0.5 mg IM
♦ May repeat in 5 minutes

Allergic Reaction/Anaphylaxis in patients who remains hypotensive after fluid bolus: 0.5 mg of 1:10,000 slow IV.

PEDI:
VF, PULSELESS VT, Asystole and PEA, Bradycardia:
0.01 mg/kg of 1:10,000 IV, or 0.1 mg/kg of 1:1,000 ETT; repeat every 3-5 min.

Asthma, Anaphylaxis:
Patient < 30 kg EpiPen Jr. (0.15 mg) or Epi (1:1,000) 0.01 mg/kg IM (max 0.5 mg)
♦ May be repeated in five minutes

THERAPEUTIC ACTION:
Directly stimulates alpha and beta adrenergic receptors in dose-related fashion; causes bronchodilation, vasoconstriction, and increased cardiac output.

CONTRAINDICATIONS:

PRECAUTIONS AND SIDE EFFECTS:
Headache, nausea, restlessness, weakness, dysrhythmias, including ventricular tachycardia and ventricular fibrillation, hypertension, precipitation of angina pectoris, tachycardia
May increase myocardial oxygen demand
Syncope has occurred following epinephrine administration to asthmatic children.

REQUIRES MCP:
ADULT: For arrest—No.
For repeat in asthmas, anaphylaxis —Yes

PEDI: For arrest—No
For repeat in asthmas, anaphylaxis —Yes
**ETOMIDATE**

**PACKAGED:** 40 mg in 20 ml, 2 mg/ml

**INDICATION:**
To provide sedation prior to Sedate to Intubate procedure

**ADULT:**
0.3 mg/kg IV; may repeat within 2 minutes if patient resistant to intubation. Average dose is 15 mg - 25 mg.

**PEDI:**
N/A

**THERAPEUTIC ACTION:**
Short-acting, IV sedative hypnotic

**CONTRAINDICATIONS:**
Hypersensitivity
Pediatrics

**PRECAUTIONS AND SIDE EFFECTS:**
Bradycardia, respiratory depression, sinus tachycardia, tachypnea, hypotension, nausea, vomiting

**REQUIRES MCP:**
**ADULT:** No. Must be authorized by department Medical Director
**PEDI: N/A**
FENTANYL
(SUBLIMAZE)

PACKAGED: 100 mcg/2 mL (50 mcg/ml) vial

INDICATIONS:
Suspected Cardiac Chest Pain, Trauma Emergencies, Extremity Fractures, Dislocations, Sprains, Frostbite, Abdominal Pain, Haz-Mat: Hydrofluoric Acid (Hf)

ADULT:
Fentanyl 100 mcg {IN}, repeat no sooner than 30 minutes.
Fentanyl administered up to 50 mcg slow IV/IO provided SBP > 100.
Repeat Dose: May repeat up to 50 mcg after 5 minutes provided SBP > 100.
If unable to establish IV, Fentanyl 50 mcg IM; Repeat no sooner than 30 minutes and is only indicated when transport is greater than 30 minutes.

PEDI:
P FENTANYL IS NOT TO BE ADMINISTERED TO ANYONE < 2 YEARS OF AGE.
P For severe pain relief when the patient is conscious and alert, consider Fentanyl 1 mcg/kg, slow IV (max dose 50 mcg) provided appropriate normal SBP.
P If unable to obtain IV, give Fentanyl 1 mcg/kg IM (max dose 50 mcg) or Fentanyl 1 mcg/kg {IN} (max dose 100 mcg).
P ♦ May repeat Fentanyl 1 mcg/kg, slow IV after 5 minutes (max dose 50 mcg) if still in pain and appropriate SBP.
P ♦ Repeat dose of Fentanyl 1 mcg/kg IM (max dose 50 mcg, repeat no sooner than 30 minutes).

THERAPEUTIC ACTION:
Provides analgesia, reduces cardiac preload by increasing venous capacitance and decreasing afterload

CONTRAINdications:
Hypersensitivity to drug/class/components

PRECAUTIONS AND SIDE EFFECTS:
Apnea
CNS depression
Chest wall rigidity ("wooden chest syndrome") may occur preventing adequate chest wall excursion and ventilation. This syndrome typically occurs with high doses (6-7 mcg/kg) or with rapid administration. Reversible with naloxone.
Bradyarrhythmia which may be transient. Ensure adequate ventilation and oxygenation first. Treat with atropine only after these have been ensured. Use atropine only if the bradycardia is symptomatic and hemodynamically significant, and per the bradycardia protocol.

REQUIRES MCP:
ADULT: No
PEDI: Yes for repeat doses
GLUCAGON

PACKAGED: 1 mg dose.
Combine liquid and powder vials, then administer. (1 in drug bag)

INDICATIONS:
Hypoglycemia if no IV access
Generalized hypothermia without arrest
Altered level of consciousness of unknown cause
Seizures with BS < 60
No blood sugar monitor is available or a strong suspicion of hypoglycemia despite BS reading and no IV access.
Calcium Channel Blocker or Beta Blocker OD
Allergic reaction/Anaphylaxis unresponsive to Epinephrine

ADULT:
Hypoglycemia with no IV: 1 mg IM.
Calcium Channel Blocker or Beta Blocker OD: 1 mg IV or IM.
Allergic Reaction/Anaphylaxis unresponsive to Epinephrine: 1 mg IV or IM

PEDI:
Hypoglycemia with no IV: 1 mg IM
Calcium Channel Blocker or Beta Blocker OD: 1 mg IV or IM

THERAPEUTIC ACTION:
Increases breakdown of glycogen to glucose and stimulates glucose synthesis thereby raising blood sugar.

CONTRAINDICATION:

PRECAUTIONS AND SIDE EFFECTS:
Tachycardia, hypotension, nausea and vomiting, urticaria
Should not be considered a first line choice

REQUIRES MCP:
ADULT:
Hypoglycemia, Allergic Reaction/Anaphylaxis—No
Calcium Channel Blocker or Beta Blocker OD—Yes

PEDI:
Hypoglycemia—No
Calcium Channel Blocker or Beta Blocker OD—Yes
**HYDROXOCOBALAMIN**  
(Cyanokit)

**PACKAGED:** Kit with specific instructions. Cyanokits are available in caches located in each county in Homeland Security Region 3.

**INDICATION:** Known or strongly suspected cyanide intoxication, or smoke inhalation with suspected cyanide component. For non-arrested patients, cyanide antidotes are indicated if there is a known or strongly suspected cyanide exposure. The patient may have been exposed to smoke from structure fires and presents with altered mental status, seizures, shock, or difficulty breathing.

**ADULT:**
5 gram vial via slow IV infusion over 15 minutes  
Must not be used in conjunction with other Cyanide antidotes  
May be repeated 1 time if patient is critical but not in arrest  

- **A**  
  - Follow package directions.  
    - Reconstitute: Place the vial in an upright position.  
      - Add 200 mL of 0.9% Sodium Chloride Injection to the vial using the transfer spike. Fill to the line.  
    - Mix: The vial should be repeatedly inverted or rocked, not shaken, for at least 60 seconds prior to infusion.  
    - Infuse Vial: Use vented intravenous tubing, hang and infuse over 15 minutes.  
    - One 5-g vial is a complete starting dose.

- **P**  
  - Pediatric dose is 70 mg/kg IV; max dose of 5000 mg; may repeat a dose of 35 mg/kg; max dose 2500 mg, depending on severity of poisoning and clinical response.

**THERAPEUTIC ACTION:**  
Binds to cyanide molecules and is eliminated as waste

**CONTRAINDICATION:**  
None

**PRECAUTIONS AND SIDE EFFECTS:**  
Do not administer other cyanide antidotes to the same patient.  
May cause hypertension

**REQUIRES MCP:**  
**ADULT:** Yes—must also be authorized by department Medical Director.

**PEDI:** YES
IPRATROPIUM
(Atrovent)

PACKAGED: 0.5 mg in 2.5 ml plastic ampule (1 in drug bag)

INDICATIONS:
Bronchospasm in Asthma/COPD/Emphysema
Allergic reaction/Anaphylaxis with wheezing

ADULT:
0.5 mg (2.5 ml), nebulized with O2 at 8-10 LPM
Combined with first dose of Albuterol

PEDI:
0.5 mg (2.5 ml), nebulized with O2 at 8-10 LPM
Combined with first dose of Albuterol

THERAPEUTIC ACTION:
Causes bronchodilation by anticholenergic effect

CONTRAINDICATION:

PRECAUTIONS AND SIDE EFFECTS:
Once initiated, the patient should be removed by EMS.
Use with caution in patients with narrow-angle glaucoma and lactating mothers.

REQUIRES MCP:
ADULT: No
PEDI: No
PACKAGED: 500 mg/10 mL (50 mg/ml)

INDICATIONS:
- Chemical restraint for combative patient, including Excited Delirium
- Sedation prior to Rapid Sequence Intubation

ADULT:
- {Sedate to intubate, rapid sequence intubation: **100 mg (2 mL)** administer slow IV.} Repeat IV at 5 minutes.
- {Combative patient including those with excited delirium: 1-2 mg/kg IV/IO, typical adult dose **100 mg (2 mL)**. Administer slow IV/IO.}
  OR {**500 mg IM dose (2 doses of 250 mg)** administered in anterolateral thigh). Repeat IM at 10 minutes.

PEDI:
- Limited to use in patients age 8 or greater.
- Chemical restraint for combative patient, including Excited Delirium: **1 mg/kg slow IV/IO (max dose 100 mg)**.
  OR **5 mg/kg IM** (max dose 500 mg, which is two doses of 250 mg)

PHARMOLOGIC EFFECTS
- Ketamine is a Schedule III Phencyclidine (PCP) derivative that is rapid acting and produces a “dissociative” anesthesia in which the patient’s consciousness is detached from their nervous system. Due to its “dissociative” properties, Ketamine is a potent analgesic.
- Minimal cardiac depression occasionally reported with high doses administered rapidly IV. May transiently increase heart rate and blood pressure by central sympathetic stimulation.
- Ketamine is a bronchodilator and causes minimal to no respiratory depression.
- Because it has a minimal effect on blood pressure, it has therapeutic advantages over many narcotics and sedatives in patients who are hypotensive.
- May be given as an adjunct to narcotic pain medication, particularly in patients at risk for hypotension or respiratory depression.

CONTRAINDICATIONS:
- Hypertensive Crisis
- When significant elevations in BP might prove harmful:
  - Acute Myocardial Infarction, angina
  - Aortic dissection

PRECAUTIONS AND SIDE EFFECTS:
- An emergence reaction may occur near end of medication half-life, when patient is awakening (hallucinations, delirium, confusion, excitement, irrational behavior)
- May require administration of midazolam or diazepam prior to wearing off.
- Catecholamine release (hypertension, tachycardia)
- Hypersalivation (the ketamine drool)
- Nausea, vomiting, particularly prevalent in pediatrics.

REQUIRES MCP:
ADULT: No       PEDI: No
NOTE: Ketamine is an OPTIONAL DRUG! This is the only drug in our Drug Bag which has only Optional uses. Ketamine may not be used without approval of your Department Chief and Department Medical Director!

CLINICAL PEARLS

- ****HIGH ALERT: KETAMINE IS SUPPLIED IN 500 MG VIALS. YOU WILL NOT ADMINISTER THIS WHOLE VIAL IV. THERE IS A MAJOR DIFFERENCE BETWEEN DOSES IN CERTAIN INDICATIONS AND BY DIFFERENT ROUTES. CHECK YOUR MATH BEFORE YOU GIVE THIS DRUG.****

May re-medicate after 10 minutes as effects wear off.
Because of dissociative effect, patient may appear awake, with eyes open, though will not directly respond to stimuli.
Airway protective reflexes typically remain intact after administration, and Ketamine typically does not cause respiratory depression, which makes it appropriate for patients undergoing sedation who will not be intubated.
LIDOCAINE 2%

PACKAGED: 100 mg in 5 ml syringe, 20 mg/ml

INDICATIONS:
VF, Pulseless VT, with no IV or IO access
Intubation on conscious patient
{Premedication for Sedate to Intubate for patient with suspected stroke, intracranial hemorrhage, head injury or signs of increased ICP}.
For pain caused by pressure of intraosseous fluid administration

ADULT:
VF, Pulseless VT: 1.5 mg/kg ETT.
Repeat bolus: one-half initial dose 0.75 mg/kg after 5 min.
Intubation on conscious patient: 100 mg (5 ml) nebulized, or 50 mg (2.5 ml) in each nostril {IN} with {MAD}.
Pain associated with IO infusion: 1.5 mg/kg up to 100 mg via {IO}

PEDI:
VF, Pulseless VT: 1.5 mg/kg ETT
Repeat bolus: 0.75 mg/kg.
Intubation on conscious patient: 1.5 mg/kg nebulized (max dose 100 mg or 5 ml)
Pain associated with IO infusion: 0.5 mg/kg via {IO}

THERAPEUTIC ACTION:
Decreases automaticity

CONTRAINDICATION:
Hypersensitivity
Second or third degree heart block in absence of an artificial pacemaker

PRECAUTIONS AND SIDE EFFECTS:
Lightheadedness, confusion, blurred vision, hypotension, cardiovascular collapse, bradycardia, altered level of consciousness, irritability, muscle twitching, seizures with high doses
Use extreme caution in patients with hepatic disease, heart failure, marked hypoxia, severe respiratory depression, hypovolemia or shock, incomplete heart block or bradycardia and atrial fib.

REQUIRES MCP:
ADULT: No
Pedi: No
LIDOCAINE 2% GEL

PACKAGED: 2% gel in a tube

INDICATION:
Lubrication of airway adjunct on conscious patient

ADULT:
Apply to airway adjunct.

PEDI:
Apply to airway adjunct.

THERAPEUTIC ACTION:
Suppresses stimulation of the upper airway activity such as, swallowing, gagging or coughing that can cause cardiovascular stimulation and elevation in intracranial pressure

CONTRAINDICATION:

PRECAUTIONS AND SIDE EFFECTS:
None

REQUIRES MCP:
ADULT: No
PEDI: No
PACKAGED: Varies

INDICATIONS:
Ingestion of Hydrofluoric Acid
Hydrofluoric Acid on skin

ADULT:
Following dilution with water or milk, have patient drink 3-4 oz. Maalox or Mylanta.
Following irrigation, apply topically to burned area unless industry has already applied topical agents.

PEDI: N/A

THERAPEUTIC ACTION:
Neutralize acid and increases the pH

CONTRAINDICATIONS:
None in the emergency setting.

PRECAUTIONS AND SIDE EFFECTS:
Use with caution in neonates, geriatric patients, renal impairment
Hypercalcemia, hypermagnesemia, nausea, vomiting, hypotension

REQUIRES MCP:
ADULT: No
PEDI: N/A
**MIDAZOLAM**  
(Versed)

**PACKAGED:** 10 mg in 2 ml vial, (5 mg/ml) (2 in drug bag)

**INDICATIONS:**
- Conscious patient requiring cardioversion
- Conscious patient requiring pacing
- For seizure {IN}
- After intubation, if patient is resisting and SBP is normal for age.
- As chemical restraint for combative patient

**ADULT:**

Cardioversion, Pacing: 2 mg slow IV  
Seizures: 10 mg {IN} (5 mg in each nostril) or 2 mg slow IV or 4 mg IM  
If seizure persists: Repeat 5 mg {IN} or 2 mg slow IV or 4 mg IM.  
Chemical restraint: 2 mg slow IV or 10 mg {IN} or 4 mg IM

**PEDI:**

Sedation: 0.1 mg/kg slow IV  
Seizures: 0.2 mg/kg {IN} (max dose 4 mg) or 0.1 mg/kg slow IV (max dose 2 mg) or 0.2 mg/kg IM (max dose 4 mg)  
If still seizing: Repeat one-half of initial Midazolam doses except **NO IM ROUTE REPEAT**  
Chemical restraint: Call MCP for repeat doses. 0.2 mg/kg {IN} (half dose each nostril, max dose 4 mg) or 0.1 mg/kg slow IV (max dose 2 mg), or 0.2 mg/kg IM (max dose 4 mg)

**THERAPEUTIC ACTION:**
Provides sedation

**CONTRAINdications:**

**PRECAUTIONS AND SIDE EFFECTS:**
Be prepared to monitor respirations and intubate and ventilate if necessary.  
Use with caution with lactating mothers.  
Geriatric & debilitated patients require lower doses & are more prone to side effects.  
Provide continuous monitoring of respiratory & cardiac function.  
Can cause respiratory depression.

**REQUIRES MCP:**  
**ADULT:** No  
**PEDI:** No for seizures, Yes for chemical restraint
MORPHINE

JITSO

PACKAGED: 5 mg in 1ml vial (2 in drug bag)

INDICATIONS:
Pain relief in suspected cardiac chest pain, trauma emergencies, extremity fractures, dislocations, sprains, frostbite, abdominal pain, Haz-Mat Hydrofluoric Acid (HF), unilateral back pain and other painful conditions.

ADULT:
Up to 5 mg slow IV based on patient’s weight, provided SBP > 100.
Repeat Dose: May repeat up to 5 mg
If unable to establish IV, Morphine 5 mg IM

PEDI:
Pain relief in trauma emergencies, extremity fractures, dislocations, sprains, frostbite, pulmonary edema, abdominal pain, Haz-Mat Hydrofluoric Acid (HF) peds > 2 years old
0.1 mg/kg slow IV (Max dose 5 mg) provided appropriate SBP.
Repeat Dose: 0.1 mg/kg, may repeat up to 5 mg.
If unable to establish IV, Morphine IM 0.1 mg/kg, max 5 mg

THERAPEUTIC ACTION:
Provides analgesia, reduces cardiac preload by increasing venous capacitance and decreasing afterload

CONTRAINDICATIONS:
Hypersensitivity to narcotics
Hypotension
Head injury, increased ICP
Severe respiratory depression
Patients who have taken MAO inhibitors within 14 days

PRECAUTIONS AND SIDE EFFECTS:
Hypotension, tachycardia, bradycardia, palpitations, syncope, facial flushing, respiratory depression, euphoria, bronchospasm, dry mouth, allergic reaction
Use with caution in the elderly, those with asthma, and in those susceptible to CNS depression.
May worsen bradycardia or heart block in inferior MI (vagotonic effect)

REQUIRES MCP:
ADULT: No
PEDI: Yes for repeat doses
NALOXONE
(Narcan)

PACKAGED: 2 mg in 2 ml vial, 1 mg/ml (2 in drug bag)

NOTE: Naloxone administration should be to improve respirations in an unresponsive patient with a hypoventilation condition, and not to awaken an unconscious patient. It should be given slowly to titrate to effect. Narcan can precipitate narcotic withdrawal, with all of its problems. If the patient has a pulse, Naloxone should be given before intubation. After administration of Naloxone, patient transport by EMS is encouraged, even if patient becomes responsive.

INDICATIONS:
Respirations depressed or high index of suspicion of narcotic overdose
Suspicion of drug abuse in cardiac arrest

ADULT:
2 mg {IN}
If respirations don’t improve after 3 minutes, establish IV and administer slow IV dose. Repeat doses may be given.
Or 2 mg ETT if IV unsuccessful. Titrate to adequate respirations.
Or 4 mg IM

PEDI:
Naloxone:
≤ 20 kg 0.1 mg/kg slow {IN}, IV, IM, ETT (max Dose 2 mg) may repeat x one
> 20 kg 2 mg, slow {IN}, IV, IM, ETT, may repeat x one
Naloxone slow IV is preferred, but it may be given {IN} before IV is established.
Titrare to adequate respirations.
If using {IN} route, if respirations don’t improve after 3 minutes, establish IV and administer IV dose.

THERAPEUTIC ACTION:
A competitive narcotic antagonist

CONTRAINdicATIONS:
Hypersensitivity
Use with caution in narcotic-dependent patients who may experience withdrawal syndrome (including neonates of narcotic-dependent mothers).

PRECAUTIONS AND SIDE EFFECTS:
Tachycardia, hypertension, dysrhythmias, nausea and vomiting, diaphoresis, blurred vision, opiate withdrawal
May not reverse hypotension
Caution should be exercised when administering to narcotic addicts (may precipitate withdrawal with hypertension, tachycardia and combative behavior).

REQUIRES MCP:
ADULT: No
PEDI: No
NITROGLYCERINE
(Abbreviated as NTG in the orders)
(Nitrostat)

PACKAGED: Dark brown glass bottle, 0.4 mg SL tablet

INDICATIONS:
Use only on patients who are at least 25 years old or have been prescribed Nitroglycerine.
Cardiac related chest pain
Pulmonary edema with systolic BP over 100 mmHg
Crack/Cocaine Overdose with chest pain

ADULT:
0.4 mg SL every 5 min for continued chest pain up to a total of 3 tablets

PEDI:
N/A

THERAPEUTIC ACTION:
Vasodilator which decreased preload and to a lesser extent, afterload

CONTRAINDICATIONS:
Hypersensitivity
Hypotension
Use of sexual enhancement drugs in last 24 hours
Taking Revatio (a pulmonary hypertension medication)
Head injury

PRECAUTIONS AND SIDE EFFECTS:
Transient headache, reflex tachycardia, hypotension, nausea & vomiting, postural syncope, diaphoresis

REQUIRES MCP:
ADULT: No
PEDI: N/A
NOREPINEPHRINE
(LEVOPHED)

PACKAGED: 4 mg/4ml for dilution in 250 ml of Normal Saline

NOTE: Protect from light.

INDICATIONS: For blood pressure control in acute hypotensive states. As an adjunct in the treatment of cardiac arrest and profound hypotension.

ADULT: Add 4 mg to 250 ml of Normal Saline. Infuse starting at 30 drops per minute (max 44 drops) with 60 drop tubing and titrate to effect.

PEDI: ♦ Contact MCP for dosing and administration guidance.

THERAPEUTIC ACTION: Peripheral vasoconstrictor. Positive inotrope (increases cardiac contractility) and chronotrope (increases heart rate).

CONTRAINDICATIONS: Should not be given to patients who are hypotensive from acute hemorrhage.

PRECAUTIONS AND SIDE EFFECTS: THIS DRUG MUST BE DILUTED BEFORE ADMINISTRATION. Avoid hypertension. Administer in free-flowing IV and watch for infiltration. If extravasation occurs, stop the infusion immediately as necrosis may occur due to vasoconstrictive action of the drug. Leave the catheter in place so that a reversal agent can be given through the infiltrated catheter.

The infusion must be stopped immediately if it free flows and call MCP.

Do not use the solution if its color is pinkish or darker than slightly yellow or if it contains particles.

REQUIRES MCP:
ADULT: No
PEDI: Yes
ONDANSETRON  
(Zofran)

PACKAGED: 4 mg in 2 ml vial, (2 mg/ml) (1 in drug bag)

INDICATION:
For nausea or active vomiting

ADULT:
Consider Ondansetron 4 mg slow IV, preferred route for active vomiting as pt may need hydration. If no IV, may use 4 mg dissolving tablet or administer the IV form PO.

PEDI:
Ondansetron 0.1 mg/kg IV (max 4 mg).

THERAPEUTIC ACTION:
Stimulation of 5-HT 3 receptors causes transmission of sensory signals to the vomiting center via vagal afferent fibers to induce vomiting. By binding to 5-HT 3 receptors, Ondansetron blocks vomiting mediated by serotonin release.

CONTRAINDICATION:
Known hypersensitivity to Ondansetron

PRECAUTIONS AND SIDE EFFECTS:
Sudden blindness of 2-3 minute duration has occurred. It is suggested that the speed of delivery may contribute to the blindness.
Constipation, diarrhea, fever, headache

REQUIRES MCP:
ADULT: No
PEDI: No
PACKAGED: 4 mg tablet

INDICATION:
For nausea or active vomiting

ADULT:
4 mg SL

PEDI:
Ondansetron 4 mg PO if pt ≥ 12 y/o and wt is ≥ 40 kg.

Transport time should be considered prior to administration.

THERAPEUTIC ACTION:
Stimulation of 5-HT 3 receptors causes transmission of sensory signals to the vomiting center via vagal afferent fibers to induce vomiting. By binding to 5-HT 3 receptors, Ondansetron blocks vomiting mediated by serotonin release.

CONTRAINDICATION:
Known hypersensitivity to Ondansetron

PRECAUTIONS AND SIDE EFFECTS:
During pregnancy it should only be used where clearly needed.
Sudden blindness of 2-3 minutes duration has occurred. It is suggested that the speed of delivery may contribute to the blindness.
Constipation, diarrhea, fever, headache.

REQUIRES MCP:
ADULT: No
PEDI: No
ORAL GLUCOSE

PACKAGED: Tube; concentration varies, check label

INDICATIONS:
Hypoglycemia, if no IV access or available Glucagon
Generalized hypothermia without arrest
Altered level of consciousness of unknown cause
Seizures with BS < 60, no BS monitor available; or strong suspicion of hypoglycemia despite BS reading and no IV access.

ADULT:
1 tube
May be repeated in 10 min. if BS remains < 60

PEDI:
1 tube
May be repeated in 10 min. if BS remains < 60

THERAPEUTIC ACTION:
Raise blood glucose concentration

CONTRAINICATION:
Inability to control the airway.

PRECAUTIONS AND SIDE EFFECTS:
Use caution when giving to unresponsive patients.
Hyperglycemia

REQUIRES MCP:
ADULT: No
PEDI: No
PRALIDOXIME (2-PAM)
(Mark I Autoinjector, Item 2)

PACKAGED: 600 mg autoinjector

INDICATION:
To be used following Atropine in organophosphate, or nerve agent poisoning. Both for treatment of
civilian patients at the scene, as well as for protection of public safety personnel who walk into scene &
become unexpectedly contaminated.

ADULT:
600 mg IM autoinjector

PEDI:
Children > 20 kg: 600 mg IM autoinjector

THERAPEUTIC ACTION:
Reactivates cholinesterase after poisoning with anticholinesterase agents,(Organophosphate or Nerve
Gas)
Reverses muscle paralysis after organophosphate poisoning

CONTRAINICATION:
Hypersensitivity

PRECAUTIONS AND SIDE EFFECTS:
Use with caution in myasthenia gravis, renal impairment, pregnancy, children. Can spread to child
through breast feeding

REQUIRES MCP:
ADULT: Yes
Pedi: Yes
SODIUM BICARBONATE

PACKAGED: 50 mEq in 50 ml syringe, 1 mEq/ml

INDICATIONS:
Renal dialysis patient in asystole or PEA cardiac arrest; known tricyclic overdose; acidosis from prolonged cardiac arrest.

ADULT:
Arrest in renal dialysis patient: 100 mEq IV
Tricyclic antidepressant OD: 100 mEq IV
May repeat dose of 50 mEq for persistent or prolonged QRS

PEDI:
Arrest in renal dialysis patient: 1 mEq/kg IV
Tricyclic antidepressant OD: 1 mEq/kg IV.
May repeat dose of 0.5 mEq/kg for persistent or prolonged QRS

THERAPEUTIC ACTION:
Buffers metabolic acidosis

CONTRAINDICATIONS:

PRECAUTIONS AND SIDE EFFECTS:
Metabolic alkalosis, hypoxia, rise in intracellular PCO2 and increased tissue acidosis, electrolyte imbalance (hypernatremia), seizures, tissue sloughing at injection site

REQUIRES MCP:
ADULT:
Arrest – No
Tricyclic OD – Yes

PEDI:
Arrest – No
Tricyclic OD – Yes
SODIUM NITRITE

JITSO

PACKAGED: Container with Sodium Nitrite 300 mg in 10 ml vial

NOTE: Antidotes are available in each County by contacting (937) 333-USAR

INDICATION:
Patients with known or suspected Cyanide poisoning

ADULT:
Sodium Nitrite: 300 mg (10 ml) 3% solution slow IV

PEDI:
N/A

SODIUM NITRITE:
THERAPEUTIC ACTION:
Oxidizes hemoglobin which then combines with cyanide to form an inactive compound,

CONTRAINDICATION:
Nitrite/nitrate allergy

PRECAUTIONS AND SIDE EFFECTS:
Methemoglobinemia if given in excessive amounts

REQUIRES MCP:
ADULT: Yes   PEDI: Not appropriate for use in the field
SODIUM THIOSULFATE

PACKAGED: 12.5 gm in 50 ml vial
        Stored in caches.

INDICATIONS:
Conscious patient with known or suspected Cyanide poisoning
Smoke Inhalation with suspected cyanide component
Cardiac Arrest from known or suspected Cyanide poisoning or smoke inhalation

ADULT:
12.5 gm (50 ml) 25% solution slow IV

PEDI:
Children > 25 kg: 12.5 gm (50 ml) 25% solution slow IV
Children < 25 kg: 412.5 mg/kg (1.65 ml/kg) of 25% solution (max dose 12.5 gm (50 ml))
Smoke Inhalation: Children < 25 kg, contact MCP for dose of Sodium Thiosulfate

THERAPEUTIC ACTION:
Accelerates detoxification of cyanide

CONTRAINDICATION:
None

PRECAUTIONS AND SIDE EFFECTS:
Possible hypotension

REQUIRES MCP:
ADULT: Yes, unless arrest situation
PEDI: Yes, unless arrest situation
TETRACAINE

PACKAGED: 0.5%/ml eye drop bottle

INDICATION:
Prior to eye irrigation in cases of chemical injury to the eye and in other situations with significant eye pain without possibility of penetrating trauma to eye.

ADULT:
2 drops in each affected eye

PEDI:
2 drops in each affected eye

THERAPEUTIC ACTION:
Provides rapid, brief, superficial anesthesia by inhibiting conduction of nerve impulses from sensory nerves

CONTRAINDICATIONS:
Hypersensitivity to Tetracaine
Open injury to eye.

PRECAUTIONS AND SIDE EFFECTS:
May cause burning or stinging sensation or irritation
Can cause epithelial damage and systemic toxicity
Incompatible with mercury or silver salts often found in ophthalmic products.

REQUIRES MCP:
ADULT: No
PEDI: No
PACKAGED: 20 units/ml, 2 ml

INDICATION:
Asystole, PEA
• CPR 1-2 minutes
• {12-lead EKG}
• Vasopressin 40 units IV
  o If unable to establish IV, Epinephrine 2 mg ETT, repeat every 3 minutes (1 mg 1:10,000 and 1 mg 1:1,000). If IV is established, Vasopressin is permitted after either first or second dose of Epinephrine.
• CPR 1-2 minutes
• Consider Atropine 1 mg IV for asystole or slow PEA (repeat every 3 minutes up to 3 doses)
• CPR 1-2 minutes
• Epinephrine 1 mg IV, repeat every 3 minutes, no sooner than 10 minutes after Vasopressin.
• Continue CPR and repeat treatment as indicated.
• Consider treatable causes.

ADULT:
40 units IV

PEDI:
N/A

THERAPEUTIC ACTION:
Potent peripheral vasoconstrictor. May be used as an alternative pressor to Epinephrine in the treatment of adult shock-refractory VF and PEA.

CONTRAINdications:

PRECAUTIONS AND SIDE EFFECTS:
May produce cardiac ischemia and angina.

REQUIRES MCP:
ADULT: No
PEDI: N/A
EMT-PARAMEDICS: Use these skill sheets and protocol to study for Skills Testing.

SKILLS TESTERS: Record Pass/Fail on Individual’s Test Summary Sheet. Use these and additional adult/pediatric mega code sheets as guidelines for grading. It is only necessary to make enough copies of this packet for testers (those who have gone through Train the Trainer sessions).

Adult Mega Code - Separate Paramedic Mega Code sheets used for testing.
ACLS Medications (verbal - covered in Mega Code)
Manual External Defibrillator (covered in Mega Code)
Orotracheal Intubation of Non-trauma Patient ------------------------------------------104
Automated External Defibrillator ------------------------------------------------- 110

Pediatric Mega Code - Separate Paramedic Mega Code sheets used for testing.
Orotracheal Intubation -------------------------------------------------------------107
Use of Length / Weight Based Tape (covered in Mega Code)

IV and Medications
Nebulizer with Bag-Valve Device --------------------------------------------------112
Medication Administration --------------------------------------------------------115
Special Venous Access -Central Venous Catheter, Dialysis Catheter, or PICC Line ----113
Special Venous Access - Dialysis Fistula ------------------------------------------ 114

Trauma
Inline Orotracheal Intubation of the Trauma Patient -----------------------------105
Nasotracheal Intubation ----------------------------------------------------------106
Needle Cricothyrotomy -----------------------------------------------------------108
Chest Decompression -------------------------------------------------------------109

Optional Skills
CPAP--------------------------------------------------------------------------------103
Intraosseous Infusion -------------------------------------------------------------111
Acquisition of 12-lead EKG--------------------------------------------------------118
12-lead EKG Interpretation -------------------------------------------------------119
LMA----------------------------------------------------------------------------------120
# Adult Protocol Skill Evaluation

## CPAP Assessment and Application

<table>
<thead>
<tr>
<th>NAME: ____________________________</th>
<th>DATE: ____________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level:</td>
<td></td>
</tr>
<tr>
<td>__EMT   ____Advanced  ____Paramedic</td>
<td></td>
</tr>
</tbody>
</table>

### STEPS

<table>
<thead>
<tr>
<th>Prepares patient:</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Test</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Test</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Takes or verbalizes appropriate PPE precautions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assures adequate blood pressure 100 Systolic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positions patient in a position that will optimize ease of ventilation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Assesses patient to identify indications for CPAP:

- Asthmatic
- Congestive heart failure
- Pulmonary edema
- COPD

### Assesses patient to identify contraindications for CPAP:

- Unconscious, unresponsive, inability to protect airway or inability to speak
- Inability to sit up
- Respiratory arrest or agonal respiration
- Nausea/vomiting
- Hypotension – Systolic <100
- Suspected pneumothorax
- Cariogenic shock
- Penetrating chest trauma
- Facial anomalies/trauma/burns
- Closed head injury
- Active upper GI bleeding or history of recent gastric surgery
- Pt must be age 16 or older

### Selects, checks and assembles equipment:

- Assembles mask and tubing according to manufacturer instructions
- Coaches patient how to breathe through mask
- Connects CPAP unit to suitable O2 supply and attaches breathing circuit to device
- Turns on oxygen
- Sets device parameters, if applicable (goal of 10 cm /H₂O)

### Performs procedure:

- Places mask over patients mouth and nose (leave EtCO₂ in place, if applicable)
- Goal of 10 cm H₂O for treatment
- Coaches patient to breathe normally

### Frequently reassesses patient for desired effects

- Decreased ventilatory distress
- SpO₂ >92%
- Decreased adventitious lung sounds
- Absence of reactions (barotrauma, pneumothorax)
- Records settings/readings and documents appropriately
ADULT PROTOCOL SKILL EVALUATION
SUBJECT: OROTRACHEAL INTUBATION OF THE NON-TRAUMA PATIENT

NAME___________________________________ DATE___________________________

LEVEL: _____Paramedic  _____ AEMT

<table>
<thead>
<tr>
<th>STEPS</th>
<th>1st Test</th>
<th>2nd Test</th>
<th>3rd Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. List the indications for endotracheal intubation, with emphasis on situations in addition to cardiac arrest.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. List the equipment required to perform endotracheal intubation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. List the potential complications of endotracheal intubation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Open the airway.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Pre-oxygenate patient during preparations to intubate.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Demonstrate the performance of cricoid pressure.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. Assemble equipment.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H. Insert laryngoscope.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. Elevate the mandible.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J. Insert the proper size ET tube.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K. Remove the stylet.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. Document ETT at 20-22 cm at front teeth.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M. Inflate the cuff with 5 to 10 ml. of air.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N. Ventilate the patient.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O. Confirm tube placement, using {Capnography, Colorimetry or EDD}. Be able to discuss the indications and limitations of each device.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P. Confirm tube placement with at least 5 methods of verification and document the outcomes.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Auscultation of epigastrium, anterior chest, midaxillary areas, epigastrium again</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Condensation in the ETT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Visualization of tube passing between vocal cords</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Depth of insertion of 20-22 cm marking at the teeth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Chest rise and fall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Improvement in patient’s color</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Improved pulse-ox readings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q. Secure tube in place &amp; reassess placement after any movement of patient.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R. Consider applying cervical collar to prevent extubation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EQUIPMENT:

1. Proper size endotracheal tube
2. Stylet
3. Laryngoscope Blade & handle
4. Magill forceps
5. 10 ml. syringe
6. Suction equipment
7. Stethoscope
8. Gloves & Eye protection
9. Commercial tube holder or proper taping method.
10. Confirmation Device
11. C-collar
12. Adult Intubation Manikin

When preparing for this skill evaluation, be sure that you are able to meet the objectives A, B, C, G, and O. If you need a reminder, the material is readily available in any standard textbook.
**ADULT PROTOCOL SKILL EVALUATION**

**SUBJECT: IN-LINE OROTRACHEAL INTUBATION OF THE TRAUMA PATIENT**

<table>
<thead>
<tr>
<th>NAME___________________________</th>
<th>DATE___________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVEL: _____Paramedic _____ AEMT</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STEPS</th>
<th>1st Test</th>
<th>2nd Test</th>
<th>3rd Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. List the indications for endotracheal intubation, with emphasis on situations in addition to cardiac arrest.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. List the equipment required to perform endotracheal intubation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. List the potential complications of endotracheal intubation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Open the airway using c-spine precautions.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Pre-oxygenate patient during preparations to intubate.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Demonstrate performance of cricoid pressure.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. Assemble equipment.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H. Insert laryngoscope.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. Elevate the mandible.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J. Insert the ET tube.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K. Remove the stylet.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. Document ETT at 20-22 cm at front teeth.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M. Inflate the cuff with 5 to 10 ml. of air.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N. Ventilate the patient.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O. Confirm tube placement, using {Capnography, Colorimetry, or EDD}. Be able to discuss the indications and limitations of each device.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P. Confirm tube placement with at least 5 methods of verification and document the outcomes.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Auscultation of epigastrium, anterior chest, midaxillary areas, epigastrium again</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Condensation in the ETT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Visualization of tube passing between vocal cords</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Depth of insertion of 20-22 cm marking at the teeth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Chest rise and fall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Improvement in patient’s color</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Improved pulse-ox readings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q. Secure tube in place &amp; reassess placement after any movement of patient.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R. Apply cervical collar.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EQUIPMENT:**

1. Proper size endotracheal tube
2. Stylet
3. Laryngoscope blade & handle
4. Magill forceps
5. 10 ml. syringe
6. Suction equipment
7. Stethoscope
8. Gloves & eye protection
9. Commercial tube holder or proper taping method.
10. Confirmation device
11. C-collar
12. Adult intubation manikin

When preparing for this skill evaluation, be sure that you are able to meet the objectives A, B, C, G, and O. If you need a reminder, the material is readily available in any standard textbook.
ADULT PROTOCOL SKILL EVALUATION
SUBJECT: NASOTRACHEAL INTUBATION

NAME___________________________ DATE___________________________
LEVEL: Paramedic

<table>
<thead>
<tr>
<th>STEPS</th>
<th>1st Test</th>
<th>2nd Test</th>
<th>3rd Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. List the indications for nasotracheal intubation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. List the equipment required to perform nasotracheal intubation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. List the potential complications of nasotracheal intubation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Open the airway.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Pre-oxygenate patient during preparations to intubate.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. If patient’s condition is potentially due to trauma, maintain C-spine precautions.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. Assemble equipment, select the appropriate ET tube. (Usually 7.0 or larger)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H. As you insert the ET tube into the most patent nostril.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. Pass the tube along the floor of the nostril until it passes into the back of the throat.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J. Advance tube slowly forward monitoring air flow via tube and from the patient's mouth. (Use BAAM device if available, listen for increased sounds of whistle)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• If using an Endotrol, flexing the tube with its control loop will help align it with the trachea.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• If the tube enters into the esophagus, there will be no air flow through the tube, air flow will continue through the mouth. The patient may gag.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• If the tube enters into the trachea, air flow will continue through the tube. There may be slight flow through the mouth. The patient may cough. Have the patient take in a deep breath.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K. If using BAAM, there should be a definite increase in the sound of the whistle. Document and remove the BAAM.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Once the tube is in the trachea, inflate the cuff with 5-10 ml of air. Tape the ETT in place after assuring proper position.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. Ventilate the patient.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M. Confirm tube placement, specifying at least 5 methods of verification:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Auscultation of epigastrium, anterior chest, midaxillary areas, epigastrium again</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Condensation in the ETT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Visualization of tube passing between vocal cords</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Depth of insertion ~ 25 cm marking at the nares</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Chest rise and fall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Improvement in patient’s color</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Improved pulse-ox readings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N. Secure tube in place &amp; reassess placement after any movement of patient.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O. Consider application of a cervical collar.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EQUIPMENT:

1. Proper size endotracheal tube (7.0, 7.5, 8.0)   5. 10 ml. syringe   10. Confirmation device
   proper taping method.

When preparing for this skill evaluation, be sure that you are able to meet the objectives A, B, C, and M. If you need a reminder, the material is readily available in any standard textbook.
# Pediatric Protocol Skill Evaluation

**Subject:** Pediatric Orotracheal Intubation

**Name___________________________**  
**Date___________________________**

**Level:**  
- _____ Paramedic
- _____ AEMT

## STEPS

<table>
<thead>
<tr>
<th></th>
<th>1st Test</th>
<th>2nd Test</th>
<th>3rd Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>List the indications for endotracheal intubation, with emphasis on situations in addition to cardiac arrest.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td>List the equipment required to perform endotracheal intubation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.</td>
<td>List the potential complications of endotracheal intubation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D.</td>
<td>Open the airway.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E.</td>
<td>Pre-oxygenate patient during preparations to intubate.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F.</td>
<td>Assemble equipment, select proper size ETT and laryngoscope blade (use length-based tape).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G.</td>
<td>Insert laryngoscope.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H.</td>
<td>Elevate the mandible.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I.</td>
<td>Insert the ET tube.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>J.</td>
<td>Remove the stylet.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K.</td>
<td>Document ETT depth at front teeth. Tube marking at teeth = 3 x tube size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L.</td>
<td>Ventilate the patient.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| M. | Confirm tube placement, using {Capnography, Colorimetry, or EDD}. Be able to discuss the indications and limitations of each device.  
- EDD is contraindicated in pregnancy, or children under 5 y/o or 20 kg. | | |
| N. | Confirm tube placement with at least 5 methods of verification and document the outcomes.  
- Auscultation of epigastrium, anterior chest, midaxillary areas, epigastrium again  
- Condensation in the ETT  
- Visualization of tube passing between vocal cords  
- Depth of insertion = tube size x 3  
- Chest rise and fall  
- Improvement in patient’s color  
- Improved pulse-ox readings | | |
| O. | Secure tube in place & reassess placement after any movement of patient. | | |
| P. | Consider applying cervical collar/towel roll to prevent extubation. | | |

## Equipment:

1. Proper size endotracheal tube  
2. Proper size stylet  
3. Laryngoscope blade & handle  
4. Magill forceps  
5. Suction equipment  
6. Stethoscope  
7. Gloves & eye protection  
8. Commercial tube holder  
9. Confirmation Device  
10. C-collar or towel roll  
11. Pedi intubation manikin

When preparing for this skill evaluation, be sure that you are able to meet the objectives A, B, C, F, and M. If you need a reminder, the material is readily available in any standard textbook.
ADULT PROTOCOL SKILL EVALUATION

SUBJECT: NEEDLE CRICOTHYROTOMY

NAME___________________________ DATE___________________________

LEVEL: Paramedic

<table>
<thead>
<tr>
<th>STEPS</th>
<th>1st Test</th>
<th>2nd Test</th>
<th>3rd Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. List the indications for needle cricothyrotomy.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. List the equipment required to perform needle cricothyrotomy.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. List the potential complications of needle cricothyrotomy.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Attempt to oxygenate patient during preparations for cricothyrotomy.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Assemble equipment.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Place patient in supine position.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. Palpate cricothyroid membrane.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H. Prep area with Betadine wash.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. Attach angiocath to syringe.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J. Insert needle (midline over cricothyroid membrane) at a 45 degree angle, directed caudally.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- If dealing with a trauma patient, stabilize cervical spine and insert needle at 90 degree angle.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K. Aspirate for air.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. Advance catheter and needle into trachea.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M. Withdraw the needle.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N. Attach catheter to oxygen tubing.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O. Ventilate the patient.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P. Confirm placement, specifying at least three methods of verification.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Capnography</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Chest rise and fall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Auscultation of breath sounds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Improvement in patient’s color</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Improved pulse-ox readings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q. Secure tubing.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R. Suction oropharynx.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EQUIPMENT:

1. Syringe
2. 10 or 14 gauge angiocath
3. Oxygen tubing with Y connector or side port cut in tubing for controlling air flow.
4. Oxygen source with rate of 15-30 liters/minute, 50 psi.

When preparing for this skill evaluation, be sure that you are able to meet the objectives A, B, C, and P. If you need a reminder, the material is readily available in any standard textbook.
ADULT PROTOCOL SKILL EVALUATION
SUBJECT: CHEST DECOMPRESSION

NAME___________________________ DATE___________________________

LEVEL:     _____ Paramedic                                               _____ AEMT

Indication is a hemodynamically unstable patient.

<table>
<thead>
<tr>
<th>STEPS</th>
<th>1st Test</th>
<th>2nd Test</th>
<th>3rd Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. List inclusion criteria:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• MOI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Respiratory Distress or Failure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Diminished or absent breath sounds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Hemodynamic instability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Trauma arrest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Potential chest injury MOI with diminished/absent breath sounds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Cardiac arrest in the asthmatic patient with diminished breath sounds either unilateral or bilateral</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. List exclusion criteria</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Lack of inclusion criteria</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Needle decompression is not to be performed unless patient is hemodynamically unstable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. BSI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Prepare equipment.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Explain procedure to the patient.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Administer high concentration Oxygen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. If patient has a sucking chest wound, place non-porous dressing taped on 3 sides over wound so air can escape.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H. Identify landmarks:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd or 3rd intercostal space at the mid-clavicular line on the affected side. Insertion site should be just superior to the rib margin.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. Prepare the skin with antiseptic.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J. Insert the needle at a 90 degree angle into the pleural cavity, just above the rib margin. Puncture the skin and advance the needle (perpendicular to chest) until you encounter a “pop” or rush of air.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K. Remove the needle, keeping the catheter in place. Securely tape the catheter. Watch for kinks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. Reassess the patient for signs of improvement or complications</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Possible complications:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Local hematoma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Pneumothorax/Hemothorax</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Infection</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Insert the needle over (superior to) the rib to avoid striking vital structures such as nerves and vascular structures that lie at the inferior margins of the ribs.

**EQUIPMENT:**
1. 14 ga 3 ¼” Angiocatheter (preferred)
2. Safety glasses and gloves
3. Stethoscope
4. Alcohol preps
5. Tape
ADULT PROTOCOL SKILL EVALUATION
SUBJECT: AUTOMATED EXTERNAL DEFIBRILLATORS

NAME___________________________ DATE___________________________

LEVEL:     _____Paramedic     _____ AEMT       _____EMT          ____ First Responder

<table>
<thead>
<tr>
<th>STEPS</th>
<th>1st Test</th>
<th>2nd Test</th>
<th>3rd Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Perform an initial assessment of the patient.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Begin CPR with 100% oxygen while preparing AED.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• CPR continuously until AED is set-up and attached to patient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o If witnessed arrest: Defibrillate immediately.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o If unwitnessed arrest: Perform CPR for 1-2 minutes prior to</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>defibrillation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• CPR continuously until AED is attached to patient.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Turn on the AED.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Place the defibrillator pads on the patient.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Stop CPR. Allow AED to analyze rhythm.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. If shock is advised, clear all personnel from around the patient, and administer a shock.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. Resume CPR with compressions immediately if there is no patient response to the shock.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H. Repeat steps E, F and G in 1-2 minutes if needed.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EQUIPMENT:

1. A.E.D. per organization type
2. Simulator
### Optional Protocol Skill Evaluation

**Subject: Intravenous Infusion**

<table>
<thead>
<tr>
<th>STEPS</th>
<th>1st Test</th>
<th>2nd Test</th>
<th>3rd Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. List the indications for intravenous infusion.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. List the potential complications of intravenous infusion.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Select the appropriate site for children: Anteromedial aspect of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>proximal tibial shaft, two fingerbreadths below the tibial tuberosity.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Position leg for IO.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Prepare the skin with appropriate antiseptic.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Adjust the depth guard on the needle.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. Demonstrate proper insertion of the needle using the device approved by your department.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H. Remove inner stylet and attach 10 cc syringe with 5 ml IV fluid.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aspirate for blood/marrow. Inject 5 ml of fluid to insure free flow.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. Attach IV tubing. Infuse fluid or medication using pressure infuser.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J. Secure the I.O. Tape the tubing to the skin.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K. List the signs of possible infiltration.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. Indicate proper site and positioning for adult insertion:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Proximal tibia:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Two fingerbreadths below the patella and 1-2 cm medial to tibial tuberosity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Distal tibia:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Flat portion of the distal tibia, just proximal to medial malleolus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Humeral head:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o 90° angle directly into greater tuberosity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Distal femur—site of last resort:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Anterior midline above external epicondyles, 1-3 cm above femoral plateau.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Equipment:**

1. Bone Marrow Aspiration needle (or BIG, EZ IO)
2. Alcohol prep
3. Towels
4. IV Solution and tubing
5. 10 ml syringe
6. Tape, 4x4s
7. Gloves & eye protection
8. 2 rolls of Kerlix.
9. IO manikin

When preparing for this skill evaluation, be sure that you are able to meet the objectives A, B, C, G, and K. If you need a reminder, the material is readily available in any standard textbook. This skill sheet is a guideline to use; you may tailor it to the appropriate I.O. device carried by your department. Follow manufacturer’s recommendations for the device.
ADULT PROTOCOL SKILL EVALUATION
SUBJECT: USE OF NEBULIZER WITH BAG-VALVE DEVICE

NAME____________________________ DATE____________________________

LEVEL:     _____Paramedic                                              _____AEMT

<table>
<thead>
<tr>
<th>STEPS</th>
<th>1st Test</th>
<th>2nd Test</th>
<th>3rd Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Equipment as shown in the illustration:

**Note:** It is recommended that departments have the inline nebulizer set prepackaged and available for providers.
**ADULT PROTOCOL SKILL EVALUATION**

**SUBJECT: SPECIAL VENOUS ACCESS - CENTRAL VENOUS CATHETER, DIALYSIS CATHETER, OR PICC LINE**

NAME___________________________ DATE___________________________

LEVEL: Paramedic

<table>
<thead>
<tr>
<th>STEPS</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Test</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Test</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. List the indications for accessing a Central Venous Catheter, Dialysis Catheter, or PICC line.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Prepare IV fluid and tubing.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Cleanse catheter port with alcohol prep thoroughly. State reason for this.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Attach 10 ml. or larger Luer lock needleless syringe.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Unclamp catheter. Why is this done after attaching the syringe?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Aspirate with very LITTLE force to withdraw 5 ml blood. Why is blood withdrawn?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. If you CANNOT aspirate blood, STOP the procedure.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H. Reclamp catheter. Why is catheter reclamped before removing the syringe?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. Remove blood-filled syringe and discard into a sharps container.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J. Cleanse catheter again with alcohol prep. Why is recleansing so important?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K. Insert 10 ml or larger Luer lock needleless syringe filled with 10 ml NS.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. Unclamp catheter and flush catheter with 10 ml NS using a pulsating technique.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M. Reclamp catheter &amp; then remove syringe.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N. Cleanse catheter again with alcohol prep.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O. Attach IV tubing with Luer-lock connector to access port.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P. Unclamp catheter. Why is this done after attaching IV tubing?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q. Adjust flow rate.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R. Tape IV tubing securely in place in two places to patient’s skin.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S. Administer medications through IV tubing port, if indicated.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EQUIPMENT:**

1. IV tubing with Luer-lock connector and IV fluid
2. Two 10 ml or larger Luer lock. needleless syringes, one with 10 ml NS
3. Minimum of 6 alcohol preps
**ADULT PROTOCOL SKILL EVALUATION**  
**SUBJECT: SPECIAL VENOUS ACCESS - DIALYSIS FISTULA**

NAME___________________________ DATE___________________________  

LEVEL: Paramedic

<table>
<thead>
<tr>
<th>STEPS</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Test</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Test</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. List the indications for accessing Dialysis Fistula.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Prepare IV fluid and tubing.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Do NOT use tourniquet, constricting band, or BP cuff on arm with fistula.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Visualize or palpate fistula.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Cleanse skin over fistula thoroughly.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Insert catheter into fistula as you would into a vein, being careful NOT to puncture the back wall. State why.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. Withdraw needle holding downward pressure on fistula proximal to needle insertion. State why.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H. Attach IV tubing to catheter while maintaining downward pressure on fistula. This may require two people.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. Adjust flow rate. Use pressure infuser, BP cuff on IV bag, or IV pump to facilitate flow. State why</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J. Tape IV tubing securely in place.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K. Administer medications through IV tubing port, if indicated.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EQUIPMENT:**

1. IV tubing and IV fluid  
2. Angiocath needle  
3. Alcohol preps  
4. Pressure infuser, BP cuff, or IV pump
# ADULT PROTOCOL SKILL EVALUATION

**SUBJECT: COMPLEX MEDICATION ADMINISTRATIONS**

<table>
<thead>
<tr>
<th>NAME __________________________</th>
<th>DATE __________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVEL:  _____ Paramedic _____ AEMT _____ EMT</td>
<td></td>
</tr>
</tbody>
</table>

## STEPS 1st Test 2nd Test 3rd Test

### AMIODARONE

A. List the indications for Amiodarone, and the “six rights”.

B. List the equipment required to draw up Amiodarone.

C. List the problems with drawing up Amiodarone & administration.

D. Discuss contraindications & precautions regarding Amiodarone.

E. Use large bore (i.e., 19 ga.) needle to draw up Amiodarone to prevent foaming.

F. Discuss the differences in administration in cardiac arrest vs. non-arrest.

### MIDAZOLAM

A. List the indications of Midazolam, and the “six rights”.

B. Discuss contraindications & precautions regarding Midazolam.

C. Discuss the issue of drug concentration (10 mg/2ml) with Midazolam.

D. Using a TB syringe, demonstrate drawing up an appropriate amount of simulated Midazolam, and correct administration:

<table>
<thead>
<tr>
<th>Amount (ml)</th>
<th>Concentration (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.4 ml</td>
<td>2 mg</td>
</tr>
<tr>
<td>0.8 ml</td>
<td>4 mg</td>
</tr>
</tbody>
</table>

E. Discuss timing for administration of Midazolam (over 2 minutes).

### MARK I KITS

A. List the indications of Mark I Kit or DuoDote, and the “six rights”.

B. Explain the difference between a Mark I Kit and a DuoDote, and how to use each. Note: both have same meds and same doses. Mark I Kits are in the CHEMPACKs; DuoDotes are in the Drug Bags.

C. Don appropriate PPE. If pt. or public safety worker exhibits symptoms of nerve gas exposure, utilize Mark 1 Kit.

D. Remove Mark 1 simulation kit from protective pouch.

E. Hold unit by plastic clip.

F. Remove AtroPen Simulator from slot #1 of the plastic clip. The yellow safety cap will remain in the clip & the AtroPen will now be armed. DO NOT hold unit by GREEN tip. The needle ejects from the GREEN tip.

G. Grasp unit & position green tip of AtroPen Simulator on victim’s outer thigh.

H. Push firmly until auto-injector fires.

I. Hold in place for 10 seconds to ensure Atropine has been fully delivered.

J. Remove 2-PAM Cl Combo Pen Simulator from slot #2 of the plastic clip. The gray safety cap will remain in the clip, and the Combo Pen will now be armed. DO NOT hold the unit by the BLACK tip. Needle ejects from the black tip.

K. Grasp unit and position black tip of the Combo Pen simulator on victim’s thigh.

L. Push firmly until auto-injector fires.

M. Hold in place for 10 seconds to ensure 2-PAM has been properly delivered.

N. If nerve agent symptoms are still present after 5 minutes, repeat injections. If symptoms still exist after an additional 5 minutes, repeat injections for a third time. If after the third set of injections, symptoms remain, do not give any more antidotes. Seek medical help.
<table>
<thead>
<tr>
<th>EPINEPHRINE 1:1,000 30 ml MULTI-DOSE VIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. List the indication(s) for administration of Epinephrine</td>
</tr>
<tr>
<td>B. Demonstrate or voice infection precautions.</td>
</tr>
<tr>
<td>C. Select the proper vial and concentration</td>
</tr>
<tr>
<td>D. Check the medication for expiration date and for cloudiness or discoloration.</td>
</tr>
<tr>
<td>E. Calculate the volume of medication needed.</td>
</tr>
<tr>
<td>F. Select a TB syringe and needle of appropriate gauge.</td>
</tr>
<tr>
<td>G. Leave the cap on the needle and attach it to the syringe.</td>
</tr>
<tr>
<td>H. Prepare the vial:</td>
</tr>
<tr>
<td>Remove cap</td>
</tr>
<tr>
<td>Cleanse with alcohol prep</td>
</tr>
<tr>
<td>Inject air and withdraw proper amount of medication</td>
</tr>
<tr>
<td>I. Hold the syringe with the needle pointed straight up and depress the plunger until all air is ejected.</td>
</tr>
<tr>
<td>J. Check the label and desired dosage again.</td>
</tr>
<tr>
<td>K. Protect the needle until ready to administer the medication.</td>
</tr>
<tr>
<td>L. Dispose of used ampule and remaining glass in appropriate container.</td>
</tr>
<tr>
<td>M. Gently grasp the skin over the injection site and pinch it away from the underlying muscle.</td>
</tr>
<tr>
<td>N. Insert the needle into the injection site at a 45 degree angle to the skin with the bevel up. Insert the needle quickly to minimize any pain.</td>
</tr>
<tr>
<td>O. Pull back slightly on the plunger to ascertain that there is no blood return. Presence of blood return indicates that if the medication were given, it would be injected intravenously.</td>
</tr>
<tr>
<td>P. Inject the contents of the syringe at a slow, steady rate.</td>
</tr>
<tr>
<td>Q. Withdraw the needle quickly and smoothly at the same angle in which it was inserted.</td>
</tr>
<tr>
<td>R. Apply direct pressure over the injection site with a sterile 2x2, then apply a sterile adhesive strip.</td>
</tr>
<tr>
<td>S. Dispose of equipment appropriately.</td>
</tr>
<tr>
<td>T. Note any effect of medication on the patient.</td>
</tr>
<tr>
<td>U. Document on run report - time medication given; name, concentration, and dosage given; and medication's effect on patient.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EPIPEN ADMINISTRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Evaluate the patient, with attention to S&amp;S of anaphylaxis.</td>
</tr>
<tr>
<td>B. Demonstrate or voice infection precautions.</td>
</tr>
<tr>
<td>C. Obtain the EpiPen auto-injector. Indicate when both EpiPens are needed. (Indicate Adult / Pedi doses)</td>
</tr>
<tr>
<td>D. Check the medication for expiration date and for cloudiness or discoloration.</td>
</tr>
<tr>
<td>E. Remove the safety cap.</td>
</tr>
<tr>
<td>F. Select the injection site.</td>
</tr>
<tr>
<td>G. Push the injector firmly against the site.</td>
</tr>
<tr>
<td>H. Properly discard the injector.</td>
</tr>
<tr>
<td>I. Monitor the patient and record the results of the treatment.</td>
</tr>
<tr>
<td>J. Discuss precautions and side effects</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D10</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. List the indication for use</td>
</tr>
<tr>
<td>B. Demonstrate or voice infection precautions.</td>
</tr>
<tr>
<td>C. Indicate dose and administration Adults/Peds</td>
</tr>
<tr>
<td>D. Check the medication for expiration date and for cloudiness or discoloration.</td>
</tr>
<tr>
<td>E. Discuss precautions and side effects (administer in continuously running IV)</td>
</tr>
<tr>
<td><strong>GLUCAGON</strong></td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>A. List the indication for use</td>
</tr>
<tr>
<td>B. Demonstrate or voice infection precautions.</td>
</tr>
<tr>
<td>C. Indicate dose and administration Adults/Peds</td>
</tr>
<tr>
<td>D. Check the medication for expiration date and for cloudiness or discoloration.</td>
</tr>
<tr>
<td>E. Discuss precautions and side effects</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>NALOXONE</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A. List the indication for use</td>
<td></td>
</tr>
<tr>
<td>B. Demonstrate or voice infection precautions.</td>
<td></td>
</tr>
<tr>
<td>C. Indicate dose and administration Adults/Peds</td>
<td></td>
</tr>
<tr>
<td>D. Check the medication for expiration date and for cloudiness or discoloration.</td>
<td></td>
</tr>
<tr>
<td>E. Discuss precautions and side effects</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>FENTANYL</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A. List indications for use</td>
<td></td>
</tr>
<tr>
<td>B. Demonstrate or voice infection precautions</td>
<td></td>
</tr>
<tr>
<td>C. Indicate dose and routes of administration for Adults/Peds</td>
<td></td>
</tr>
<tr>
<td>D. Check the medication for expiration date and for cloudiness or discoloration.</td>
<td></td>
</tr>
<tr>
<td>E. Discuss precautions and side effects</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>KETAMINE</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A. List indications for use</td>
<td></td>
</tr>
<tr>
<td>B. Demonstrate or voice infection precautions</td>
<td></td>
</tr>
<tr>
<td>C. Indicate dose and routes of administration for Adults/Peds</td>
<td></td>
</tr>
<tr>
<td>D. Check the medication for expiration date and for cloudiness or discoloration</td>
<td></td>
</tr>
<tr>
<td>E. Discuss precautions and side effects</td>
<td></td>
</tr>
</tbody>
</table>

Revised: 11/2012
<table>
<thead>
<tr>
<th>STEPS</th>
<th>1st Test</th>
<th>2nd Test</th>
<th>3rd Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student will demonstrate how to acquire a 12-lead EKG, completing the following steps within two minutes:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expose chest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limb lead placement, and placement options</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Precordial (chest) lead placement, with no deviation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speed (all ten leads must be placed within two minutes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When to acquire according to optional Standing Orders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interface with hospital:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notify if you or machine suspect MI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid transport</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitor quality vs. Diagnostic quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency response</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Must use printed EKG for ST segment analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calibration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper speeds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Various limb lead placements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance of anatomical uniformity with precordial leads</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need for note on chart and EKG if non-standard position</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative complex in aVR as “test” for lead placement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hair removal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Artifact, and what to do about it:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin prep</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrode attachment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient movement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable movement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle movement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMI</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ADULT PROTOCOL SKILL EVALUATION  
SUBJECT: 12-Lead EKG Interpretation

NAME____________________________ DATE______________________________

LEVEL:     _____Paramedic

<table>
<thead>
<tr>
<th>STEPS</th>
<th>1st Test</th>
<th>2nd Test</th>
<th>3rd Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Show each paramedic five to ten EKGs.  In response to your questions,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>each paramedic should be able to identify the Components of the EKG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>following with 90% accuracy or better:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- P-R segment, Q waves, R waves, and S waves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- J-point, ST segment, T waves, TP segment, etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- QRS complexes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Q waves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Pathologic (&gt; or = 40 ms.) vs. physiologic (&lt; 40 ms.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- ST elevation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paramedics should be able to measure time on the EKG using either</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>seconds or milliseconds, and converting from one to the other with</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80% accuracy or better.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Given a series of EKGs with ST elevation, each paramedic should be</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>able to identify the leads with ST elevation, and localize the area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>infarct as Anterior, Inferior, Lateral, or Septal with 80% accuracy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>or better.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Given a series of EKGs with ST elevation, each paramedic should be</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>able to recognize reciprocal changes (ST depression) with 70% accuracy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>or better.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Given examples, the paramedic should be able to discuss the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>evolution of a myocardial infarction and the EKG changes over time,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>including the following phases:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Hyperacute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Acute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Indeterminate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Given a series of three to five EKGs, each paramedic should be able</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>to recognize the following with 60% accuracy or better.  You may</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>give the paramedic a clinical presentation along with the EKG.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- LBBB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- RBBB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Ventricular rhythms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- LVH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Ventricular aneurysm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Benign early repolarization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Pericarditis (S&amp;S: sharp, localizable chest pain, radiates to</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>base of neck, between scapulas)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Digitalis (ST depression with sag)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
NAME___________________________ DATE___________________________

LEVEL:     _____Paramedic     _____ AEMT       _____EMT

STEPS

A. List the indications for insertion of an LMA.
B. Select correct size LMA (See guidelines below).
C. Check cuff by inserting air, then withdraw air.
D. Deflate the cuff so that it forms a smooth “spoon-shape”.
E. Lubricate the posterior surface of the mask with water-soluble lubricant.
F. Hold the LMA like a pen, with the index finger placed at the junction of the cuff and tube.
G. Non-Trauma Patient: With the head extended and the neck flexed, carefully flatten the LMA tip against the hard palate. Trauma Patient: With second person maintaining inline stabilization, carefully flatten the LMA tip against the hard palate.
H. Use the index finger to push cranially, maintaining pressure on the tube with the finger.
I. Advance the mask until definite resistance is felt at the base of the hypopharynx.
J. Gently maintain cranial pressure with the non-dominant hand while removing the index finger.
K. Without holding the tube, inflate the cuff with just enough air to obtain a seal (to a pressure of approximately 60 cm. H2O). See the instructions for appropriate volumes. Never overinflate the cuff.
L. Ventilate & check breath sounds
M. Confirm sufficient cuff inflation using the End Tidal CO2 Detector (EDD cannot be used). CAUTION: Do Not give medications via the LMA.

EQUIPMENT:
1. LMA (correct size)
2. Water-soluble lubricant
3. 50 ml. syringe
4. Bag-valve mask
5. Stethoscope
6. End tidal CO2 detector
7. Suction

LMA SELECTION GUIDELINES

<table>
<thead>
<tr>
<th>LMA Airway Size</th>
<th>Patient Size</th>
<th>Maximum Cuff Inflation Volumes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Neonates/Infants up to 5 kg. (11 lb.)</td>
<td>4 ml. air</td>
</tr>
<tr>
<td>1.5</td>
<td>Infants 5 - 10 kg. (22 lb.)</td>
<td>7 ml. air</td>
</tr>
<tr>
<td>2</td>
<td>Infants/Children 10 - 20 kg. (44 lb.)</td>
<td>10 ml. air</td>
</tr>
<tr>
<td>2.5</td>
<td>Children 20 - 30 kg. (66 lb.)</td>
<td>14 ml. air</td>
</tr>
<tr>
<td>3</td>
<td>Children 30 - 50 kg. (110 lb.)</td>
<td>20 ml. air</td>
</tr>
<tr>
<td>4</td>
<td>Adults 50 - 70 kg. (154 lb.)</td>
<td>30 ml. air</td>
</tr>
<tr>
<td>5</td>
<td>Adults 70 - 100 kg. (220 lb.)</td>
<td>40 ml. air</td>
</tr>
<tr>
<td>6</td>
<td>Adults &gt; 100 kg. (220 lb.)</td>
<td>50 ml. air</td>
</tr>
</tbody>
</table>
DRUG BAG EXCHANGE PROGRAM

PURPOSE
To administer and monitor a drug bag exchange program between participating Fire/EMS/Private Ambulance departments and hospitals.

DRUG BAG EXCHANGE COMMITTEE
Co-Chairpersons: 1 Hospital EMS coordinator
1 Hospital pharmacy representative from each participating county
Members: EMS Coordinator from each participating hospital
Pharmacy representative from each participating hospital
Any interested GMVEMS Council member

MEETINGS
Scheduled: Two meetings per year: March and September
Unscheduled: As needed to discuss problem areas

OPERATING GUIDELINES

General
- There are two types of drug bags: ALS/BLS and BLS (fanny pack style).
- All drug bags, both ALS/BLS and BLS, are the property of the Greater Miami Valley EMS Council.
- There is an initiation fee for each new bag that EMS agencies add to the program.
- There is an annual maintenance fee for each ALS/BLS bag and BLS bag.
- There is an approved policy for replacement of lost or stolen drug bags (see Addendum A).
- To maintain the integrity of the drug bag contents, pharmacy departments’ seal each compartment of stocked drug bags with a blue plastic device. The seal should only be broken for administration of prehospital emergency medical treatment by approved EMS personnel. After prehospital emergency medical treatment use, the drug bag should be cleaned and re-sealed with the red plastic device contained inside each drug bag compartment.
- The following actions may be taken for any department found to be in non-compliance with the Drug Bag Exchange Program Operating Guideline regarding opening and resealing the drug bag:
  o Notification of the Fire Chief, EMS Administrator, or Private Ambulance Administrator.
  o The governing agency, e.g., city council, trustees, EMFTS for private ambulance service, will be notified that action is being initiated for the Fire/EMS/Private ambulance service.
  o Removal of all drug bags from all locations of said Fire/EMS/Private ambulance service.
  o Written notification to the following that the said service is in violation of the operating policy of the Drug Bag Exchange Program:
    ▪ Medical Director
    ▪ Regional Physician Advisory Board
    ▪ OH State Pharmacy Board
    ▪ OH Division of EMS
    ▪ All hospitals participating in the drug bag exchange program
- GMVEMS Council maintains an information database for all EMS personnel authorized to participate in the Drug Bag Exchange Program.
- Rosters with certification expiration dates for EMS providers are available via an online database for review and updates.

PARTICIPATION REQUIREMENTS
- Active membership in the GMVEMS Council.
- Each agency in GMVEMSC must understand that Council typically communicates with departments and agencies via email, and that some of those messages concern changes to Standing Orders, pharmaceuticals in our Drug Bags, or other critical issues. Council maintains two lists of emails:
  o The GMVEMSC Listserve
  o A distribution list of Agency Contacts
As such, to participate in the Drug Bag Program, each agency must provide a minimum of one functioning email contact for each of those lists (may be the same person or different). Council desires to communicate as freely and effectively as possible, and agencies may provide as many as they like for each list, but must have at least one person who can reliably receive messages. Since in rare cases, these messages may be urgent, we encourage use of the “three-deep” rule: provide Council with three (or more) emails for each list.

- **ADDITIONAL REQUIREMENTS FOR DRUG BAG PROGRAM**
  - The protocol testing compliance letter (Addendum I) must be signed by the Chief within two weeks after completion of the written testing cycle, then faxed to Council.
  - Provide Drug License for upcoming year to Council by January 31st of the license year. Example would be when renewing the license for 2015, then the copy of your license needs to go to Council by January 31, 2015. This is required, as the Pharmacy at each hospital needs your license on file in order to exchange drug bags with your department.
  - Complete drug bag updates when scheduled. This is essential. The Pharmacy Board has made it very clear that updates must be completed on time.
  - Provide a signed letter (Addendum C) from each department or agency acknowledging that they must comply with the requirements. This letter will be kept on file with Council.

- **No department which participates in the Drug Bag Exchange Program shall possess a DEA License.**
- Area hospital participation according to Council guidelines. (See Addendum B).
- Document medical advisor approval for the use of the GMVEMS Council Operating Protocols with a signed, notarized letter, which is attached to the drug license renewal application form with a copy submitted to Council. Notarized letter is not required for renewal unless medications are added or there is a change in Medical Director from previous year.
- Signed agreement to abide by the GMVEMS Council Operating Guidelines for the Drug Bag Exchange Program (see Addendum C).
- Agreement to complete the GMVEMSC annual skills and annual written test between 1 January and 31 May unless otherwise scheduled by Council (see Non-Compliance Procedures).
- **Maintain all drugs at all times in a clean, temperature-controlled environment per Rule 4729-33-03(E) of the OH State Pharmacy Board Administrative Code.** The rules can be seen at: [http://pharmacy.ohio.gov/rules/4729-33-03.pdf](http://pharmacy.ohio.gov/rules/4729-33-03.pdf)
- The ideal temperature span is 59-86 degrees F.
- In order to utilize an ALS/BLS or BLS drug bag in the pre-hospital emergency setting, the following equipment should be immediately available:
  - **BLS Provider:**
    - Oxygen
    - Suction (non-powered is acceptable)
    - AED (if approved by Medical Advisor)
  - **ALS Provider:**
    - Oxygen
    - Suction (non-powered is acceptable)
    - Monitor/defibrillator or AED & intubation equipment

**LEVELS OF PARTICIPATION**

- **Paramedic Level**
  - Each drug bag consists of a navy, standard issue drug bag. A Paramedic can access any of the compartments of bag to obtain medications per his/her protocol.
  - Each standard issue bag is labeled with a metal tag from 850 – up.
  - Upon completion of a transport, the entire bag is exchanged at the receiving hospital with the appropriate paperwork following the steps above.
• **AEMT Level**
  o A side compartment labeled “intermediate”
  o The AEMT can access compartments to obtain medications per their protocol. They cannot access the Center Inside Compartment or the Center Controlled Medication Compartment.
  o Upon completion of a transport, the entire bag is exchanged at the receiving hospital *with the appropriate paperwork following the steps above.*

• **Basic Life Support**
  o The RED BLS compartment on an ALS/BLS bag or BLS fanny-pack style bag will carry the following medications ONLY: Nitrostat, EpiPen, EpiPen Jr. and baby Aspirin. The EMT can only access this compartment and the Naloxone compartment to treat his/her patient per protocol.
  o Each bag is labeled with a numeric code.
  o Upon completion of a transport, the bag is exchanged at the receiving hospital *with the appropriate paperwork following the steps above.*

**EXCHANGE PROCESS**

• Each department is assigned to a "home" hospital. The assigned hospital is the central resource for initial fulfillment of medications for the drug bags and wholesale exchanges, replacement, or additions as required by revisions to the GMVEMS Council Standing Orders Protocols. Under normal operating parameters, drug bags can be exchanged at any participating hospital or within the same department.
  o ALS/BLS bags may be exchanged one-for-one with another ALS/BLS bag. BLS bags may be exchanged one-for-one with another BLS bag.

• EMS providers are required to inventory each opened compartment, discard any used sharps and clean any contaminants from bag used, and apply a red seal before exchanging for a replacement bag. The red seal will be looped through the proximal portion of the zipper tab (not the outermost portion of the zipper tab).

• Once you have verified the contents, seal the compartment with the RED tag, **placing the blue seal from the opened compartment back in that compartment,** unless there is a discrepancy. If any old blue seals (from previous runs) are found in the compartment, remove them, and send them to the EMS Coordinator for the receiving hospital.

• Any discrepancies (missing meds, expired meds, wrong meds or dose, altered or tampered meds, drug bag number discrepancy, etc.) that are identified shall be reported to the GMVEMSC using the Drug Bag Discrepancy Report. (See discrepancy procedure)

• The primary care provider for the patient is responsible for the inventory of the drug bag prior to sealing it. If two departments have accessed a drug bag, they should jointly seal the drug bag.

• Each hospital designates a specific location for the exchange of drug bags. EMS personnel are **required** to complete the Sign In/Out log when exchanging a drug bag. Once sealed, any provider can exchange the drug bag.

• EMS Providers are responsible for ensuring that all blue seals on the new bag are intact when logging out an exchanged bag.

**DOCUMENTATION OF DRUG USAGE**

• Fentanyl, Ketamine, Morphine, Versed and Valium are controlled drugs. They must be tracked from the time they are dispensed into the drug bag through the time of administration.

• To insure the medications are properly accounted for, all AEMTs and Paramedics will document:
  o The drug name
  o The amount used
  o The amount wasted
  o The signature of the two witnesses if wastage (the person wasting the medication can sign as a witness).

• The GMVEMSC run sheets have a dedicated area for this documentation and required signature lines. Those using other types of run sheets should document the above information and the
required signatures. **Some hospitals also require the use of the GMVEMSC approved Controlled Drug Usage Form in addition to documentation on the run sheet. This GMVEMSC approved form must be filled out for any controlled drug use, even if there is no wastage.** This information shall be on both the original EMS department form and the hospital copy for reference if needed.

**WASTED DRUG PROCEDURE**

- Fentanyl, Ketamine, Morphine, Versed and Valium are controlled drugs. If a medication is only partially administered, the paramedic or AEMT must account for the all of the unused portion.
- To insure the medications are properly accounted for, all paramedics and AEMTs will document:
  - The drug name
  - The amount used
  - The amount wasted
  - The signature of a second witness if there is wastage.
- One witness will be the paramedic or AEMT wasting the medication and the second witness signature will be the nurse/physician/pharmacist or EMT who witnessed the disposal of the medication. Both witnesses will sign the run sheet.
- It is preferred to have a nurse or physician witness drug wastage. A pharmacist can also be a witness if a nurse or physician is not available. Using another EMS provider to witness wastage should be avoided unless the EMS provider cannot obtain a nurse, physician, or pharmacist as a witness. EMS personnel witnessing drug wastage can be of higher, equal or lower certification level.

**GENERAL NON-COMPLIANCE PROCEDURES**

- Each department and department medical director(s) will be notified if the annual written test and skills check-off has not been completed within the prescribed time period.
- The Ohio State Board of Pharmacy will be notified that a department or individual members of a department have not completed the annual written test and skills check-off within the prescribed time period.
- Hospital EMS coordinators and pharmacy departments will receive a list of departments or individuals within a department that are not in compliance with the operating guidelines. At the end of the testing season, if a department does not have 100% of their personnel completing both skill and written tests (or explanations for individuals not in compliance) noted in the Standing Orders database, then appropriate action, up to and including the removal of department from the Drug Bag program, may be taken by the chair of the drug bag committee.
- If copy of drug license(s) is not received by due date, GMVEMS Council notifies EMS department medical director. GMVEMS Council reserves the right to initiate the non-compliance action process for any Fire/EMS/Private Ambulance service that does not provide documentation for drug license(s) renewal.

**DRUG BAG DISCREPANCIES**

- EMS providers are required to inventory each opened pouch prior to applying the red seal.
- All discrepancies (missing meds, expired meds, wrong med or dose, altered or tampered meds, drug bag number discrepancy, etc.) that are identified shall be reported to GMVEMSC using the Drug Bag Discrepancy Report (Addendum E).
- **If at any time, an EMS provider encounters a discrepancy he/she will:**
  - Notify his/her EMS Officer of the discrepancy.
  - If the discrepancy was discovered after opening the bag, retain the blue seal and the hospital sticker that was attached to the drug bag in question.
  - If the EMS provider is at the hospital, he/she will log the bag in using the normal procedure at that hospital while retaining the blue seal.
He/she will advise the pharmacist or EMS Coordinator of the discrepancy and that he/she will be initiating the Discrepancy form as described below (pharmacist may request a copy of the Discrepancy form).

The EMS Officer may contact the EMS Coordinator if assistance is needed.

### Discrepancies Involving Controlled Drugs and/or Potential Tampering:
- When an issue arises concerning any of the following, a collaborative effort between the EMS organization/provider and the Hospital EMS Coordinator/Pharmacist shall be made in an attempt to resolve the issue:
  - A controlled drug (Fentanyl, Ketamine, Valium, Versed, or Morphine)
  - A stolen, missing or lost bag
  - Any medication that appears to have been altered or tampered with.
- If the issue cannot be resolved, the following steps shall be taken:
  - If the discrepancy was discovered by the EMS organization/provider, the person designated by the organization/provider shall comply with the requirements of OAC 4729-9-15 and GMVEMSC requirements as indicated below.
  - If the discrepancy was discovered by the hospital, the person designated by the hospital shall comply with the requirements of OAC 4729-9-15 and GMVEMSC requirements as indicated below.
- Required reporting for unresolved issues involving Controlled Drug or potential/suspected tampering or lost or stolen drug bags pursuant Federal and State Laws and GMVEMSC Protocol include:
  - Contact the Ohio State Board of Pharmacy by telephone at (614) 466-4143. Advise them you want to report a dangerous drug discrepancy. They will connect you with the appropriate person. (OAC 4729-9-15)
  - File a report with the appropriate law enforcement authorities (ORC 2921.22).
  - Notify the Drug Enforcement Agency (DEA) within 30 days of discovery using DEA Form 106 available electronically at: [https://www.deadiversion.usdoj.gov/webforms/app106Login.jsp](https://www.deadiversion.usdoj.gov/webforms/app106Login.jsp). A 30-day extension may be requested in writing from the DEA. (CFR 1301.76(b)).
  - Submit a completed GMVEMSC Drug Bag Discrepancy Report located at Addendum #E, with appropriate supporting documentation, to the GMVMESMC.

### Discrepancies Not involving Controlled Drugs and/or Potential Tampering
- Examples may include:
  - Non-controlled drugs that were not in the bag
  - Wrong number of medications or doses
  - Wrong drug concentration
  - Expired medications found
  - No expiration date on tag
  - Medications improperly labeled
  - Empty vials/packaged left in bag
  - Unsealed medications
  - Wrong medication administered
  - Unsealed pouch discovered
  - Bag logged out with red seal (used bag)
- If discovered by EMS, the EMS Officer will initiate the Discrepancy form. He/she shall provide a copy of the form and the Blue Seal to the Hospital EMS Coordinator and shall fax a copy of the report to the GMVEMSC (937-228-1035).
- If the Hospital discovers the discrepancy, the EMS Coordinator will initiate the Discrepancy Form and submit to GMVEMSC. If the EMS Coordinator is able to determine which EMS agency/hospital is responsible for the discrepancy, the agency/hospital will be notified and will receive a copy of the Discrepancy Form and the Blue Seal if applicable.
The GMVEMSC will:
- Maintain a record of all discrepancies that occur.
- Follow up with the agencies involved as needed.
- Advise the Drug Bag Chairperson of any and all discrepancies and action taken.

The Drug Bag Committee Chairperson will:
- Report at the bi-annual Drug Bag Committee meetings for discussion and resolutions to all discrepancies encountered.
- Assist the Council and or affected departments with any issues or questions that may result.

**DRUG BAG BLUE SEALS**

- **Blue seals:**
  - Blue seals are used by the pharmacy that inventories and restocks the ALS/BLS drug bags. The blue seals will have a hospital sticker attached to the seal that identifies the hospital and pharmacist that inventoried the bag and the expiration date of the next drug to expire. The inner compartment of the ALS bag and Intermediate will be sealed with a blue seal and will have the expiration date noted. The blue seal will be looped through the proximal portion of the zipper tab (not the outermost portion of the zipper tab). EMS should verify the blue seal is intact and has an expiration date before accepting the bag. When EMS opens a drug bag compartment, keep the blue seal in your possession until you have verified the contents are accounted for. Once you have verified the contents, seal compartment with RED tag, placing the blue seal in the compartment, unless there is a discrepancy.

- **Red Seals:**
  - Red seals identify ALS/BLS bags as being used. EMS providers are required to inventory each opened pouch, discard any used sharps and clean any contaminants from bag used and then take red seal from the inside compartment (supplied by pharmacy when restocking the ALS/BLS bag) and seal the used compartment. The red seal will be looped through the proximal portion of the zipper tab (not the outermost portion of the zipper tab).

Hospital Pharmacies should use the same style colored seals to maintain continuity of the system. Hospital pharmacists can purchase these seals through the GMVEMSC office.
ADDENDUM A

Lost or Stolen Drug Bag Policy

RE: Lost or Stolen Drug Bags
APPROVED: June 1994
PURPOSE: To provide a uniform mechanism for the investigation and reporting of lost or stolen drug bags.

EMS DEPARTMENT SHALL:

• Develop and implement an internal investigation mechanism for lost or stolen drug bags. The internal investigation mechanism should include:
  o Determine if drug bag was left at the scene.
  o Determine if drug bag was not exchanged on last run.
  o Determine if drug bag is in the wrong vehicle.
  o Interview all personnel who had access to the drug bag.

• The GMVEMSC will seek the assistance of the Drug Bag Co-Chair to check with all hospitals to determine if the bag might be in inventory or be alerted if it shows up at one of the hospitals.

• EMS Officer will initiate the Drug Bag Discrepancy Form and follow instructions for reporting lost or stolen drug bags. Completed paperwork and reports will be submitted to GMVEMSC.

• The GMVEMSC will contact the hospital EMS Coordinator with whom the EMS Department is assigned to work out a drug bag replacement. The EMS Coordinator will contact GMVEMSC for a drug bag replacement after all paperwork is submitted and GMVEMSC will assess a fee for replacement bag to be paid for by the EMS Department receiving the replacement bag.
ADDENDUM B

HOSPITAL PARTICIPATION POLICY

APPROVED: 29 November 2001

GENERAL PURPOSE:
To assure uniformity of hospital pharmacy participation in the DBEP.

The Hospital Shall:

- Purchase (at cost), fill, and maintain a supply of bags sufficient to meeting the needs of an average day, plus a few extra to meet peak demands for bag replacement.

- Accept responsibility for filling new bags for departments or vehicles as assigned by Council, at hospital expense.

- Assign one licensed pharmacist and an EMS coordinator to attend and participate in the Standing Orders and Drug Bag Exchange Program Committees.

- Agree to pay annual dues and any fees assessed by Council that are approved by the DBEP Committee and the GMVEMSC Council that pertain to the DBEP.

GMVEMSC SHALL:

- Maintain a current State Drug Licenses for all participants in the DBEP.

- Furnish hospital pharmacy with a current listing of all departmental personnel authorized to access the GMVEMSC drug bags and copy of the protocol.

- Assign departments to hospitals in both a geographic and otherwise equitable fashion.
ADDENDUM C

AGREEMENT LETTER

Please type or print legibly

DEPARTMENT/SERVICE: ________________________________

CONTACT PERSON: ________________________________

TELEPHONE: _______________________________________

FAX: _____________________________________________

This department/service agrees to abide by the GMVEMS Council Drug Bag Exchange Program and
Standing Orders operating guidelines.

SIGNATURE: _______________________________________

Fire Chief, EMS Administrator, or Private Ambulance Administrator.

DATE: __________________

Return to:

GMVEMSC
2 Riverplace, Suite 400
Dayton OH 45405
Phone: 937-228-1288
Fax: 937-228-1035
ADDENDUM D

New Member Policy requiring Drug (ALS/BLS) bag for licensure of their ALS/BLS unit

Those Agencies who have applied for membership and require a GMVEMSC drug bag to license their units may request a GMVEMSC drug Bag to be available 24 hours prior to the Ohio Medical Transportation Board (OMTB) inspection date providing they have done the following:

1. Have applied for a GMVEMSC membership
2. They have provided a copy of their State Pharmacy License
3. Have been given a provisional membership by the GMVEMSC Executive Committee if the inspection is before regularly scheduled Council meeting.
4. Personnel must be checked off on Standing Orders and data entered on GMVEMSC data base.
5. Medical Director must submit a notarized letter to the State Pharmacy Board with License application stating they approve their department to use the GMVEMSC protocols.
   i. Medical Directors have the right to limit their personnel from using certain medications or procedures within the scope of the GMVEMSC protocols.
   ii. Medical Directors may elect to change or add medications or procedures to the protocol. The Medical Director must include those protocols in addendum to the GMVEMSC, be responsible for the training and documentation of training in of their protocol as well as purchasing and maintaining those drugs that are not included in the standard inventory of the GMVEMSC ALS or BLS.

The agency has 72 hours to show proof of a temporary permit from the date of inspection to the GMVEMS Council office. If they cannot demonstrate an OMTB permit in that time the Drug bag must be returned to the Hospital to which the agency is assigned or the hospital that provided the drug bag.
ADDENDUM E

GMVEMSC Drug Bag Discrepancy Report

If at any time an EMS provider encounters a discrepancy he/she will notify their EMS Officer of the discrepancy. If the discrepancy was discovered after opening the bag, retain the blue seal and the hospital sticker that was attached to the drug bag in question. If the EMS provider is at the hospital, they will log the bag in using the normal procedure at that hospital. They will advise the pharmacist or EMS Coordinator of the discrepancy and that they will be initiating the Discrepancy form as described below (pharmacist may request a copy of the Discrepancy form).

Date of report:_________ Bag Number:_______ Date Discrepancy discovered:_____________
Discovered by:_____________ Hospital/EMS Dept making discovery:______________
Have blue Hospital seal? YES/NO If yes - Attach seal to report

Tracking:
Date bag was logged out:______ from (hospital)__________ To (EMS agency)__________ Date Bag turned in:______ to (hospital)__________________

Description of the discrepancy: (Attach addendum if additional space needed)

Describe efforts to resolve the discrepancy: (Attach addendum if additional space needed)

Was the discrepancy satisfactorily resolved? _____ If not, what steps are to be taken:______________

Who will be responsible for any required reporting:

Reporting requirements:
Was a police report filed? ______ Date: ______ By whom? _________________
Was a DEA report filed? ______ Date: ______ By whom? _________________

Required documents submitted to GMVEMSC By:______________________ Date:______

For Drug Bag committee use:

<table>
<thead>
<tr>
<th>Wrong Med stocked</th>
<th>Bag logged out with red seal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expired meds found</td>
<td>Empty vials/packages found</td>
</tr>
<tr>
<td>Wrong dose packaged</td>
<td>Open pouch found</td>
</tr>
<tr>
<td>Missing Meds</td>
<td>Unsealed bottles found</td>
</tr>
<tr>
<td>Wrong number packaged</td>
<td>Med found in wrong compartment</td>
</tr>
<tr>
<td>No exp date on tag</td>
<td>Wrong med administered</td>
</tr>
<tr>
<td>Atrovent/Albuterol not labeled</td>
<td>Lost or stolen bag</td>
</tr>
<tr>
<td>Damaged medications</td>
<td>Other:</td>
</tr>
<tr>
<td>Other:</td>
<td></td>
</tr>
</tbody>
</table>

GMVEMSC – White Pharmacy - Yellow EMS Department - Blue
ADDENDUM F

OAC 4729-9-15

Report of theft or loss of dangerous drugs, controlled substances, and drug documents. (A) Each prescriber, terminal distributor of dangerous drugs, or wholesale distributor of dangerous drugs shall notify the following upon discovery of the theft or significant loss of any dangerous drug or controlled substance, including drugs in transit that were either shipped from or to the prescriber, terminal distributor of dangerous drugs, or wholesale distributor of dangerous drugs:

(1) The state board of pharmacy, by telephone immediately upon discovery of the theft or significant loss;

(2) If a controlled substance, the drug enforcement administration (DEA) pursuant to section 1301.76(b), Code of Federal Regulations;

(3) Law enforcement authorities pursuant to section 2921.22 of the Revised Code.

(B) Controlled substance thefts must also be reported by using the Federal DEA Report form whether or not the controlled substances are subsequently recovered and/or the responsible parties are identified and action taken against them. A copy of the federal form regarding such theft or loss shall be filed with the State Board of Pharmacy within thirty days following the discovery of such theft or loss.

(1) An exemption may be obtained upon sufficient cause if the federal form cannot be filed within thirty days.

(2) A request for a waiver of the thirty-day limit must be requested in writing.

(C) Each prescriber, terminal distributor of dangerous drugs, or wholesale distributor of dangerous drugs immediately upon discovery of any theft or loss of:

(1) Uncompleted prescription blank(s) used for writing a prescription, written prescription order(s) not yet dispensed, and original prescription order(s) that have been dispensed, shall notify the state board of pharmacy and law enforcement authorities.

(2) Official written order form(s) as defined in division (Q) of section 3719.01 of the Revised Code shall notify the state board of pharmacy and law enforcement authorities, and the drug enforcement administration (DEA) pursuant to section 1305.12(b), Code of Federal Regulations.
ADDENDUM G
OAC 4729-33-03 Security and storage of dangerous drugs

(A) Overall supervision and control of dangerous drugs is the responsibility of the responsible person. The responsible person may delegate the day-to-day tasks to the emergency medical service (EMS) organization personnel who hold appropriate certification to access the dangerous drugs for which they are responsible.

(B) All dangerous drugs must be secured in a tamper-evident setting with access limited to EMS personnel based on their certification status except for sealed, tamper-evident solutions labeled for irrigation use. All registrants shall provide effective and approved controls and procedures to deter and detect theft and diversion of dangerous drugs.

(C) Only paramedics, advanced emergency medical technicians, registered nurses, physicians, and pharmacists who are associated with that EMS organization may have access to any controlled substances maintained by the EMS organization. Other persons employed by the EMS organization may have access to controlled substances only under the direct and immediate supervision of a paramedic, an advanced emergency medical technician as defined in rules 4765-16-01 and 4765-16-02 of the Administrative Code, a registered nurse, or a physician in emergency situations.

(D) Administration of dangerous drugs by EMS personnel is limited to the scope of practice, as determined by the State Board of Emergency Medical Services, for the individual's certification level and the protocols as established by the medical director or when the individual is acting within their certification level pursuant to direct prescriber's orders received over an active communication link.

(E) All dangerous drugs will be maintained in a clean and temperature-controlled environment.

(F) Any dangerous drug that reaches its expiration date is considered adulterated and must be separated from the active stock to prevent possible administration to patients.

(G) Any non-controlled dangerous drug that is outdated may be returned to the supplier where the drug was obtained or may be disposed of in the proper manner.

(I) Destruction of outdated controlled substances may only be done by a State Board of Pharmacy agent or by prior written permission from the State Board of Pharmacy office.

(J) Destruction of partially used controlled substances can be accomplished, with the appropriate documentation, by two licensed health care personnel, one of which must have at least an advanced emergency medical technician, as defined in rules 4765-16-01 and 4765-16-02 of the Administrative Code, level of training.

(K) Any loss or theft of dangerous drugs must be reported upon discovery, by telephone, to the State Board of Pharmacy, local law enforcement and, if controlled substances are involved, to the Drug Enforcement Administration. A report must be filed with the State Board of Pharmacy of any loss or theft of the vehicle or storage cabinets containing dangerous drugs used by the EMS organization.

(L) Any dangerous drug showing evidence of damage or tampering shall be removed from stock and replaced immediately.
ADDENDUM H

Ambulance Restocking Policy
EMS Supply Exchange Program
September 23, 2014

History
The member hospitals of GDAHA have supported Emergency Medical Services agencies in the region for decades. In 1998, GDAHA received permission (Advisory Opinion No. 98.7) from the Department of Health & Human Services to continue to exchange drugs (GMVEMSC Drug Bag Program) and supplies with EMS agencies and avoid violating the anti-kickback (safe harbor) statute of the Social Security Act. The hospitals named in the advisory are in the eight (8) county West Central Region: Champaign, Clark, Darke, Greene, Miami, Montgomery, Preble and Shelby.

In December 2001, the Centers for Medicare and Medicaid Services issued an Ambulance Final Rule on Ambulance Restocking Safe Harbor. Elements of the Safe Harbor include: 1) Billing and Claim Submission; 2) Documentation; 3) Not Tied to Referrals; and 4) Compliance with other laws.

Current Situation
EMS agencies and personnel need to understand the benefits of the EMS Supply exchange program, as offered by GDAHA members participating in this program. EMS agencies and personnel must also realize that they must adhere to the agreement, particularly the areas highlighted below:

1. **Written records describing each of the medical supplies and/or medications utilized by the patient during the transport.** For all transports to Member Hospitals, the EMS agencies will provide the receiving Hospital Member with copies of such written records **upon arrival at the Hospital**.

2. Participating hospital members will restock EMS agency ambulances, at no charge to EMS agency, with the medical supplies and/or medications which were **utilized by the patient during the transport to the receiving Hospital.**

**Hospitals will not restock items used on patients delivered to another hospital.** It is the responsibility of the EMS agencies to restock items used on patients delivered to a hospital that is not a participant in the Agreement. **Participating hospitals will restock drug bags.**

Hospitals are not required to participate in this restocking program. This is a benefit to EMS Agencies in the region. Restocking an ambulance at a participating hospital for items used on a patient delivered to a hospital not participating in the agreement, will jeopardize this program.

Hospitals will not provide medical supplies to a new ambulance, or an old ambulance being returned to service. These ambulances must be stocked for the first time by the EMS agency.
ADDENDUM I

Protocol Testing Compliance

I, ___________________________ (Chief’s Name Printed), do hereby certify that all

members of ___________________________ (Agency/Department Name)

have completed the _______ (Year) GMVEMSC Protocol Testing as of ____________ (Date

of Completion) with the exception of the following personnel:

(List anyone who has not completed testing)

____________________________________

Chief’s Signature
To avoid misunderstanding, all parties are cautioned to use the word “rerouting,” never “closed.”

Patients are never rerouted for patient’s economic considerations.

The following patients are NOT rerouted:

- RESPIRATORY AND/OR CARDIAC ARREST
- CARDIAC & STROKE ALERT CRITERIA PATIENTS
- MAJOR TRAUMA
- MATERNITY
- SERIOUS BURNS
- HIGH RISK NEONATAL
- DIALYSIS PATIENT
- AIR MEDICAL TRANSPORT
- HYPERBARIC
- RECENTLY DISCHARGED PATIENTS (48 hours)

When conditions exist that may hinder the timely treatment of additional emergency cases, the Designated Hospital Official will declare the “Rerouting of Emergency Patients to be in Effect.” The hospital will update the “GDAHA SurgeNet Web Page.” The Hospital will notify their appropriate dispatch center, identify the hospital, name and title of caller, as needed. The hospital will then notify (by prior agreement, this can be via the SurgeNet Web Page) at least the following organizations:

1. The emergency department of each metropolitan hospital:
   a. The Children’s Medical Center
   b. Good Samaritan Hospital
   c. Grandview Medical Center
   d. Kettering Medical Center
   e. Miami Valley Hospital
   f. Miami Valley Hospital South
   g. Southview Medical Center
   h. Sycamore Medical Center

2. The appropriate emergency medical services – refer to individual hospital call list

3. The emergency department of non-metropolitan hospitals:
   a. Wayne Hospital, Greenville
   b. Atrium Medical Center, Middletown
   c. Wilson Memorial Hospital, Sidney
   d. Springfield Regional Medical Center
   e. Mercy Memorial Hospital, Urbana
   f. Upper Valley Medical Center, Troy
   g. Greene Memorial Hospital, Xenia
   h. Department of Veterans Affairs - Medical Center
   i. 88th Medical Center, WPAFB

Communicate the following information:

Rerouting of emergency patients is requested by name________ hospital due to overcrowding.

One of the following categories of rerouting may be requested. Hospitals MUST specify what category is being rerouted using the following options:
Reroute all Emergency Patients
Reroute all but major trauma (Trauma Centers Only)
Reroute Intensive and/or Coronary Care Patients Only.

After two (2) hours hospitals will be notified by page and/or email to review their reroute status.

It will be the responsibility of the rerouting hospital to cancel their rerouting status and:
  1. Update the GDAHA SurgeNet Web Page
  2. Use the same notification protocols used to initiate the rerouting procedure as appropriate

LOCKDOWN: the hospital has activated its disaster plan because of an internal emergency, bomb threat, or other situation rendering it unable to accept patients.

INFORMATIONAL CATEGORIES:
On occasion, hospitals will not be able to handle a certain category of patients. For example:
  • CAT Scan is not available; stroke or head trauma patients should be diverted;
  • Haz-mat patients should be diverted;
  • A physician specialty is not available;

The hospital that is diverting this certain category of patients will not be considered rerouting in these circumstances. This will be shown on the web page as SPECIAL SITUATION – see Notes/Call.

THREE HOSPITALS NEED TO REROUTE
In the event that overcrowding and rerouting exists at the same time at two (2) hospitals in close geographic proximity (Addendum A) and the third hospital in the same geographic area needs to reroute, by prior agreement, all hospitals will terminate their rerouting for a minimum of two hours (Forced Open). It will be the responsibility of the third hospital to initiate communication with the other rerouting hospitals’ individuals responsible for reroute to review the situation. If any of the rerouted hospitals can stop rerouting they will do so, to avoid all hospitals having to stop rerouting.

REROUTING EMERGENCY
If none of the three hospitals can stop rerouting, then a “rerouting emergency” will be declared and the following procedures will be followed.
  1. Update the GDAHA SurgeNet Web Page
  2. All three hospitals will call previously notified agencies and inform them that rerouting emergency has been declared.
  3. When a rerouting emergency is declared, Children’s Medical Center will remain available to accept patients up to 21 years of age (no maternity patients).
  4. Squads should transport patients to their assigned reroute emergency “home base” hospital(s) (See Addendum B):

Note: During mutual aid or out of district transport as aided agency/district.

When emergency medical service personnel respond to an emergency call and the patient and/or physician requests him to proceed to a hospital which is rerouted, the emergency medical services personnel will have the responsibility of advising the patient and/or physician that “due to overcrowding of the hospital patient care may be jeopardized.” If the patient and/or physician still requests to be transported to the rerouted hospital, the emergency medical services personnel will contact and consult with a Medical Control physician in the emergency department of the rerouted hospital.

All concerned parties should acknowledge the situation in which emergency medical services personnel (in the absence of a physician’s judgment) may determine the victim to be in critical need of immediate medical care and decide to transport the victim to the nearest hospital, even though overcrowded conditions exist in the hospital. Any discussion concerning the decision of the emergency medical services personnel should be done privately and after the patient care has been initiated.

Emergency medical service personnel should use their radios, cellular phone or dispatcher to notify the rerouting hospital in unusual circumstances (critical illness or injury, multi-victim incidents, etc.).
GREATER DAYTON AREA HOSPITAL ASSOCIATION

POLICY STATEMENT FOR
TEMPORARY REROUTING OF EMERGENCY PATIENTS

ADENDUM A

Geographic Areas:

1. In the event that overcrowding and rerouting exists at the same time at two (2) hospitals in the list below and a third hospital in the list below needs to reroute, by prior agreement no hospitals will reroute for two (2) hours.
   a. Good Samaritan Hospital
   b. Grandview Medical Center
   c. Kettering Medical Center
   d. Miami Valley Hospital

2. In the event that overcrowding and rerouting exists at the same time at two (2) hospitals in the geographic groups below and a third hospital needs to reroute, by prior agreement no hospitals will reroute for two (2) hours.
   a. Greene Memorial and two (2) of the following: Miami Valley, Kettering, Grandview, Southview or Miami Valley Hospital South.
   b. Upper Valley Medical Center and two (2) of the following: Good Samaritan, Grandview, Miami Valley, or Wilson Memorial Hospital in Sidney.
   c. Any three (3) of the following: Atrium Medical Center, Southview, Sycamore, Kettering and Miami Valley South.
   d. Wayne Hospital, Good Samaritan and Grandview.

PKB/pbt
8-24-09
REROUTE EMERGENCY
EMS – HOSPITAL PROPOSED PAIRING

Reroute Emergency is declared when three or more hospitals in the same geographic area are extremely overcrowded and none of the three hospitals feel that they can stop rerouting. When a rerouting emergency is declared the following procedures will be followed.

1. The third rerouting hospital will coordinate communications with the designated administrative person in charge, at the other rerouting hospitals.
2. Each GDAHA hospital will notify the home base EMS agencies assigned to them, as well as other squads that they normally notify out of the GDAHA service area, and inform them that a Rerouting Emergency has been declared. Squads should transport patient to their assigned “home base” hospital. Only Good Samaritan Hospital will notify Harrison Township. Only Miami Valley Hospital will notify Dayton Fire Department. Only Sycamore Hospital will notify Miami Township.
3. Following notification of EMS, hospitals able to maintain Normal Operation should not change their status on the web page to Reroute Emergency, until conditions warrant that change.
4. Squads should CONSIDER utilizing outlying hospitals or other hospitals in normal status.
5. Children’s Medical Center will remain available to accept patients up to 21 years of age. (No maternity patients.)
6. Rerouting Emergency DOES NOT apply to the following categories of patients: respiratory and/or cardiac arrest; Trauma, maternity, serious burns, high risk neonatal, dialysis patient, air medical transport, hyperbaric, cardiac or stroke alert patients, or recently discharged patients (48 hours).
7. After a maximum of two (2) hours all hospitals in Reroute Emergency must reevaluate their status.
8. Squads should transport patients to their assigned reroute emergency “home base” hospital(s) as follows:
   Note: During mutual aid or out of district transport as aided agency/district

<table>
<thead>
<tr>
<th>Good Samaritan Hospital</th>
<th>Greene Memorial Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brookville</td>
<td>Cedarville Township</td>
</tr>
<tr>
<td>Clayton, Englewood, Union</td>
<td>Cedarville University</td>
</tr>
<tr>
<td>Dayton Fire Department #16</td>
<td>Central State University</td>
</tr>
<tr>
<td>Eaton</td>
<td>Jefferson Township</td>
</tr>
<tr>
<td>Harrison – Turner Road</td>
<td>Miami Township</td>
</tr>
<tr>
<td>New Lebanon</td>
<td>New Jasper Township</td>
</tr>
<tr>
<td>Lewisburg</td>
<td>Silvercreek Township</td>
</tr>
<tr>
<td>Trotwood</td>
<td>Spring Valley</td>
</tr>
<tr>
<td>West Alexandria</td>
<td>Xenia</td>
</tr>
<tr>
<td>North Central</td>
<td>Xenia Township</td>
</tr>
<tr>
<td>Phillipsburg</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>McCullough Hyde Hospital-Oxford</th>
<th>Grandview Medical Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camden</td>
<td>Box 21</td>
</tr>
</tbody>
</table>

| Upper Valley Medical Center    |                                          |
| Miami County Squads            |                                          |

139
Kettering Medical Center
Dayton Fire Department #15, 18
Kettering (4 units)
Miami Valley Fire District #55
Moraine (4 units)

Miami Valley Hospital
Dayton Fire Department #11, 10
Jefferson Township
Oakwood
Riverside
University of Dayton Public Safety

Miami Valley Hospital South
Bellbrook
Kettering #36
Sugarcreek (2 units)
Washington Township #44

Southview Medical Center
Clearcreek Township
Miami Valley Fire District #52
Washington Township #41, 42, 43, 45
Wayne Township

Sycamore Medical Center
Farmersville
Miami Valley Fire District #51, 53, 54
West Carrollton
Germantown
JEMS

Springfield Reg. Med Center
Hustead EMS
Madison Township
Harmony Township
Springfield Township
Pleasant Township
SFRD Medic
German Township
Pike Township
Bethel Township
Mad River Township
Moorefield Township

Wayne Healthcare
Darke County Squads

Wilson Memorial Hospital
Shelby County Squads

Atrium Medical Center
Gratis
Lebanon
Mason
Monroe
Turtlecreek
Middletown

Clinton Memorial Hospital-Wilmington
Massie Township

Reid Hospital-Richmond, Indiana
NW Fire – New Paris

Huber Heights Emergency
Huber Heights
New Carlisle
Bethel Miami

Soin Medical Center
Beavercreek
Fairborn

Pkb/pbt
8-24-09
A summary of the hospital reroute status is sent every 15 minutes. The following is an explanation of the abbreviations used.

**HOSPITAL NAME ABBREVIATIONS**

- **CMC** – Children’s Medical Center
- **GSH** – Good Samaritan Hospital
- **GVH** – Grandview Medical Center
- **GMH** – Greene Memorial Hospital
- **KMC** – Kettering Medical Center
- **SRMC** – Springfield Regional Medical Center
- **MVH** – Miami Valley Hospital
- **MVS** – Miami Valley Hospital South
- **AMC** – Atrium Medical Center, Franklin
- **SVH** – Southview Medical Center
- **SYC** – Sycamore Medical Center
- **UV** – Upper Valley Medical Center
- **VA** – Department of Veterans Affairs Medical Center
- **WAY** – Wayne Hospital, Greenville
- **WMH** – Wilson Memorial Hospital
- **WP** – 88th Medical Center, WPAFB

**HOSPITAL STATUS ABBREVIATIONS**

- **NORM** – Normal Operations
- **ALL** – Reroute all Emergency Patients
- **MTO** – Reroute all but major trauma (Major Trauma Only)
- **ICOR** - Reroute Intensive and/or Coronary Care Patients Only
- **FO** – Forced Open
- **EMR** – Emergency Reroute
- **CALL** – Special Situation Call the ED
- **LOCK** – Internal Emergency ED is Closed
Below is a list of hospitals and the specialty capabilities of each (Stroke, PCI, Trauma, etc.):

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Adult Trauma Center</th>
<th>Pedi Trauma Center</th>
<th>Inpatient Burn Center</th>
<th>Interventional Cath Lab 24/7</th>
<th>Labor &amp; Delivery</th>
<th>Stroke Thrombolitics</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atrium</td>
<td>Level 3</td>
<td></td>
<td></td>
<td>Cardiac only</td>
<td>Y</td>
<td>Y</td>
<td>2,4</td>
</tr>
<tr>
<td>Children’s</td>
<td>Level 2</td>
<td></td>
<td></td>
<td>Cardiac only</td>
<td>Y</td>
<td>Y</td>
<td>2,8</td>
</tr>
<tr>
<td>Good Sam</td>
<td></td>
<td></td>
<td></td>
<td>Cardiac only</td>
<td>Y</td>
<td>Y</td>
<td>2,4</td>
</tr>
<tr>
<td>Grandview</td>
<td>Level 3</td>
<td></td>
<td></td>
<td>Cardiac only</td>
<td>Y</td>
<td>Y</td>
<td>2,4,8</td>
</tr>
<tr>
<td>Greene</td>
<td>Level 3</td>
<td></td>
<td></td>
<td></td>
<td>Y</td>
<td>Y</td>
<td>2,7</td>
</tr>
<tr>
<td>Huber Heights-GVH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jamestown</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kettering</td>
<td>Level 2</td>
<td></td>
<td></td>
<td>Cardiac, Stroke</td>
<td>Y</td>
<td>Y</td>
<td>2,4,8</td>
</tr>
<tr>
<td>Mercy-Urbana</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Y</td>
<td></td>
<td>5,7</td>
</tr>
<tr>
<td>Miami Valley</td>
<td>Level 1</td>
<td>Y</td>
<td>Cardiac, Stroke</td>
<td></td>
<td>Y</td>
<td>Y</td>
<td>2,4,5,8</td>
</tr>
<tr>
<td>Miami Valley South</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reid</td>
<td></td>
<td></td>
<td></td>
<td>Cardiac only</td>
<td>Y</td>
<td>Y</td>
<td>2,7</td>
</tr>
<tr>
<td>Soin Medical</td>
<td>Level 3</td>
<td></td>
<td></td>
<td></td>
<td>Y</td>
<td>Y</td>
<td>2,7</td>
</tr>
<tr>
<td>Southview</td>
<td></td>
<td></td>
<td></td>
<td>Cardiac only</td>
<td>Y</td>
<td>Y</td>
<td>4,8</td>
</tr>
<tr>
<td>Springfield RMC</td>
<td></td>
<td></td>
<td></td>
<td>Cardiac only</td>
<td>Y</td>
<td>Y</td>
<td>2,5</td>
</tr>
<tr>
<td>Sycamore</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Y</td>
<td></td>
<td>2,4,7</td>
</tr>
<tr>
<td>Upper Valley</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Y</td>
<td>Y</td>
<td>2,5</td>
</tr>
<tr>
<td>VA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wayne</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Y</td>
<td>Y</td>
<td>2,7</td>
</tr>
<tr>
<td>West Chester</td>
<td>Level 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2,5</td>
</tr>
<tr>
<td>Wilson</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Y</td>
<td>Y</td>
<td>2,5</td>
</tr>
<tr>
<td>WPAFB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Y</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

2 Sexual Assault Nurse Examiners available 24/7
4 Accredited Stroke Center
5 Pediatric Capability
6 No Alerts to Facility
7 Has a “Cardiac Alert Program” No Interventional Cath lab on site
8 Hand Trauma Center
<table>
<thead>
<tr>
<th>Step</th>
<th>Atrium</th>
<th>CMC</th>
<th>GSH</th>
<th>GVH/SVH</th>
<th>GMH</th>
<th>KMH/SYC</th>
<th>MVH</th>
<th>MVH South</th>
<th>UVMC</th>
<th>SRMC</th>
<th>MMH</th>
<th>Wayne</th>
<th>Wilson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Updated</td>
<td>May-09</td>
<td>Sep-04</td>
<td>Sep-07</td>
<td>Sep-07</td>
<td>Sep-07</td>
<td>Sep-07</td>
<td>Sep-07</td>
<td>Sep-07</td>
<td>Sep-07</td>
<td>Sep-07</td>
<td>Sep-07</td>
<td>Sep-07</td>
<td>Jul-09</td>
</tr>
<tr>
<td>Wash Area</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Notify EMS Supervisor</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Report to hospital</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Hospital Contact</td>
<td>ED Charge Nurse &gt; EMS Coordinator</td>
<td>NICU Charge Nurse</td>
<td>ED Staff or Infection Control</td>
<td>ED Staff &gt; EMS Coord.</td>
<td>ED Staff &gt; Infection Control</td>
<td>Security &gt; AOC</td>
<td>Charge Nurse</td>
<td>Resource Supervisor</td>
<td>Infection Control</td>
<td>Infection Control</td>
<td>Infection Control</td>
<td>ED Staff</td>
<td></td>
</tr>
<tr>
<td>Complete &quot;Request for Information Form for HCWs&quot;</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Register w/ ED</td>
<td>Encouraged</td>
<td>If desired</td>
<td>If desired</td>
<td>If desired</td>
<td>If desired</td>
<td>If desired</td>
<td>If desired</td>
<td>If desired</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Have your lab drawn</td>
<td>If Desired</td>
<td>If source is high risk (not routine)</td>
<td>Y</td>
<td>Y</td>
<td>If desired</td>
<td>If desired</td>
<td>If desired</td>
<td>If desired</td>
<td>If/indicated</td>
<td>If indicated</td>
<td>If indicated</td>
<td>If indicated</td>
<td></td>
</tr>
<tr>
<td>Have source lab drawn (HIV, Hep B, Hep C)</td>
<td>Y (Rapid HIV Available)</td>
<td>Y</td>
<td>Y (Rapid HIV avail.)</td>
<td>Y (Rapid HIV avail.)</td>
<td>Y</td>
<td>Y (Rapid HIV avail.)</td>
<td>Y (Rapid HIV avail.)</td>
<td>Y (Rapid HIV avail.)</td>
<td>Y (Rapid HIV avail.)</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow-up Consult YOUR Fire/EMS Dept. policies/procedures</td>
<td>EMS Coordinator</td>
<td>Follow dept policy</td>
<td>Infection Control</td>
<td>EMS Coord. or designee &amp; Follow dept policy</td>
<td>Work Plus Dept</td>
<td>Infection Control &amp; Follow dept policy</td>
<td>Infection Control or Admin Officer</td>
<td>Infection Control or Admin Officer</td>
<td>Occupational Health</td>
<td>Infection Control</td>
<td>Infection Control</td>
<td>Follow EMS policy</td>
<td></td>
</tr>
<tr>
<td>Comments</td>
<td>Have request for information forwarded to EMS Coordinator</td>
<td>Anti-Viral medication available in ER if indicated</td>
<td>Infection Control Doc available 24/7 for RN contact if needed</td>
<td>Infection Control is notified of Exposure Incident by EMS coordinator</td>
<td>EMS Coord. is to be paged 24/7 by ED or Prehospital care provider</td>
<td>Give form to EMS Coord. Who forwards to Infection Control for follow up</td>
<td>Security page Infection Control Mon-Fri 8-4 AM &amp; PM; Other times including holidays</td>
<td>Charge Nurse to page Infection Control M-F 8-4 AM &amp; PM; Other times including holidays</td>
<td>Place form in locked box in EMS Room for EMS Manager to forward to Occupational Health</td>
<td>Give form to EMS Coord who forwards to Infection Control for follow up</td>
<td>Give form to EMS Coord who forwards to Infection Control for follow up</td>
<td>Give form to EMS Coord who forwards to Infection Control for follow up</td>
<td>Hosp ED sends white copy of &quot;Request for Info by EMS Worker&quot; to Inf. Preventionist. Yellow copy to EMS coordinator. Inf. Preventionist oversees communication of results &amp; related documentation has been completed per policy.</td>
</tr>
</tbody>
</table>

**Hospitals’ Guide for Public Safety Workers’ (PSW) Exposures**
Updated 7-7-09 (Data subject to change – check periodically to ensure most current)
<table>
<thead>
<tr>
<th>Hospital Name</th>
<th>PHONE</th>
<th>FAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children’s Medical Center</td>
<td>641-4444</td>
<td>641-5301</td>
</tr>
<tr>
<td>Good Samaritan Hospital</td>
<td>275-9722</td>
<td>276-8217</td>
</tr>
<tr>
<td>Maternity</td>
<td>734-7579</td>
<td></td>
</tr>
<tr>
<td>Grandview Hospital</td>
<td>723-3419</td>
<td>461-0020</td>
</tr>
<tr>
<td>Huber Heights-GVH</td>
<td>558-3338</td>
<td>552-3349</td>
</tr>
<tr>
<td>Kettering Medical Center</td>
<td>395-8080</td>
<td>395-8347</td>
</tr>
<tr>
<td>Miami Valley Hospital</td>
<td>208-2440</td>
<td>208-2521</td>
</tr>
<tr>
<td>Maternity</td>
<td>208-2408</td>
<td>208-2651</td>
</tr>
<tr>
<td>Miami Valley South Health Center</td>
<td>438-2662</td>
<td>438-2262</td>
</tr>
<tr>
<td>Southview Hospital</td>
<td>401-6226</td>
<td>401-6158</td>
</tr>
<tr>
<td>Maternity</td>
<td>401-6950</td>
<td>401-6861</td>
</tr>
<tr>
<td>Sycamore Hospital</td>
<td>384-8766</td>
<td>384-8729</td>
</tr>
<tr>
<td>Veterans Administration Medical Center</td>
<td>262-2172</td>
<td>267-5364</td>
</tr>
</tbody>
</table>

Hospitals in **bold type** ask to be called for every patient.

<table>
<thead>
<tr>
<th>Hospital Name</th>
<th>PHONE</th>
<th>FAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atrium Medical Center, Middletown</td>
<td>513-424-3924</td>
<td>513-420-5133</td>
</tr>
<tr>
<td>Greene Memorial Hospital, Xenia</td>
<td>937-372-2297</td>
<td>937-352-3501</td>
</tr>
<tr>
<td>Jamestown (MVH)</td>
<td>937-374-5274</td>
<td>937-374-5275</td>
</tr>
<tr>
<td>Mercy Memorial Hospital, Urbana</td>
<td>937-484-6160</td>
<td>937-484-6183</td>
</tr>
<tr>
<td>McCullough-Hyde Hospital, Oxford</td>
<td>513-524-5353</td>
<td>513-523-0144</td>
</tr>
<tr>
<td>Reid Memorial Hospital, Richmond, IN</td>
<td>765-983-3161</td>
<td>765-983-3038</td>
</tr>
<tr>
<td>Soin Medical Center</td>
<td>937-702-4525</td>
<td>937-702-4509</td>
</tr>
<tr>
<td>Springfield Regional Medical Center</td>
<td>937-328-9372</td>
<td>937-328-9185</td>
</tr>
<tr>
<td>Upper Valley Medical Center, Troy</td>
<td>937-440-4600</td>
<td>937-440-4346</td>
</tr>
<tr>
<td>Wayne Hospital, Greenville</td>
<td>937-547-5777</td>
<td>937-547-5790</td>
</tr>
<tr>
<td>West Chester Hospital</td>
<td>513-298-8888</td>
<td>513-298-8978</td>
</tr>
<tr>
<td>Wilson Memorial Hospital, Sidney</td>
<td>937-498-5300</td>
<td>937-498-4201</td>
</tr>
<tr>
<td>WPAFB Medical Center, Fairborn</td>
<td>937-257-3295</td>
<td>937-656-1673</td>
</tr>
</tbody>
</table>

Hospitals in **bold type** ask to be called for every patient.
Region 2 EMS Providers,

This Training Manual has been produced as a result of countless hours of work by a diverse cross section of the EMS community in the Region. The members of the Standing Orders and Continuing Education Committees, and the RPAB have put countless hours into this document. The groups have responded to changes in medication availability and have used your input to improve these documents.

There are companion documents and additional resources that are available for you to either view online / download for further explanation on the Training / Testing process for 2015. The first of these is the “2015 Implementation Guide”. It addresses the new philosophy, CEUs, and other important information regarding the testing. The other is the Ohio Public Safety “Scope of Practice” document. We hope to have additional supplemental material posted on the website soon.

The Training Manuals and processes would not have been possible without the strong foundation left by the past chairpersons of the Continuing Education Committee: Anne Boyd, Steve Stein and David Gerstner. David has worked on the EMS Council for 30 continuous years. A special debt of gratitude is owed to Pat Kincer, who has not only provided invaluable feedback for the AEMT Orders, but contributed numerous hours of editing to make all four of our Standing Orders books better, more concise and eminently more readable. Thank you to all who have volunteered and critiqued these manuals.

I would like to take time for a special thank you to Bill Mangas and Terri Norris who have managed the written testing process for many years. Terri has managed the GMVEMSC website for years. She has moved on to new adventures. Best wishes!

I would also like to thank Dr. Randy Marriott and all RPAB members.

Sincerely,
Jack A. Mix
Standing Orders Co-Chair
Throughout Standing Orders:

- All SQ injections are now IM injections, per latest medical recommendations.
- Maximum pediatric dose of Lidocaine is now consistent at 100 mg.
- Max pediatric IV Versed dose changed to 2 mg

Communicating with Hospital or Medical Control:

- Updated lists of hospitals requesting notifications.
- Run Documentation Requirements: Must leave a run sheet within three hours.

Non-Initiation of Care:

- Added statement that CPR may be discontinued if it was started inappropriately on patients who meet non-initiation criteria.

DNR:

- CPAP is not allowed under DNR-CC

Field Termination:

- Language strengthened encouraging field termination if patients do not respond to ALS.
- Field Termination without ALS Equipment section combined into Field Termination section.
- Reminder: EMS must speak directly with MCP for field termination

Initial Care:

- Added definition of SAMPLE, and referenced location for OPQRST.

Airway Maintenance:

- EMT and Advanced EMT are permitted to suction tracheostomies.

Spinal Immobilization Protocol:

- New section.
- Defines different methods of spinal immobilization (not an absence of spinal immobilization)
- Removed previous optional section on Spinal Clearance.

Pain Control Protocol:

- New Section.
- Fentanyl dosing deleted throughout book; covered in this section.

Electronic End-Tidal CO2 Monitors:

- Explained titration of ventilations to effect CO2 levels.

Intubation:

- Added optional camera-assisted intubation.

Tension Pneumothorax Relief:

- Clarified that needle decompression is appropriate in pediatric patients.

Sedate to Intubate:

- Requirements for STI clarified to match Optional Manual.

IO Insertion:

- Corrected IO section to reflect tibial insertion in both adult and pediatrics.
Cardiac Arrest, Smoke Inhalation, and Haz-Mat Cyanide Sections:

- Deleted Amyl Nitrite and Sodium Nitrite; neither is available in our region.
- Cyanide antidotes are no longer carried in the Drug Bags.
- Both Hydroxocobalamin (Cyanokits) and Sodium Thiosulfate are in multiple caches in each of eight counties throughout the region, and are available by contacting 937-333-USAR (8727).
- Strongly recommends that agencies immediately call for the cyanide antidote cache whenever:
  - Dispatched on a report of a person trapped in a structure fire
  - Dispatched on a report of an incident involving cyanide
  - Report of a Mayday or firefighter down in a structure fire

Cardiac Arrest: Intra-Arrest

- Optional therapeutic hypothermia may now be started Intra-Arrest.

Suspected Cardiac Chest Pain:

- Must have two identifiers on EKGs.
- Women were deleted from the list of those having atypical presentations. Evidence now indicates that incidence of atypical presentations is no higher in females than in males.

Shock:

- Deleted orthostatic vitals as evidence indicates no value in the field.
- Changed goal SBP from “greater than” to “approximately” (~) 100 for hemorrhage to be consistent with permissive hypotension concept of trauma resuscitation.

Stroke:

- Changed time limits for stroke symptoms.

Trauma Emergencies:

- Added permissive hypotension concept to penetrating trauma to chest and abdomen.

Hemorrhage Control:

- Wording changed pertaining to Combat Gauze.

Burns/Smoke Inhalation:

- Cyanide antidote changes as noted before.
- In radiation burns, clarified that other medical emergency issues are treated first, to be consistent with national and regional guidelines.

Altered Level of Consciousness and Poisoning/Overdose Sections:

- Now encouraged to transport patients who have been given Narcan.

Pulmonary Edema:

- Morphine and Fentanyl were removed, as evidence now indicates that they are not beneficial and may be harmful when used for pulmonary edema.

Asthma/Emphysema/COPD:

- If a breathing treatment is given, encourage transport.
- If patient arrests, consider bilateral decompression.
- Changed Epinephrine doses to be consistent with new national guidelines, including simultaneous use of both EpiPen and EpiPen, Jr.
Allergic Reaction/Anaphylaxis:
- Deleted constricting bands.
- Changed Epinephrine doses to be consistent with new national guidelines, including simultaneous use of both EpiPen and EpiPen, Jr.

Combative Patients:
- Initial dose for chemical restraint in pediatrics is not call for orders, but repeats are.
- Deleted Diazepam from combative patients.
- IM Ketamine must be given into LARGE muscle groups.

SALT Triage:
- Updated SALT Triage section to be consistent with Dayton MMRS triage materials and training programs.
- Clarified that LSIs must be within scope of practice.
- Clarified that Yellow patients can have significant injuries.
- Added “good-bad” mnemonic for four key questions.

Haz-Mat:
- Updated Hydroxocobalamin (Cyanokit) to match newer single vial packaging and instructions (same changes made in Smoke Inhalation order, and Drug Sheet).
- Hydroxocobalamin is no longer an optional drug since it will be available to all agencies on request starting in early 2014.
- Removed Amyl Nitrite and Sodium Nitrite from orders and Drug Sheets (except Nitrite as JITSO).
- Clarified that no cyanide antidotes (including Sodium Thiosulfate) are carried in Drug Bags, and describes how and when to call to obtain it during incidents.
- Clarified eligibility for Dayton MMRS antibiotics in event of biological attack or event

Regional Hospital Notification System (RHNS):
- Updated list of hospitals notified.

Drug Sheets:
- Third Trimester is a contraindication for administration of ASA.
- Added Calcium Gluconate
- Pulmonary edema removed from indication for Fentanyl (or Morphine)
- Lidocaine doses were changed.
- Added Ondansetron PO as a JITSO in case of IV Ondansetron shortage.

Skills Sheets:
- Added CPAP skill sheet

Hospital Capabilities List:
- Updated
2015 PARAMEDIC STANDING ORDERS CHANGES

Assessment & Treatment
Do not d/c a pump needle assembly or hitting suspend on the pump. Just treat the hypoglycemia.
Under cardiac arrest changed CPR time to 1-2 minutes
Renal dialysis pts presenting in wide complex bradycardia should spark consideration for
treatment of hyperkalemia. Deleted use of Dopamine for bradycardia.
Perform manual BP on all pts presenting with s/s of shock.
Reworded combat gauze sentences
Cold water submersion is an acceptable method for cooling heat stroke patients. You will see this
more with athletic trainers cooling athletes in full body bags.
Additional APGAR score should be done at 10 minutes postnatal.
Asthmatic added as indication for CPAP

Crush Syndrome
Crush syndrome protocol added

Drugs
Pedi dose of Midazolam modified
Added dosing for pediatric hydroxocobalamin
Changed wording and order of Naloxone to reflect the order of use: IN, IV, IM.
IM route of Midazolam as last resort has been deleted.
Pedi IM dose of Midazolam changed to 0.2 mg/kg.
Pedi dose of Midazolam changed to 0.2 mg/kg
Fentanyl dosing for Peds amended.
Norepinephrine added to replace Dopamine t
Deleted IM route of Ondansetron, changed Pedi dose.

Drug Bag Exchange Program
Additional requirements for drug bag program
Drug bags can only be exchanged between the same department, and not different departments.

Indications/Contraindication changes:
ASA
Chloride and calcium gluconate. Added statement for dialysis patient in bradycardia.
Cipro.
Dextrose.
Diazepam,
Diphenhydramine.
Doxycycline, and changed dosage.
Duodotes.
Epi
Glucagon
Ipratropium
Lidocaine
Lidocaine Gel
Midazolam
Nitro
Sodium Bicarb
Vasopressin
Policies
Added Addendum H: Ambulance Restocking Policy
Added Addendum I: Protocol Testing Compliance
Changes in phone number and hospital capabilities

Spinal Immobilization
Spinal Immobilization Protocol has been amended to include pediatric patients.
Spinal Immobilization Protocol changed to age of 70 to match trauma triage age.

Stroke
Modification to transporting a stroke pt flat.
Modified destinations for stroke pts.

Terminology
The term Intermediate has been changed to AEMT.

NOTES: