GMVEMSC PREHOSPITAL PARAMEDIC STANDING ORDERS
TRAINING MANUAL VERSION January 1, 2014
Adult: Patients 16 Years Old and Above
Pediatric: Patients < 16 Years old will be in Pink and Bulleted with a "**P**"
ADULT and PEDIATRIC ORDERS INDEX

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.
- As with the Drug Bag Exchange Program and several other pieces of medical equipment, 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 ($ETCO_2$) 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.

A Sections that apply only to Adults are bulleted with an "**A**".

P 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.

G 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, Kettering Medical Center, McCullough-Hyde, Miami Valley Maternity, Miami Valley South, Soin, Southview, Springfield Regional Medical Center, Sycamore, 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, or if a call is enough. Paramedics who have transmitted an EKG are expected to call and to speak with the MCP.
- Basics and Intermediates 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

A ♦ 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:

A 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

A 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.

A 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.

A ♦ **EMS must contact MCP directly to receive consent for field termination.**

A 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: **S**igns and Symptoms, **A**llergies, **M**edications, **P**ast medical history, **L**ast oral intake, **E**vents 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:**
  - **A** Shock: run wide-open using macro-drip or blood tubing. Decrease fluid rate if systolic blood pressure (SBP) >100.
  - **P** 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}
- 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. Exception: hypoglycemic diabetic patient with an insulin pump (see "Maintenance of Existing Medication Pumps" section for details.)
- Bring medications or a list of the medications with the patient to the hospital; include the dose and frequency administered.
- For treatment of hypoglycemia:
  A D10: 250 ml, (250 ml = 25 grams of dextrose and 500 ml = 50 grams of dextrose).
  P D10: 5 ml/kg to a max dose of 250 ml.
  P 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 is being 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.

NOTE: This protocol does not apply to patients less than 16 years of age.

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. 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 > 65
   - 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, frostbite; fractures, dislocations, and sprains; and abdominal pain including unilateral flank pain).

P ♦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 as soon as practical 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 box 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).**
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).

AIRWAY MAINTENANCE

- **O_2** as needed. Use the following rates as guidelines:
  - 2 LPM by nasal cannula (NC) for patient with COPD

- 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

Up to 1 year	30-60	7-9 years	16-24
1-3 years	20-40	10-14 years	16-20
4-6 years	20-30	15+ years	12 -20

- Consider patient airway anatomy for the appropriate selection of the airway adjunct.

A 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.

- When deciding whether to intubate, consider the following:

A 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:

- Capnography is the "gold standard." CO_2 detection methods are recommended.
- 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 CO_2 ($ETCO_2$) Monitors—Capnography

Waveform $ETCO_2$ 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 $EtCO_2$ 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 $ETCO_2$ of 35-45 mm/Hg. To increase CO_2, slow down ventilations, and to decrease CO_2, speed up ventilations. **MAINTAIN THIS DEVICE UNTIL PATIENT CARE IS TRANSFERRED TO THE RECEIVING HOSPITAL.**

End Tidal CO_2 Detector ($ETCO_2$) -- Colorimetric

Colorimetric Limitations:

- The Colorimetric $ETCO_2$ detector may be utilized as a confirmation device for patients in cardiac arrest, **IF** it shows the presence of CO_2 (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 CO_2 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 $ETCO_2$ 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, Pharyngotracheal 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 **O_2.**

  P **Lidocaine 1.5 mg/kg** nebulized with 8-10 LPM O_2 **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 0.15 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}

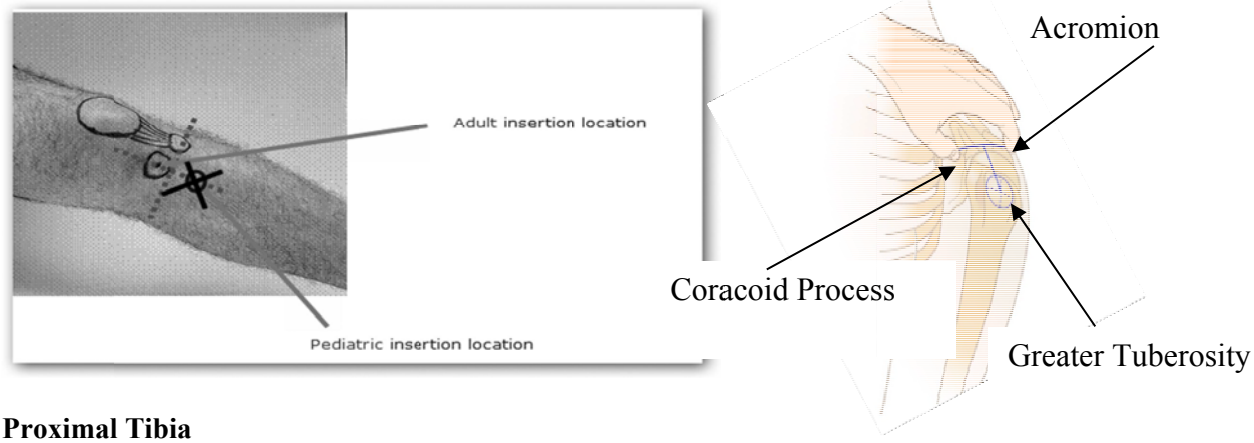
- Use of IO devices is limited to patients who are unresponsive or hemodynamically unstable; and then, only when less invasive means are ineffective or not available (e.g., IM Glucagon, {IN Narcan or Versed}).

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:

	Adults	**Pediatric**
Arrest:	**Humerus**	**Tibia**
Non-arrest:	**Tibia**	**Tibia**



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).
3. Support flexed knee with towel under calf.
4. Prep the skin and insert needle according to manufacturer's directions.
5. Use 10-15^{O} 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.
    Lidocaine 2% 0.5 mg/kg (max 100 mg) **via IO** for pain associated with IO 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 Embolism: 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 anticlotting 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.

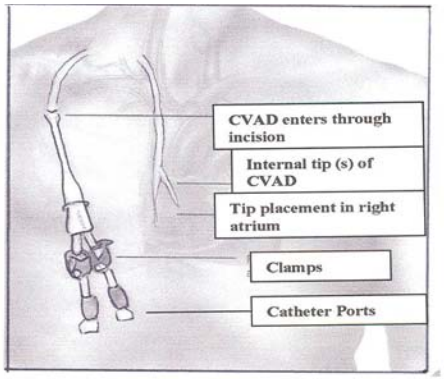
- Catheter Damage: Use a 10 ml syringe or larger when drawing off the blood. Smaller syringes create too much pressure. After verifying blood return, flush catheter with 10 ml of NS with a 10 ml or larger syringe utilizing a pulsating technique. Administer medications slowly to avoid creating too much pressure. *Do not use catheter if unable to get blood return.*
- **DO NOT USE A PRESSURE INFUSION DEVICE ON CVADs**.

INTERNAL DIALYSIS FISTULA

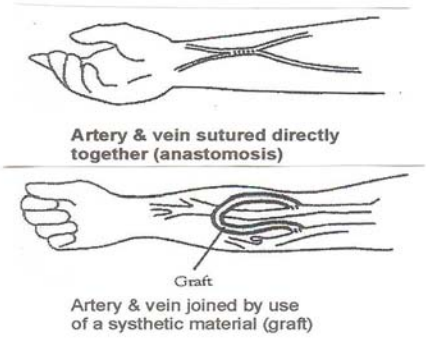
A dialysis fistula is an artificial passage between an artery and a vein used to gain access to the bloodstream for hemodialysis. In hemodialysis, the patient's blood is pumped through the internal arteriovenous fistula. These internal shunts may be an artery and vein being sutured directly together (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.



CENTRAL VENOUS ACCESS



VASCULAR ACCESS - HEMODIALYSIS

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.

NOTE: The exception is a diabetic patient with an insulin pump who is hypoglycemic. If NOT familiar with the device, disconnect the tubing from the pump (first choice) or remove needle assembly from the patient (second choice). Do NOT turn off the pump. The patient could receive a large bolus of insulin if the wrong button is pressed. If familiar with the device, you may "Suspend" the administration of insulin.

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.

A 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.

A 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.

2010 AHA CPR GUIDELINES

	ADULTS	CHILDREN	INFANTS	NEWBORNS
CPR ORDER	Compression, Airway, Breathing C A B			
COMPRESSION DEPTH	At Least 2 Inches	1/3 Depth Of Chest (About 2")	1/3 Depth Of Chest (About 1 ½ ")	1/3 Depth Of Chest
COMPRESSION RATE	at least 100 per minute			120/MIN
COMPRESSION NOTES	Minimize interruptions in chest compressions Attempt to limit interruptions to < 10 seconds			
COMPRESSION TO BREATHS RATIO	30:2 1 OR 2 Person CPR	30:2 1 Person CPR 15:2 2 Person CPR		3:1
ADVANCED AIRWAY	1 breath every 6-8 seconds (8-10 breaths/min.) About 1 sec per breath duration No interruptions of compressions			40-60 breaths /min.
RESCUE BREATHING	1 breath every 5-6 seconds (10-12 breaths/min)	1 breath every 3-5 seconds (12-20 breaths/min)		40-60 breaths/min

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.)

P 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"

H's	**T's**
Hypovolemia	Toxins
Hypoxia	Tamponade, Cardiac
Hypo-/hyperkalemia	Tension Pneumothorax
Hydrogen Ion (Acidosis)	Thrombosis (Coronary, Pulmonary)
Hypoglycemia	Trauma
Hypothermia	

CARDIAC ARREST: RENAL DIALYSIS

- For renal dialysis patients in arrest:
  - **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.

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.

A **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 (**1mg 1:10,000** and **1mg 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

P 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 2 minutes

A **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 (1mg 1:10,000 and 1mg 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}
  o {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.
  o Trauma is a contraindication to this protocol.
  o {Do NOT start protocol if patient is hypothermic (<34°C/93.2°F) or if patient is conscious.}
  o {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.}
  o Complete neurologic exam including GCS and pupil response.
  o {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**}
  o {Treat for appropriate rhythm with medications given in normothermic IV}

- {Notify hospital so they are ready to continue patient cooling}.
- If SBP remains < 100, **Dopamine drip, start at 5 mcg/kg/min** (max dose 20 mcg/kg/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 {$ETCO_2$ > 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 32-34^0 C (89.7-93.2^0 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.

ACUTE MYOCARDIAL INFARCTION (AMI)

Establish communications with MCP as early as possible and advise them of a Cardiac Alert. It is imperative that the paramedic speaks directly with the physician. Rerouting of Interventional Facilities does not apply to Cardiac Alerts. Follow the appropriate treatment considerations for specific AMI types.

All patients with 12-lead EKG evidence of AMI (>1 mm ST elevation in 2 contiguous leads) are included in the Cardiac Alert Program, unless they meet one of the Cardiac Alert Exclusion Criteria.

- Cardiac Alert Exclusion Criteria
  - Patients with a LBBB (QRS Greater than 120 ms)
  - Patients with a Pacemaker rhythm
- Speak directly to the MCP.
  - Advise MCP that you are transporting a CARDIC ALERT patient.
  - Give patient report with vitals, history, physical exam, and other pertinent information.
  - Give interpretation of 12-lead EKG.
  - Give name of patient's cardiologist, if known.

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. The receiving facility in return will activate a Cardiac Alert, prompting the response of the On-Call Cath Lab team members.

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 after performing a diagnostic 12-lead EKG will be considered an included patient for the Cardiac Alert Program. (>1mm ST elevation in 2 contiguous leads)
- The EMS Provider will complete the Cardiac Alert Checklist and contact the receiving facility as soon as possible. The EMS Provider must speak directly with the MCP.

Exclusion Criteria For The Cardiac Alert Program:

- Patient with a LBBB will not be included
- 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 Medical Control Physician when you call, but have the courage of your convictions. You may be right and the computer is wrong.

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 3° 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

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.
  - **A** Consider **Atropine 0.5 mg IV up to 3 mg** while awaiting pacer.
  - **A** Consider **Midazolam 2 mg slow IV** prior to pacing.
  - **A** Start pacing at 70 BPM, 20 mA and increase until mechanical capture is obtained.
- **Dopamine** use for hypotension is discouraged.

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
- **Dopamine** should be the first treatment for significant hypotension rather than fluid boluses.

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

A Obtain {12-lead EKG}.
A For adequate perfusion, observe and monitor.
A For poor perfusion:
  - Consider **Atropine 0.5 mg IV, may repeat x 5 (up to total of 3 mg).**
  - Consider **Dopamine 5 mcg/kg/min. Max dose is 20 mcg/kg/min.** Titrate to adequate BP.
  - If treatments are ineffective begin pacing:
    - If time permits, **Midazolam 2mg 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/IO 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 0.15 mg/kg (Max dose 2 mg), slow IV/IO** 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 0.15 mg/kg (Max dose 2 mg), slow IV**.

- Cardioversion 1 J/kg

P If no response, Cardioversion 2 J/kg

SHOCK

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**, 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, **Dopamine drip, start at 5 mcg/kg/min;** titrate to maintain SBP > 100.

P If SBP remains < 100, **Dopamine drip, start at 5 mcg/kg/min.** Maximum dose is 20 mcg/Kg/min. Titrate to maintain adequate perfusion

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, **Dopamine drip, start at 5 mcg/kg/min;** 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

- 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.

- {If signs of cerebral herniation are present and numeric $EtCO_2$ 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.

- Complete Cincinnati Prehospital Stroke Scale. If one or more signs on this is abnormal, call a Stroke Alert.
  - 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.")
- Assess blood glucose. 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
  - Document amount of **D10** administered in milliliters.
  - 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 awaking with symptoms, then consider transport to an interventional facility using air transport if needed.

- Contact MCP with a Stroke Alert for advice regarding transport destination if greater than 8 hours since last seen normal. There are multiple factors that determine treatment options and time frames.

- Transport the patient with the bed flat, to increase cerebral perfusion.
- 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

A Miami Valley Hospital
A 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.

A 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**.

P Start IV with a large bore catheter, macro drip tubing and 20 ml/kg of **NS**.

A IV flow rates are as follows:
  - Keep open rate for major head trauma with adequate perfusion
  - **A** IV wide open if the patient has inadequate perfusion (including head trauma) utilizing {IV Pressure Infusion Pump or Bag} or similar equipment if available.

A Titrate IV flow rates to maintain SBP ~ 100.

A **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.

- **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.

- Consider Pain Control Protocol.

PRE-HOSPITAL FIELD TRIAGE

- Patients to be taken to the nearest hospital:
  - Unstable airway
  - Blunt trauma arrest within 5 minutes or penetrating trauma arrest within 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

G One proximal long bone fracture in MVC only

- Evidence of pelvic fracture (exception: isolated hip fracture)
- Spinal cord injury with paralysis

A 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 of 2 or more body systems
- Crush injury to head, neck, torso, or extremities proximal to knee or elbow

YES =Transport to Trauma Center	**NO – Assess Physiologic**
Alert Trauma Team	

Physiological Adult:

A GCS less than or equal to 13
A Loss of consciousness greater than five minutes at any time
A Alteration in level of consciousness with evidence of head injury at time of exam or thereafter
A Failure to localize pain
A Respirations < 10 or > 29
A Intubation
A Tension pneumothorax
A Pulse > 120 in combination with any other physiologic criteria
A SBP < 90 or absent radial pulse with carotid pulse present

Physiological Pediatric:

- **P** GCS less than or equal to 13
- **P** Loss of consciousness greater than five minutes at any time
- **P** Alteration in level of consciousness with evidence of head injury at time of exam or thereafter
- **P** Failure to localize pain
- **P** Evidence of poor perfusion (e.g., weak distal pulse, pallor, cyanosis, delayed capillary refill, tachycardia)
- **P** Evidence of respiratory distress or failure (e.g., stridor, grunting, retractions, cyanosis, nasal flaring, hoarseness, or difficulty speaking)

Physiological Geriatric:

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

YES = Transport to Trauma Center	NO = Evaluate Mechanism of Injury
Alert Trauma Team	

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

A Fall > 20 feet

P 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

YES = Consider Trauma Center	NO = Check Special Situations
May consult with Medical Control Physician if needed	

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)

P Congenital disorders

YES = Consider Trauma Center	NO = To Local Hospital

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.
- **P** 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.

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.}
  - Only use wide, flat materials such as cravats or BP cuffs as improvised tourniquets.
  - 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.
  - Tighten the tourniquet until the bleeding stops.
  - 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 the chest or abdomen. Do not use granular agents. Place in direct contact with the source of bleeding and apply a pressure dressing.}
- Treat for hypovolemic shock as indicated.

HEAD INJURY

- Evaluate patient condition:
  - Level of consciousness
  - Pupillary size and reaction
  - Glasgow Coma Scale

GLASGOW COMA SCALE

	< 2 YEARS OLD		ADULT & PEDIATRIC > 2 YEARS OLD	
EYES	SPONTANEOUSLY	4	SPONTANEOUSLY	4
	TO VOICE	3	TO VOICE	3
	TO PAIN	2	TO PAIN	2
	NO RESPONSE	1	NO RESPONSE	1
VERBAL	COOS, BABBLES	5	ORIENTED	5
	IRRITABLE CRY, CONSOLABLE	4	CONFUSED	4
	CRIES TO PAIN	3	INAPPROPRIATE WORDS	3
	MOANS TO PAIN	2	GRUNTS, GARBLED SPEECH	2
	NO RESPONSE	1	NO RESPONSE	1
MOTOR	NORMAL MOVEMENTS	6	OBEYS COMMANDS	6
	WITHDRAWS TO TOUCH	5	LOCALIZES PAIN	5
	WITHDRAWS TO PAIN	4	WITHDRAWS TO PAIN	4
	FLEXION (DECORTICATE)	3	FLEXION (DECORTICATE)	3
	EXTENSION (DECEREBRATE)	2	EXTENSION (DECEREBRATE)	2
	NO RESPONSE	1	NO RESPONSE	1

- Signs of cerebral herniation:
  - Dilated and unresponsive pupils, bradycardia, posturing, and decreased mental status.

A Ventilate at 20 breaths per minute when signs of cerebral herniation are present.
  - {Ventilate to maintain $EtCO_2$ readings of 30 mmHg (30 torr)}.

P Ventilate at a rate of ten faster than normal respiratory rate when the signs of cerebral herniation are present.

Maintain good ventilation at rate of about one breath every 5-6 seconds (10-12 per minute), with high flow oxygen. Prophylactic hyperventilation for head injury is not recommended. Cerebral herniation

syndrome is the only situation in which hyperventilation (rate of 20 per minute; pediatric rate of 10 faster than the normal rate) is indicated.

Hypoventilation increases the level of CO_2 in the brain, causing cerebral vasodilatation and increased swelling. Hyperventilation decreases the level of CO_2 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 pupil, 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:
  - Establish vascular access and consider {warmed} fluids.
  - Treat bradycardia only if hypotensive.
- If patient arrests:
  - CPR continuously
  - If severe hypothermia (< 86° F (30° C)) is suspected, limit defibrillation attempts to one and withhold medications except on orders from MCP.
  - If body temperature is > 86° F (30° C), follow normal arrest protocols.
  - Intubate and oxygenate the patient with {warmed and humidified}100% **O_2**.
  - 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 **O_2** {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% **O_2** 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.

A ♦ Administer **Hydroxocobalamin (Cyanokit) 5 grams, slow IV infusion**, over 15 minutes. 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.

A **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.}

P ♦ Administer **Sodium Thiosulfate**:
- If > 25 kg, 50 **ml (12.5 g) slow IV.**
- If < 25 kg then **1.65 ml/kg (412.5 mg/kg) of the 25% solution**, not to exceed 50 ml (12.5 grams), slow IV.

- 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 **O_2** 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.
- 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.

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

A If {CPAP} or {Bi-PAP} is available, its use is encouraged prior to the initiation of drug therapy.

A 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.

ASTHMA/EMPHYSEMA/COPD

- Consider **Albuterol 2.5 mg** and **Ipratropium 0.5 mg, nebulized** with **O_2** @ 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 **O_2 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:
  - Patient arrests.
  - Patient has unilateral or bilateral diminished breath sounds and is hemodynamically unstable.

A For asthmatics in distress:

- **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** If < 30 kg, **EpiPen Jr or Epi (1:1,000) 0.01 mg/kg IM (**max 0.5 mg)**.**
- **P** ♦ May repeat **Epi (1:1,000) 0.01 mg/kg IM** after 5 minutes **(**max 0.5 mg)**.**

A A patient who has received a breathing treatment should be transported for evaluation.

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** If < 30 kg, **EpiPen Jr or Epi (1:1,000) 0.01 mg/kg IM (**max **0.5 mg).**
- **P** ♦ May repeat **Epi (1:1,000) 0.01 mg/kg IM (**max **0.5 mg)** after 5 minutes**.**

- 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 O_2 flowing at 8-10 LPM.
- If a conscious patient requires intubation, consider:
  - Applying **Lidocaine Jelly** to the ET tube.
  - **A** **Lidocaine 100 mg {IN** half dose per nostril} or nebulized with 8-10 LPM **O_2**
  - **P** **Lidocaine 1.5 mg/kg** nebulized or {IN} with 8-10 LPM **O_2.** 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.**

A For patients unresponsive to **Epi, administer Glucagon 1mg IV/IM**

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, disconnect patient from the pump or "suspend" the device if familiar with its operation.
- Maintain normothermia. Unconscious diabetics are often hypothermic.
- Consider patient restraint before administration of **Naloxone**.

A If respiration is impaired and there is a high index of suspicion of narcotic overdose and patient does not respond to **D10**, administer **Naloxone, up to 2 mg slow IV** or **Naloxone 2 mg {IN}** or **4 mg IM.** Titrate to adequate respirations.

P **Naloxone:**
- o **≤ 20 kg 0.1 mg/kg slow IV/{IN}/IM/ETT (Max Dose 2 mg)** may repeat x one
- o > 20 kg **2 mg, slow IV/{IN}/IM/ETT,** may repeat x one
- o **Naloxone slow 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**

NOTE: THE IM ROUTE OF MIDAZOLAM SHOULD BE A LAST RESORT.

P If seizing, **Diazepam 0.2 mg/kg (Max Dose 5 mg) slow IV,** or **Midazolam 0.15 mg/kg {IN}** (Max dose 4 mg) or **Midazolam 0.15 mg/kg slow IV,** (Max dose 2 mg) or **Midazolam 0.15 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)
  P **D10 (5 ml/kg),** maximum single dose of 250 ml.
  - Document amount of **D10** administered in milliliters.
  - 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, disconnect patient from the pump or "suspend" the device if familiar with its operation.
- Maintain normothermia.
- When obtaining history be sure to include the following:
  - Description of seizures, areas of body involved, and duration
  - 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:
  - Oculogyric crisis (spasmodic deviation of eyes in all directions generally fixed upward.)
  - Buccolingual crisis (protrusion of tongue with slurred speech)
  - Trismus (closing of the jaw due to spasm of the muscles also called lockjaw.)
  - Difficulty in speaking
  - Facial grimacing
  - Torticollis crisis (stiff neck with deviation of the head with the chin pointing to the other side)
  - Opisthotonus (extreme back arching)
  - Tortipelvic crisis—typically involves hip, pelvis, and abdominal wall muscles, and causes difficulty with walking.
  - Mental status is unaffected.
  - Vital signs are usually normal.
  - 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)
  - Document amount of **D10** administered in milliliters.
  - 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

- Consider patient restraint before administration of **Naloxone**.
- If patient has a pulse, **Naloxone** should be administered *before* inserting an ETT.

- **Naloxone 2 mg {IN}**
- If no arousal occurs after three minutes, establish an IV and administer **Naloxone** slow IV, titrated to adequate respirations.
- If unable to establish an IV and no {MAD}, **Naloxone up to 4 mg IM.**

P **Naloxone:**
- **≤ 20 kg 0.1 mg/kg slow IV/{IN}/IM/ETT (Max Dose 2 mg)** may repeat x one
- > 20 kg **2 mg, slow IV/{IN}/IM/ETT,** may repeat x one
- **Naloxone slow IV** is preferred, but it may be given {IN} before IV is established.
- Titrate to adequate respirations.

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

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

Crack/Cocaine

A 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.**

NOTE: THE IM ROUTE OF MIDAZOLAM SHOULD BE A LAST RESORT.

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:

A ♦ **Calcium Chloride, 1 gm slow IV**

P ♦ **Calcium Chloride 10% 0.2 ml/kg (20 mg/kg) slow IV** (Max Dose 500 mg)
- ♦ **Glucagon 1 mg IM or IV**
- 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 (Zofran) 4 mg slow IV,** for nausea or vomiting.

P Consider **Ondansetron (Zofran) 0.1 mg/kg slow IV,** (Max Dose 4 mg) for recurrent active vomiting. The length of transport should be evaluated when administering Ondansetron for the pediatric patient.

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 $\geq$ 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.

CHILDBIRTH

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 and five 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 O_2 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 minute and 5 minutes post delivery**

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

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 136cmH_2O.

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/IO** 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/IO/ETT every 3 minutes until respirations improve.

P **NEWBORN**: **D10 (2 ml/kg)** if blood glucose < 40

SAFE HARBOR

P Voluntary Separation of Newborn Infant

P 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.

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

P 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.

P Transport the infant to the hospital.

FEVER

P Transport all infants < 2 months of age with a history or reported temperature of > 38.0^0 C (100.4^0 F) or < 35.6^0 C (96.0^0 F).

CHILD ABUSE/NEGLECT

P 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. Pediatric Public Social Services Agencies

County	Phone	After Hours Phone	Fax
Butler	(513) 887-4055	(513) 868-0888	(513) 887-4260
Champaign	(937) 484-1500	Contact County SO (937) 484-6092	(937) 484-1506
Clark	(937) 327-1700	(937) 324-8687	(937) 327-1910
Darke	(937) 548-7129	(937)-548-2020	(937) 548-8723
Greene	(937) 562-6600	(937) 372-4357	(937) 562-6650
Miami	(937) 335-4103	Contact County SO (937) 440-3965	(937) 339-7533
Montgomery	(937) 224-5437	(937) 224-5437 (same as daytime)	(937) 276-6597
Preble	(937) 456-1135	(937) 456-1135 (same as daytime)	(937) 456-6086
Shelby	(937) 498-4981	Contact County SO (937) 498-1111	(937) 498-1492
Warren	(513) 695-1558	(513)695-1600	(513) 695-1800

ELDER ABUSE/NEGLECT

A 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 reporting responsibilities.

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.

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

PATIENT COMPETENCY/CONSENT/PSYCHIATRIC/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}** (5mg 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, i**f 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 0.15 mg/kg {IN} /IM** (Max dose 4 mg) **or Midazolam 0.15 mg/kg slow IV** (Max dose 2 mg) as a chemical restraint.

P ♦ Call MCP for repeat {**Ketamine**}, **Midazolam**.

SALT TRIAGE SYSTEM (MCI)

The **SALT** (**S**ort, **A**ssess, **L**ife-Saving Intervention, **T**reatment/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.
  - 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.
  - 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.
  - *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
  - Secondary Triage **must** be performed on all victims prior to transport.
  - 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.
  - 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.
  - 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.
  - 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.
  - **Do not overload any hospital**, regardless of transport distance to other hospitals.
  - 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.
  - As Transport assigns patient allocation, consider the likelihood that the closest hospital(s) may be overwhelmed by patients who were not transported by EMS.
  - 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
  - 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
- 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:

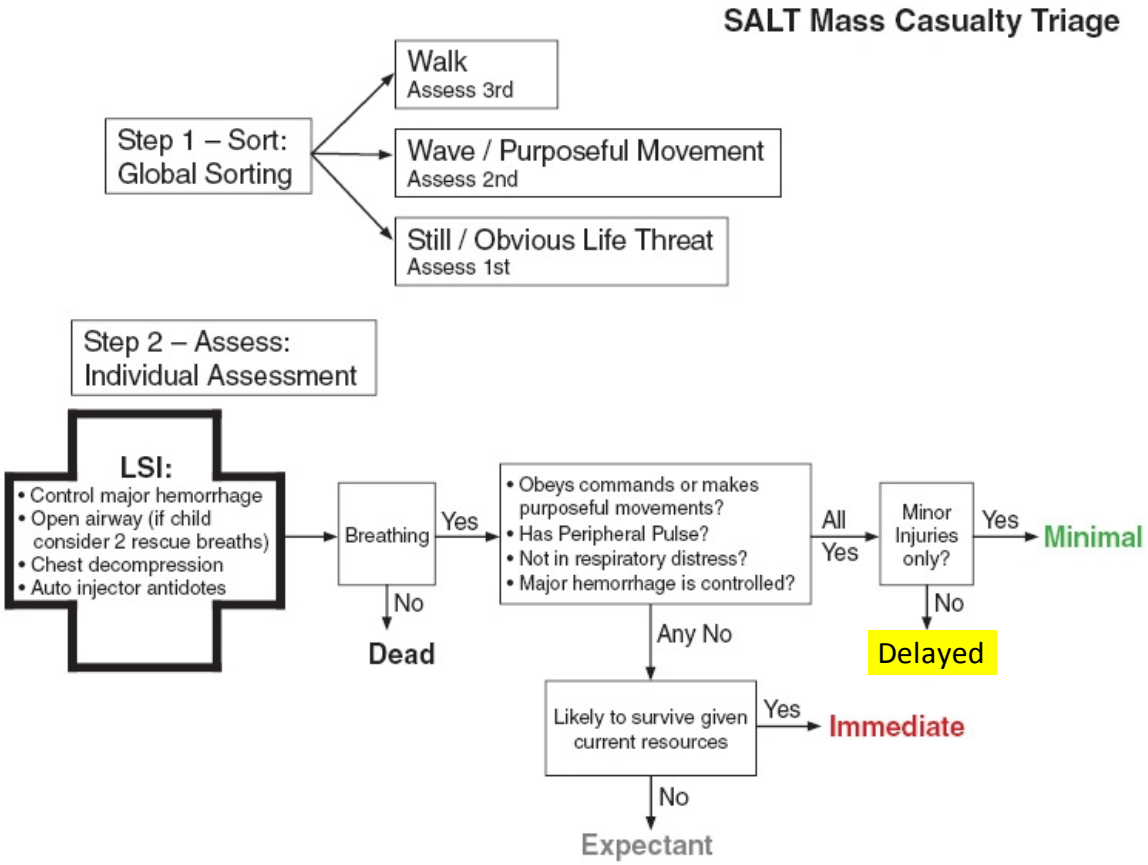
- **Only** correct life-threatening problems during triage.
  - Control major hemorrhage
  - Open airway (if child, consider giving two rescue breaths)
  - Needle chest decompression
  - Auto injector antidotes

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.**



CRISIS STANDARDS OF CARE IN MASSIVE EVENTS

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.
  - 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
  - ♦ 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:
  - Patients who have continuous IV chemotherapy at home.
  - 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.
  - Patients taking oral chemotherapy drugs.
- Potential routes of exposure include:
  - Absorption through skin or mucous membranes
  - Accidental injection by needle stick or contaminated sharps
  - Inhalation of drug aerosols, dust, or droplets
  - 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.
  - Handling leakage from tubing, syringe, and connection sites
  - Disposing of hazardous drugs and items contaminated by hazardous drugs
  - Handling the body fluids of a patient who received hazardous drugs in the past 48 hours
  - Cleaning hazardous drug spills
- Guidelines for PPE:
  - 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.
  - Disposable non-permeable gowns
  - Respirators: NIOSH-approved respirator mask
  - Eye and face protection: wear a face shield whenever there is a possibility of splashing.
- Procedures:
  - Use universal precautions when handling any body fluids of a patient who has received chemotherapy within 48 hours.
  - Accidental skin exposure: Remove contaminated garments, place in leak-proof plastic bag, and immediately wash contaminated skin with soap and water. Rinse thoroughly.
  - Accidental eye exposure: immediately flush eye with saline solution or water for at least 30 minutes or until patient transport is completed.
  - Wipe up liquids with an absorbent pad or spill-control pillow.
  - Disposal of hazardous drugs and materials contaminated with hazardous drugs per MSDS or Haz Mat Team direction
  - Report and document spills as required.
- For more information, contact:
  - The homecare agency that is supplying the infusion.
  - The physician who ordered the infusion.
  - A hospital pharmacy, if necessary (there should be a label on the IV bag with the drug's name, concentration and dosage.
  - 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 Kit antidotes**.
- Provide 100% $\mathbf{O_2}$

- If unconscious, provide 100% **O_2** 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.
  - 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.

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.

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: ORGANOPHOSPHATE/NERVE AGENT
ORGANOPHOSPHATE/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 EMT-Basics 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 over 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:
  - **2 DuoDotes** (**Atropine** (2 mg) and **2-PAM** (600 mg) administered through a single auto-injector).

- **2 Pediatric AtroPens (**1 each: 0.5 mg, 1.0 mg)
- 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.**
  - To obtain Dayton MMRS antidotes: call **937-333-USAR (8727). The closest department with an antidote cache will respond as a mutual aid request.**
  - Dayton MMRS antidotes may be requested for incidents too small to require a CHEMPACK.
  - 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:
  - Obtain MCP approval
- ♦ 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:
  - The Organophosphate or nerve agent has been identified, or patients are exhibiting signs and symptoms of exposure.
  - **AND** the need for antidotes is greater than the available resources.
  - 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:

88th Medical WPAFB
Atrium Medical Center
Children's Medical Center
Community Blood Center
Dayton MMRS Med. Director
GDAHA
Good Samaritan Hospital
Grandview Hospital
Green Memorial Hospital
Huber Heights-GVH
Joint Township Memorial
Kettering Medical Center
Kindred Hospital
Lifecare Hospital
Mercy Hospital
Miami Valley Hospital
Miami Valley Hospital South
Miami Valley - Jamestown Mont.
Co. Of. of Emer Mgmt.
Reg. Healthcare Syst. Coord.
Reg. MMRS/RMRS Coord.
Reg. Public Health Coord.
Reid Memorial Hospital
Soin
Southview Hospital
Springfield Reg. Med. Cen.
Sycamore
Upper Valley Medical Center
VA Medical Center
Wayne Healthcare
Wilson Memorial Hospital

{PARAMEDIC STUDY GUIDE FOR DEPARTMENTS WITH 12 LEAD EKGS}

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 women, 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 elevation. 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 **R**ight 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 <u>not</u> 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

I	**aVR**	**V1**	**V4**
II	**aVL**	**V2**	**V5**
III	**aVF**	**V3**	**V6**

Lead Localization

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

AMI Recognition/Lead Localization

Lateral	**I, aVL, V5, & V6**
Inferior	**II, III, & aVF**
Septal	**V1 & V2**
Anterior	**V3 & V4**

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 re**a**dily abbreviated using a period have been left out of this list.

abdomen	abd
abdominal aortic aneurysm	AAA
abortion	AB
acute coronary syndrome	ACS
acute myocardial infarction	AMI
acute pulmonary edema	APE
acute renal failure	ARF
acute respiratory distress/syndrome	ARD/ARDS
administer rectally	p.r.
advanced cardiac life support	ACLS
advanced directive	AD
advanced life support	ALS
after	$\overline{p}$
against medical advice	AMA
alcohol	ETOH
alert & oriented	A&O
alert/verbal/pain/unresponsive	AVPU
antecubital fossa	AC
arteriosclerotic heart disease	ASHD
as necessary or needed	prn
as soon as possible	ASAP
aspirin	ASA
at	@
at bedtime	h.s.
atrial fibrillation	a-fib
atrial flutter/ tachycardia	AF/AT
atrioventricular	AV
automatic external defibrillator	AED
automatic transport ventilator	ATV
backboard	BB
bag-valve mask	BVM
basic life support	BLS
before	$\overline{a}$
below the knee amputation	BKA
births, number of	para
black	B
blood pressure	BP
blood sugar	BS
body substance isolation	BSI
body surface area	BSA
bowel movement	BM
bradycardia	brady
breaths per minute	bpm
by mouth	po
by or through	per
cancer	CA
capillary refill time	CRT
carbon dioxide	CO_2
carbon monoxide	CO

centimeter	cm.
cerebral palsy	CP
cerebrospinal fluid	CSF
cerebrovascular accident	CVA
cervical immobilization device	CID
cervical spine	C-spine
change	Δ
chest pain	CP
chief complaint	CC
chronic obstructive pulmonary disease	COPD
chronic renal failure	CRF
circulatory/sensory/motor	CSM
clear to auscultation bilaterally	CTAB
complaining of	c/o
congestive heart failure	CHF
coronary artery bypass graft	CABG
coronary artery disease	CAD
cubic centimeter	cc.
date of birth	DOB
dead on arrival	DOA
decreasing	$\downarrow$
degree(s)	°
delirium tremens	DTs
Dextrose in water – 50%	D50
Dextrose in water - 10%	D10
diabetes mellitus	DM
diagnosis	Dx
dilation & curettage	D&C
discontinue	d/c
disease	DZ
do not resuscitate	DNR
drop (s)	gtt (s)
dyspnea on exertion	DOE
electrocardiogram	ECG / EKG
emergency department	ED / ER
endotracheal tube	ETT
epinephrine	EPI
Equal to or greater than	$\geq$
Equal to or less than	$\leq$
esophageal detection device	EDD
esophageal obturator airway	EOA
estimated	Est.
estimated time of arrival	ETA
every	$\overline{q}$
external jugular vein	EJV
fever of unknown origin	FUO
for example	e.g.
foreign body	FB
four times a day	qid

fracture	fx
French	Fr.
gallbladder	GB
gastrointestinal	GI
gauge	Ga
Glasgow Coma Scale	GCS
gram	Gm
greater than	>
gunshot wound	GSW
hazardous materials	HazMat
head, ears, eyes, nose, throat	HEENT
Headache	H/a
heart block	HB
heart rate	HR
history	Hx
hypertension	HTN
Incident Command	IC
increasing	↑
inferior	inf.
insulin dependent diabetes	IDDM
intercostal space	ICS
intracranial pressure	ICP
intramuscular	IM
intranasal	IN
intraosseous	IO
intravenous	IV
intravenous push	IVP
joule	J
jugular venous distension	JVD
Kendrick Extrication Device	KED
kilogram	kg
labor & delivery	L&D
last normal menstrual period	LNMP
left	(L)
Left lower/upper extremity	LLE/LUE
Left lower/upper lobe	LLL/ LUL
left lower/upper quadrant	LLQ/LUQ
left bundle branch block	LBBB
less than	<
lights and siren	L&S
liters per minute	lpm
liter	L.
loss or level of consciousness	LOC
mass casualty event	MCE
mechanism of injury	MOI
medial	med.
medical control physician	MCP
metered dose inhaler	MDI
microgram	mcg.
milliequivalent	mEq
milligram	mg.
milliliter (same as cc.)	ml.
motor vehicle collision	MVC
multiple casualty incident	MCI
multiple sclerosis	MS
myocardial infarction	MI
nasal cannula	NC
nasopharyngeal airway	NPA
nausea & vomiting	N&V
newborn	NB
nitroglycerine	NTG
no known drug allergies	NKDA/NKA
non-rebreather mask	NRM
nonsteroidal anti-inflammatory	NSAID
normal saline	NS
normal saline lock	NSL
normal sinus rhythm	NSR
not applicable / available	n/a
nothing by mouth	NPO
O2 % of arterial blood	SpO2
obstetrics	OB
oropharyngeal airway	OPA
over the counter	OTC
overdose	OD
packs per day	p/d
parts per million	ppm
past medical history	PMH
patient	pt.
pelvic inflammatory disease	PID
penicillin	PCN
peptic ulcer disease	PUD
peripheral inserted central cath	PICC
pharyngo tracheal lumen airway	PtL
pregnancies, number of	Gravida
premature ventricular complex	PVC
prior to my arrival	PTA
pulmonary embolism	PE
pulse	P
pulse, motor, sensation	PMS
pulseless electrical activity	PEA
pupils (=), round, reactive to light & accommodation	PERRLA
right bundle branch block	RBBB
right lower/upper extremity	RLE/RUE
right lower/upper lobe	RLL/RUL
right middle lobe	RML
rapid sequence induction	RSI
respiratory rate	RR
returned to service	RTS
rheumatic heart disease	RHD
right	R
right lower/upper quadrant	RLQ/ RUQ
secondary / second degree	2°
sedate to intubate	StI
sexually transmitted disease	STD
shortness of breath	SOB
signs/symptoms	S/S
sino-atrial	SA

sinus bradycardia	SB
sinus tachycardia	ST
standard operating procedure	SOP
standing orders	SO
ST elevation MI	STEMI
subcutaneous	SQ
sublingual	SL
sudden infant death syndrome	SIDS
supraventricular tachycardia	SVT
symptoms	Sxs
systolic blood pressure	SBP
tachycardia	tach(y)
temperature	T
temporomandibular joint	TMJ
that is	i.e.
three times a day	tid
tibia	Tib
times	×
to keep open	TKO
tourniquet	TQ
tracheal deviation	TD
transport	Tx
transcutaneous pacing	TCP
transfer	x-fer
transient ischemic attack	TIA
treatment/medication	Rx
tuberculosis	TB
twice a day	bid

unconscious	unc.
unequal / not equal	≠
Unified command	UC
unknown	unk.
upper/lower	U/L
upper respiratory infection	URI
urinary tract infection	UTI
ventricular fibrillation	VF/ VFib
ventricular tachycardia	VT/ VTach
vital signs	VS
warm & dry	w/d
week	wk.
weight	wt.
white	W
with	$\overline{c}$
within normal limits	WNL
without	$\overline{s}$ or w/o
Wolff Parkinson-White	WPW
year	yr.
years old	y/o or yo

Greater Miami Valley EMS Council & Ohio EMS Region 2
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 aneurysm.
_____ 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 <u>REQUIREMENTS</u>

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 O_2 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 O_2 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
GI bleeding
Active ulcer disease
Hemorrhagic stroke
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/IO/IM or (AtroPen) Autoinjector
40 lbs to 90 lbs: 1.0 mg Atropine, IV/IO/IM or (AtroPen) Autoinjector
> 90 lbs: 2.0 mg Atropine, IV/IO/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:
Bradycardia, Asystole / PEA—No
Organophosphate Nerve Agent Poisoning—Yes

PEDI:
Brady—No
Organophosphate Nerve Agent Poisoning—Yes

CALCIUM CHLORIDE 10%

PACKAGED: 1 gm in 10 ml vial, 100 mg/ml

INDICATIONS:
Renal dialysis patient in cardiac arrest
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: 1000 mg (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:
VFib during cardiac resuscitation, in patients with digitalis toxicity
Hypercalcemia
Renal or cardiac disease when not in arrest

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

CALCIUM GLUCONATE

JITSO

INDICATIONS: Renal dialysis patient in arrest.
If Calcium Chloride on shortage, give Calcium Gluconate 10 ml IV

PACKAGED: 1 gm in 10 ml vial, 100 mg/ml

INDICATIONS:
Renal dialysis patient in cardiac arrest
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: 1000 mg (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:
VFib during cardiac resuscitation, in patients with digitalis toxicity
Hypercalcemia
Renal or cardiac disease when not in arrest

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

{CIPROFLOXACIN}
(Cipro)

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
Cardiac arrythmias
Bradycardia
QT prolongation
Myasthenia gravis

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

REQUIRES MCP:
ADULT: Yes
PEDI: Yes

D10

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:
Intracranial hemorrhage
Increased intracranial pressure
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
Chemical restraint for combative patient who presents with agitation or tachycardic with SBP > 100.
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:
Hypersensitivity to the drug
Substance abuse (use with caution)
Coma (unless the patient has seizures or severe muscle rigidity or myoclonus)
Shock
CNS depression as a result of head injury
Respiratory depression

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 for seizures, Yes for Chemical Restraint

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:
Patients taking monoamine oxidase (MAO) inhibitors
Hypersensitivity
Narrow angle glaucoma (relative)
Newborns
Nursing mothers

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

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

{DOXYCYCLINE}

PACKAGED: Tablet

INDICATION:
As prophylaxis against Anthrax, Cholera & Plague

ADULT:
500 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.

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:
Tachycardia
Hypersensitivity to atropine
Obstructive disease of GI tract
Obstructive uropathy
Unstable cardiovascular status in acute hemorrhage with myocardial ischemia
Narrow angle glaucoma
Thyrotoxicosis
Hypersensitivity to 2-PAM

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—l mg/10ml (8 in drug bag) 10 ml prefilled syringe
1:1,000—30 ml vial, 1 mg/ml
Autoinjector—0.3 mg or 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:
Hypovolemic shock (as with other catecholamines, correct hypovolemia prior to use)
Coronary insufficiency (use with caution)

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

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**. This is a call for orders age group because of side effects.
- P For severe pain relief when the patient is conscious and alert, not hypotensive, and complaining of severe pain, consider **Fentanyl, up to 1 mcg/kg, slow IV (Max dose 50 mcg)** provided appropriate normal SBP.
- P If patient meets criteria for **Fentanyl** and unable to obtain IV, give **Fentanyl 1 mcg/kg IM (Max dose 50 mcg).**
- P ♦May repeat **Fentanyl 1 mcg/kg, slow IV after 5 minutes** if still in pain and SBP > 100. **(Max dose 50 mcg).**
- P ♦Repeat dose of **IM Fentanyl 1 mcg/kg IM (Max dose 50 mcg)** (repeat no sooner than 30 minutes) is only indicated when transport is greater 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.
Bradycardia 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:
Hypersensitivity (allergy to proteins)

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

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.

PEDI: N/A

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: N/A

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:
Hypersensitivity to Atropine, Ipratropium, or derivatives

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

{KETAMINE}

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 IV/IO (Max dose 100 mg). Administer slow IV/IO.
  OR **5 mg/kg IM (Max dose 500 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 <u>only</u> Optional uses. Ketamine may not be used without approval of your Department Chief and Department Medical Director!

CLINICAL PEARLS

- **<u>****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.****</u>**

  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
Adams-Stokes syndrome
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:
Hypersensitivity to caine drugs

PRECAUTIONS AND SIDE EFFECTS:
None

REQUIRES MCP:
ADULT: No
PEDI: No

{MAGNESIUM-CONTAINING ANTACID}
(Maalox or Mylanta)

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

NOTE: THE IM ROUTE SHOULD BE THE LAST RESORT ROUTE.

PEDI:

Sedation: 0.15 mg/kg slow IV

Seizures: 0.15 mg/kg {IN} Max dose 4 mg) or 0.15 mg/kg slow IV (Max dose 2 mg) or 0.15 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 initial and repeat doses. 0.15 mg/kg {IN} (half dose in each nostril) or 0.15 mg/kg slow IV (Max dose 2 mg), or 0.15 mg/kg IM (Max dose 4 mg)

THERAPEUTIC ACTION:
Provides sedation

CONTRAINDICATIONS:
Hypersensitivity to benzodiazepines
Acute narrow glaucoma
Do not use in obstetrics, coma, shock or acute alcohol intoxication where vital signs are depressed.

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 slow IV, ETT if IV unsuccessful. Titrate to adequate respirations.
Or 4 mg IM

PEDI:

Naloxone:
≤ 20 kg **0.1 mg/kg slow IV/{IN}/IM/ETT (Max Dose 2 mg)** may repeat x one
> 20 kg **2 mg, slow IV/{IN}/IM/ETT,** may repeat x one
Naloxone slow 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.

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
Cerebral hemorrhage

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

REQUIRES MCP:
ADULT: No
PEDI: N/A

ONDANSETRON
(Zofran)

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

INDICATION:
For nausea or active vomiting

ADULT:
4 mg slow IV.
If unable to obtain IV, may give Ondansetron 4 mg IM, or PO.

PEDI:
0.1 mg/kg slow IV, PO (Max dose 4 mg)
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:
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

ONDANSETRON
(Zofran)

JITSO

PACKAGED: 4 mg tablet

INDICATION:
For nausea or active vomiting

ADULT:
4 mg PO

PEDI:
4 mg PO
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 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

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

CONTRAINDICATION:
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

CONTRAINDICATION:
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:
In patients with chloride loss from vomiting
Metabolic & respiratory alkalosis
Severe pulmonary edema
Abdominal pain of unknown origin
Hypoglycemia
Hypokalemia
Hypernatremia

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

PRECATIONS 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

PRECATIONS 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

VASOPRESSIN
JITSO

PACKAGED: 20 units/ml, 2 ml

INDICATION:
Asystole, PEA

- CPR 1-2 minutes
- {12 –lead EKG}
- **Vasopressin 40 units IV**
  - If unable to establish IV, **Epinephrine 2 mg ETT,** re[eat 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:
Not recommended for responsive patients with coronary artery disease.

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

REQUIRES MCP:
ADULT: No
PEDI: N/A

GREATER MIAMI VALLEY EMS COUNCIL
YEAR 2014 PARAMEDIC SKILL SHEETS

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)

Pediatric Mega Code - Separate Paramedic Mega Code sheets used for testing.

Use of Length / Weight Based Tape (covered in Mega Code)

IV and Medications

Trauma

Optional Skills

Adult Protocol Skill Evaluation
CPAP Assessment and Application

NAME: _____ DATE:_____

Level: ____EMT ____Advanced ____Paramedic

STEPS	1st Test	2nd Test	3rd Test
Prepares patient:			
Takes or verbalizes appropriate PPE precautions			
Assures adequate blood pressure 100 Systolic			
Positions patient in a position that will optimize ease of ventilation			
Assesses patient to identify indications for CPAP:			
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 /H_2O)			
Performs procedure:			
Places mask over patients mouth and nose (leave EtCO2 in place, if applicable)			
Goal of 10 cm H_2O 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			
			/30

ADULT PROTOCOL SKILL EVALUATION
SUBJECT: OROTRACHEAL INTUBATION OF THE NON-TRAUMA PATIENT

NAME_____ DATE_____

LEVEL: _____Paramedic _____ Intermediate

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

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

NAME_____ DATE_____

LEVEL: _____Paramedic _____ Intermediate

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

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

STEPS	**1st Test**	**2nd Test**	**3rd Test**
A. List the indications for nasotracheal intubation.			
B. List the equipment required to perform nasotracheal intubation.			
C. List the potential complications of nasotracheal intubation.			
D. Open the airway.			
E. Pre-oxygenate patient during preparations to intubate.			
F. If patient's condition is potentially due to trauma, maintain C-spine precautions.			
G. Assemble equipment, select the appropriate ET tube. (Usually 7.0 or larger)			
H. As you insert the ET tube into the most patent nostril.			
I. Pass the tube along the floor of the nostril until it passes into the back of the throat.			
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)			
• If using an Endotrol, flexing the tube with its control loop will help align it with the trachea.			
• 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.			
• 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.			
K. If using BAAM, there should be a definite increase in the sound of the whistle. Document and remove the BAAM.			
• 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.			
L. Ventilate the patient.			
M. Confirm tube placement, specifying at least 5 methods of verification: • Auscultation of epigastrium, anterior chest, midaxillary areas, epigastrium again • Condensation in the ETT • Visualization of tube passing between vocal cords **A** Depth of insertion ~ 25 cm marking at the nares • Chest rise and fall • Improvement in patient's color • Improved pulse-ox readings			
N. Secure tube in place & reassess placement after any movement of patient.			
O. Consider application of a cervical collar.			

EQUIPMENT:

1. Proper size endotracheal tube (7.0, 7.5, 8.0)
2. Lubricant
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
13. BAAM device

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 _____ Intermediate

STEPS	**1st Test**	**2nd Test**	**3rd Test**
A. List the indications for endotracheal intubation, with emphasis on situations in addition to cardiac arrest.			
B. List the equipment required to perform endotracheal intubation.			
C. List the potential complications of endotracheal intubation.			
D. Open the airway.			
E. Pre-oxygenate patient during preparations to intubate.			
F. Assemble equipment, select proper size ETT and laryngoscope blade (use length-based tape).			
G. Insert laryngoscope.			
H. Elevate the mandible.			
I. Insert the ET tube.			
J. Remove the stylet.			
K. Document ETT depth at front teeth. Tube marking at teeth = 3 x tube size			
L. Ventilate the patient.			
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 P 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 or proper taping method.
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

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

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 _____ Intermediate

Indication is a hemodynamically unstable patient.

STEPS	**1st Test**	**2nd Test**	**3rd Test**
A. List inclusion criteria: • MOI • Respiratory Distress or Failure • Diminished or absent breath sounds • Hemodynamic instability • Trauma arrest o Potential chest injury MOI with diminished/absent breath sounds • Cardiac arrest in the asthmatic patient with diminished breath sounds either unilateral or bilateral			
B. List exclusion criteria • Lack of inclusion criteria • **Needle decompression is not to be performed unless patient is hemodynamically unstable**			
C. BSI			
D. Prepare equipment.			
E. Explain procedure to the patient.			
F. Administer high concentration Oxygen			
G. If patient has a sucking chest wound, place non-porous dressing taped on 3 sides over wound so air can escape.			
H. Identify landmarks: 2nd or 3rd intercostal space at the mid-clavicular line on the affected side. Insertion site should be just superior to the rib margin.			
I. Prepare the skin with antiseptic.			
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.			
K. Remove the needle, keeping the catheter in place. Securely tape the catheter. Watch for kinks			
L. Reassess the patient for signs of improvement or complications • Possible complications: o Local hematoma o Pneumothorax/Hemothorax o Infection **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 _____ Intermediate _____Basic ____ First Responder

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

EQUIPMENT:

1. A.E.D. per organization type
2. Simulator

OPTIONAL PROTOCOL SKILL EVALUATION
SUBJECT: INTRAOSSEOUS INFUSION

NAME_____ DATE_____

LEVEL: _____Paramedic _____Intermediate

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

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.

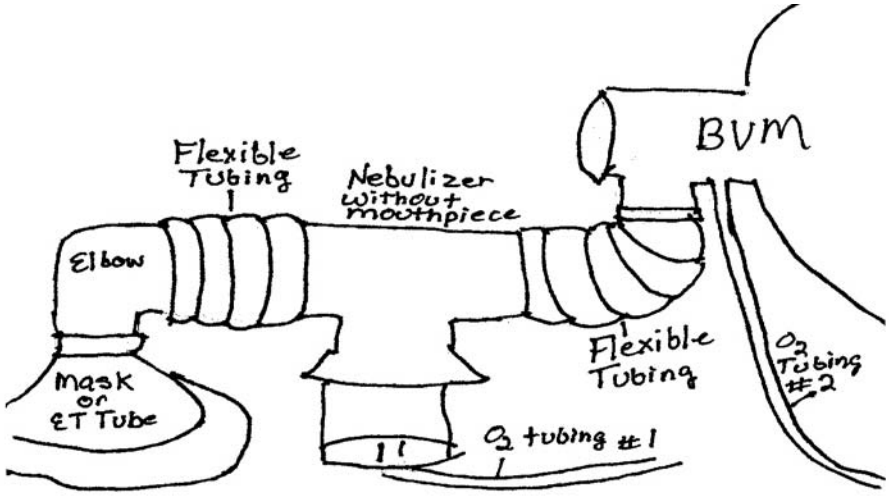
ADULT PROTOCOL SKILL EVALUATION
SUBJECT: USE OF NEBULIZER WITH BAG-VALVE DEVICE

NAME_____ DATE_____

LEVEL: _____Paramedic _____Intermediate

STEPS	**1st Test**	**2nd Test**	**3rd Test**
A. List the indications for the use of nebulized drugs with bag-valve device.			
B. Connect bag-valve to nebulizer unit without mouthpiece as shown in drawing.			
C. Connect mask to elbow, then connect elbow to nebulizer as shown in drawing.			
D. Place medications and saline solution in the reservoir well of the nebulizer.			
E. Connect 1st oxygen supply to nebulizer @ 8-10 LPM. and. 2nd oxygen supply to bag-valve @ 12-15 LPM. (If only one oxygen source, attach it to nebulizer.)			
F. Use mask with non-intubated patient or attach elbow to endotracheal tube of intubated patient.			
G. Begin bagging patient, being careful to keep reservoir well of the nebulizer in an upright position.			
H. If only one oxygen source is available, reconnect oxygen tubing to bag-valve device after medication has been administered.			
I. Monitor patient for effects of medications.			

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

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

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

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

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

NAME_____ DATE_____

LEVEL: _____ Paramedic _____ Intermediate _____ Basic

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: 0.4 ml = 2 mg 0.8 ml = 4 mg			
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.			

EPINEPHRINE 1:1,000 30 ml MULTI-DOSE VIAL			
A. List the indication(s) for subcutaneous administration of Epinephrine			
B. Demonstrate or voice infection precautions.			
C. Select the proper vial and concentration			
D. Check the medication for expiration date and for cloudiness or discoloration.			
E. Calculate the volume of medication needed.			
F. Select a TB syringe and needle of appropriate gauge.			
G. Leave the cap on the needle and attach it to the syringe.			
H. Prepare the vial: Remove cap Cleanse with alcohol prep Inject air and withdraw proper amount of medication			
I. Hold the syringe with the needle pointed straight up and depress the plunger until all air is ejected.			
J. Check the label and desired dosage again.			
K. Protect the needle until ready to administer the medication.			
L. Dispose of used ampule and remaining glass in appropriate container.			
M. Gently grasp the skin over the injection site and pinch it away from the underlying muscle.			
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.			
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.			
P. Inject the contents of the syringe at a slow, steady rate.			
Q. Withdraw the needle quickly and smoothly at the same angle in which it was inserted.			
R. Apply direct pressure over the injection site with a sterile 2x2, then apply a sterile adhesive strip.			
S. Dispose of equipment appropriately.			
T. Note any effect of medication on the patient.			
U. Document on run report - time medication given; name, concentration, and dosage given; and medication's effect on patient.			
EPIPEN ADMINISTRATION			
A. Evaluate the patient, with attention to S&S of anaphylaxis.			
B. Demonstrate or voice infection precautions.			
C. Obtain the EpiPen auto-injector. (Indicate Adult / Pedi doses)			
D. Check the medication for expiration date and for cloudiness or discoloration.			
E. Remove the safety cap.			
F. Select the injection site.			
G. Push the injector firmly against the site.			
H. Properly discard the injector.			
I. Monitor the patient and record the results of the treatment.			
J. Discuss precautions and side effects			
D10			
A. List the indication for use			
B. Demonstrate or voice infection precautions.			
C. Indicate dose and administration Adults/Peds			
D. Check the medication for expiration date and for cloudiness or discoloration.			
E. Discuss precautions and side effects (administer in continuously running IV)			

GLUCAGON			
A. List the indication for use			
B. Demonstrate or voice infection precautions.			
C. Indicate dose and administration Adults/Peds			
D. Check the medication for expiration date and for cloudiness or discoloration.			
E. Discuss precautions and side effects			
NALOXONE			
A. List the indication for use			
B. Demonstrate or voice infection precautions.			
C. Indicate dose and administration Adults/Peds			
D. Check the medication for expiration date and for cloudiness or discoloration.			
E. Discuss precautions and side effects			
FENTANYL			
A. List indications for use			
A. Demonstrate or voice infection precautions			
B. Indicate dose and routes of administration for Adults/Peds			
C. Check the medication for expiration date and for cloudiness or discoloration.			
D. Discuss precautions and side effects			
KETAMINE			
A. List indications for use			
B. Demonstrate or voice infection precautions			
C. Indicate dose and routes of administration for Adults/Peds			
D. Check the medication for expiration date and for cloudiness or discoloration			
E. Discuss precautions and side effects			

Revised: 11/2012

ADULT PROTOCOL SKILL EVALUATION
SUBJECT: 12-Lead EKG Acquisition

NAME_____ DATE_____

LEVEL: _____Paramedic ____ Intermediate ____Basic

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

ADULT PROTOCOL SKILL EVALUATION
SUBJECT: 12-Lead EKG Interpretation

NAME_____ DATE_____

LEVEL: _____Paramedic

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

{LARYNGEAL MASK AIRWAY}

NAME_____ DATE_____

LEVEL: _____Paramedic _____ Intermediate _____Basic

STEPS	**1st Test**	**2nd Test**	**3rd Test**
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		
LMA Airway Size	Patient Size	Maximum Cuff Inflation Volumes
1	Neonates/Infants up to 5 kg. (11 lb.)	4 ml. air
1.5	Infants 5 - 10 kg. (22 lb.)	7 ml. air
2	Infants/Children 10 - 20 kg. (44 lb.)	10 ml. air
2.5	Children 20 - 30 kg. (66 lb.)	14 ml. air
3	Children 30 - 50 kg. (110 lb.)	20 ml. air
4	Adults 50 - 70 kg. (154 lb.)	30 ml. air
5	Adults 70 - 100 kg. (220 lb.)	40 ml. air
6	Adults > 100 kg. (220 lb.)	50 ml. air

DRUG BAG EXCHANGE PROGRAM

PURPOSE

To administer and monitor a drug bag exchange program between participating Fire/EMS/ Private Ambulance departments and hospitals to improve the level and quality of pre-hospital care by ensuring that participating members are in full-service at all times.

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 added to the program.
- There is an annual maintenance fee for each ALS/BLS bag and BLS bag.
- There is an approved policy for the replacement of lost or stolen drug bags (see Addendum A).
- To maintain the integrity of the drug bag contents, pharmacy departments' seal stocked drug bags with a blue plastic device. The only time the seal should be broken is for the administration of pre-hospital emergency medical treatment by approved EMS personnel. After pre-hospital emergency medical treatment use, the drug bag should be cleaned and re-sealed with the red plastic device contained inside the drug bag.
- The following action will 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:
  - Notification of the Fire Chief, EMS Administrator, or Private Ambulance Administrator.
  - The governing agency, e.g., city council, trustees, OMTB for private ambulance service, will be notified that action is being initiated for the Fire/EMS/Private ambulance service.
  - All drug bags will be removed from all locations of said Fire/EMS/Private ambulance service.
  - The GMVEMS Council will distribute 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:

- The GMVEMSC Listserve
- 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.
- Submission of a copy of the annual OH State Board of Pharmacy drug license(s) for each location(s) with vehicles that carry drug bags no later than 1 January ***to GMVEMS Council.*** If a drug license update is needed after January 1, then the renewal license is due to GDAHA by 1 March of that year.
- ***No department which participates in the Drug Bag Program shall possess a DEA License.***
- Area hospital participation according to Council guidelines. (See Addendum B).
- Medical advisor approval for the use of the GMVEMS Council Operating Protocols. Approval consists of 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 new medication or 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 an annual skills check and annual written test between 1 January and 31 May unless otherwise scheduled by Council (see Non-Compliance Procedures).
- Maintain all drugs 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
- 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 (only if Medical Advisor approved)
  - ALS Provider:
    - Oxygen
    - Suction (non-powered is acceptable)
    - Monitor/defibrillator or AED & intubation equipment
- EMS providers are required to inventory each opened pouch, discard any used sharps and clean any contaminants from bag used and apply a red seal before exchanging for replacement bag. The red seal will be looped through the proximal portion of the zipper tab (not the outermost portion of the zipper tab).
- 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)

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.*
  - When you open a controlled drug 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**. DO NOT** throw blue seals in drug bag

- **Intermediate Level**
  - *A side compartment labeled "intermediate"*
  - The Intermediate can access all outside compartments to obtain medications per their protocol. They cannot access the Center inside compartment or Center Controlled medication compartment.
  - When you open the controlled drug 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. DO NOT throw blue seals in drug bag
- **Basic Life Support**
  - **The RED BLS compartment on a ALS/BLS bag** or BLS fanny-pack style bag will carry the following medications ONLY: Nitrostat, EpiPen, EpiPen Jr. and baby Aspirin. The Basic EMT can only access this compartment to treat his/her patient per protocol.
  - Each bag is labeled with a numeric code.
  - Upon completion of a transport, the bag is exchanged at the receiving hospital *with the appropriate paperwork.*
  - DO NOT throw the blue seal in drug bag. Once you have verified the contents and seal compartment with RED tag you can then dispose of blue seal.

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/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.
- 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.
- 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.
- EMS Providers are responsible for ensuring that all blue seals are intact when logging out an exchanged bag.
- When you open a controlled drug 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. DO NOT throw blue seals in drug bag.

DOCUMENTATION OF DRUG USAGE

- Fentanyl, Ketamine, Morphine, Versed and Valium are scheduled drugs, which means 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 Intermediate/Paramedics will document:
  - The drug name
  - The amount used
  - The amount wasted
  - 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 scheduled 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 scheduled drugs. If a medication is only partially administered then the paramedic or intermediate must account for the all of the unused portion.

- It is preferred to have a nurse or physician witness the waste of the drug. 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 to witness same. If a certified EMS person does witness the wastage, they can be of higher, equal or lower certification level.
- To insure the medications are properly accounted for, all paramedics and intermediates 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 intermediate 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.
- 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 scheduled 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.

GENERAL NON-COMPLIANCE PROCEDURES

- Each department and department medical director(s) will be notified that 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 skills and written test and information about individual reasons for non-compliance noted in the Standing Orders database, then appropriate action, up to and including the removal of department from the Drug Bag program by the chair of the drug bag committee, may be taken
- 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 ~~t~~hat does not provide documentation for drug license(s) renewal.
- If a department does not have a current DEA license (it is the responsibility of the EMS Department to submit a copy of the DEA renewal license when the license on file has expired), 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 ~~t~~hat 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 the 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.

- 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:
  - 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.
- A collaborative effort between the EMS organization/provider and the Hospital EMS Coordinator/Pharmacist shall be made in an attempt to resolve the issue.
- 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 issued involving Controlled Drug or potential/suspected tampering or lost or stolen drug bags pursuant Federal and State Laws and GMVEMSC Protocol:
  - 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 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 not in the bag
  - Wrong number of medications 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:

- Will report all at the bi-annual Drug Bag Committee meetings for discussion and resolutions to discrepancies encountered.
- Will 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. When EMS opens a controlled drug 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. ***DO NOT throw used blue seals in drug bag.***

- **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 will then take red seal from the inside compartment (supplied by pharmacy when restocking the ALS/BLS bag and seal the appropriate bag used. 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:
  - Determine if drug bag was left at the scene.
  - Determine if drug bag was not exchanged on last run.
  - Determine if drug bag is in the wrong vehicle.
  - 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 & DEA 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. They have provided a copy of their DEA license or proof of submission for a DEA license if agency is an Intermediate or ALS agency .
4. Have been given a provisional membership by the GMVEMSC Executive Committee if the inspection is before regularly scheduled Council meeting.
5. Personnel must be checked off on Standing Orders and data entered on GMVEMSC data base.
6. 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:

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

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 emergency medical technician-paramedics, emergency medical technician-intermediates, 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 an emergency medical technician-paramedic, an emergency medical technician-intermediate 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 emergency medical technician-intermediate, 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.

GREATER DAYTON AREA HOSPITAL ASSOCIATION
GREATER MIAMI VALLEY EMERGENCY MEDICAL SERVICES COUNCIL
GREATER MONTGOMERY COUNTY FIRE CHIEFS' ASSOCIATION
POLICY STATEMENT FOR
TEMPORARY REROUTING OF EMERGENCY PATIENTS

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 <u>name</u> 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

ADDENDUM 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

ADDENDUM B
GREATER DAYTON AREA HOSPITAL ASSOCIATION

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

Good Samaritan Hospital
Brookville
Clayton, Englewood, Union
Dayton Fire Department #16
Eaton
Harrison – Turner Road
New Lebanon
Lewisburg
Trotwood
West Alexandria
North Central
Phillipsburg

McCullough Hyde Hospital-Oxford
Camden

Upper Valley Medical Center
Miami County Squads

Greene Memorial Hospital
Cedarville Township
Cedarville University
Central State University
Jefferson Township
Miami Township
New Jasper Township
Silvercreek Township
Spring Valley
Xenia
Xenia Township

Grandview Medical Center
Box 21
Butler Township
Dayton Fire Department #2, 8, 13, 14
Harrison – I-75 & Needmore
Vandalia

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

ADDENDUM C

GREATER DAYTON AREA HOSPITAL ASSOCIATION
EMS REROUTE PAGER

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

PKB/pbt
8-24-09

Hospital Capabilities Chart Below is a list of hospitals and the specialty capabilities of each (Stroke, PCI, Trauma, etc.)							
Hospital	**Adult Trauma Center**	**Pedi Trauma Center**	**Inpatient Burn Center**	**Interventional Cath Lab 24/7**	**Labor & Delivery**	**Stroke Thrombo-lytics**	**Other**
Atrium	Level 3			Cardiac only	Y	Y	2,3,4
Children's		Level 2	Y				2
Good Sam				Cardiac only	Y	Y	2,3,4
Grandview				Cardiac only		Y	1,2,3, 4,8
Greene	Level 3					Y	1,2,3,7
Huber Heights-GVH							2,3,6
Jamestown						Y	2,3,5,7
Kettering	Level 2			Cardiac, Stroke	Y	Y	1,2,3, 4
Mercy-Urbana						Y	3,5
Miami Valley	Level 1		Y	Cardiac, Stroke	Y	Y	2,4,5
Miami Valley South						Y	2,6
Reid				Cardiac only	Y	Y	2,3,5
Soin Medical	Level 3				Y	Y	1,2,3,7
Southview				Cardiac only	Y	Y	1,3,4,8
Springfield RMC				Cardiac only	Y	Y	2,3,5
Sycamore						Y	1,2,3,4,7
Upper Valley					Y	Y	3
VA							
Wayne					Y	Y	2,3
West Chester	Level 3						
Wilson					Y	Y	2,3,5
WPAFB							2

1 Accredited Chest Pain Evaluation Center
2 Sexual Assault Nurse Examiners 24/7
3 Treats Superficial Burns
4 Self Reported Accredited Stroke Center
5 Pediatric Capability
6 No Alerts to Facility
7 Has a "Cardiac Alert Program" No Cath lab on site
8 Hand Trauma Center

Step	Atrium	CMC	GSH	GVH/SVH	GMH	KMH/SYC	MVH	MVH South	UVMC	SRMC	MMH	Wayne	Wilson
Updated	May-09	Sep-04	Sep-07	Sep-07	Sep-07	Sep-07				Sep-07	Sep-07	Sep-07	Jul-09
Wash Area	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Notify EMS Supervisor	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Report to hospital	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Hospital Contact	ED Charge Nurse > EMS Coordinator	NICU Charge Nurse	ED staff or Infection Control	ED Staff -> EMS Coord.	ED Staff -> EMS Coord.	ED Staff -> Infection Control	Security -> AOC	Charge Nurse	Resource Supervisor	Infection Control	Infection Control	Infection Control	ED Staff
Complete "Request for Information Form for HCWs"	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Register w/ ED	Encouraged	If desired	If desired	Y	Y	If desired	If desired	If desired	Y	Y	Y	Y	Y
Have your lab drawn	If Desired	If source is high risk (not routine)	If indicated	Y	Y	If desired	If desired	If desired	If desired	If Indicated	If indicated	If indicated	If indicated
Have source lab drawn (HIV, Hep B, Hep C)	Y (Rapid HIV Available	Y	Y (Rapid HIV avail.)	Y (Rapid HIV avail.)	Y	Y	Y (Rapid HIV avail)	Y (Rapid HIV avail)	Y (Rapid HIV avail.)	Y (Rapid HIV avail.)	Y	Y	Y (Rapid HIV available)
Follow-up Consult ***YOUR Fire/EMS*** Dept policies/procedures	EMS Coordinator	Follow dept policy	Infection Control	EMS Coord. or designee & Follow dept policy	Work Plus Dept	Infection Control & Follow dept policy	Infection Control or Admin Officer	Infection Control or Admin Officer	Occupa-tional Health	Infection Control	Infection Control	Infection Control	Follow EMS policy
Comments	Have request for information forwarded to EMS Coordinator Anti-Viral medication available in ER if indicated	Infection Control Doc available 24/7 for RN contact if needed	Infection Control is notified of Exposure Incident by EMS coordinator	EMS Coord. is to be paged 24/7 by ED or Prehospital care provider	Give form to EMS Coord. Who forwards to Infection Control for follow up	Infection Control to be paged 24/7 by ED	Security page Infection Control Mon-Fri 8-4. Admin Officer to be paged at all other times including holidays	Charge Nurse to page Infection Control M-F 8-4 Admin officer to be paged at all other times inlcuding holidays	Place form in locked box in EMS Room for EMS Managr to forward to Occupa-tional Health	Give form to EMS Coord who forwards to Infection Control for follow up	Give form to EMS Coord who forwards to Infection Control for follow up	Give form to Infection Control, ED Manager or House Supervisor	Hosp ED sends white copy of "Request for Info by EMS Worker" to Inf. Preventionist. Yellow copy to EMS coordinator. Inf. Preventionist oversees communication of results & related documentation has been completed per policy.

Hospitals' Guide for Public Safety Workers' (PSW) Exposures

Updated 7-7-09 (Data subject to change – check periodically to ensure most current)

	PHONE	FAX
Children's Medical Center	641-4444	641-5301
Good Samaritan Hospital **Maternity**	275-9722 734-7579	276-8217
Grandview Hospital	723-3419	461-0020
Huber Heights-GVH	558-3338	552-3349
Kettering Medical Center	395-8080	395-8347
Miami Valley Hospital **Maternity**	208-2440 208-2408	208-2521 208-2651
Miami Valley South Health Center	438-2662	438-2262
Southview Hospital Maternity	401-6228 401-6850	401-6158 401-6861
Sycamore Hospital	384-8766	384-8729
Veterans Administration Medical Center	262-2172	267-5364

Hospitals in **bold type** ask to be called for every patient.

	PHONE	FAX
Atrium Medical Center, Middletown	513-424-3924	513-420-5133
Greene Memorial Hospital, Xenia	937-372-2297	937-352-3501
Jamestown(MVH)	937-374-5274	937-374-5275
Mercy Memorial Hospital, Urbana	937-484-6160	937-484-6183
McCullough-Hyde Hospital, Oxford	513-524-5353	513-523-0144
Reid Memorial Hospital, Richmond, IN	765-983-3161	765-983-3038
Soin Medical Center	937-702-4525	937-702-4509
Springfield Regional Medical Center	937-328-9372	937-328-9185
Upper Valley Medical Center, Troy	937-440-4600	937-440-4346
Wayne Hospital, Greenville	937-547-5777	937-547-5790
West Chester Hospital	513-298-8888	513-298-8978
Wilson Memorial Hospital, Sidney	937-498-5300	937-498-4201
WPAFB Medical Center, Fairborn	937-257-3295	937-656-1673

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 poured input into this document. The groups have responded to changes in medication availability and have received 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 2014. The first of those is the "2014 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 websites 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 who 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 utterly invaluable feedback for the Intermediate Orders, but contributed numerous hours to make all four of our Standing Orders books better, more concise and eminently more readable. Thank you all.

I would like to take time for a special thank you to Terri Norris who has managed the written testing process and the GMVEMSC website for many years. She has moved onto additional responsibilities in her new position. Good luck!

Additionally, I would like to extend some special thanks to the members of the Standing Orders committee and all of the volunteers who have critiqued these manuals.

I would also like to thank Dr. Randy Marriott and all RPAB members.

Sincerely,
Jack A. Mix
Standing Orders Co-Chair

Synopsis of Changes and Issues of Concern for 2013 GMVEMSC Standing Orders

Paramedic Orders

1) Removed START triage from the protocol, and replaced with SALT triage.
    - The change to SALT (for Sort, Assess, Life-saving Interventions, and Treatment/Transport) Triage was recommended unanimously by the Dayton MMRS Triage Committee, the GMVEMSC Standing Orders Committee, and the RPAB.
    - SALT was developed by the Centers for Disease Control after they found that **no current triage model or system was supported by adequate evidence** and has been recommended by FICEMS and NEMSAC of the U.S. Department of Transportation for national adoption.
    - SALT is easy to remember and apply to all hazards and all types of patients. SALT is simple. Perhaps most importantly, SALT is much faster.
2) Rather than add the full Functional Needs Shelter Triage protocol to all Standing Orders books as had been recommended by two area chiefs, a short description has been added to the Altered Standards of Care section explaining the FN protocol. The protocol itself will be added to the Optional Standing Orders Book, as well as having it on the website. A similar process has been used by EMS in areas hit by Hurricane Sandy.
3) Lasix has been removed from the protocol. Nationally, Lasix use by EMS has had multiple problems and risks. CPAP is safer and more effective.
4) Morphine has been removed from the protocol, and replaced with Fentanyl.
    - However, a Morphine JITSO has been added to the book in case of drug shortages with Fentanyl, and the Morphine Drug Chart will **not** be deleted for the same reason
    - If no IV, Fentanyl will be given IM.
5) {Ketamine has been added to the protocol as an Optional {bracketed} drug. It **will** be in the Drug Bags, but may only be used if your department's medical director specifically authorizes it. Indications will be Sedate to Intubate and/or Combative Patients (your department may do one, and not the other, or both). For departments opting to use it, Ketamine will be limited to age 8 and up.}
6) Added use of clot control-soaked gauze as an option {bracketed} for Hemorrhage Control for departments who wish to purchase it. Granular clotting agents are **not** to be used by EMS.
7) The GMVEMSC QA Committee has found numerous instances of ALS crews transporting patients who met criteria for Field Termination, or worse, transporting patients in cardiac arrest without providing all the appropriate ALS interventions at the scene. The expectation continues to be that paramedics should (in general – exceptions are in the Standing Orders) provide resuscitation at the scene, and either make removals after ROSC, or complete Field Termination. Therefore, the Education Committee will ensure that every paramedic written test will have at least one question relating to this issue.
8) Another issue discovered by the QA Committee is that there have been numerous errors in drug calculations and dosing over the past year. Dosing and calculations, especially relating to epinephrine, versed, and the new drugs will be emphasized in written testing and in skills stations.
9) Recent evidence shows that effective CPR and good teamwork significantly impact survival rates from prehospital cardiac arrest. Mega-code skills stations will emphasize those aspects.
10) Ketamine and Fentanyl have been added to the Complex Medication Administrations Skill Sheet. Expect to see emphasis during testing on the dosing and calculation issues discussed above. You will not be tested on Ketamine unless your department authorizes its use.
11) A Dosage Calculator has been added to the GMVEMSC protocol app for your benefit.
12) There is an update Hospital Capabilities Chart.
13) There is an updated Hospital Phone List.
14)) There is an updated reroute list of home hospitals.

2014 PARAMEDIC STANDING ORDERS CHANGES

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.

Seizures:

- IM route of Midazolam should be a last resort.

Combative Patients:

- Initial dose for chemical restraint in peds 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

NOTES: