



**Greater Miami Valley
EMS Council**

and

Ohio EMS Region 2

Paramedic Standing Orders Training Manual

**Pre-hospital Protocols
2004
for Paramedics**

Version: 12/16/03
Effective: 4 February, 2004

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Version: December 16, 2004

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Paramedic Standing Orders Training Manual

Adult

**Pre-hospital Protocols
2004
for Paramedics**

(Patients Age 16 and Over)

Version: 12/16/03
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MEDICAL ABBREVIATIONS

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1.0 - STIPULATIONS

1. This protocol is for use by those individuals operating in and under the authority of the Greater Miami Valley EMS Council (GMVEMSC) Drug Box Exchange Program and Ohio EMS Region 2, and certified by the State of Ohio as an EMT-Paramedic.
2. This protocol is to be used in the field only. Communications must be attempted as soon as practical for potentially unstable patients, or hospitals that request contact on all patients being transported to their facility.
3. Procedures that are marked with a diamond (♦) ARE **NEVER TO BE PERFORMED WITHOUT A PHYSICIAN'S ORDER**. The diamond provides rapid identification of procedures and medications that require **on-line medical control** authorization.
4. No procedures, techniques, or drugs will be used without the proper equipment or beyond the training or capabilities of the Pre-hospital personnel. Nothing in this protocol may be used without specific pre-approval of the Medical Advisor for the local department or agency. **Items that are enclosed in braces ({} are at the option of the Department, and its Medical Director.**
5. EMS personnel of any level are not authorized to intubate, unless they have and use appropriate secondary confirmation devices (EtCO₂ Detectors or Monitors, and/or Esophageal Detection Devices).
6. Bring the patient's medications, or a list of the medications, with the patient to the hospital. When supplying hospitals with documentation of patient meds, be certain to include the proper **dose**, and the **frequency** of administration.



Identify yourself and Level of Certification as well as the person receiving the message at the medical facility.

2.0 - INITIAL CARE

1. Institute Basic and Advanced Life Support as indicated:
 - Establish unresponsiveness.
 - Stabilize neck and immobilize if history of trauma.
 - Open airway and assess breathing.
 2. If not breathing, institute artificial ventilation (using mouth-to-mask, bag mask, and adjuncts such as oropharyngeal and nasopharyngeal airways).
 3. Administer **Oxygen (O₂)**.
 4. When indicated, endotracheal intubation should be performed. Paramedics may intubate using any appropriate route by which they have been trained.
 5. Check pulse. If absent, CPR continuously until {AED} or other defibrillator is available.
 6. Utilize Cardiac Monitor or other monitor {Pulse Oximeter, etc.} as available and appropriate.
 7. Start IV of **0.9% Normal Saline (NS)** or a **Saline Lock**.
 - A. **IV Rates:**
 - **Shock** - Establish an IV of **0.9% NS**, run wide open using regular or macro-drip tubing. Decrease fluid rate if Systolic BP (SBP) is greater than (>) 100.
 - **Medical Emergencies, Head Trauma, Cardiac Problems (with stable BP)** - Use TKO (to keep open) rate.
 - B. **Saline Lock:** If appropriate for patient condition, establish a **Saline Lock** in place of an IV. Contraindications: Cases where an **IV Bolus** may be required, **IV Drip** medications are indicated, or multiple trauma related injuries.
- NOTE: IN ALL CASES WHEN ATTEMPTING TO START AN IV, SPEND NO MORE**

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THAN FIVE (5) MINUTES AT THE SCENE ON THIS PROCEDURE.

- C. {Departments may purchase, and properly trained and tested paramedics, with the approval of their Medical Director, are encouraged to utilize **IV pumps** for control of IV Drip medications.}
- D. {Properly trained and tested paramedics, with the approval of their Medical Director, may utilize **Adult Intraosseous (IO)** devices such as the **Bone Injection Gun (BIG)** or “First Access for Shock and Trauma” (**FAST1**) for Cardiac Arrest and profoundly unstable, unconscious trauma patients.}



{Dual Lumen Airways} and the {LMA} may only be used for apneic patients with no gag reflex.



It is very important for Crews to realize that the section of the Drug Box that was used for a Supply Pouch will no longer be available for that purpose. All the supplies (syringes, alcohol preps, saline locks, needles, and IV tubing) that used to be carried in that pocket must now be stocked on your Medic.



Tubing and any other supplies for {IV pumps} must also be purchased by the EMS agency.

2.1 - PATIENT ASSESSMENT

1. Airway (Assess, establish, and maintain as needed)
2. Breathing
3. Circulation (Skin - warm, cool, dry, or moist; capillary refill; peripheral pulses)
4. Present Complaint
5. Vital Signs
6. Signs & Symptoms (90 second survey)
7. Allergies
8. Medications – Current, with dose and frequency
9. Past Medical History
10. Last oral intake
11. Events leading up to illness/injury
12. Approximate Age/Weight.



May use {Doppler Monitor} or {Doppler Stethoscope} to assist in obtaining accurate BP, or to verify effectiveness of treatment.


2.2 - AIRWAY MAINTENANCE

1. Administer **O2** to all patients with respiratory distress, or whenever your impression indicates that it is appropriate. Use the following rates as guidelines:
 - A. Two (2) liters per minute per nasal cannula for patients with a history of Chronic Obstructive Pulmonary Disease (COPD).

NOTE: COPD patients in severe respiratory distress or with Chest Pain need the same O2 devices and flow rates as any other patient in such condition. Be prepared to stimulate

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- breathing and/or ventilate should the patient become apneic.**
- B. Four to six (4-6) liters per minute by nasal cannula for other patients.
 - C. 100% by a NRB (12-15 liters per minute) for severe trauma patients, very distressed cardiac patients, and other patients who appear to need high flow **O₂**.
 2. Ventilate patients who are symptomatic with an insufficient respiratory rate, or insufficient respiratory depth. Patients with airway compromise or insufficient ventilations should be intubated.
 - A. When deciding whether to intubate, consider the following:
 - Insufficient respiratory rates: less than 10 or greater than 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 or nasal flaring
 - Pallor or cyanosis
 - Cardiac dysrhythmias.
 - B. **EMS personnel are required to use both a Primary and at least one appropriate Secondary Method of tube placement confirmation** (as defined below) **on every intubation**. These include:
 - Primary Methods:
 - ❖ Physical Assessment including auscultation of the epigastrium, anterior chest, midaxillary areas, then the epigastrium again.
 - ❖ Repeat visualization of the tube between the cords
 - ❖ Condensation in the tube
 - ❖ {Pulse Oximeter}
 - ❖ Keeping the Endotracheal tube at the 20 - 22 cm. mark at the teeth will prevent inserting the ETT too far, and greatly reduce the chances of right mainstem bronchi intubations.
 - Secondary Methods:
 - **{End Tidal Carbon Dioxide Monitor}** (electronic waveform EtCO₂ may be used for all intubations).  EtCO₂ with Waveform is the most accurate method of airway confirmation.
 - **{End Tidal Carbon Dioxide Detector}** (colorimetric EtCO₂ is limited to patients with pulses)
 - **{Esophageal Detection Device (EDD)}** (may be used with any intubation, though EtCO₂ is preferable for patients who are still breathing)
 - **Unless at least one of these secondary devices is available and used to verify tube placement, EMS personnel are not authorized to intubate.**
 - C. **Always secure the ET tube in place as effectively as possible, preferably with a {commercial tube-securing device}.**
 - D. **Re-assess tube placement EVERY TIME THE PATIENT IS MOVED.**
 - E. **{Digital Intubation and Lighted Stylet Intubation are also acceptable insertion techniques, for appropriately trained paramedics.}**
 3. {Dual Lumen Airways (e.g., {Combitube} or {Pharyngotracheal Lumen Airway (PtL)}), or a {Laryngeal Mask Airway (LMA)}}, are acceptable rescue airway devices for properly trained and tested paramedics with the approval of their Medical Director, and may be used after **two** failed attempts to intubate patients in cardiac or respiratory arrest.} Use of these devices is limited to patients who need an artificial airway, and who are able to tolerate the device (similar to use of oral airways).}
 4. If routine ventilation procedures are unsuccessful, try to visualize obstruction with laryngoscope. If

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foreign body is seen, attempt to remove it using **suction**, and/or Magill Forceps if possible.

5. If an **awake** patient requires intubation, Paramedics may apply **2% Lidocaine Jelly** to the ET tube, or 4 ml. of **2% Lidocaine** (80 mg.) **nebulized** with 8-12 liters/minute high flow **O2**, or both. Nebulized **Lidocaine** can be administered simultaneously and in the same nebulizer with **Proventil (Albuterol)**. If feasible, wait one to two minutes before intubating.
 - A. If intubating nasally, the {Beck Airway Airflow Monitor Mark VI (BAAM Valve) or comparable device} may be used to assist with intubation.
6. {If a patient would benefit from intubation but is combative, too agitated to cooperate, or has jaws clenched too tightly to permit intubation, Paramedics who are **currently authorized by their Department and Medical Director** have the option to utilize the “**Sedation for Intubation**” **Protocol** with **Etomidate** to permit placement of the endotracheal tube. Paramedics **may not** utilize **Sedation for Intubation** unless they have an approved cricothyrotomy method in addition to Needle Cricothyrotomy available.}

{SEDATE TO INTUBATE PROTOCOL}

NOTE: This is the only approved use of drugs by paramedics as an adjunct to intubation, either before or after tube placement. It may not be used unless the paramedic has been trained (per the training protocol listed below) and authorized according to Number 5 (above).

- A. {**Preoxygenate** the patient to the greatest degree possible with 100% **O2** by bag-mask ventilation, or by any means possible. Avoid BVM and associated gastric distention if able to adequately oxygenate otherwise. You **MUST** have EKG monitor, IV, and Pulse Oximeter in place.}
 - B. {When using this protocol for patients with suspected Stroke, Intracranial Hemorrhage, Head Injury, or signs of Increased Intracranial Pressure, administer **Lidocaine**, 100 mg, IVP.}
 - C. {Administer **Etomidate 0.3mg/kg** IVP. If patient is still resistive to intubation, repeat initial dose within two minutes of first dose.}
 - D. {Apply cricoid pressure to reduce possibility of aspiration and facilitate intubation.}
 - E. {After jaw relaxes (30-60 seconds), intubate. Confirm tube placement!}
 - F. {After intubation, if patient resisting and SBP > 100, give **Versed** 2-4 mg IV over 1 – 2 minutes.}
 - G. {If you are unable to immediately intubate the patient, rapidly begin ventilating with a BMV while maintaining cricoid pressure.}
 - H. {If you experience problems with patient management, contact medical control.}
 - I. This procedure is **contraindicated** if paramedics doubt that they will be able to successfully intubate.
7. {Whenever all reasonable attempts to provide an adequate airway by less invasive means have failed, perform a **Cricothyrotomy** utilizing a **PerTrach**, or other device approved by the GMVEMSC Products and Procedures Committee, if you are authorized to do so.} If no PerTrach or other approved device available, perform a **Needle Cricothyrotomy**.
 8. **Tension Pneumothorax Relief** - if indications of Tension Pneumothorax are present, decompress the chest with a 14 gauge, 2 ½ inch Angiocath placed in the second or third Intercostal Space (ICS), in the mid-clavicular line.

See “**IMPORTANT INFORMATION REGARDING IV VERSED**” in Section 3.3.1.



Definition – Rescue Airway: use of an alternative device such as a Dual Lumen Airway or LMA after attempts to use endotracheal intubation have failed.



End Tidal CO₂ Detector (EtCO₂): an inline detector for intubated patients that senses the presence of carbon dioxide (CO₂) in expired air. If CO₂ is detected, correct tube placement is confirmed. If no CO₂ is

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detected, placement is suspect. One disposable EtCO₂ Detector is the “Nellcor Easy Cap.” The Easy Cap can be used continuously after the patient is intubated.

Limitations:

1. The patient must have adequate perfusion. If CO₂ is not transported to the lungs, the device will not register CO₂. It can then appear that the tube is in the esophagus, when, in fact, it is correctly placed. Therefore, Easy Cap EtCO₂ Detectors are **not recommended** for patients in cardiac arrest. (Please note that electronic EtCO₂ Detectors with waveform readings are useful in cardiac arrest patients, although they are significantly more expensive, and are not available to many departments at this time.)
2. Secretions, emesis, etc. can ruin the device.
3. A patient with large amounts of carbonated beverage (e.g., beer) in his stomach can give a false positive. The device may sense the CO₂ given off by that beverage and indicate that the tube is in the trachea, when it is in the esophagus.
4. Use the device for no more than two hours.
5. **Do not use the device on children weighing less than 45 kg, due to the dead space within the detectors.**
6. Medication issues:
 - If you administer epinephrine or other medications via the ETT, remove the EtCO₂ Detector for several ventilations, until no medication returns through the tube during exhalation. If you do not, medications splashing up the tube onto the EtCO₂ can ruin the ability of the device to show color changes.
 - Be aware that if you give intravenous sodium bicarbonate, more carbon dioxide will be produced. The yellow color on the Easy Cap may be enhanced.



End Tidal CO₂ (EtCO₂) Monitors: These are electronic devices that 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 samples the ventilations more remotely from the patient. Sidestream sensors can be used with patients who are not intubated. Electronic EtCO₂ Monitors can provide only a numeric readout, or can include a “waveform.” EtCO₂s with waveform graphically and constantly display the changes in exhaled carbon dioxide, thus providing a moment by moment assessment of the patient.

Limitations and Benefits of Electronic EtCO₂ Monitors:

1. Electronic EtCO₂ monitors have all the benefits of EtCO₂ Detectors (see above), plus EtCO₂ Monitors with Waveform can even be used in patients with poor perfusion, such as cardiac arrest patients. That is partly because the Electronic Monitors are more sensitive, but mostly because watching the changes in the waveform lets you see changes, just as you see changes in an EKG. By knowing how EtCO₂ waveforms appear in different situations, you can determine tube placement even during cardiac arrest.
2. Furthermore, there is a growing body of evidence that EtCO₂ levels in the cardiac arrest patient can be used to assess the patient’s chances for survival.
3. Sidestream monitoring can be useful to help guide treatment in asthma or COPD patients even before they are intubated.
4. The biggest limitation of electronic EtCO₂ Monitors with waveform readings is that they are significantly more expensive.
5. You are much less likely to be misled by readings from a patient with large amounts of carbonated beverage (e.g., beer) in his stomach when using the waveform. Even though the device may sense the CO₂ given off by that beverage, the paramedic will be able to determine by the pattern of the waveform whether the CO₂ is respiratory or not.
6. Electronic EtCO₂ Monitors can be used in all situations described for EtCO₂ Detectors.

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Additionally, if the Monitor includes a waveform, it can be used with cardiac arrest patients.



Esophageal Detector Device (EDD): a device to confirm tube placement mechanically. It is based on the principle that the esophagus is a collapsible tube, while the trachea, on the other hand, is rigid. An EDD looks something like a bulb syringe. Collapse the bulb, and place the device on the end of the ETT. 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 the ETT. That prevents air movement up the tube and into the bulb. So 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, which is rigid, there is nothing to occlude the movement of air into the tube. The bulb will rapidly refill, indicating that the ETT is properly placed.

Limitations:

1. A large amount of gastric air can give a false positive finding (tube seems to be in the trachea, but is not).
2. 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.)
3. EDD cannot be used continuously. It must be removed after confirmation, though you may reuse it after patient movement.
4. EDDs may only be used on pediatric patients who are older than 5 years of age, and weigh at least 20 Kg/44 pounds.
5. Pregnancy is a relative contraindication to use of the EDD.



BAAM Valve: The Beck Airway Airflow Monitor Mark VI (BAAM) is a device to assist with nasotracheal tube placement which helps confirm correct intubation by sound. The BAAM is a small plastic device which attaches to the 15 mm. endotracheal tube connector. It emits a whistle sound when the patient inhales and exhales.

Limitations:

1. The patient must have spontaneous respirations.
2. The tiny opening in the BAAM is an artificial partial airway obstruction. It can only be used for very brief periods of time.



Burden Nasoscope: The nasotracheal intubating stethoscope is a device to assist with nasotracheal tube placement. It helps guide and confirm correct tube placement by sound. Like the BAAM, it attaches to the 15 mm. endotracheal tube connector. Breath sounds are heard through the stethoscope when the patient inhales and exhales.

Limitations:

1. The patient must have spontaneous respirations.

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★ Indications for Various Devices

| | Nasopharyngeal ETT | Oral ETT | Pulseless Pt. | Apneic Patient |
|---------------------------------------|--------------------|-----------------|-----------------|-----------------|
| Colorimetric EtCO ₂ | Useful | Useful | Contraindicated | Useful |
| Electronic Waveform EtCO ₂ | Useful | Useful | Useful | Useful |
| EDD | May be used | Useful | Useful | Useful |
| Nasoscope | Useful | Contraindicated | Contraindicated | Contraindicated |
| BAAM | Useful | Contraindicated | Contraindicated | Contraindicated |
| Pulse-Ox | Useful | Useful | May be useful | Useful |



To prevent endotracheal tube dislodgement, secure the tube in place as effectively as possible and prevent patient's head from moving. Cervical immobilization is effective in maintaining patient's head in a neutral position.



Nebulized medication(s) may be administered while bagging a patient. The process ideally requires two oxygen sources, one attached to the nebulizer and one attached to bag-valve device and an extra elbow. If you have only one oxygen source, attach it to the nebulizer until nebulized medication delivery is complete, then attach to bag-valve device. See the diagram of the proper way to combine the nebulizer kit with a bag-valve device on the Skill Sheet "Use of Nebulizer with Bag-Valve Device."

Note: To administer nebulized medications to an intubated patient, you must have all of the following:

1. ETT
2. BVM
3. O₂ Source (preferably two)
4. Nebulizer set
5. "Ventilator Elbow with Suction Port and Cap" (new hospital exchange item)

3.0 - CARDIOVASCULAR EMERGENCIES

3.1 - CARDIAC ARREST

GENERAL CONSIDERATIONS

1. CPR should not be interrupted for more than 30 seconds until spontaneous pulse is established.
2. If IV cannot be established, **Epinephrine, Atropine, Lidocaine, and Narcan** may be administered through the endotracheal tube.
3. Each IV push medication should be followed by a 20ml NS flush.
4. In all Cardiac Arrests, consider the ACLS "Treatable Causes:"

The "H's"

Hydrogen ion (acidosis)
Hyperkalemia/hypokalemia,
and other electrolyte/metabolic causes
Hypoglycemia/hyperglycemia
Hypothermia/ hyperthermia
Hypovolemia (tank/anaphylaxis/gravid)
Hypoxia

The "T's"

Tablets (drug OD, accidents)
Tamponade, cardiac
Tension pneumothorax
Thrombosis, coronary (ACS)
Thrombosis, pulmonary (embolism)
Trauma

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3.1.1 - CARDIAC ARREST: PULSELESS APNEIC PATIENT ({AED} PROTOCOL)

1. Evaluate ABCs.
2. Provide ventilations during CPR with a {Bag-Valve-Mask (BVM) or Positive Pressure Ventilation (PPV) with 100% {oxygen}}.
3. CPR continuously until {AED} or Monitor/Defibrillator is attached to patient.
4. Press to analyze. If no shock advised, continue CPR.
5. If shock advised, provide set of three Stacked shocks.
6. CPR continuously for one minute, if no pulse, then press to analyze. If shock advised, repeat set of three (3) stacked shocks.
7. If no shock advised by {AED} at any point, transport as soon as possible if no ALS equipment on scene.
8. CPR continuously.
9. Intubate patient.
10. Approximately every five (5) minutes, stop the vehicle, and reanalyze the patient as long as shocks are advised. Never analyze or defibrillate in a moving vehicle.



AED Use: If your AED has recording capabilities, start verbal documentation at the time you attach AED to patient. On monophasic AEDs, the manufacturer's recommended energy settings for the first three stacked shocks is 200 J., 200 - 300 J. , 360 J., with all subsequent shocks @ 360 J.. Departments who have purchased one of the new biphasic AEDs will have equivalent energy settings.

As stated in section 3.1.6 A of this protocol, when faced with a patient in cardiac arrest and no advanced life support capabilities at the scene, time to the receiving medical facility is critical. Stopping to analyze on long transports will increase that time. A good rule of thumb: If AED is recommending you shock, stop for analysis; if no shock is advised, make less stops for analysis.

3.1.2 - CARDIAC ARREST: V-FIB/PULSELESS V-TACH

Paramedics: You are expected to provide resuscitation at the scene. You should not transport Cardiac Arrests before completing the steps below unless the patient has Return of Spontaneous Circulation (ROSC), or you are unable to intubate and secure IV access.

1. Evaluate ABCs; provide ventilations during CPR with a (BVM) or {"Flow-Restricted, Oxygen-Powered Ventilation Device"} (FROPVD) with 100% O₂.
2. If witnessed arrest, and no defibrillator available, administer one (1) **Precordial Thump**.
3. CPR continuously, until AED or Monitor/Defibrillator is available.
4. Defibrillate up to three (3) times if needed for persistent pulseless VF/VT (200J, 200-300J, 360J, or equivalent {biphasic defibrillation} doses).
5. Intubate the patient. Confirm tube placement using Primary and Secondary Methods, and secure tube.
6. Establish an IV of **0.9% NS**. Use an external jugular (EJ) or antecubital vein for cardiac arrest patients. EJ is the preferred IV site for prehospital cardiac arrests.
7. Administer **Vasopressin**, 40 Units, IVP. After **Vasopressin**, wait 10 – 15 minutes before administering **Epinephrine**.
 - A. If unable to start IV, administer **Epinephrine** 2 mg., using 1 mg of 1:1,000 (1 ml) and 1 mg of 1:10,000 (10 ml) simultaneously down the ETT.

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8. Defibrillate at 360 Joules.
9. Consider “treatable causes” (H’s and T’s). **NOTE: Nearly all medical cardiac arrests are “Altered Level of Consciousness – Unknown Cause.” If there is any evidence of hypoglycemia prior to arrest, administer 50 ml. of 50% Dextrose IVP. If there is a suspicion of drug overdose, administer 4 mg. Narcan IVP.**
10. Administer **Amiodarone** at 300 mg, IV push. May repeat times one after five to ten minutes at half the initial dose (150 mg, IV push), if VF persists or recurs. Draw up Amiodarone using a large bore needle to reduce foaming.
11. Defibrillate at 360 Joules.
12. Administer **Epinephrine** 1 mg. (1:10,000) IVP, no sooner than ten minutes after administering Vasopressin. Repeat every three (3) minutes until pulse is obtained. May use ETT **Epinephrine**, as above, **if no IV**.
13. Defibrillate at 360 joules.
14. Administer **Lidocaine** at 1.5 mg/Kg, IV push. May repeat times one after five minutes at half the initial dose (0.75 mg/Kg, IV push), if no conversion. If patient converts to a perfusing rhythm, start a **Lidocaine Drip** with Premix of 1 gram in 250 ml. of **D5W** (4 mg/ml.), at an initial rate of 2 mg/minute (30 minidrops/minute). Maximum rate is 4 mg/minute (60 minidrops/minute).
15. Defibrillate at 360 Joules.



IV administration of drugs is the preferable method of administration when choosing between IV and ETT. IV medications achieve higher peak dose concentration when compared with the endotracheal route because the lungs act as a storage unit and let drugs out slowly. Therefore the endotracheal route should be used only if no IV route is available.



ETT Drug Administration: There are several methods of ETT medication administration:

- Down the tube or through a port in some models of bag-valve devices. This route leaves much of the medication on the inner wall of ETT. Take the needle off syringe to avoid the needle coming off and entering tracheobronchial tree during drug administration.
- Needle through wall of ETT. The needle can be placed low in the ETT to avoid so much medication remaining on inner wall of ETT. A second person can continue bagging, thereby creating an "aerosol".



FROPVD are only appropriate for adult patients.



Administration of Amiodarone:

- Break ampule as usual.
- Do not turn ampule upside down to insert needle. The medication will run out of the ampule.
- Use a 19 gauge or larger needle to withdraw medication to prevent foaming.

3.1.3 - CARDIAC ARREST: ASYSTOLE

Paramedics are expected to provide resuscitation at the scene. They should not transport Cardiac Arrests before completing the steps below, unless the patient has Return of Spontaneous Circulation (ROSC), or the paramedic is unable to intubate and secure IV access.

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1. Evaluate ABCs; provide ventilations during CPR with BVM or FROPVD with 100% **O2**.
2. CPR continuously, until Defibrillator or Monitor/Defibrillator is available.
3. Intubate the patient. Confirm tube placement using Primary and Secondary Methods, and secure tube.
4. Establish an IV of **0.9% NS**. Use an external jugular (EJ) or antecubital vein for cardiac arrest patients. EJ is the preferred IV site for prehospital cardiac arrests.
5. Confirm asystole.
6. Consider immediate {**External Cardiac Pacing** at 70 beats per minute Maximum MA.}
7. Consider “treatable causes” (H’s and T’s). **NOTE: Nearly all medical cardiac arrests are “Altered Level of Consciousness – Unknown Cause.” If there is any evidence of hypoglycemia prior to arrest, administer 50 ml. of 50% Dextrose IVP. If there is a suspicion of drug overdose, administer 4 mg. Narcan IVP.**
8. Administer **Epinephrine** 1 mg (1:10,000) IVP. Repeat every three (3) minutes until pulse is obtained.
 - A. If unable to start IV, administer **Epinephrine** 2 mg., using 1 mg of 1:1,000 (1 ml) and 1 mg of 1:10,000 (10 ml) simultaneously, down the ETT.
9. Administer **Atropine** 1 mg. IVP or ETT. Wait three (3) minutes for effect. Repeat as needed every three (3) minutes to a maximum dose of 3 mg.
10. For renal dialysis patients in arrest:
 - A. Administer 10 ml bolus of **Calcium Chloride 10% (1,000 mg)**.
 - B. **Flush IV line thoroughly** between Calcium and Bicarb. It is critical that these drugs not be given together.
 - C. Administer **Sodium Bicarb**, 100 mEq. (2 Ampules) IVP.
11. ♦Consider contacting Medical Control Physician (MCP) for **Field Termination**.



When pacing a Cardiac Arrest patient, remember that Electrical Capture does not necessarily equal Mechanical Capture. If you have Pacer spikes on the EKG followed by QRS complexes, check the patient’s pulse. If there is no palpable pulse, CPR must be continued while treating the patient for PEA.



Field Termination: As stated in section 3.1.6 of this protocol, certain criteria must be met in order to consider field termination of resuscitation efforts. PEA is potentially more reversible than Asystole. Therefore, it is recommended that you spend at least 10 minutes in ALS procedures for asystole and more with PEA before requesting field termination.



Calcium Chloride has replaced Calcium Gluconate in the Standing Orders. Their use, indications, and contraindications are very similar. The Calcium ion is critical to cardiac function, yet serum calcium can be depleted during dialysis. That's why we recommend its use for dialysis patients in PEA or Asystolic arrest. At the same time, Calcium is a cardiac irritant, and there are literature reports of intractable VFib following Ca++ administration. That's why we don't use it in VF.

In the Haz-Mat section, the main concern with Hydrofluoric Acid is the rapidly fatal systemic calcium depletion. That's treated with IV Ca++, and it doesn't matter whether you give the Gluconate or the Chloride form. In fact, the Chloride form actually has an advantage here, since it provides more ionizable Calcium per volume of drug.

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3.1.4 - CARDIAC ARREST: PULSELESS ELECTRICAL ACTIVITY: (PEA)

Paramedics are expected to provide resuscitation at the scene. They should not transport Cardiac Arrests before completing the steps below, unless the patient has Return of Spontaneous Circulation (ROSC), or the paramedic is unable to intubate and secure IV access.

1. Evaluate ABC's; provide ventilations during CPR with BVM or FROPVD with 100% O₂.
2. CPR continuously, until Defibrillator or Monitor/Defibrillator is available.
3. Intubate the patient. Confirm tube placement using Primary and Secondary Methods, and secure tube.
4. Establish an IV of **0.9% NS**. Use an external jugular (EJ) or antecubital vein for cardiac arrest patients. EJ is the preferred IV site for prehospital cardiac arrests.
5. Administer **Epinephrine** 1 mg (1:10,000) IVP. Repeat every three (3) minutes until pulse is obtained.
 - A. If unable to start IV, administer **Epinephrine** 2 mg., using 1 mg of 1:1,000 (1 ml) and 1 mg of 1:10,000 (10 ml) simultaneously, down the ETT.
6. Consider "treatable causes" (H's and T's). **NOTE: Nearly all medical cardiac arrests are "Altered Level of Consciousness – Unknown Cause." If there is any evidence of hypoglycemia prior to arrest, administer 50 ml. of 50% Dextrose IVP. If there is a suspicion of drug overdose, administer 4 mg. Narcan IVP.**
7. {May use Doppler Monitor to confirm pulselessness, assess adequacy of CPR and perfusion with pacemaking.}
8. If bradycardic, administer **Atropine** 1 mg. IVP/ETT. Repeat every three (3) minutes up to a maximum of 3 mg.
9. {May also utilize **External Pacemaker** for bradycardic PEA}.
10. Initiate fluid bolus of 250 ml. of **0.9% NS** and re-assess the patient.
11. For renal dialysis patients in PEA arrests with Wide Complex arrhythmias:
 - A. Administer 10 ml bolus of **Calcium Chloride 10%**.
 - B. **Flush IV line thoroughly** between Calcium and Bicarb. It is critical that these drugs not be given together.
 - C. Administer **Sodium Bicarb**, 100 mEq. (2 Ampules) IVP.
12. ♦Consider contacting Medical Control Physician (MCP) for **Field Termination**.

3.1.5 - NON-INITIATION OF CPR

1. **No** resuscitation will be attempted in cardiac arrest patients with the following:
 - A. Burned beyond recognition
 - B. Decapitation
 - C. Deep, penetrating, cranial injuries or massive truncal wounds
 - D. DNR Order - present and valid
 - E. Frozen body (so severe that chest compression is impossible, or the nose and mouth are blocked with ice)
 - F. Hemitorporectomy (body cut in half)
 - G. Rigor mortis, tissue decomposition, or severe dependent post-mortem lividity (any one or more)
 - H. Scene Safety - Situations where the danger to rescuers is excessive
 - I. Triage
2. If CPR has been started on a patient with any condition listed in # 1 of this Section, EMS may discontinue the resuscitation efforts.
3. EMS will **not** initiate resuscitation on victims of **blunt trauma** who are **found in cardiac arrest upon EMS arrival**, or who **arrest before** being placed in the EMS vehicle, unless one or more of the

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following conditions are present:

- A. Patient can be **delivered** to an Emergency Department within 5 minutes of the time patient is found to be in arrest; or
- B. You suspect that the arrest may have been caused by a medical condition (e.g., AMI) or a focused blunt trauma to the chest (e.g., baseball to the chest).
 - If you suspect that the arrest resulted from medical conditions or focused trauma, follow all normal cardiac arrest procedures.
4. EMS will **not** initiate resuscitation on victims of **penetrating trauma** who are in cardiac arrest upon EMS arrival, **unless** the patient can be delivered to an Emergency Department within **15 minutes**.
 - A. Resuscitation **will** be attempted on victims of penetrating trauma who arrest after they are in EMS care.
5. Once enroute, continue care even if the above time limits cannot be met.



Risks and Benefits of Departments accepting DNR Orders that are not on Comfort Care forms:

Some EMS agencies do accept formal DNR orders that are not on State of Ohio forms, as long as you are comfortable with the identification of the patient. There are several reasons why this may be beneficial to your patients:

- There are still physicians who are unfamiliar with the Comfort Care Law, and who are writing older style DNR orders.
- A terminal patient from another state may be visiting Ohio. Obviously, a person coming from out of the state to visit their relatives for one last time, is going to have a DNR Order from their home state, and would want it to be honored.
- As a result of a quirk in the law, DNR Comfort Care does not apply to children. As such, any DNR Orders for pediatric patients will be a format other than the Comfort Care style.

See Appendix for more complete information on Ohio DNR.



Blunt Trauma Patient in V Fib/V Tach: When you find a patient with blunt trauma in cardiac arrest at an accident scene, it can be difficult to know if s/he is in arrest from blunt trauma due to the accident or if s/he had an AMI, went into arrest, and that caused the accident. If, in your judgment, the patient's injuries caused the cardiac arrest, make no resuscitative efforts, unless you can arrive at the hospital within five minutes of the time the patient arrested. On the other hand, if you have reason to suspect that the patient had a medical condition that caused his arrest, follow all of your normal cardiac arrest procedures.

3.1.5.A – DNR COMFORT CARE SYNOPSIS

1. Two Comfort Care trigger points:
 - A. DNR **Comfort Care** means “**comfort care only**.”
 - In effect when order is written. Allows any medical treatment to diminish pain or discomfort that is not used to postpone the patient's death.
 - B. DNR **Comfort Care-Arrest** means care is limited to comfort care **only** after the patient goes into cardiac or respiratory arrest.
 - Until arrest, patient receives all usual medical care.
2. The following treatments are prohibited for apneic or pulseless patients with DNR **Comfort Care – Arrest** orders, and **for DNR Comfort Care Patients at any time:**

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- A. Artificial airways (oral airways, nasal airways, or endotracheal tubes)
 - B. Cardiac monitoring
 - C. Chest compressions
 - D. Defibrillation or cardioversion
 - E. Respiratory assistance
 - F. Resuscitative drugs
 - G. Resuscitative IV line
3. **The following treatments are always permissible, regardless of a patient's DNR status:**
- A. Clearing the airway, other than as an attempt at resuscitation
 - B. Contacting medical control or your supervisor
 - C. Controlling bleeding
 - D. Oxygen
 - E. Pain management
 - F. Position for comfort
 - G. Providing emotional support
 - H. Splinting or immobilizing suspected fractures
4. If a person holds Durable Power of Attorney for **Healthcare** (DPA-HC), they can request CPR for the patient if:
- A. The Durable Power of Attorney is for **Healthcare**, and the DNR Comfort Care form does **NOT** have the box for "Living Will and Qualifying Condition" checked under "Certification of DNR Comfort Care Status (to be completed by the physician)."
 - B. **If the Living Will box (second box) is checked**, the DNR Comfort Care protocol applies, regardless of wishes of the DPA-HC.



After the body is released by the Coroner, or a physician has agreed to sign the death certificate, you may remove endotracheal tubes, IVs, etc. If for any reason, the body will not be released (i.e. it will be a Coroner's case), do not remove any such equipment.

3.1.6 - FIELD TERMINATION OF RESUSCITATION EFFORTS

When a patient that is in cardiac arrest has failed to respond to Advanced Life Support, it may be decided to terminate the effort and not transport the patient to the hospital. When the Paramedic determines that this option is appropriate, the following criteria must be met:

- 1. The victim must be 18 years or older.
- 2. The victim must be in asystole or PEA, and have the absence of pulses confirmed.
- 3. The victim must not be in arrest due to hypothermia, or apparent drug overdose.
- 4. The victim **must have a properly placed orotracheal or nasotracheal tube**.
- 5. The victim **must have a patent IV access**.
- 6. **♦Medical control** must be contacted and the physician must speak directly with the paramedic and **must give consent** for the resuscitation effort to cease.
- 7. **Ensure that the EMS Coordinator of the hospital that authorized the Field Termination receives a copy of the runsheet for his/her records.**

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Take note: the Field Termination protocol says that the patient, “has failed to respond to Advanced Life Support...” At a **minimum**, the patient must receive the full Asystole or PEA protocol **prior** to contacting Medical Control.

3.1.6.A - FIELD TERMINATION OF RESUSCITATION EFFORTS WITH NO AVAILABLE ADVANCED LIFE SUPPORT (ALS)

1. ♦ When faced with a patient in Cardiac Arrest, no ALS equipment is available at the scene, and Transport time to a medical facility will exceed 30 minutes, they may consider contacting a Medical Control Physician for orders to terminate the resuscitation.
2. ♦ Medical control must be contacted and the physician must speak directly with the EMS provider, and must give consent for the resuscitation effort to cease.
3. ♦ This section does not normally apply to Paramedics; it may **only** be used when no Paramedics are available, **or** when Paramedics are present, but ALS equipment is not available.
4. The intent of this section is to avoid the risks of emergency transport of patients who are non-viable.
5. **Ensure that the EMS Coordinator of the hospital that authorized the Field Termination receives a copy of the runsheet for his/her records.**



ALS equipment means having full ALS capabilities, including Monitor/Defibrillator, Intubation equipment, IV supplies, and an ALS Drug Box.

3.2 - SUSPECTED CARDIAC CHEST PAIN OR CHEST PAIN EQUIVALENTS

1. Secure and maintain airway, administer Oxygen at 4 - 6 l/m via Nasal Cannula. Increase oxygen delivery as needed for respiratory distress.
2. Obtain vital signs.
3. Complete patient assessment, **including Pain Scale (1-10)**, and pain radiation.
4. Place patient on Cardiac Monitor and {Pulse Oximeter}.
5. Ask patient about allergies.
6. Ask both male and female patients if they are taking Viagra. No Nitroglycerin if Viagra or similar medications within the last 24 hours.
7. Give 325 mg. of **Aspirin** (4 Baby Aspirin, or one regular Adult Aspirin) to every patient with symptoms of Acute Coronary Syndrome (ACS). Patient **MUST CHEW** the aspirin.
8. If SBP > 100, and patient is at least 25 years of age (or has prescription for **Nitro**), administer **Nitrostat (Nitroglycerin)** (1) 1/150 grn. (0.4 mg.) **SL**. Re-assess the patient's vitals.
 - A. Patients who have not taken NTG previously must have IV started prior to Nitroglycerin administration.
 - B. Nitro may be repeated every 5 minutes as needed for pain control, up to a total of three tablets given by EMS, except as noted under “Treatment Considerations for Inferior Wall AMI,” below. Monitor and document the patient's BP before and after each Nitro administration.
9. Establish IV **0.9% NS** 250 ml. at TKO or **Saline Lock**, while en route to hospital. Establish IV **0.9% NS** 1,000 ml. at TKO with Macro-drip tubing, or a **Saline Lock**, preferably with an 18 gu. or larger Angiocath.

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10. For persistent chest pain, consider **Morphine Sulfate** up to 5 mg slow IVP (2-3 minutes) based on patient weight, provided SBP>100).
 - A. After 5 minutes, may repeat **Morphine Sulfate** as needed up to 5 mg slow IVP (2-3 minutes) based on patient weight, provided SBP>100).
11. Acquire a supine (if possible) {12-Lead EKG }, on all patients in the following categories:
 - Any patient experiencing symptoms suspicious of Acute Coronary Syndrome, including Anginal Chest Pain or an equivalent (e.g.; Shortness of Breath, Syncope, Back Pain, Abdominal Pain, Jaw or Shoulder Pain, Diaphoresis, Weakness)
 - Be particularly liberal in performing {12-Lead EKGs} on patients who are likely to have MIs without classical symptoms. Those patients include women, diabetics, and the elderly.
12. The {12-Lead EKG} should generally be obtained prior to moving the patient to the ambulance.
Mark all EKGs with patient name, and sequence.
13. Notify hospital of the transport of a possible MI patient if patient is displaying high-risk signs/symptoms.
14. {All patients with evidence of an Acute MI (diagnostic 12-Lead EKG showing >1mm ST elevation in 2 or more contiguous leads) should be transported to an appropriate Interventional Facility. **SEE ACUTE MI SECTION, 3.2.1.**}
15. Transport as rapidly as is possible and safe. While en route, if time permits, obtain further patient history regarding possible eligibility for thrombolytics, completing the “EMS CHECKLIST: SUSPECTED CARDIAC CHEST PAIN OR PAIN EQUIVALENTS”. The following is a list of contraindications to thrombolytics:

| Absolute and Relative Contraindications to Thrombolytic Therapy (Adapted from ACLS) | | |
|--|--|---|
| Time Frame | Absolute Contraindications | Relative Contraindications |
| Right Now | Suspected aortic dissection Known intracranial neoplasm Pregnancy (certain lytic agents) | Severe, uncontrolled hypertension (BP > 180/110) Current anticoagulant use Prolonged (> 10 minutes) and potentially traumatic CPR |
| Past 2 – 4 Weeks | Active internal bleeding (except menses) | Trauma, especially head trauma Major surgery Noncompressible vascular punctures Internal bleeding |
| Past Year | Non-hemorrhagic stroke or TIA Prior exposure to specific lytic agent | Intracerebral pathology |
| Ever | Hemorrhagic stroke Prior allergic reaction to streptokinase | Known bleeding disorder |

16. **Fluid challenges** of up to 250 ml may be administered to a patient with SBP < 100, in the absence of pulmonary edema.
17. {If feasible, acquire additional 12-Lead EKGs during transport, after administration of Nitro or other medications.}



Monitoring of BP with Nitro Administration: All levels of EMS Personnel are required to monitor and document the patient's BP reading before and after each administration of Nitroglycerin (Nitro).

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3.2.1 – ACUTE MYOCARDIAL INFARCTION

GENERAL CONSIDERATIONS

Protocol “3.2.1 – Acute Myocardial Infarction,” is to be used for patients with {12-Lead EKG} evidence of Acute Myocardial Infarction (AMI). These patients require aggressive treatment to reduce damage to the myocardium. This section is for use only by paramedics who can acquire and interpret a {diagnostic 12-Lead EKG}.

1. Open and maintain the airway. Administer Oxygen and maintain O2 Saturation >95%.
2. **Establish communications with Medical Control as early as possible** and advise them of a **CARDIAC ALERT** patient. It is imperative that the Paramedic speak directly with the Physician.
3. **If patient is having a confirmed MI and the Interventional Facility is rerouting, contact that Medical Control Physician, and discuss destination options.**
4. Transport should begin as soon as possible. Attempt to limit scene time to 10 minutes or less.
5. While en route, if time permits, establish a second IV **0.9% NS** 1,000 ml. with Macro-drip tubing at TKO or a **Saline Lock**.
6. Follow the appropriate Treatment Considerations for Specific AMI types listed in the sections below.
7. Destination considerations:
 - A. Interventional Facility means a hospital that offers Percutaneous Coronary Interventions (PCI, i.e., angioplasty) around the clock.
 - B. Paramedics should attempt to transport **all AMI patients** directly to an Interventional Facility, provided that the appropriate Interventional Facility is within 30 minutes travel time from the scene, even if other hospitals are closer.
 - C. If transport time would exceed 30 minutes, the paramedic may consider Aeromedical Transport.
 - D. Patients with 12-Lead EKG evidence of an Acute MI who have **contraindications to thrombolytics** should be transported to an Interventional Facility, unless transport time will exceed 45 minutes. Paramedics concerned about transport time should contact MCP at the receiving hospital or request Aeromedical Transport.
 - E. Use of on-line, active medical control, particularly for difficult cases, is encouraged.
 - F. **EXCEPTIONS:**
 - It is medically necessary to transport the victim to another hospital for initial assessment and stabilization;
 - It is unsafe or medically inappropriate to transport the victim directly to an Interventional Facility due to adverse weather or ground conditions or excessive transport time;
 - Transporting the victim to an Interventional Facility would cause a critical shortage of local Emergency Medical Services resources;
 - No appropriate Interventional Facility is able to receive and provide care to the AMI patient without undue delay;
 - The patient requests to be taken to a particular hospital that is not an Interventional Facility despite explanation of the benefits by the paramedic.
 - Contact Medical Control to discuss the appropriate destination for patients whom you have resuscitated from Cardiac Arrest, and who have 12-Lead EKG evidence of AMI.
 - Paramedics should complete the Cardiac Alert Checklist and the Prehospital Suspected Cardiac Chest Pain Checklist while en route if possible, or after arrival at the hospital.



Patients who have just been resuscitated are better treated with PCI than with thrombolytics. However, if you are concerned that your patient may be too unstable to be transported to an Interventional Facility, you should discuss this with MCP.

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TREATMENT CONSIDERATIONS FOR INFERIOR WALL AMI (IWMI)

(Leads II, III, aVF; supplied by the Right Coronary Artery)

1. Use IV **0.9% NS** 1,000 ml. at TKO with Macro-drip tubing (not Saline Lock). These patients typically often require aggressive fluid administration. Use 18 gauge Angiocath or larger.
2. Attempt to capture Lead V4R to determine RVI in all patients with IWMI.
3. Patient may be sensitive to Nitroglycerin and Morphine administration. Use with constant BP monitoring. Treat hypotension with a fluid challenge, then give further Nitro or MS less frequently, and maintain SBP > 100.
Patients who develop Second or Third Degree Blocks should receive {transcutaneous pacing (TCP)} instead of Atropine.
4. Dopamine should be a last resort in a patient experiencing an IWMI. Utilize fluids for hypotension, and continually assess lung sounds.

TREATMENT CONSIDERATIONS FOR ANTERIOR WALL AMI

(Leads V1-V4; supplied by Left Anterior Descending Artery)

1. Patients with ST Elevation in more than 2 leads are at higher risk for Sudden Cardiac Death
2. Patient is at risk for developing CHF or Cardiogenic Shock.
3. Patient also may develop BBB's, PVC's, or Complete Heart Block.
4. Dopamine should be the first treatment for significant hypotension in these patients, as opposed to fluid challenges.

TREATMENT CONSIDERATIONS FOR LATERAL WALL AMI

(Leads I, aVL, V5-V6; supplied by Circumflex)

1. May have some LV dysfunction but not as severe as Anterior Wall AMI.
2. May also develop AV Nodal Block.



Two Checklists, the revised “EMS Checklist: Suspected Cardiac Chest Pain or Equivalents,” and the new “Cardiac Alert Checklist,” have been created to coincide with these Standing Orders. Copies are available in pads or in electronic format from the GMVEMSC Office (937-586-3703). Use your old checklists until your supply is exhausted, then use this newer format.



TERMINOLOGY

MI – Myocardial Infarction (may be new, or may be old damage from previous event)

AMI – Acute Myocardial Infarction

ACS – Acute Coronary Syndrome

PCI – Percutaneous Coronary Intervention (newer term for PTCA or angioplasty)

Interventional Facility – hospital that offers PCI around the clock. In our region, as of this writing, those facilities include:

Dayton Heart Hospital
Good Samaritan Hospital
Grandview Hospital
Kettering Memorial Hospital

Miami Valley Hospital
Springfield Mercy Hospital
Springfield Community Hospital

3.3 - ARRHYTHMIAS

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1. Open and maintain the airway. Administer **O2**. Increase rate as needed for respiratory distress.
2. Place patient on {Pulse Oximeter} and Cardiac Monitor. Obtain a strip from Cardiac Monitor, and mark it with the date and patient's name.
3. Establish IV **0.9% NS** 250 ml. at TKO or **Saline Lock**, while en route to hospital.

3.3.1 - BRADYCARDIAS

1. Open and maintain the airway. Administer **O2**. Increase rate as needed for respiratory distress.
2. Good perfusion – Transport.
3. **If poor perfusion** is present and likely to be related to the bradycardia, treat according to steps below. Serious signs and symptoms of poor perfusion include chest pain, shortness of breath, decreased level of consciousness, hypotension, shock, pulmonary congestion, or congestive heart failure.
 - A. Administer **Atropine** 0.5mg IVP
 - B. If patient is conscious and alert, consider premedicating before pacing with **Versed**, 2 - 4 mg, IV push over 1 – 2 minutes.
 - C. Apply {**External Pacemaker**}, set at 70 beats per minute. Start at 20 milliamps and increase until mechanical capture is obtained for conscious patients. Start at maximum milliamps for unconscious patients. If no IV available, use pacer prior to atropine.
 - D. Administer a second **Atropine** 0.5mg IVP after 3 – 5 minutes, if heart rate remains below 60 with serious signs and symptoms.
 - E. **If serious signs and symptoms continue**, administer up to two additional doses of **Atropine**, using 1.0 mg each every 3-5 minutes. Total maximum dose of **Atropine** is 3 mg (0.04mg/Kg), or until heart rate is 60 and SBP > 100 with adequate level of consciousness.
 - F. A **Dopamine Drip** can be used in addition to atropine if SBP < 100. Use the 400 mg **Dopamine**/250 ml NS pre-mix (1600 mcg/ml). Titrate the infusion until heart rate is 60 or > with SBP > 100 and improved LOC. Start at 5mcg/Kg/minute (approximately 15 drops/minute using **Microdrip tubing**), and titrate to a maximum dose of 20 mcg/Kg/min (approximately 60 drops per minute).

IMPORTANT INFORMATION REGARDING IV VERSED:

The concentration of Versed in the GMVEMSC Drug Bag is now 10mg/2ml. This concentration works well for the volumes used with the {Mucosal Atomizer Device (MAD)}. However, it is more difficult to deliver IVP over a 1 – 2 minute period of time, as required by Standing Orders.

When administering Versed IVP, use a TB syringe, which must be supplied by EMS (not carried in the Drug Bag). Draw up the correct amount of Versed, and deliver small pushes over 1 – 2 minutes.

2 mg = 0.4 ml

3 mg = 0.6 ml

4 mg = 0.8 ml



Documentation of Prehospital External Pacemaker Use

The use of External Cardiac Pacemakers by paramedics in the field has become quite common.

Pacemakers can provide an effective treatment for bradycardic rhythms, sometimes when atropine and other drugs are ineffective. Pacemaker use for bradycardia may be safer than atropine for MI patients. Occasionally, pacemakers can be used successfully for asystolic cardiac arrest. Most importantly, their use may prevent cardiac arrest from occurring.

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If you utilize an external (or “transcutaneous”) pacer, it is important that you document that use correctly. The time the pacer was applied, the current setting used, and the rate that you specified are each important points for documentation.

However, you also need to document whether or not pacing was successful. There are two measures of pacemaker effectiveness: **electrical** capture, and **mechanical** capture. Merely saying on your runsheet that you achieved “capture” does not provide any useful information.

The presence of pacemaker spikes on the cardiac monitor indicates only that a pacemaker is discharging. It provides **no** information about ventricular contraction or perfusion. When pacemaker spikes are followed by QRS complexes, the patient’s heart rate is being regulated by an electronic pacemaker, rather than one of the heart’s intrinsic pacemakers. That is referred to as “**electrical capture**.”

“**Mechanical capture**” occurs when pacemaker beats result in effective myocardial contractions. The pacemaker is generating not only a QRS complex, but also a perfusing rhythm. Recognizing mechanical capture is simple: you can palpate a pulse with each complex. The pacemaker is doing its job.

To provide some examples, let’s say we are using a pacer to try to treat asystole. According to the Standing Orders, the pacemaker should be set to 70 beats per minute, at Maximum milliamps. If pacing is successful, there will be **mechanical capture**, and the patient will have a pulse. On the other hand, if you have neither electrical nor mechanical capture, the patient will remain asystolic. Finally, if you get electrical capture only, there will be ventricular beats on the monitor, but the patient will be pulseless. In these patients, electrical capture is the equivalent of Pulseless Electrical Activity (PEA).

Obviously, you cannot have mechanical capture without first having electrical capture. If pacemaker spikes do not elicit a QRS complex, the pacemaker is not capturing the ventricle electrically, and there will be no ventricular contraction.

Every runsheet documenting the use of a pacemaker should contain all of the following information:

1. Time
2. Current setting in milliamps (Per Standing Orders, maximum milliamps to start with in unconscious patients; minimum to start for conscious patients; titrate to effect)
3. Rate setting (beats per minute)
4. A measure of effectiveness, by specifying one of these categories:
 - Mechanical Capture (best)
 - Electrical Capture ONLY
 - No Pacemaker Capture (worst)

If possible, both cardiologists and Emergency Room personnel would also appreciate it if you could leave EKG strips, showing the rhythms before and after pacer application.

3.3.2.A – TACHYCARDIAS: UNSTABLE

1. If serious signs and symptoms (including chest pain, shortness of breath, decreased level of consciousness, hypotension, shock, pulmonary congestion, congestive heart failure, or Acute MI) are present that are **likely to be related to the tachycardia**, treat as follows. Rate-related signs and symptoms occur at different rates, but seldom less than 150 bpm.
2. Airway, **O2**, IV, Cardiac Monitor.

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3. Prepare for immediate **Cardioversion**. Depending on level of consciousness, consider premedicating with **Versed**, 2 - 4 mg, IV push over 1 – 2 minutes.
4. Provide **Synchronized Cardioversion**:
 - A. Start with **50 joules** for **Atrial Flutter** or **Paroxysmal Supraventricular Tachycardia** (PSVT).
 - B. Begin **Cardioversions** at **100 joules** for any other tachycardia, or if unsuccessful at 50 j (above), continuing to resynchronize. If still unsuccessful, use **200, 300, 360 j**.
 - C. If patient critical, and any delay in synchronization, immediately use unsynchronized shocks.
5. Be prepared with suction and intubation equipment.
6. May give **brief trial** of medication for **specific tachycardia** unless the patient is profoundly hypotensive or unconscious. The trial of medications may be aborted at any time if cardioversion is needed. Specific tachycardia medications are:
 - A. **Narrow complex tachycardia: Adenosine** 6 mg, rapid IVP over 1 – 2 seconds, followed by **Adenosine** 12 mg, rapid IVP over 1 – 2 seconds, then by Adenosine 12 mg, rapid IV push, if first dose(s) unsuccessful.
 - B. **AFib/AFlutter: Cardizem**, 0.25 mg/Kg IV (avg. dose 20 mg) over two minutes.
Contraindicated if CHF or WPW, or SBP < 100.
 - C. **Wide complex tachycardia: Give Cordarone (Amiodarone)** very slow IV over 10 minutes, by adding 150 mg of **Amiodarone** to a **50 ml** bag of **D5W**, and running wide open using **Microdrip** tubing.

See “IMPORTANT INFORMATION REGARDING IV VERSED” in Section 3.3.1.



This is an easy and safe way to administer Amiodarone as a 10 minute drip. First, you dilute the Amiodarone. The maximum drip rate for Microdrip tubing (without pressure bags) is 300 gtts/minute. 60 drops = 1 ml, so the max drip rate is 5 ml/per minute (5 x 60 = 300). 5 ml/minute x 10 minutes = 50 ml. Since the Amiodarone adds volume, and slows the drip somewhat because it is thicker than water, it adds a safety factor, and the Amiodarone will probably take a little over 10 minutes to administer.



Relationship of S/S to Arrhythmia: Rapid tachycardia results in decreased cardiac output thereby producing the signs and symptoms listed in #1 above (chest pain, shorthess of breath, etc.) This algorithm is intended to treat those signs and symptoms that result from the tachycardia, not tachycardia that result from other conditions (example: hypovolemia).

Cardizem will rarely convert the arrhythmia. It is used to reduce the heart rate.

3.3.2.B – TACHYCARDIAS: STABLE

1. Airway, **O2**, IV, Cardiac Monitor.
2. **If Stable, Narrow Complex Tachycardia:**
 - A. Consider specific diagnosis. Obtain all available clinical information, including {12-Lead EKG} if available.
 - B. Attempt a **vagal maneuver** by having the patient bear down.
 - C. Give **Adenosine**, 6 mg, rapid IVP over 1 – 2 seconds. If patient has history of PSVT and advises that it takes 12 mg to convert, paramedic **may skip this Step** and go directly to the 12 mg dose.
 - D. If no change, give **Adenosine**, 12 mg, rapid IVP over 1 – 2 seconds. If still no change, give **Adenosine**, 12 mg, rapid IVP over 1 – 2 seconds.
 - E. If still no change, give **Cardizem**, 0.25 mg/Kg IV (avg. dose 20 mg) over two minutes.

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Contraindicated if CHF or WPW, or SBP < 100.

3. **If Atrial Fib/Atrial Flutter:**
 - A. Do not use Adenosine or Cardizem for Atrial Fib/Flutter in a WPW patient.
 - B. **Cardizem**, 0.25 mg/Kg IV (avg. dose 20 mg) over two minutes. **Contraindicated** if CHF or WPW, or SBP < 100.
4. **For all Stable, Wide Complex Tachycardias:**
 - A. Consider specific diagnosis. Obtain all available clinical information.
 - B. Give **Cordarone (Amiodarone)** very slow IV over 10 minutes, by adding 150 mg of **Amiodarone** to a **50 ml** bag of **D5W**, and running wide open using **Microdrip** tubing. May give Lidocaine at 1.5 mg/Kg in place of Amiodarone, if patient is allergic to Amiodarone, or profoundly hypotensive.
 - C. **Cardiovert** immediately if patient becomes unstable. Start with **100** joules, then **200, 300, 360 j**. If patient becomes critical, and there is any delay in synchronization, immediately use unsynchronized shocks.

3.4 - SHOCK

1. Establish and maintain airway. Administer 100% **O2** with NRB, regardless of {Pulse-ox readings}.
2. During transport to the hospital, start IV of **0.9% NS** and titrate flow to maintain perfusion, **DO NOT DELAY TRANSPORT**.
3. Apply ECG Monitor.
4. Hypothermia is a significant, and frequent, problem in Shock or Major Trauma patients. Do all that you can to maintain patients' body temperature.

3.4.1 - NON-TRAUMATIC SHOCK WITHOUT PULMONARY EDEMA

1. Place patient on 100% **O2** with NRB, regardless of {Pulse-ox readings}.
2. Identify type of shock.
3. Administer a 500 ml. fluid challenge bolus of **0.9% NS** IVP.
4. ♦Repeat the fluid challenge bolus with an additional 500 ml on MCP orders.
5. If Shock persists despite above measures or transport will be prolonged, start second **Saline** IV.
6. If Shock is still unresponsive and **SBP < 100**, administer a **Dopamine (Intropin) Drip** using the 400 mg **Dopamine**/250 ml **NS** pre-mix (1600 mcg/ml). Titrate the infusion to keep **SBP > 100** and improved LOC. Start at 5mcg/Kg/minute (approximately 15 drops/minute using **Microdrip tubing**), and titrate to a maximum dose of 20 mcg/Kg/min (approximately 60 drops per minute).

3.4.2 – NON-TRAUMATIC SHOCK WITH PULMONARY EDEMA

In Non-Traumatic Shock With Acute Pulmonary Edema, especially if associated with **JVD, Rales, Cold/Clammy Skin, Shortness of Breath, Pre-Sacral and Pedal Edema:**

1. Place patient on 100% **O2** with NRB, regardless of {Pulse-ox readings}.
2. Treat cardiogenic causes by treating arrhythmias as indicated.
3. Administer a 250 ml. fluid challenge bolus of **0.9% NS** IVP.
4. Administer **Dopamine (Intropin)** drip 400 mg/250 ml **D5W** pre-mix (1600 mcg/ml). Initiate **Dopamine** at 5mcg/Kg/minute (approximately 15 drops/minute using **Microdrip tubing**), to a maximum dose of 20 mcg/Kg/min (approximately 60 drops per minute). Titrate rate to keep **SBP > 100**.

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5. ♦ Additional fluid challenges given only on MCP orders.

3.4.3 – EXSANGUINATING HEMORRHAGE

1. Establish and control airway.
2. Control external bleeding.
3. Place patient on 100% O₂ with NRB, regardless of {Pulse-ox readings}.
4. Establish multiple IV's of **0.9% NS** at wide/open rate with an {IV pressure infusion device} **while en route**. Titrate IV flow to obtain and maintain SBP > 100.

3.5 - STROKE

GENERAL CONSIDERATIONS

1. The patient needs to be transported without delay to the most appropriate hospital.
2. NOTIFY HOSPITAL AS SOON AS POSSIBLE.
3. Hypertension in stroke patients should rarely be treated in the Pre-hospital setting.
4. Nitroglycerin should not be used unless signs and symptoms consistent with AMI or APE are present.
5. **Time of onset of signs and symptoms must always be obtained, documented and relayed to the receiving facility.**
6. Evaluate the patient using the “**Pre-hospital CVA CHECKLIST**,” including the three tests of the Cincinnati Pre-hospital Stroke Scale:
 - A. Facial Droop (pt. shows teeth or smiles):
 - Normal – both sides of face move equally
 - Abnormal – one side of face does not move as well as other side
 - B. Arm Drift (pt. closes eyes and holds both arms straight out for 10 seconds):
 - Normal – both arms move the same, or both arms do not move at all (other findings, such as pronator grip, may be helpful)
 - Abnormal – one arm does not move, or one arm drifts down compared with the other
 - C. Abnormal Speech (have pt. say “you can’t teach an old dog new tricks”):
 - Normal – pt. uses correct words with no slurring
 - Abnormal – pt. slurs words, uses wrong words, or is unable to speak
7. Assessment should also include Glasgow Coma Score with components. Patient’s with scores of 8 or less have poor prognosis and need ALS as soon as possible.
8. **Consider transporting acute CVA/TIA patients to a facility offering thrombolytics for stroke *if* you will be able to arrive within two hours from the time of onset of symptoms. Contact Medical Control for advice.**

SPECIFIC CARE

1. Provide **O₂** by nasal cannula at 4 lpm, and increase as needed with respiratory distress.
2. Apply {Pulse Oximeter}, and evaluate relevant history of condition, and Cincinnati Stroke Scale. Maintain >92% {SpO₂}.
3. Be prepared to hyperventilate at a rate of 24 respirations per minute and/or assist ventilations with oral or nasal airway and BVM or FROPVD.
 - A. {If signs of cerebral herniation are present (see Head Injury) and quantitative (i.e., numeric) End Tidal CO₂ (EtCO₂) readings are available, ventilate at a rate to maintain EtCO₂ readings at approximately 30 mmHg (30 torr).}
4. Apply EKG Monitor
5. Start **Saline Lock** or **IV Saline TKO** and draw blood sample while en route to hospital.

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6. Re-evaluate patient condition, contact Medical Control to advise you are en route with a Stroke patient, and transport to hospital.
7. If patient does not have a secure, protected airway, intubate.
8. {Determine blood sugar level.}
9. If blood sugar (BS) less than 60, no {blood sugar monitor} is available, or there is a strong suspicion of hypoglycemia despite blood sugar readings:
 - A. Administer 50ml of **50% Dextrose** (25 grams **D50**), IV bolus.
 - B. **D50** may be repeated in 10 minutes if patient fails to respond, or BS remains < 60.
 - C. IF unable to obtain IV, give **Glucagon**, 1mg IM.
10. DO NOT DELAY TRANSPORT



Symptoms Mimicking Stroke

- Unrecognized seizures
- Subdural hematoma
- Brain tumor
- Confusional states
- Syncope
- Toxic or metabolic disorders (eg, hypoglycemia)

4.0 - TRAUMA EMERGENCIES

4.0.1 - GENERAL CONSIDERATIONS

1. **Minor Trauma** patients may be transported to non-Trauma Centers. Vital Signs should be recorded, all necessary splinting and bandaging completed as needed.
2. Administer **O2** at 12-15 liters/minute by NRB mask to all significant trauma patients, regardless of {Pulse-ox readings}.
3. **Major Trauma** patients are to be transported as soon as possible to the nearest appropriate facility, per destination protocols.
 - A. 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.
 - B. Limit on-scene time to 10 minutes or less whenever feasible.
 - C. The Glasgow Coma Scale can be completed in seconds, and the component scores relayed to Medical Control. Communicate and document components, rather than overall score.
 - D. Hypothermia is a significant, and frequent, problem in Shock or Major Trauma patients. Do all that you can to maintain patients' body temperature.
 - E. Contact receiving hospital and provide Medical Control with **MIVT and ETA**.
 - Mechanism of Injury
 - Injuries
 - Vital Signs
 - Treatment
4. The **ONLY** procedures that should take precedence to transport of Major Trauma patients are:
 - A. **Extrication**
 - B. **Airway Management**
 - C. **Stabilization of neck/back or obvious femur and pelvic fractures on a backboard**
 - D. **Exsanguinating Hemorrhage Control.**



Mnemonic: EASE.

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5. **IV's should be attempted en route to the hospital unless the patient is trapped or 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, the largest tubing available, and 1000 ml of **0.9% NS**. IV flow rates are as follows:
 - A. Keep open rate for Major Head Trauma with adequate perfusion.
 - B. IV wide open if the patient has inadequate perfusion (including Head Trauma) utilizing {IV Pressure Infusion Pumps} or similar equipment if available.
 - C. Titrate all IV flow rates to maintain SBP > 100.
 - D. A second IV may be started en route.
6. For pain relief when the patient is conscious, alert, is not hypotensive, and is complaining of severe pain, consider **Morphine Sulfate**, up to 5 mg slow IVP (2-3 minutes) based on patient weight, provided SBP>100).
7. May repeat **Morphine Sulfate** up to 5 mg slow IVP (2-3 minutes) based on patient weight, provided SBP>100).

4.0.2 - TRIAGE and TRANSPORTATION GUIDELINES

4.0.2.1 - CONCEPTS

1. After the trauma patient's extrication, the on-scene time should be limited to TEN MINUTES or less, except when there are extenuating circumstances.
2. Trauma Patients, as identified in this document, should be transported to "THE NEAREST APPROPRIATE TRAUMA CENTER".
3. Use of on-line, active medical control for medical direction in the field, particularly for difficult cases, is encouraged in compliance with regional standing orders.
4. **PRE-ARRIVAL NOTIFICATION OF THE RECEIVING FACILITY IS ESSENTIAL!** Give Mechanism of Injury, Injuries, Vital Signs, Treatment (MIVT) and ETA.
5. List in the EMS Run Report which of the State Trauma Triage Criteria were met by the patient.

4.0.2.2 - TRAUMA CENTER/FACILITY CAPABILITIES

1. Level I and II Trauma Centers can care for the same trauma patients.
 - A. Level III Trauma Centers offer services, based on individual hospital resources that provide for initial assessment, resuscitation, stabilization, and treatment for the trauma patient.
 - B. In areas of the region where the Level III Trauma Center is the only verified trauma facility, (within 30 minutes ground transport time), this hospital may act as the primary receiving facility for the critically injured patient.
 - C. In areas where the trauma patient is in close proximity to a Level III trauma center and a Level I or II trauma center is still within the 30 minute transport guidelines established in this document, the EMS Provider should exercise professional judgment as to whether the patient would benefit more from an immediate evaluation, stabilization and treatment at the proximate Level III trauma center or from direct transport by EMS Provider to the Level I or II trauma center.
 - D. Regional Adult Trauma Centers
 - Level I – Miami Valley Hospital
 - Level II – Good Samaritan Hospital
 - Level III – Greene Memorial Hospital
2. In areas of the region where there are no verified Trauma Centers (within 30 minutes ground transport time) the acute care hospital may act as the primary receiving facility for critically injured trauma patients. EMS provider may arrange for air medical transport from the scene.
3. If a pediatric patient meets the trauma triage guidelines, then they are taken to a pediatric trauma center. If transportation time is >30 minutes to a pediatric trauma center, then transport to nearest acute care hospital for stabilization and transfer. EMS provider may arrange for air medical transport

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from the scene.

4. All pregnant trauma patients should be transported to the NEAREST ADULT Trauma Center, unless transport time > 30 minutes.

4.0.2.3 - AIR MEDICAL TRANSPORTATION

PRE-ARRIVAL NOTIFICATION OF THE RECEIVING FACILITY IS ESSENTIAL.

1. Prolonged delays at the scene waiting for air medical transport should be avoided.
2. Traumatic cardiac arrest due to blunt trauma is **not** appropriate for air transport.
3. In the rural environment, direct transfer of trauma patients by air medical transport may be appropriate and should be encouraged.

4.0.2.4 - USE OF GUIDELINES

1. EXCEPTIONS:
 - A. It is medically necessary to transport the victim to another hospital for initial assessment and stabilization before transfer to an adult or pediatric trauma center;
 - B. It is unsafe or medically inappropriate to transport the victim directly to an adult or pediatric trauma center due to adverse weather or ground conditions or excessive transport time;
 - C. Transporting the victim to an adult or pediatric trauma center would cause a shortage of local emergency medical services resources.
 - D. No appropriate trauma center is able to receive and provide trauma care to the victim without undue delay;
 - E. Before transport of a patient begins, the patient requests to be taken to a particular hospital that is not a trauma center or, if the patient is less than 18 years of age or is not able to communicate, such a request is made by an adult member of the patient's family or legal representative of the patient.

4.0.3 - Pre-hospital FIELD ADULT TRAUMA TRIAGE GUIDELINES

1. Utilize for persons 16 and above
2. Patients to be taken to nearest hospital:
 - Unstable airway
 - Blunt trauma arrest, no pulse or respirations
 - All pregnant trauma patients should be transported to the NEAREST ADULT Trauma Center, unless transport time > 30 minutes.

ANATOMY OF INJURY

1. All penetrating trauma to head, neck, torso, and extremities proximal to elbow and knee
2. Abdominal injury with tenderness, distention, or seat belt sign
3. Chest injury: Flail chest and/or tension pneumothorax
4. Two or more proximal long bone fractures
5. Evidence of pelvic fracture (exception: isolated hip fracture)
6. Spinal cord injury with signs and symptoms of paralysis.
7. Burns greater than 10% Total BSA or other significant burns involving the face, feet, hands, genitalia, or airway
8. Amputation proximal to wrist and/or ankle
9. Evidence of serious injury of 2 or more body systems
10. Crush injury to head, neck, torso, or extremities proximal to knee or elbow

| | |
|-------------------------------|--------------------------------|
| YES = To Trauma Center | NO = Assess Physiologic |
| Alert Trauma Team | |

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PHYSIOLOGIC

1. **GCS less than or equal to 13** (see Section 4.3.1), loss of consciousness at anytime greater than 5 minutes or alteration in level of consciousness with evidence of head injury at time of exam or thereafter, or fails to localize pain
2. Respirations less than 10 or greater than 29 or intubation or relief tension pneumothorax
3. Pulse greater than 120 in combination with any other physiologic criteria
4. SBP < 90 or absent radial pulse with carotid pulse present

| | |
|-------------------------------|--|
| YES = To Trauma Center | NO = Evaluate Mechanism of Injury if high energy impact |
| Alert Trauma Team | |

MECHANISM OF INJURY

1. Auto-pedestrian/auto-bicycle injury with significant (> 5 mph) impact
2. Death in same passenger compartment
3. Ejection from motor vehicle
4. Extrication time >20 minutes
5. Falls > 20 feet
6. High Speed auto crash
 - A. Initial speed > 40 mph
 - B. Intrusion into passenger compartment > 12 inches
 - C. Major auto deformity > 20 inches
7. Open motor vehicle crash >20 mph or with separation of rider from vehicle
8. Pedestrian thrown or run over
9. Unrestrained rollover

| | |
|-------------------------------------|--------------------------------------|
| YES = Consider Trauma Center | NO = Check Special Situations |
| | |

SPECIAL SITUATIONS

1. Age >55
2. Preexisting cardiac and/or respiratory disease
3. Insulin dependent diabetes, cirrhosis, morbid obesity, seizure
4. Patient with bleeding disorder or on anticoagulants
5. Immunosuppressed patients (renal dialysis, transplant, cancer, HIV)
6. **All pregnant trauma patients should go to nearest adult trauma center, if within 30 minutes transport time.**

| | |
|-------------------------------|-------------------------------|
| YES = To Trauma Center | NO = To Local Hospital |
| | |

4.1 - MULTIPLE TRAUMA

Patients meeting criteria for transport to a Trauma Center are considered “Load and Go.”

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1. Establish airway, breathing and circulation. Maintain C-spine immobilization. Use the modified jaw-thrust if airway needs to be opened.
2. Assess patient and initiate 100 % **O2** therapy via NRB mask, regardless of {Pulse-ox readings}.
3. If snoring is heard or patient unconscious: insert an oral or nasopharyngeal airway, and assist with ventilations with 100% **O2**.
4. If gurgling heard or secretions/blood/vomit present: suction upper airway.
5. Assure adequate ventilation. If breathing is slow (less than 10 breaths per minute), or shallow and rapid (greater than 29 breaths per minute), assist breathing using bag-valve mask with 100% **O2** and reservoir. Consider intubation if indicated.
6. Utilize **PerTrach** or other approved **cricothyrotomy device**, if available and needed to maintain or secure the airway.
7. Control hemorrhage by appropriate method, and splint/immobilize as indicated.
8. If patient resuscitation is consistent with **Section 3.1.5: Non-Initiation of CPR**, perform endotracheal intubation using in-line immobilization technique. Confirm tube placement using **Primary and Secondary Methods**, and secure tube.
9. Manage any injury that may compromise breathing. Place/maintain the patient in correct position to maintain the airway. Apply {Pulse Oximeter}.
 - Open pneumothorax: cover with an occlusive dressing, tape three sides down.
 - Tension pneumothorax:
 - lift one side of any occlusive dressing;
 - if patient has signs and symptoms of tension pneumothorax, perform needle decompression on the affected side;
 - if patient with torso trauma has rapidly and profoundly dropping or non-palpable BP, perform bilateral needle chest decompression.
 - After chest decompression, provide positive pressure ventilation.
 - Flail chest: immobilize with a bulky dressing or towels taped to the chest.
10. **TRANSPORT immediately!**
11. Contact Medical Control and advise of patient condition with MIVT & ETA, and need for Trauma Team.
12. **IV's should be attempted en route to the hospital unless the patient is trapped.** Start the IV with a large bore catheter, the largest tubing available and 1000 ml of **0.9% NS**. **IV** flow rates are as follows:
 - A. Keep open rate for Major Head Trauma with adequate perfusion.
 - B. IV wide open if the patient has inadequate perfusion (including Head Trauma) utilizing {IV Pressure Infusers} or other similar device if available.
 - C. Titrate all IV flow rates to maintain SBP > 100.
 - D. A second IV may be started en route.
13. Apply Cardiac Monitor and check rhythm.



During transportation:

- A. Continue to evaluate patient.
- B. Splint individual fractures.
- C. Check pulses distal to the fracture site.
- D. Check distal skin color, temperature, neurologic status.
- E. Obtain relevant history.

In lieu of an IV Pressure Infuser, you can use a BP cuff or squeeze IV bag by hand.

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4.2 - TRAUMATIC FULL ARRESTS AFTER INITIATION OF CARE

1. Open, assess and maintain the airway, using the modified jaw-thrust, always assume C-spine injury.
2. Ventilate with 100% **O2** using BVM. Ventilate at a rate of 24/minute with severe head injury.
3. Begin CPR unless patient meets the criteria for **Non-Initiation of CPR** in **Section 3.1.5**.
4. Place on a Cardiac Monitor.
5. Contact Medical Control and advise of patient condition, while continuing CPR and rapid transport to appropriate facility by ground, if appropriate.
6. Perform endotracheal intubation using in-line immobilization technique. Confirm tube placement using Primary and Secondary Methods, and secure tube.
7. Establish 2 IV's of **NS** to maintain perfusion. IVs should be started en route to hospital unless patient is trapped.
8. If the patient has potential chest trauma, perform bilateral relief of tension pneumothorax.

4.3 - HEAD INJURY

GENERAL CONSIDERATIONS

1. Evaluate patient condition:
 - A. Level of Consciousness
 - B. Pupillary size and reaction
 - C. Glasgow Coma Scale results
2. Orotracheal, nasotracheal, or digital intubation, if indicated, should be accomplished gently with in-line C-spine immobilization. Confirm tube placement using **Primary** and **Secondary Methods**, and secure tube.
3. Do not hesitate to take control of airway.
4. Ventilate at a rate of 24 per minute when there are the following signs of cerebral herniation:
 - A. Blown pupil(s), left and right pupil sizes different, bradycardia, posturing, and decreased Level of Consciousness.
 - B. {If quantitative (i.e., numeric) End Tidal CO₂ (EtCO₂) readings are available, ventilate at a rate to maintain EtCO₂ readings at approximately 30 mmHg (30 torr).}
5. Notify hospital for all patients with serious signs and symptoms of Head Injury; advise of all three components of GCS.

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4.3.1 - GLASGOW COMA SCALE

| | | GCS |
|-------------------------------------|------------------------------------|----------|
| EYES | SPONTANEOUSLY | 4 |
| | TO VERBAL COMMAND | 3 |
| | TO PAIN | 2 |
| | NO RESPONSE | 1 |
| BEST VERBAL RESPONSE | ORIENTED & CONVERSES | 5 |
| | DISORIENTED & CONVERSES | 4 |
| | INAPPROPRIATE WORDS | 3 |
| | INCOMPREHENSIBLE SOUNDS | 2 |
| | NO RESPONSE | 1 |
| BEST MOTOR RESPONSE | OBEYS VERBAL COMMAND | 6 |
| | PURPOSEFUL MOVEMENT TO PAIN | 5 |
| | WITHDRAWAL | 4 |
| | FLEXION | 3 |
| | EXTENSION | 2 |
| | NO RESPONSE | 1 |



Hyperventilation and EtCO₂ Levels: Maintain good ventilation at rate of about one breath every 4 – 5 seconds with high flow oxygen. Prophylactic hyperventilation for head injury is no longer recommended. Cerebral herniation syndrome is the only situation in which hyperventilation (rate of 24 per minute) is still indicated.

An increase in the level of CO₂ (hypoventilation) promotes cerebral vasodilation and increased swelling, while lowering the level of CO₂ (hyperventilation) promotes cerebral vasoconstriction and cerebral ischemia. Hyperventilation causes a significant decrease in cerebral perfusion from vasoconstriction, which results in cerebral hypoxia. Thus, both hyperventilation and hypoventilation cause cerebral hypoxia and increase mortality.

The one time when you may hyperventilate is cerebral herniation syndrome. 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 and 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 is occurring, 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 ICP. In this situation, the danger of immediate herniation outweighs the risk of ischemia.

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4.4 - EXTREMITY FRACTURES, DISLOCATIONS, SPRAINS

1. ABC's with C-spine control as indicated.
2. Control bleeding by direct pressure.
3. Assess extremity distal to the injury for color, pulses, sensation, temperature and movement.
4. For open fractures, control bleeding with direct pressure and cover with dry, sterile dressing.
7. Apply appropriate splinting device.
5. Re-assess color, pulses, sensation and movement after splinting and during transport.
6. Elevate extremity applying ice/cold pack to site.
8. If signs/symptoms of hypovolemic shock are present, establish an IV of NS to maintain perfusion. Do NOT delay transport to establish venous access.
9. IV should be started en route to hospital unless patient is trapped, or patient has no life threatening injuries, and transport prior to analgesia would be extremely painful.
10. For pain relief when the patient is conscious, alert, is not hypotensive, and is complaining of severe pain, consider **Morphine Sulfate**, up to 5 mg slow IVP (2-3 minutes) based on patient weight, provided SBP>100).
11. May repeat **Morphine Sulfate** up to 5 mg slow IVP (2-3 minutes) based on patient weight, provided SBP>100).



Rules of Splinting

1. Adequately visualize the injured part.
 - Check and record distal sensation and circulation before and after splinting. Check movement distal to the fracture if possible (ask conscious patient to wiggle fingers or observe motion of the unconscious patient when a painful stimulus is applied)
 - If the extremity is severely angulated and pulses are absent, you should apply gentle traction in an attempt to straighten it. This traction should never exceed 10 pounds of pressure. If resistance is encountered, splint the extremity in the angulated position. When you are attempting to straighten an extremity, it is very important to be honest with yourself with regard to resistance. It takes very little force to lacerate the wall of a vessel or to interrupt the blood supply to a large nerve. If the trauma center is near, always splint in the position found. Consider pain relief as needed and appropriate!
 - Open wounds should be covered with a sterile dressing before you apply the splint. Splints should always be applied on the side of the extremity away from open wounds to prevent pressure necrosis.
 - Use the splint that will immobilize one joint above and below the injury.
 - Pad the splint well.
 - Do not attempt to push bone ends back under the skin. If you apply traction and the bone end retracts back into the wound, do not increase the amount of traction. You should not use your hands or any tools to try to pull the bone ends back out, but be sure to notify the receiving physician. Bone ends should be carefully padded by bandages before pneumatic splints are applied to the lower extremities. The healing of bone is improved if the bone ends are kept moist when transport time is prolonged.
 - In a life-threatening situation, injuries may be splinted while the patient is being transported. When the patient is stable, splint all injuries before moving the patient.
 - If in doubt, splint a possible injury.

Reference: BTLS

Note: The patient who requires a load and go approach can be adequately immobilized by careful packaging on the long spineboard. You can then do some additional splinting in the vehicle en route to the hospital as time and the patient's condition permits.

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Management of Specific Orthopedic Injuries

| SITE | INJURY | SUGGESTED IMMOBILIZATION |
|--------------|-------------|---|
| Clavicle | Fracture | Sling and swath |
| Shoulder | Dislocation | Splint in position found with pillow, sling and swath |
| Humerus | Fracture | Short board splint & sling and swath |
| Elbow | Fracture | Splint in position found |
| Elbow | Dislocation | Splint in position found |
| Forearm | Fracture | Rigid splint and sling |
| Wrist | Fracture | Splint in position found |
| Hand | Fracture | Splint in position of function |
| Finger | Fracture | Malleable padded splint in position of function |
| Pelvis | Fracture | PASG & long board |
| Hip | Fracture | Blanket between legs & secure injured leg to uninjured leg, backboard |
| Hip | Dislocation | Long board with leg supported with pillow |
| Femur | Fracture | Traction splint, PASG |
| Knee | Fracture | Splint in position found |
| Knee | Dislocation | Splint in position found unless instructed to reduce. |
| Tibia/fibula | Fracture | Air splint, padded board splint, or PASG |
| Ankle | Fracture | Pillow splint or air splint |
| Ankle | Dislocation | Pillow splint or air splint |
| Toe | Fracture | Tape to adjacent toe |

4.5 - DROWNING AND NEAR DROWNING

1. **Maintain personal safety at all times.**
2. Assure ABCs, starting in the water if necessary
3. Consider spinal immobilization, and deliver 100% **O2**.
4. If patient arrests, or is found in arrest, attempt to evaluate for the presence of hypothermia. If severe hypothermia is strongly suspected, limit defibrillation attempts to no more than three.
5. Check pulse, assure ABCs, intubate patient and continue CPR.
6. Remove wet clothing, and try to maintain the victim's body temperature.
7. Apply Cardiac Monitor and check rhythm. Follow cardiac arrest guidelines.
8. Start IV of **Saline** {warmed if possible} while en route.
9. Evaluate neurological status including level of consciousness (GCS), pupillary response, and movement.
10. If feasible for patient condition, Near Drowning patients should be transported to a Trauma Center.

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4.6 - HYPOTHERMIA/FROSTBITE

GENERAL CONSIDERATIONS

1. Secure airway, and consider C-spine immobilization.
2. Administer {warmed, humidified} 100% **O2** by NRB mask and or BVM.
3. Attempt to evaluate the severity of hypothermia, if means are available.
4. Evaluate neurological status including level of consciousness (GCS) and pupillary response.
5. Notify hospital immediately.
6. Move patient to warm environment, remove all wet clothing and cover with blankets.
7. Take great care to avoid any rough movement, since that can precipitate VFib. It may be beneficial to immobilize the victim on a backboard.
8. Assess vital signs, mental status, temperature of patient and environment, and evidence of local injury. It may be necessary to assess pulse and respirations for up to 30 seconds or more to confirm arrest in the profoundly hypothermic patient.
9. Diabetics are highly susceptible to cold illnesses. Consider the possibility of hypoglycemia, and treat accordingly.
10. If patient condition warrants, **Hypothermia** patients should be transported to a **Trauma Center**. Patients with severe **Frostbite** should be transported to a **Burn Center**.

4.6.1 - HYPOTHERMIA WITH ARREST

1. CPR continuously.
2. Consider spinal immobilization. Evaluate for other traumatic injuries.
3. Apply Cardiac Monitor or AED, check rhythm and shock if indicated. Maximum of three (3) shocks: 200 J, 300 J, and 360 J.
4. {Use a hypothermia thermometer.} If body temperature is < 30 degrees centigrade (86 degrees Fahrenheit), or severe hypothermia is strongly suspected, limit defibrillation attempts to no more than three, and withhold medications except on orders from Medical Control.
5. If body temperature is > 30 degrees centigrade (86 degrees Fahrenheit), follow normal arrest protocols.
6. Intubate and oxygenate the patient with {warmed and humidified} 100% O2. Confirm tube placement using **Primary and Secondary Methods**, and secure tube.
7. Transport IMMEDIATELY after ABC's and appropriate defibrillations (as above).
8. Continue resuscitative efforts for longer than normal **while in transit**, even if there is no response.
9. IV with NS {warm}. If hypotensive, give 250 ml IV bolus {warmed IV fluid}.
10. Contact Medical Control.
11. Consider "treatable causes" (H's and T's). **NOTE: Nearly all medical cardiac arrests are "Altered Level of Consciousness – Unknown Cause." If there is any evidence of hypoglycemia prior to arrest, administer 50 ml. of 50% Dextrose IVP. If there is a suspicion of drug overdose, administer 4 mg. Narcan IVP.**
12. Consider possibility of other medical issues, including drug overdose and trauma.
13. Consider transport to a Level I or II Trauma Center. If Trauma Center is distant, consider aeromedical transport.

4.6.2 - HYPOTHERMIA WITHOUT ARREST

1. Do **not** initiate CPR if there is any pulse present, no matter how slow.
2. Consider spinal immobilization; evaluate for other trauma.
3. Use **O2**, high flow. Do not hyperventilate. Do not use adjunctive airway equipment unless necessary. If necessary, use least intrusive measures that will adequately assure airway and

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ventilation.

4. Ventilate if necessary, and oxygenate with 100% {warmed/humidified} O₂.
5. Intubate if necessary, as gently as possible.
6. Avoid rough handling and unnecessary stimulation.
7. Apply Cardiac Monitor, check rhythm and treat according to cardiac protocol.
8. Do not allow conscious patients to ambulate, exercise or move about.
9. **Diabetics are highly susceptible to cold illnesses. Consider the possibility of hypoglycemia, and treat accordingly**

Complete the following Steps During Transport:

10. IV with NS {warmed}. If hypotensive, give 250 ml bolus.
11. Do not treat bradycardia unless it is profound, and avoid the use of pacing for bradycardia unless specifically ordered to do so by Medical Control.
12. {Determine blood sugar level.}
13. If blood sugar (BS) less than 60, no {blood sugar monitor} is available, or there is a strong suspicion of hypoglycemia despite blood sugar readings:
 - A. Administer 50ml of **50% Dextrose** (25 grams **D50**), IV bolus.
 - B. **D50** may be repeated in 10 minutes if patient fails to respond, or BS remains < 60.
14. Consider possibility of other medical issues, including drug overdose and trauma.
15. If feasible for patient condition, **Hypothermia** patients should be transported to a **Trauma Center**.

4.6.3 - FROSTBITE

1. Protect injured areas from pressure, trauma, and friction. Remove all covering, including jewelry, from injured parts. Do not rub. Do not break blisters.
2. Do not attempt to thaw injured part with local heat.
3. Do not allow limb to thaw if there is a chance that limb may refreeze before evacuation is complete.
4. Maintain core temperature by keeping patient warm with blankets, warm fluids, etc.
5. Severe frostbite injuries should be transported to a Burn Center.
6. Transport and contact Medical Control.
7. Apply Cardiac Monitor.
8. IV with NS {warm}.
9. For pain relief when the patient is conscious, alert, is not hypotensive, and is complaining of severe pain, consider **Morphine Sulfate**, up to 5 mg slow IVP (2-3 minutes) based on patient weight, provided SBP>100).
10. May repeat **Morphine Sulfate** up to 5 mg slow IVP (2-3 minutes) based on patient weight, provided SBP>100).
11. If patient condition warrants, transport severe Frostbite patients to a Burn Center.

4.7 - BURNS/SMOKE INHALATION

GENERAL CONSIDERATIONS

1. **Burn Referral Centers:**
 - A. Transport patients under 16 years of age with severe burns to the pediatric regional burn center at the Children's Medical Center, unless > 30 minute transport time.
 - B. Transport patients 16 years of age and older with severe burns to the adult regional burn center at Miami Valley Hospital, unless > 30 minute transport time.
2. The first priority is to assure scene safety and then remove the patient from the heat and/or flame, electrical or chemical exposure.

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3. When dealing with contaminated environments, EMTs must have appropriate protective clothing. If not available, contact appropriate Haz Mat service for such equipment.
4. Airway, Breathing, and Circulation must be stabilized before addressing the burn. Establish and maintain C-spine control if indication of neck/head trauma.
5. Patient with extensive burns must be monitored for hypothermia. Do not use ice or prolonged cold compresses. When in doubt, cover with dry dressing. Cover burn areas with clean, dry sheets or dressings after cooling first. Remove all rings, watches, and jewelry. Superficial and partial thickness burns of less than 10% may have wet dressings applied. Do not remove items which have adhered to the skin.
6. In caring for the burn:
 - A. Stop the Burning
 - B. Reduce the pain
 - C. Prevent contamination
7. Major burns should be transported directly to a Burn Center when possible, as above. Inhalation injuries with unsecured airway should be transported to the nearest facility. For patients with major burns, and long transports, you may contact Medical Control for destination:
8. Closest Hospital or
9. Burn Center
10. For chemical burns, gross decontamination **must be done at the scene. Always include removal of all involved clothing.** Advise receiving facility, and be prepared to transport to decontamination area. See **Section 6.6 – Haz-Mat.**
11. Keep patient warm – turn off air conditioner if appropriate.
12. The burn patient should be managed as any other trauma victim. The burn itself has a low priority over other associated injuries for which the patient must be completely evaluated. Vital signs may be taken over damaged tissue if no other area is accessible.

SPECIFIC CARE

1. Assess for respiratory distress, stridor, hoarseness, sooty sputum, singed eyebrows and nares or burns of the face or airway. Suspect airway injury. Assess neuro status.
2. Administer 100% **O₂** by NRB mask or BVM.
3. Initiate cardiac monitoring, especially if patient has been involved with a lighting strike or electrical burn.
4. Determine types of burn and treat as follows:
 - A. Thermal (dry and moist):
 - 1) Stop burning process: i.e., remove patient from heat source, cool skin by applying water; remove clothing.
 - 2) If patient starts to shiver or skin is cool, stop cooling process.
 - 3) Estimate extent (%), depth, and seriousness of the burn. Contact Medical Control and transport.
 - 4) Avoid wet dressings if burn area is greater than 10% body surface area (BSA).
 - B. Radiation Burns:
 - 1) Treat as thermal burns except when burn is contaminated with radioactive source, then treat as chemical burn.
 - 2) Contact HAZ-MAT TEAM for assistance in contamination cases
 - C. Chemical Burns:
 - 1) EMS personnel must wear appropriate protective clothing and respirators
 - 2) Remove patient from contaminated area to decontamination site (NOT AMBULANCE).
 - 3) Determine chemicals involved; contact appropriate agency for chemical information.
 - 4) If any possibility of continuing contamination, notify hospital promptly.
 - 5) Remove patient's clothing and flush skin.

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- 6) Leave contaminated clothes at scene. Cover patient completely before loading into squad.
 - 7) Personnel not involved in decontamination process should transport patient.
 - 8) See **Section 6.6 - Haz-Mat**, for some specific treatments.
 - 9) For Chemical Burns, notify hospital as early as possible! It is imperative that the hospital be notified prior to your arrival
- D. Electrical Burns
- 1) Shut down electrical source; do not attempt to remove patient until electricity is confirmed to be shut off.
 - 2) If no pulse, apply {AED} or **Monitor/Defibrillator and follow 3.1.1.**
 - 3) Assess for visible entrance and exit wounds and treat as thermal burns.
 - 4) Assess for internal injury, i.e., vascular damage, tissue damage, fractures, and treat.
- E. For Inhalation Burns, Thermal Burns, and Smoke Inhalation:
- 1) {Provide humidified **O2** using a wall humidifier with **Saline**}.
 - 2) If no humidifier is available, provide a **Saline Nebulizer** treatment by adding 3 ml **Saline** to a nebulizer, and give repeated treatments as needed while in transit.
 - 3) Provide endotracheal intubation as indicated. **Do Not Wait for complete airway obstruction or respiratory arrest to intubate!**
5. Determine the severity of the burn, contact Medical Control and transport.
 6. If indicated, establish an IV, en route, of **0.9% NS**. Titrate to maintain a systolic BP greater than 100.
 7. ♦For unconscious smoke inhalation patients, contact Medical Control regarding potential use of Sodium Thiosulfate. See **Section 6.6 – Haz-Mat** for specific information.
 8. For pain relief when the patient is conscious, alert, is not hypotensive, and is complaining of severe pain, consider **Morphine Sulfate**, up to 5 mg slow IVP (2-3 minutes) based on patient weight, provided SBP>100).
 9. May repeat **Morphine Sulfate** up to 5 mg slow IVP (2-3 minutes) based on patient weight, provided SBP>100).

4.8 - HEAT EXPOSURE

GENERAL CONSIDERATIONS

1. Geriatric patients, pediatric patients, and patients with a history of spinal injury or diabetes mellitus are the ones most likely to suffer heat-related illness. Other contributory factors may include heart medications, diuretics, cold medications and/ or psychiatric medications.
2. Heat exposure can occur either due to increased environmental temperatures, prolonged exercise or a combination of both. Environments with temperature above 90 degrees Fahrenheit and humidity over 60% present the most risk.
3. When altered mental status is present consider other causes such as hypoglycemia, stroke and/ or shock.

SPECIFIC CARE

1. Secure and maintain airway, and consider cervical spine injury.
2. Administer **O2**, maintaining at least 95% {SpO₂}. Use BVM if needed.
3. Move patient to cool environment.
4. Assess mental status, temperature of patient and of environment. Assess vital signs at least every 15 minutes.
5. Strip the patient of clothing, cool the patient, and apply water to the skin. Provide oral fluids if patient is conscious, and not vomiting or extremely nauseous.
6. Apply Cardiac Monitor.
7. During transport, start IV NS if the patient is hypotensive or there are mental status changes, and give

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- 1,000 ml bolus of NS.
8. Be prepared for seizures.
9. Intubate if indicated, and oxygenate with 100% O₂.
10. If feasible for patient condition, significant Heat Exposure patients should be transported to a Trauma Center.



Heat Stroke: Most serious type of exposure illness, usually due to prolonged exposure to heat, inadequate fluid replacement and deficient thermoregulatory function. Patient often experiences inadequate perspiration with body temperatures reaching 105 degrees F or greater. Skin is usually hot and dry and there may be an altered LOC and/or coma. Seizures may occur. Cardiovascular collapse is the usual cause of death.

Heat Exhaustion: More moderate form of heat exposure associated with dehydration combined with overexertion. Skin is cooler and the core temperature is below 105 degrees F. The patient may experience syncope with orthostatic hypotension.

Heat Cramps: the mildest form of heat exposure caused by dehydration, overexertion, and electrolyte abnormalities. The skin is moist with muscle cramps, usually affecting large muscle groups.

Altered Mental Status: When altered mental status is present, consider other causes such as hypoglycemia, stroke and/or shock.

4.9 – SYMPTOMATIC CARBON MONOXIDE POISONING

1. Remove the victim from the contaminated area.
2. Airway with C-spine control as indicated.
3. Provide high flow **O₂** to all suspected CO poisonings **continuously**, including from Medic to ER.
 - A. Provide {humidified **O₂**} using a {wall humidifier} with **Saline**.
 - B. If no humidifier is available, provide a **Saline Nebulizer** treatment by adding 3 ml **Saline** to a nebulizer, and give repeated treatments as needed while in transit.
4. Evaluate for associated injuries.
5. **Pulse Oximetry will give false readings: Do not use it.**
6. If CO is suspected, and any of the following High Risk Factors are present, consider Hyperbaric Oxygen (HBO) Treatment. Contact the closest hospital, and discuss where the patient should be transported.
 - A. Underlying cardiovascular disease, or cardiovascular symptoms such as chest pain or shortness of breath.
 - B. > 60 years of age.
 - C. Obvious neuro-psychological symptoms, such as ANY interval of unconsciousness, loss of time, inability to perform simple motor tasks, or loss of memory.
 - D. Smoke inhalation victims.
 - E. Pregnancy.
7. If signs/symptoms of hypovolemic shock are present, establish an IV of **NS** to maintain systolic pressure of 100.
 - A. Do NOT delay transport to establish venous access.
8. Place patient on Cardiac Monitor & treat any dysrhythmias.

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4.10 – EYE INJURY

GENERAL CONSIDERATION: CONTACT LENSES

1. If possible, contact lenses should be removed from the eye. Be sure to transport them to the hospital with the patient. If the lenses cannot be removed, notify the ED personnel as soon as possible.

SPECIFIC CARE

1. In cases where eyes may need irrigation, and other appropriate situations with significant eye pain, administer two (2) drops of topical ophthalmic anesthetic (**Tetracaine**) in eyes.
2. **Tetracaine** must not be used if there is a possibility of penetrating trauma to the eye.
3. {Morgan Lens} may be used by paramedics, who have been appropriately trained/tested and with Medical Director approval, after administration of Tetracaine.
4. Use Nasal Cannula and IV tubing for irrigation



Eye Irrigation with Nasal Cannula:

- Place cannula over bridge of the nose with nasal prongs pointing down toward the eyes.
- Attach cannula to an intravenous administration set using normal saline.
- Run continually into both eyes.

4.10.1 – EYE INJURY: CHEMICAL BURNS

1. When possible determine type of chemical involved first. The eye should be flushed with copious amounts of water or **Saline**. Irrigate for a minimum of 20 minutes, starting as soon as possible, and continue until the pain is relieved. Any delay may result in serious damage to the eye.
2. Always obtain name and, if possible, the Material Safety Data Sheet (MSDS), or ask that name or MSDS be brought to the hospital as soon as possible. Knowing the **pH** of the chemical is crucial information for the ER.
3. Consider the use of two (2) drops of topical ophthalmic anesthetic (**Tetracaine**). Ideally, it should be placed in the eye prior to irrigation, but **must not delay the irrigation**.
4. Use Nasal Cannula and IV tubing for irrigation. {Morgan Lens} may be used by paramedics, who have been appropriately trained/tested and with Medical Director approval, after administration of Tetracaine.

4.10.2 – MAJOR EYE TRAUMA

1. Keep patient quiet.
2. Cover injured eye with Metal Eye Shield or Cardboard or Styrofoam cup, taped onto bony prominences.
3. Do not use a pressure patch, or any absorbent dressing on or near any eye that may have ruptured, or have any penetrating trauma.
4. Cover both eyes to limit movement.
5. Transport with head elevated.
6. Do not use eye drops.
7. Establish IV and consider Morphine for pain relief.

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4.11 – {SPINAL INJURY CLEARANCE ALGORITHM }

{Only to be used by personnel **specifically authorized** by their Medical Director and Department.

Limited to use in patients age 16 and over.}

The Spinal Injury Clearance Algorithm, when authorized by the Medical Director, permits carefully trained personnel to determine which patients can safely be transported without spinal immobilization. It is critical that each step be evaluated in sequence, since the steps proceed from the least to the greatest risk for the patient. It is just as critical that the patient be manually immobilized by another EMS provider until all ten evaluation steps are completed.

1. If patient unconscious with potential mechanism of injury: Immobilize.
2. If patient not alert, is disoriented, or has GCS < 15: Immobilize.
3. If patient had loss of consciousness: Immobilize.
4. If suspicion of ETOH or drug intoxication: Immobilize.
5. If possible acute stress reaction: Immobilize.
6. If other painful or distracting injury: Immobilize.
7. If cervical pain or other spinal column pain (patient complaint) is present: Immobilize.
8. If neurological deficit (motor or sensory): Immobilize.
9. If cervical tenderness (on palpation) or deformity: Immobilize.
10. If pain with cervical motion: Immobilize.
11. {If **none** of the above are present, personnel who have been appropriately trained, and who are specifically authorized by their Department and Medical Director, may opt to transport the patient without spinal immobilization.} In any case where there is the slightest doubt about the possible need for spinal immobilization, the patient is to be fully and effectively immobilized.
12. All of the above items **must** be documented, and the EMS agency must have a mechanism in place for Quality Improvement monitoring of each run where this procedure is employed.



Spinal Injury Clearance: All personnel need to realize that this protocol is designed for the patient's safety. This will only permit avoidance of spinal immobilization in a relatively small number of patients. 80 - 90% of the patients we currently immobilize will still require a backboard and associated equipment under this protocol.

Patient's complaint of cervical or other spinal column pain refers to the patient's subjective assessment of pain prior to palpation by EMS personnel.

4.12 - START TRIAGE SYSTEM FOR MASS CASUALTY INCIDENTS (MCIs)

START SYSTEM OF TRIAGE

I. INTRODUCTION. Use the Simple Triage And Rapid Treatment (START) method of triage to assess a large number of victims rapidly. It can be used easily and effectively by all EMS personnel. However, there are limitations to START (see Section 4.12.A, below).

II. PROCEDURE.

A. Initial Triage (Using the START Method).

- 1) Utilize {Triage Ribbons (color-coded strips)}. One should be tied to an upper extremity in a VISIBLE location (wrist if possible, preferably on the right).
 - a) RED - Immediate.
 - b) YELLOW- Delayed.
 - c) GREEN- Ambulatory (minor).

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d) BLACK- Deceased (non-salvageable).

2) Independent decisions should be made for each victim. Do not base triage decisions on the perception of too many REDs, not enough GREENs, etc.

3) If borderline decisions are encountered, always triage to the most urgent priority (eg. GREEN/YELLOW patient, tag YELLOW). Move as quickly as possible!

B. Secondary Triage.

1) Will be performed on all victims in the Treatment Area.

2) Utilize the Triage Tags (METTAGs or START tags) and attempt to assess for and complete all information required on the tag (as time permits). Affix the tag to the victim and remove ribbon. This is done after patients enter the Treatment Area, not at the initial triage site!

3) The Triage priority determined **in the Treatment Area** should be the priority used for transport.

III. START

A. Locate and remove all of the walking wounded into one location away from the incident, if possible. Assign someone to keep them together (eg. PD, FD, or initially a bystander) and notify COMMAND of their location. Do not forget these victims. Someone should re-triage them as soon as possible.

B. Begin assessing all non-ambulatory victims where they lie, if possible. Each victim should be triaged in 60 seconds or less, preferably much less.

NOTE: Remember the mnemonic **RPM (Respirations, Perfusion, Mental Status)**.

1) Assess **RESPIRATIONS**:

a) If respiratory rate is 30/min. or less go to PERFUSION assessment.

b) If respiratory rate is over 30/min, tag RED.

c) If victim is not breathing, open the airway, remove obstructions, if seen, and assess for (a) or (b) above.

d) If victim is still not breathing, tag BLACK. (Depending on circumstances, you may attempt three rapid defibrillations before triage to BLACK.)

2) Assess **PERFUSION**:

a) Performed by palpating a radial pulse or assessing capillary refill (CR) time.

b) If radial pulse is present or CR is 2 seconds or less, go to MENTAL STATUS assessment.

c) No radial pulse or CR is greater than 2 seconds, tag RED.

NOTE: In addition, any major external bleeding should also be controlled.

3) Assess **MENTAL STATUS**:

a) Assess the victim's ability to follow simple commands and their orientation to time, place, and person.

b) If the victim follows commands and is oriented x3, tag GREEN.

NOTE: Depending on injuries (eg. burns, fractures, bleeding) it may be necessary to tag YELLOW.

c) If the victim does not follow commands, is unconscious, or is disoriented, tag RED.

V. SPECIAL CONSIDERATIONS.

A. The **first** assessment that produces a RED tag stops further assessment.

B. Only correction of life-threatening problems (eg. airway obstruction or severe hemorrhage) should be managed during triage.

C. To help speed the process, Departments should consider utilizing colored (Red, Yellow, Green, Black) {Ribbons} to initially mark patients categories. Triage Tags are then attached and filled out once the patient reaches the Treatment Area.

D. When using Triage Tags, if the patient's condition or the triage priority changes, the bottom

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portion of the tag should be removed, leaving only the injury information. Add a new tag to identify the new triage priority, and if time permits, the reason for the change.

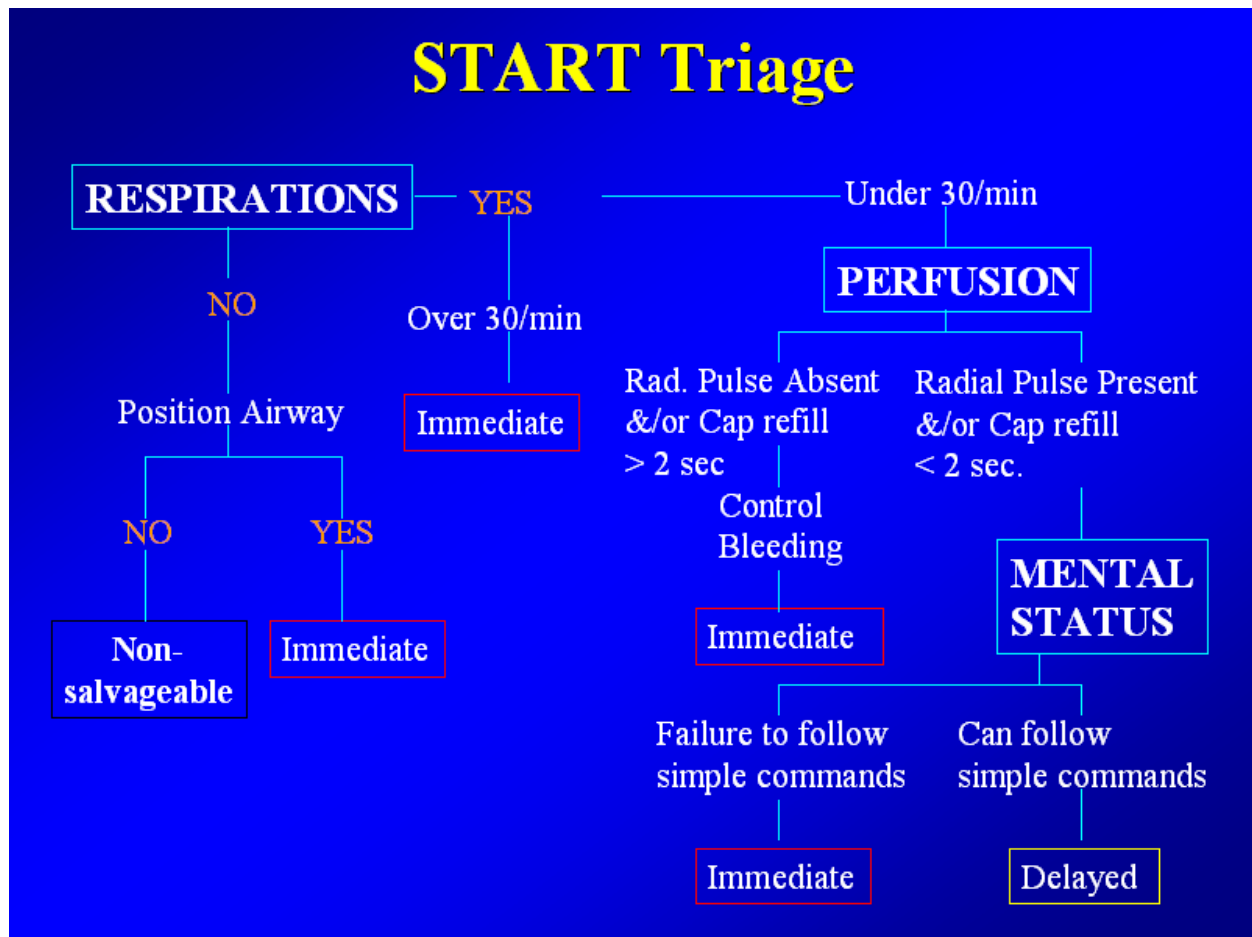
RPM: 30, 2, Can Do!

R: Respirations – 30

P: Perfusion – 2

M: Mental Status – Can do

Above was adapted from <http://www.co.broward.fl.us/tmi02719.htm>.



4.12.A - START SYSTEM LIMITATIONS



Why do we use START? There are several reasons. It is:

- Fast
- Simple
- Easy to Use
- Easy to Remember
- Consistent

Given massive situations, such as the first bombing of the World Trade Center in New York, or the Alfred

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P. Murrah Federal building in Oklahoma City, START is the most effective system we know of to rapidly help us sort out the casualties, from the “walking wounded” and the “worried well.”

There are also other things that we can do to provide the most effective care in a disastrous situation. In reviews of previous Mass Casualty Incidents, some of the greatest pitfalls that occur include:

- Failure to alert hospitals quickly
- Failure to perform any triage at all
- Spending too much time triaging each patient
- Lack of focus on critical patients
- Rendering time-consuming care on scene
- Sending too many patients too quickly to nearby hospitals (i.e., “relocating the disaster to the hospital”)
- Improper use of personnel (BLS does BLS stuff. ALS does ALS stuff)
- Patients not uniformly distributed to hospitals
- Lack of strong, visible Command
- Lack of preparation or training
- Failure to adapt to circumstances
- Poor communication

When incidents involve more than 50 casualties, the Transport Sector should initially direct patients away from the nearest hospital or trauma center until they can be checked for availability. Why? Because in past large disasters, more than 75% of patients were sent to the nearest hospital or trauma center. Those facilities were then quickly overloaded. Again: Don’t relocate the disaster to the nearest hospital!

It is also crucial to remember that Triage is a process, not an event. The importance of repeated Triage, that is re-evaluating each patient over and over until they can be transported to an appropriate facility, cannot be overstated.

However, START has some very significant limitations, especially for smaller incidents. The greatest concern is the initial command to have all patients who can stand to move to another area. Those patients are then classified, at least initially, as “Green.”

Obviously, there are risks to this. With trauma patients, the potential to exacerbate an injury is very high. A patient with a spinal fracture may move in such a way that their spinal cord is severed, creating a permanent quadriplegic. A person having a cardiac event triggered by the stress of the incident may well be triaged to Green in this way, and then suffer a cardiac arrest which could have been prevented. Inhalation injuries during Haz-Mat events may be missed. Still another victim may try to stand on a fractured lower leg, and turn a closed fracture into an open one. On the other hand, a patient with a relatively minor injury, such as an ankle fracture, may be unable to walk, and slow the triage process.

In small incidents, use of that component of START may put not only the patient at risk, but you, as well. Exacerbation of injuries, such as those just discussed, put you at legal risk.

Finally, even patients who receive the full START evaluation may be miscategorized. One example is a patient who fails the “Can do” Mental Status component. The assumption is that the patient’s deterioration is due to the event, but obviously, there are many conditions, from dementia to intoxication, that can impact the patient’s mental status.

A modification the START system can be used in smaller multiple casualty incidents, especially motor vehicle crashes, and incidents with less than 10 patients. First, **don’t** yell out to move the MINOR

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“walking wounded” to a collection area. Don’t move the Minor (Green) patients! **It is not the standard of care** to ask these patients to move at a smaller incident.

After that, continue to use RPM to assess and categorize patients. But do not assume that those assessments are flawless, and don’t forget that patient conditions change. Re-triage as the patient is moved to the Treatment Area, and repeatedly while they are in Treatment. Be prepared to upgrade and downgrade triage categories as you develop more information about the patient’s condition.

The last set of concerns that we will discuss is the use of START with Children. Apneic children are more likely to have primary respiratory problems than adults. Perfusion may be maintained for a short time, and those child may be salvageable.

More frequently, pediatric patients can be either over-triaged or under-triaged, depending on age and stress levels, by using the Respiratory Rate of 30 as a measure. Capillary refill, though usually more reliable in children, may not adequately reflect peripheral hemodynamic status in a cold environment. Obeying commands may not be an appropriate gauge of mental status for younger children.

There is a companion triage system called, “JumpSTART,” that tries to address these concerns. It is more complex, and we have chosen not to utilize it in this region, at least for now. However, you can consider making the following modifications to your assessment of patients who are 8 years old or less:

If a child is not breathing even after opening the airway, consider attempting 15 seconds of ventilations (e.g., Mouth to Mask), which would be about 5 breaths, if the patient still has a peripheral pulse.

If breathing resumes after this “jumpstart,” tag patient Red (Immediate) and move on.

When assessing Respiratory Rate, consider using 15 – 45, rather than 30. Patients with a respiratory rate <15 or >45, or that are irregular, should be tagged as Immediate.

If the respiratory rate is in the 15 – 45 range, proceed to assess perfusion.

These additional points should help you better utilize the START triage system to care for your patients.

5.0 - RESPIRATORY DISTRESS

1. Open airway and check for breathing
2. Administer **O₂** by NRB mask or nasal cannula; be prepared to assist ventilations by BVM or FROPVD with 100% **O₂**.
3. Evaluate breath sounds, and obtain {Pulse Oximetry} reading:
 - A. **Clear breath sounds:** Treat cause (MI, pulmonary embolism, metabolic disturbance, hyperventilation) and transport in position of comfort.
 - B. **If wheezes present:** Consider possibility of allergic reaction. See **Section 6.3 Anaphylaxis**.
 - C. **If wheezes present and not an allergic reaction**, and patient has history of **COPD (emphysema, asthma, bronchitis):**
 - Administer **Proventil**.
 - D. **Patient with Severe Distress:** Sit patient up, assist ventilations, and give HIGH flow **O₂**.
 - E. **Rales present (pulmonary edema):** Sit patient up, administer HIGH flow **O₂** by NRB mask and/or BVM and transport.
 - F. **Sucking chest wound:** Seal open wound on 3 sides, monitor for development of Tension Pneumothorax.
4. Reassess breath sounds.
5. Start Saline Lock or IV **Saline**, TKO, while en route to hospital. **DO NOT DELAY TRANSPORT.**

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6. Apply Cardiac Monitor and check rhythm.
7. If breath sounds are asymmetrical or absent, consider possibility of pneumothorax, spontaneous or otherwise.
8. Endotracheal intubation if indicated and provide 100% O₂ by BVM or FROPVD.
9. After intubation of an asthma patient, limit rate of ventilation to eight to ten breaths per minute, to avoid auto-PEEP and hypotension, provided that you can adequately ventilate the patient at that rate.
10. Transport in position of comfort.
11. Monitor for development of Tension Pneumothorax. If found perform immediate chest decompression.

5.1 - PULMONARY EDEMA

Look for and note cyanosis, clammy skin, absence of fever, coughing, wheezing, labored breathing, diaphoresis, rales in bilateral lower lung fields, tachypnea, apprehension, and inability to talk.

1. Open airway and check for breathing
2. Evaluate breath sounds, and obtain {Pulse Oximetry} reading:
3. Administer **O₂** by NRB mask or nasal cannula; be prepared to assist ventilations by BVM or FROPVD with 100% **O₂**.
4. Consider need for possible early **Endotracheal Intubation**.
5. Apply Cardiac Monitor and check rhythm.
6. Establish Saline Lock or IV **NS** at TKO.
7. Look for and note cyanosis, coughing, wheezing, labored breathing, diaphoresis, pitting edema, tachypnea, apprehension, JVD, absence of fever, and inability to talk.
8. If patient has SBP > 100, administer sublingual **Nitroglycerin** 0.4mg up to three times at five-minute intervals. Maintain BP above 100 systolic.
9. Appropriately trained and approved Paramedics may utilize {Continuous Positive Airway Pressure (**CPAP**)} or {Bilevel Positive Airway Pressure (**Bi-PAP**)} for patients with appropriate Inclusion Criteria, and without Exclusion Criteria.
10. Administer **Lasix** 80 mg. slow IV over one minute. Maintain SBP > 100.
11. Administer **Morphine Sulfate**, up to 5 mg slow IVP (2-3 minutes) based on patient weight, provided SBP>100). Usually MS can be administered in lower doses for CHF, if it is needed at all.
12. May repeat **Morphine Sulfate** up to 5 mg slow IVP (2-3 minutes) based on patient weight, provided SBP>100).
13. Consider breathing treatment, using 2.5mg (3ml), of **Proventil (Albuterol)** combined with **Atrovent**, 0.5 mg, in nebulizer with **O₂** flow at 8-12 liters per minute, or give 2 puffs from an **Albuterol** inhaler for patients **if there is any suspicion of bronchospasm**.
 - A. May repeat **Proventil** continuously in patients with any signs of benefit from the Proventil.
 - B. **Proventil** and **Atrovent** may be administered simultaneously with 4 ml. of **2% Lidocaine** (80 mg.) in Nebulizer if intubation is anticipated.
14. Monitor vital signs, especially respirations and BP, every 5 minutes.



Nebulized medications may be given simultaneously before intubation with bag-valve-mask or after intubation with bag-valve device attached to endotracheal tube.



It is important to differentiate between CHF with pulmonary edema and pneumonia when considering the administration of Lasix. At times, pneumonia may look like CHF with Pulmonary

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Edema. However, the pneumonia patient is often dehydrated and has an elevated temperature. Not only will he not benefit from Lasix, but a borderline dehydrated pneumonia patient may go into hypovolemic shock.

5.2 - ASTHMA/EMPHYSEMA/COPD

1. Open airway and check for breathing
2. Administer **O2** by NRB mask or nasal cannula; be prepared to assist ventilations by BVM or FROPVD with 100% **O2**.
3. Evaluate breath sounds, and obtain {Pulse Oximetry} reading:
4. **Transport as soon as practical.**
5. Apply Cardiac Monitor and check rhythm.
6. Establish Saline Lock or IV **NS** at TKO.
7. Consider breathing treatment, using 2.5mg (3ml), of **Proventil (Albuterol)** combined with **Atrovent**, 0.5 mg, in nebulizer with **O2** flow at 8-12 liters per minute, or give 2 puffs from an **Albuterol** inhaler.
 - A. May give repeat dose of **Proventil** times three.
 - B. **Proventil** and **Atrovent** may be administered simultaneously with 4 ml. of **2% Lidocaine** (80 mg.) in Nebulizer if intubation is anticipated.
8. Consider need for possible early **Endotracheal Intubation**. The following signs indicate that the need for rapid endotracheal intubation is imminent:
 - A. Decreasing level of consciousness.
 - B. Profuse diaphoresis.
 - C. Poor ("floppy") muscle tone
 - D. Severe agitation, confusion, or fighting against the **O2** mask.
 - **Immediately after intubation**, give **Proventil (Albuterol)**, 2.5 mg (3 ml) via nebulizer into ETT. If **Atrovent** not given before intubation, add to **Proventil**.
9. Appropriately trained and approved Paramedics may utilize {Continuous Positive Airway Pressure (CPAP)} or {Bilevel Positive Airway Pressure (Bi-PAP)} for patients with appropriate Inclusion Criteria, and without Exclusion Criteria.
10. After intubation of an asthma patient, limit rate of ventilation to eight to ten breaths per minute, to avoid auto-PEEP and hypotension, provided that you can adequately ventilate the patient at that rate.
11. **If patient arrests**, tension pneumothorax is a likely cause. Strongly consider bilateral needle decompression for relief of tension pneumothorax.
12. If patient with asthma, **not emphysema or bronchitis**, is in severe distress, give 0.3 mg (1:1000) **Epinephrine** by injection subcutaneously.
13. ♦ If patient condition does not improve, SUB-Q **Epinephrine** may be repeated during transport on MCP orders.



Needle decompression may be needed even if patient has not been intubated: If asthma patient arrests, consider bilateral needle decompression for relief of tension pneumothorax even if patient has not been intubated.



The sequence of drug administration is left to the paramedic's discretion based on his/her assessment of the patient's severity.

- If there is no need for immediate intubation, proceed with nebulized bronchodilators.
- If there is a need for intubation and patient is awake, administer nebulized Lidocaine and bronchodilators prior to intubation.

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- If there is a need for intubation and patient is unconscious or condition is deteriorating, intubate and then give nebulized bronchodilators.

6.0 - OTHER MEDICAL ISSUES

6.1 - ALTERED LEVEL OF CONSCIOUSNESS – UNKNOWN CAUSE

1. Secure airway and consider cervical spine injury.
2. Administer 100% **O2** by NRB mask.
3. Apply {Pulse Oximeter}.
4. Apply restraints as necessary per restraint guidelines.
5. Be prepared to hyperventilate and/or assist ventilations with oral or nasal airway and BVM.
6. Apply Cardiac Monitor and check rhythm.
7. Start Saline Lock or IV **Saline**, TKO, and draw blood chemistry tube.
8. Treat signs and symptoms of shock.
9. {Determine blood sugar level.}
10. If blood sugar (BS) less than 60, no {blood sugar monitor} is available, or there is a strong suspicion of hypoglycemia despite blood sugar readings:
 - A. Administer 50ml of **50% Dextrose** (25 grams **D50**), IV bolus.
 - B. **D50** may be repeated in 10 minutes if patient fails to respond, or BS remains < 60.
 - C. IF unable to obtain IV, give **Glucagon**, 1mg IM.
11. Consider patient **restraint** before administration of **Narcan**.
12. If respiration is impaired, or there is a high index of suspicion of narcotic overdose and patient does not respond to **Dextrose**, administer **Narcan**, up to 4 mg IV push, varying rate according to patient severity.
 - A. As an **alternative to IV Narcan**, paramedics have the option to administer **Narcan** 2 mg. **intranasally** via {Mucosal Atomization Device (MAD)}, if appropriately trained/tested with Medical Director approval. Give 1 mg. in each nostril by briskly compressing syringe. If no arousal occurs after 3 minutes, establish an IV and administer IV **Narcan**.
 - B. If unable to obtain IV and no {MAD}, **Narcan** may be administered ETT, SUB-Q, Sublingual Injection (SL), or IM.



Oral Glucose Administration: Oral glucose is indicated for any awake but disoriented patient with blood sugar readings less than 60 or strong suspicion of hypoglycemia despite blood sugar readings. Glucose paste 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.



Narcan Administration: Caution should be exercised when administering Narcan to narcotic addicts as rapid administration may precipitate withdrawal with hypertension, tachycardia, and violent behavior. Titrate to maintain adequate respiratory rate. and to avoid dealing with an agitated patient.

If a patient suspected of overdosing on an opiate has a pulse, try to reverse respiratory insufficiency with narcan before inserting an endotracheal tube.

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6.2 - DIABETIC EMERGENCIES

1. Secure and maintain airway. Support with 100% O₂ by NRB mask.
2. Apply Cardiac Monitor and check rhythm.
3. Start Saline Lock or IV **Saline**, TKO, and draw blood chemistry tube.
4. Treat signs and symptoms of shock.
5. {Determine blood sugar level.}
6. If blood sugar (BS) less than 60, no {blood sugar monitor} is available, or there is a strong suspicion of hypoglycemia despite blood sugar readings:
 - A. Administer 50ml of **50% Dextrose** (25 grams **D50**), IV bolus.
 - B. **D50** may be repeated in 10 minutes if patient fails to respond, or BS remains < 60.
 - C. IF unable to obtain IV, give **Glucagon**, 1mg IM.
7. **Unconscious diabetics are often hypothermic. Be prepared, and treat hypothermia when indicated.**

6.2.1 - DIABETIC EMERGENCIES: REFUSAL AFTER TREATMENT

1. It is not uncommon for a diabetic, hypoglycemic patient who responds to being given sugar (IV Dextrose, Glucagon, or Oral Glucose) at the scene, to refuse transportation after awakening. **These patients may be permitted to refuse.** Before doing so, follow these guidelines:
 - A. Perform a **repeat physical examination**, and **repeat vital signs**. The **patient must be alert and oriented x 3**.
 - B. Warn the patient that there is a significant risk of going back into hypoglycemia, especially if the patient is on oral hypoglycemic agents.
 - C. Advise the patient that he or she should eat something substantial as quickly as possible, before the sugar given by EMS “wears off.”
 - D. Advise the patient to contact his/her family physician as soon as possible, to try to prevent future episodes.
 - E. Advise the patient to stay with someone who could call for help if necessary.
 - F. Discontinue the IV line, follow normal patient refusal procedures (Refusal Form, etc.), and go to the nearest hospital to replace your Drug Box and IV supplies.
2. Meticulously document all of the above. **Ensure that the EMS Coordinator of the hospital that replaces your Drug Box and Supplies receives a copy of the runsheet for his/her records.**



Importance/Difficulty of Determining Competence: A mentally competent adult has the right to refuse medical care, even if the decision could result in death or permanent disability. The problem for the EMS provider is determining if the patient is mentally competent. This is especially difficult in a diabetic patient.

You need to make sure the patient is able to understand situation. At very least, patient needs to be oriented x 3. This means s/he is oriented to time (time of day, day of week, and date), to place, and to person. Follow guidelines listed above. Remember, if you leave a person who is hypoglycemic, he may die.

6.3 - ALLERGIC REACTION/ANAPHYLAXIS: WHEEZES PRESENT

1. Secure airway and support with **O2**.
2. If severe allergic reaction, administer **Epi-Pen**.
3. Apply ice pack to slow swelling and spread of poison.
4. Start Saline Lock or IV **Saline**, TKO. **DO NOT DELAY TRANSPORT**

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5. If patient deteriorating or unresponsive, consider early intubation, possibly with smaller than normal ET tube. If patient is conscious, consider premedicating before intubation with **Versed**, 2 - 4 mg, slow IV push over 1 – 2 minutes.
6. If patient is wheezing: Administer **Proventil (Albuterol)** breathing treatment: 2.5mg (3ml) in nebulizer with **O2** flow at 8-12 liters per minute.
7. May also provide **Atrovent**, 0.5 mg in the nebulizer with an **O2** flow rate of 8-12 liters per minute. **Proventil** and **Atrovent** may be placed in the nebulizer simultaneously. If you anticipate needing to intubate, **Lidocaine** may also be placed in the nebulizer with the other two agents.
8. May give repeat dose of **Proventil** times three.
9. If patient is intubated, immediately after intubation, give 2.5 mg **Proventil (Albuterol)** by nebulizer into the **endotracheal tube**. If **Atrovent** not given before intubation, add to first **Proventil**.
10. Administer **Benadryl (Diphenhydramine)** 1mg/Kg (Max dose: 50 mg) IM or slow IV. **NOTE:** This is especially indicated when drug reactions are suspected and SBP > 100.
11. If patient is hypotensive and/or in respiratory compromise, run IV wide open to maintain systolic pressure above 100 mm Hg. Large volumes of fluid may be needed.
12. If patient remains hypotensive after a fluid bolus, administer 0.5mg (1:10,000) **Epinephrine**, very slow IV push.
13. For patients unresponsive to Epinephrine, administer **Glucagon** 1-2mg IV or IM.
14. If patient goes into cardiac arrest, intubate, possibly with smaller than normal ET tube.
14. If patient goes into cardiac arrest, administer 3 mg **Epinephrine**, 1:10,000, rapid IV push immediately.
15. Repeat **Epinephrine** 1 mg. (1:10,000) IVP, every three (3) minutes until pulse is obtained. May use **ETT Epinephrine if no IV**. (See V Fib protocol 3.1.2)
16. While in arrest, administer one dose of **Benadryl**, 1mg/Kg (Max Dose: 50 mg) IV as above, unless already given.

See “**IMPORTANT INFORMATION REGARDING IV VERSED**” in Section 3.3.1.



Assisting with EpiPen: When assisting patient with severe allergic reaction with their own prescribed EpiPen, do the following:

- Assure medication is prescribed for patient
- Check medication for expiration date.
- Contact Medical Control, if possible.
- Administer medication in mid-thigh and hold injector firmly against leg for at least 10 seconds to assure all medication is injected.
- Record patient reaction to medication and relay to Medical Control – be sure to have vital signs.



Intubation Considerations: Paramedics should intubate early, especially if patient presents with hoarseness or swelling in and around airway.

6.4 - SEIZURES

GENERAL CONSIDERATIONS

1. Provide Aspiration precautions:
 - A. Recovery position: a side lying position with the head lowered 15 to 30 degrees
 - B. **Suction readily available**
 - C. If possible, mouth cleared of foreign bodies (food, gum, and dentures)

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SPECIFIC CARE

1. Clear and maintain airway, consider cervical spine injury.
2. Administer 100% **O2** with NRB mask.
3. Apply Cardiac Monitor and check rhythm
4. Start Saline Lock or IV, **Saline**, TKO.
5. Consider using a BVM and {nasopharyngeal airways} during seizure.
6. If repeated or continuing seizure activity, administer **Valium (diazepam)** 5 mg **slow** IV push, **or Versed** 10 mg. Intranasally via {Mucosal Atomization Device (MAD)}, if appropriately trained/tested paramedics with Medical Director approval. Place 5 mg (1 ml) in each nostril for adults 50 Kg and over, by briskly compressing syringe. IV may be delayed until after use of {MAD}.
 - A. If Valium is unavailable due to drug shortage, and no MAD available, administer Versed for seizure control, 2 to 4 mg slow IV push over 1 - 2 minutes.
7. If seizures continue or recur, may repeat **Valium** 5 mg **slow** IV push once, or ½ dose of Versed intranasally or intravenously. If unable to obtain IV, Paramedics may consider administering **Valium** 10 mg rectally, using a syringe with the needle removed.
8. After **Valium or Versed**, monitor airway, be prepared to intubate and assist ventilation with BVM or FROPVD.
9. {Determine blood sugar level.}
10. If blood sugar (BS) less than 60, no {blood sugar monitor} is available, or there is a strong suspicion of hypoglycemia despite blood sugar readings:
 - A. Administer 50ml of **50% Dextrose** (25 grams **D50**), IV bolus.
 - B. **D50** may be repeated in 10 minutes if patient fails to respond, or BS remains < 60.
 - C. IF unable to obtain IV, give **Glucagon**, 1mg IM.

See “IMPORTANT INFORMATION REGARDING IV VERSED” in Section 3.3.1.



The basic rule with seizures is to “protect and support” the patient. The seizure has usually stopped by the time the EMS personnel arrive and the patient is in the postictal state. Place the patient away from objects on which they might injure themselves; protect but do not restrain them. Evaluate for drug abuse and evidence of head trauma. If trauma is suspected, consider cervical immobilization. Obtain history from bystanders. Bring medication with patient if available.

When obtaining history, include the following:

- Seizure history
- Description of seizures, areas of body involved, and duration
- Medications
- Other known medical history – especially head trauma, diabetes, drugs, alcohol, stroke, heart disease.



Intranasal Versed via MAD is an **option** that provides for greater personnel safety (less chance of a needlestick) and timeliness of treatment issues (i.e., no need to try to start an IV on someone actively seizing), for Departments that opt to purchase MADs.



Status Epilepticus: If patient is in status epilepticus, paramedics should consider nasotracheal intubation or, if trained and authorized by department medical director, use of the Sedate to Intubate Protocol.



Valium Vial Shortage

Due to Valium Vial shortages, hospitals are substituting the vials with carproject Valium pre-filled syringes. Pharmacists are attempting to put the carproject devices to enable you to administer the medication **but** they are not always available.



You are still able to **easily and safely** withdraw the Valium from the carproject syringes even in the absence of a carproject device.

To do so, simply grab the base of the needle hub and separate from the base of the syringe as shown....



Once the needle portion has been removed, discard it properly. Take a syringe **with a needle** and insert through the rubber stopper at the base of the syringe as shown....



Withdraw your dose and discard the barrel **after** having someone witness any residual waste.

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6.5 - POISONING/OVERDOSE

GENERAL CONSIDERATIONS

1. WHEN DEALING WITH CONTAMINATED ENVIRONMENTS, EMTs MUST HAVE APPROPRIATE PROTECTIVE CLOTHING. IF NOT AVAILABLE, CONTACT HAZ-MAT.
2. **Patient should be searched for weapons.** Consider having police perform search, but don't assume that their search was adequate.
3. EMTs and Paramedics will consider the possibility of accidental or intentional poisoning whenever any of the following conditions are present:
 - A. History of observed or admitted accidental or intentional ingestion.
 - B. Coma.
 - C. History of known suicide gesture.
 - D. Suggestive intoxicated behavior (hyperactive, hypoactive, unstable walk, lethargic)
4. **Bring all patient's prescription medications and bottle or remaining poison to the hospital,** unless this results in an unreasonable delay of transport. **Consider having police take custody of substance and means.**

SPECIFIC CARE

1. Establish airway
2. Obtain relevant history
 - A. What, when, why taken (if known)
 - B. Quantity taken (if known)
 - C. Victim's age and weight
3. Make a thorough search for any and all potential poisonous substances (i.e. medications, drugs).
4. Evaluate patient's:
 - A. Breath sounds (rales)
 - B. Level of consciousness and gag reflex
 - C. Pupil size
 - D. Evidence of head injury
5. {Check finger stick blood sugar}.
6. If an **Ingested Poison** – Transport.
7. If an **Inhaled Poison**:
 - A. Remove from toxic area
 - B. Secure airway, support with 100% O₂
 - C. Assist in ventilation if necessary
8. If an **Absorbed Poison**:
 - A. Remove victim's clothing - protect EMS personnel from contaminated clothing. Consider Haz-Mat Team contact.
 - B. Identify substance.

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- C. Flush skin with water before and during transport if possible - at least 10-15 minutes.
- D. If eyes are involved flush with water or **Saline** continuously.
- 9. If an **Injected Poison**:
 - A. Secure and maintain airway.
 - B. If possible, identify substance and method of injection.
- 10. Apply Cardiac Monitor and check rhythm
- 11. Start Saline Lock or IV **Saline**, TKO, while en route to hospital. DO NOT DELAY TRANSPORT
- 12. If patient has an altered level of consciousness, follow the **Altered Level of Consciousness Protocol 6.1**.
- 13. Consider patient **restraint** before administration of **Narcan**. If respiration is impaired, or there is a high index of suspicion of narcotic overdose, administer **Narcan**, up to 4 mg IV push, varying rate according to patient severity. If patient has a pulse, **Narcan** should be administered before inserting an endotracheal tube.
 - A. As an **alternative to IV Narcan**, paramedics may administer **Narcan** 2 mg. **intranasally** via {Mucosal Atomization Device (MAD)}, if appropriately trained/tested with Medical Director approval. Give 1 mg. in each nostril by briskly compressing syringe. If no arousal occurs after 3 minutes, establish an IV and administer IV **Narcan**.
 - B. If unable to obtain IV and no {MAD}, **Narcan** may be administered ETT, SUB-Q, SL, or IM.
- 14. ♦ If known tricyclic overdose (examples of Tricyclic Antidepressants below), administer **Sodium Bicarbonate** (NaHCO₃), 1 mEq/Kg IV push. May repeat 0.5 mEq/Kg IV push for persistent QRS prolongation.
 - * Amitriptyline (Elavil, Endep, Etrafon, Limbitrol)
 - * Nortriptyline (Pamelor, Aventyl)
 - Amoxapine (Asendin)
 - Clomipramine (Anafranil)
 - Desipramine (Norpramine)
 - Doxepin (Sinequan)
 - Imipramine (Tofranil)
 - Protriptyline (Vivactil)
 - Trimipramine (Surmontil)

Tricyclic Antidepressant Overdose is a special, potentially lethal overdose.

Known or suspected overdose with Tricyclic antidepressant medications may be evidenced by bradycardia, tachycardia, hypotension, and prolongation of the QRS complex. Risk of rapid deterioration or sudden onset Ventricular fibrillation is high.

* Most commonly seen Tricyclic overdoses.
- 15. ♦ If known Calcium Channel Blocker overdose (examples below), administer 10 ml bolus of **Calcium Chloride 10%**, 1,000 mg.
 - Amlodipine (Norvasc)
 - Diltiazem (Cardizem, Dilacos)
 - Felodipine (Plendil)
 - Isradipine (Dynacirc)
 - Nifedipine (Procardia, Adalat)
 - Verapamil (Calan, Isoptin, Verelan)
- 16. ♦ Administer **Glucagon** 1 mg IM or IVP (preferred) if known Calcium Channel Blocker overdose (examples above) or Beta-Blocker (examples below) overdose.
 - Acebutolol (Sectral)
 - Atenolol (Tenormin)
 - Carvedilol (Coreg)
 - Corzide, Inderide, Lopressor, HCT, Tenoretic, Timolide, Ziac
 - Labetalol (Normodyne, Trandate)

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Metoprolol (Topral, Lopressor)
Nadolol (Corgard)
Pindolol (Viskin)
Propranolol (Inderal)
Sotalol (Betapace)
Timolol (Blocadren)

17. If chest pain is present in a patient who is known to have recently used cocaine or “Crack”, give **Nitro**, 0.4 mg SL, provided SBP > 100.
- If patient known to have recently used cocaine or “Crack” is significantly hypertensive, **or** has hemodynamically significant tachycardia (HR > 100, and SBP < 100), administer **Valium** 5.0 mg, IV push.



In ingested poisoning, it is not necessary to transport emesis. Document if pills or fragments were seen in emesis. Do not give Ipecac or Activated Charcoal.



Narcan Administration: Caution should be exercised when administering Narcan to narcotic overdose patients, as rapid administration may precipitate withdrawal with hypertension, tachycardia, and violent behavior. Titrate to maintain adequate respiratory rate. And to avoid dealing with an agitated patient.

6.6 – HAZ-MAT

Contact receiving hospital immediately to allow for set up time on all Haz-Mat situations!

Any chemical burn is, by definition, a Haz-Mat incident.

1. Perform scene survey and practice Body Substance Isolation.
2. Do not attempt to treat patient until you have adequately protected yourself.
3. Consider calling for assistance.
4. **Initiate field decontamination.** First step is to remove contaminated clothing.
5. If hazardous material is tenacious, thoroughly wash the patient using a solution of {Dawn} Soap and water, paying special attention to skin folds and other areas where simple irrigation may not remove it. Do not abrade the skin!
6. **Do not** transport a patient until gross decontamination is completed.
7. ♦ Obtain **permission** from Medical Control before entering hospital with a potentially contaminated patient.
8. If patient is suffering effects from an identified Hazardous Material, refer to the relevant section below, and contact MCP.
9. EMS crews should decontaminate themselves and vehicle before leaving hospital.



Field decontamination must be initiated. An example of the often overlooked importance of decon is a patient soaked in diesel fuel.



The Centers for Disease Control (CDC) has made recommendations about antidotes for Mass Casualty Incidents (MCIs), including the following.

- It is likely that a terrorist attack would utilize materials that could be stolen or purchased in the U.S., rather than importing weapons such as Nerve Gas. Improvised weapons

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could include cyanide stolen from industry, or organophosphates, which have essentially the same effect as Nerve Agents, yet can be purchased inexpensively.

- In spite of what is commonly believed, many people exposed to cyanide, organophosphates, or Nerve Gas are potentially salvageable.
- It is critically important that the antidotes be given as quickly as possible.
- Atropine is the most important drug to be given rapidly for organophosphate or nerve agent poisons, and often the patients need repeated doses of Atropine.
- Nitrites (the first two components of Cyanide Kits) provide increased effectiveness, but require careful and time-consuming monitoring, and have significant side effects. They may be impractical in a Mass Casualty Incident. Sodium Thiosulfate has fewer side effects and much lower risk, especially when the diagnosis is not certain, or when combinations of poisons (e.g., carbon monoxide) may be present. CDC recommends that suspected victims of cyanide poisoning in MCIs should be treated with Oxygen and Sodium Thiosulfate, skipping the use of both nitrites.
- EMS agencies in major cities should be prepared to deal with at least 500 – 1,000 casualties from either cyanide or organophosphates/Nerve Agents, and thus should deploy antidotes on prehospital apparatus:

6.6.1 – HAZ-MAT: HYDROFLUORIC ACID (HF)

1. Substance is **extremely** hazardous! Deaths have been reported after burns involving < 3% Body Surface Area. Assure safety of all personnel!
2. Begin decon **immediately**, as soon as it can be accomplished without putting EMS personnel at risk! Strip the patient of any clothing which may be contaminated, avoiding contact of clothes and the patient's face.
3. 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). However, getting water on the burn is more urgent than the use of Epsom salt. **DON'T DELAY IRRIGATION/DECON!** Continue to flush affected skin and eyes with copious amounts of water or **Saline**, and use {**Epsom salt solution**} on the skin, for at least 30 minutes.
4. Place EKG Monitor on patient.
5. Establish IV with 1,000 ml of 0.9% NS at TKO, or as necessary to treat hypovolemia.
6. If ingested, **do not** induce vomiting. Dilute with water or milk, and give {**3 – 4 ounces of magnesium-containing antacid** (e.g., **Maalox** or **Mylanta**)}.
7. Intubate if unconscious, or at **first sign** of pulmonary edema or respiratory distress.
8. Obtain 12-Lead EKG when time permits. Monitor for prolonged QT interval, and cardiac arrest.
9. Apply {**magnesium-containing antacid (Maalox or Mylanta)**} topically to burned areas. Omit topical treatment if industry has already applied topical agents.
10. Treat as indicated for shock, pulmonary edema, and cardiac dysrhythmias.
11. For pain relief when the patient is conscious, alert, is not hypotensive, and is complaining of severe pain, consider **Morphine Sulfate**, up to 5 mg slow IVP (2-3 minutes) based on patient weight, provided SBP>100).
12. May repeat **Morphine Sulfate** up to 5 mg slow IVP (2-3 minutes) based on patient weight, provided SBP>100).
13. ♦If patient with HF exposure experiences tetany or cardiac arrest, administer 10 ml **Calcium Chloride 10%**, IV push. **Calcium Chloride 10% should be considered a first line drug in cardiac arrest associated with Hydrofluoric Acid. Only ABCs, defibrillation, intubation, and**

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epinephrine or vasopressin should precede its administration.

14. ♦ If victim was exposed to high concentration HF (>40%), discuss prophylactic 4 ml **Calcium Chloride 10%** (400 mg), IV with Medical Control.

6.6.2 - HAZ-MAT: CYANIDE

♦ In any case of known or strongly suspected cyanide intoxication, paramedics will utilize the following components of the {Cyanide Kit}.

1. **Conscious Victims of Known or Strongly Suspected Cyanide Poisoning**

- A. ♦ {For victims of cyanide poisoning who are awake, administer one **Amyl Nitrite** pearl every 10 minutes.}
- B. ♦ {If the victim's condition is deteriorating, give 300 mg of **Sodium Nitrite** (10 ml of 3% solution) **slow** IV push over 5 minutes.}
- C. ♦ Administer **Sodium Thiosulfate**, 50 ml of 25% solution (12.5 grams), **slow IV push** over 3 minutes.
- D. It is critical to control any seizure activity, using **Valium** or **Versed**.

2. **Unconscious Victims of Known or Strongly Suspected Cyanide Poisoning**

- A. Provide 100% oxygen by Bag-Valve, preferably via endotracheal tube.
- B. CPR if indicated. In cases of cardiac arrest associated with cyanide poisoning, the cyanide antidotes must have a very high priority. Only ABCs, defibrillation, intubation, and epinephrine should precede use of the {Cyanide Kit}, as authorized by Medical Control.
- C. ♦ {While preparing to intubate, place one ampule of **Amyl Nitrite** into a nebulizer after breaking the ampule, and attach it to the Bag Mask while ventilating.}
- D. ♦ {If the victim is not responding to treatment, give 300 mg of **Sodium Nitrite** (10 ml of 3% solution) **slow** IV push over 5 minutes. If possible, start two IV lines, one for standard code drugs, and one for cyanide antidotes.}
- E. ♦ Give **Sodium Thiosulfate**, 50 ml of 25% solution (12.5 grams), **slow IV push**, over 3 minutes.
- F. It is critical to control any seizure activity, using **Valium** or **Versed**.

3. **For pediatric patients, follow the orders above, using the doses below:**

- A. ♦ {Limit exposure to **Amyl Nitrite** ampule to 15 seconds, followed by 15 seconds of rest, then repeat until next Cyanide Antidote can be administered.}
- B. ♦ {Do not administer Sodium Nitrite in the field unless lab values are available.}
- C. ♦ Administer **Sodium Thiosulfate**, **1.65 ml/Kg** of the 25% solution, not to exceed 12.5 grams, **slow IV push** over 3 minutes.
- D. It is critical to control any seizure activity, using **Valium** or **Versed**.

4. **In Multiple Casualty Incidents with suspected cyanide poisoning:**

- A. Provide 100% oxygen by Bag-Valve, preferably via endotracheal tube.
 - ♦ Administer **Sodium Thiosulfate**, 50 ml of 25% solution (12.5 grams), **slow IV push** over 3 minutes.
 - It is critical to control any seizure activity, using **Valium** or **Versed**.

5. ♦ When paramedics are faced with any of the above scenarios, but do not have all three components of the Cyanide Kit, or have insufficient numbers to provide all patients with all three components, any one component (**Amyl Nitrite**, **Sodium Nitrite**, or **Sodium Thiosulfate**) is better than none, and may be administered alone. **The only exception is that Sodium Nitrite should not be used in pediatric patients.**

6. **In cases of smoke inhalation where cyanide is a likely component of the smoke (i.e., structure fires), cases where cyanide intoxication is uncertain, or cases where multiple toxins may be present:**

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- A. Provide 100% oxygen by Bag-Valve, preferably via endotracheal tube.
- B. CPR if indicated. In cases of cardiac arrest associated with cyanide poisoning, the cyanide antidotes must have a very high priority. Only ABCs, defibrillation, intubation, and epinephrine should precede use of the {**Cyanide Kit components**}, as authorized by Medical Control.
7. ♦ Administer **Sodium Thiosulfate**, 50 ml of 25% solution (12.5 grams), **slow IV push**.
8. **It is critical to control any seizure activity, using Valium or Versed.**

6.6.3 - HAZ-MAT: ORGANOPHOSPHATE OR NERVE GAS POISONING

1. Any case of known or strongly suspected organophosphate or carbamate (e.g., insecticides such as parathion or malathion); or nerve agent (e.g., Tabun, Sarin, Soman, VX, etc.) exposure, symptoms may include miosis (pinpoint pupils), rhinorrhea (runny nose), copious secretions, localized sweating, nausea, vomiting, weakness, seizures, dyspnea, loss of consciousness, apnea, diarrhea, flaccid paralysis, and cardiac arrest.
2. Note well: **Patients with severe poisoning may or may not be bradycardic.**
3. ♦ Paramedics will administer 1-2 mg. **Atropine** every 3-5 minutes, as available, until lungs are clear to auscultation. **Atropine** may be given IV or IM, or IM by **Mark I** auto-injector Item 1.
 - Atropine is given as 1-2 mg in conventional form, or by the 2 mg Autoinjector, for adults and children weighing over 90 pounds.
 - Children weighing 40 – 90 pounds should be given 1.0 mg Atropine, or the 1.0 mg Atropen autoinjector.
 - Children weighing less than 40 pounds should be given 0.5 mg Atropine, or the 0.5 mg Atropen autoinjector.
4. ♦ **Atropine** should be followed with 600 mg IM **Pralidoxime (2-PAM)**, which is **Mark I auto-injector Item 2**.
5. Treat any seizures with **Valium**, **Versed**, or {**Valium Autoinjector**}.

The Mark I Kits and other agents for use against Weapons of Mass Destruction (pediatric Atropens, multi-dose vials of Atropine, and Sodium Thiosulfate for cyanide poisoning) are now included in the Drug Box.

Use extreme caution! Having Mark I Kits available does not suggest that entry can be made into a hazardous environment with impunity or safety. They are to provide protection for public safety personnel who walk into a scene and become unexpectedly contaminated. They are also intended for the treatment of civilian patients at the scene.

In the event of a large Mass Casualty Incident involving Weapons of Mass Destruction such as Cyanide or Nerve Agents, contact Medical Control, and request an “Antidote free” order, allowing you to treat all of the patients on the scene with the appropriate antidote. Calling for separate orders for each individual patient is utterly impractical.

Multi-dose vials of Atropine have been added to the Drug Box. However, Squads must carry syringes and needles for administering that Atropine.



Departments are authorized to {stockpile large quantities of **Atropine** and supplies (syringes, needles, etc.), as well as **2-PAM**, if desired, on selected units. The stockpiles can also be in the form of auto-injectors, such as the **Mark I** kits. Auto-injectors can be quite expensive, but enough atropine in multi-dose vials for an initial dose of **Atropine** for between 200 and 400 patients, with syringes, needles, and alcohol preps, for example, is very inexpensive}.



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Administering the Nerve Agent Antidote Auto-Injector Kit (Mark I)

When a first responder arrives on a scene potentially contaminated with nerve agents, s/he must don appropriate PPE. If symptoms of nerve agent exposure manifest:

1. Remove Mark I kit from protective pouch.
2. Hold unit by plastic clip.
3. Remove AtroPen from slot number 1 of the plastic clip. The yellow safety cap will remain in the clip and the AtroPen will now be armed. DO NOT hold unit by green tip. The needle ejects from the green tip.
4. Grasp the unit and position the green tip of the AtroPen on victim's outer thigh.
5. Push firmly until auto-injector fires.
6. Hold in place for 10 seconds to ensure Atropine has been properly delivered.
7. Remove 2-PAM Cl ComboPen from slot number 2 of the plastic clip. The gray safety cap will remain in the clip and the ComboPen will now be armed. DO NOT hold the unit by the black tip. The needle ejects from the black tip.
8. Grasp the unit and position the black tip of the ComboPen on victim's outer thigh.
9. Push firmly until auto-injector fires.
10. Hold in place for 10 seconds to ensure Pralidoxime Chloride has been properly delivered.
11. **If nerve agent symptoms are still present after 15 minutes, repeat injections. If symptoms still exist after an additional 15 minutes, repeat injections for a third time. If after the third set of injections, symptoms remain, do not give any more antidotes but seek medical help.**

6.6.4 - HAZ-MAT: BIOLOGICAL AGENTS

1. ♦ {In preparation for the possibility of a bioterrorist attack, departments may elect to store a supply of **Ciprofloxacin (Cipro)** or **Doxycycline**. **Cipro** will provide prophylaxis against both Anthrax and Cholera, and to some degree against Plague, as will **Doxycycline**. In the event of such an attack, and on the direct order of their Medical Advisor, Medical Control Physician, or EOC Physician, issue a one - two day supply of Cipro, Doxycycline, or other antibiotics as ordered, along with the appropriate preprinted information sheet, to members of your Department, and members of area police, fire, and EMS agencies, as well as members of their immediate families}.

6.6.5 - HAZ-MAT: Pepper Spray

1. Departments may purchase and utilize {**Sudecon Wipes**} to assist in the decontamination of patients or public safety personnel who have been sprayed with Pepper Spray.

6.7 - ABDOMINAL PAIN

1. Airway with C-spine control, if indicated. Provide O2 as indicated.
2. Transport in position of comfort.
3. Give nothing by mouth.
4. Start an IV of **Normal Saline** at a keep open rate if there is significant potential for hypotension, especially for positive orthostatic vital signs. (Do not perform tilt test if unsafe or impractical.)
5. If hypotensive, follow **Shock protocol, Section 3.4**
6. Monitor ECG during transport
7. Consider administering **Phenergan, (Promethazine)** 12.5 mg, 0.5 ml (concentration is 25 mg/ml) IVP over 30 seconds in a **continuously running** IV line for nausea with active vomiting.

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8. If patient has vaginal bleeding, ask for an estimate of blood loss. Perform a visual perineal exam if any of the following are present:
 - Patient pregnant, voices possibility of pregnancy, or has had multiple missed menstrual periods, **and** has significant abdominal pains.
 - Presenting large clots and/or suspected products of conception.
 - Any history of trauma below umbilicus with vaginal bleeding.
 - Patient states use of more than two pads saturated with blood per hour.
 - Visual observation of large vaginal blood loss.
9. Pregnant patients > 20 weeks gestation should be taken to a Maternity Department if feasible; < 20 weeks should go to the Emergency Room.
10. For pain relief when the patient is conscious, alert, is not hypotensive, and is complaining of severe pain, consider **Morphine Sulfate**, up to 5 mg slow IVP (2-3 minutes) based on patient weight, provided SBP>100).
11. May repeat **Morphine Sulfate** up to 5 mg slow IVP (2-3 minutes) based on patient weight, provided SBP>100).



The position of comfort for most patients with abdominal pain is supine with knees flexed, unless there is respiratory distress.



Orthostatic Vital Signs: Consider evaluation of orthostatic vital signs in a conscious patient suspected of being volume depleted, provided that there is no suspicion of spinal injury or another condition precluding this assessment. A rise from a recumbent position to a sitting or standing position associated with a fall in systolic pressure (after 1 minute) of 10 to 15 mm Hg. and/or a concurrent rise in pulse rate (after 1 minute of 10 – 15 beats per minute indicates a significant (at least 10%) volume depletion (postural hypotension) and a decrease in perfusion status.

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7.0 - OBSTETRICAL EMERGENCIES

7.1 - MISCARRIAGE/ABORTION

1. Aggressively treat for **Hypovolemic Shock, Section 3.4**.
2. Give psychological support to patient and family.
3. Be sure to take all expelled tissue with you to the hospital.



Miscarriage/Abortion refers to premature termination of a pregnancy

7.2 - ECTOPIC PREGNANCY

1. Patient may experience severe abdominal pain, and may have intra-abdominal and/or vaginal bleeding and discharge. Patient may not know she is pregnant.
2. Aggressively treat for **Hypovolemic Shock, Section 3.4**.
3. Transport supine with knees flexed.
4. Take any expelled tissue with you to the hospital.
5. Obtain history, including Last Menstrual Period.
6. Pregnant patients > 20 weeks gestation should be taken to a Maternity Department if feasible; < 20 weeks should go to the Emergency Room.



Ectopic Pregnancy refers to growth and development of a fertilized egg occurs outside the uterus, most commonly in the fallopian tube, but sometimes in the ovary or (rarely) the abdominal cavity or cervix. It is usually discovered in the first two months, often before the woman realizes she is pregnant.

7.3 - CARDIAC ARREST IN PREGNANT FEMALE

1. Precipitating events for cardiac arrest include: Pulmonary embolism, trauma, hemorrhage or congenital or acquired cardiac disease.
2. Load and go to closest hospital! Follow all normal cardiac arrest protocols en route, per **Section 3**.
3. To minimize effects of the fetus pressure on venous return, apply continuous manual displacement of the uterus to the left, or place a wedge (pillow) under the right abdominal flank and hip.
4. Administer chest compressions slightly higher on the sternum than normal.



Manual Displacement of Uterus: When working cardiac arrest in pregnant patient, do not transport patient in supine position. When the mother is supine, the fetus can compress the iliac vessels, the inferior vena cava, and the abdominal aorta.

7.4 - THIRD TRIMESTER BLEEDING

1. Never do vaginal exam! Visualize the perineal area.
2. Place patient in left lateral recumbent position.
3. Treat for **Hypovolemic Shock** if indicated, **Section 3.4**.
4. Apply continuous manual displacement of the uterus to the left, or place a wedge (pillow) under the

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right abdominal flank and hip.

8.0 - CHILDBIRTH

GENERAL CONSIDERATIONS

1. Unless delivery is imminent, transport to a hospital with obstetrical capabilities. Imminent delivery is when the baby is crowning during a contraction.
2. A **visual** inspection of the perineal area should only be done when contractions are less than 5 minutes apart and/or there is bleeding or fluid discharge.
3. DO NOT place a gloved hand inside the vagina except in the case of breech delivery with entrapped head, or a prolapsed umbilical cord.
4. During delivery, gentle pressure with a flat hand on the baby's head should be applied to prevent an explosive delivery.
5. Pregnant patients > 20 weeks gestation should be taken to a Maternity Department if feasible; < 20 weeks should go to the Emergency Room.

SPECIFIC CARE

1. Obtain history of patient condition and pregnancy, including contraction duration and interval, due date, number of pregnancies, number of live children, prenatal care, multiple births and possible complications, and drug use.
2. Determine transport or delivery. Transport unless crowning is present.
3. Always try to transport mother to appropriate hospital designated for delivery.
4. Transport mother on left side with head slightly elevated to relieve pressure on mother's vena cava created by baby. Pressure could cause a decrease in mother's and baby's heart rate.
5. After delivery, keep mother and child warm and monitor airways and signs of shock.
6. Obtain one and five minute APGAR scores if time and patient condition permits.
7. Cut the umbilical cord, then place the baby to suckle at the mother's breast.
8. Call MCP for orders and advice as needed.
9. Start IV **Saline**, especially if hypovolemic shock, excessive bleeding, or crowning is present.



Fundal Height refers to the level of the upper part of the uterus. Fundal height changes as the uterus enlarges during the course of pregnancy. You can palpate the top of the uterus and get a general ideal of the weeks of gestation by relating fundal height with anatomical landmarks of the mother.

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 | At term |

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- **APGAR scores at 1 minute, and 5 minutes post delivery**

| | 0 | 1 | 2 |
|---------------------------------|--------------|-----------------------------|-----------------|
| Heart rate | Absent | Slow (< 100) | > 100 |
| Resp. effort | Absent | Slow or Irregular | Good crying |
| Muscle tone | Limp | Some flexion of extremities | Active motion |
| Response to catheter in nostril | No response | Grimace | Cough or sneeze |
| Color | Blue or pale | Body pink, extremities blue | Completely pink |



Separate run reports must be completed for each patient. The newborn is a separate patient from the mother.

8.0.A - NEWBORN RESUSCITATION

GENERAL CONSIDERATIONS

1. *Thermal regulation is an important aspect of the new born.* Body heat must always be maintained. As soon as the baby is born, wipe the baby dry and place in a warm environment. Ways to maintain body heat:
 - A. Cover infant's head with a cap, place infant against mother's skin, and cover both.
 - B. Use car seat with heat packs under and beside infant. Be sure to place towels between heat packs and infant.
 - C. Use {heated, humidified} oxygen.
2. Always position infant in the sniffing position (1" towel under shoulders). This will allow for an adequate open airway and drainage of secretions.
3. Suction infant until all secretions are clear of airway.
 - A. Meconium aspiration is a major cause of death and morbidity among infants. If thick meconium is present and not removed adequately a high percentage (60%) of these infants will aspirate the meconium.
 - B. If the newborn delivers with meconium-stained amniotic fluid and is vigorous, with strong respirations, good muscle tone, and heart rate greater than 100 bpm, suction the mouth and nose in the same way as for infants with clear fluid.
 - C. If the newborn delivers with meconium-stained amniotic fluid and is depressed, has poor respiratory effort, decreased muscle tone, or heart rate less than 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. Each time this suctioning is done, the infant will have to be re-intubated with a new tube. This lower airway suctioning is only done when thick meconium is present. Watery or thin meconium does not require routine endotracheal intubation.
 - D. Mechanical suction may be used on infants but only if the suction pressure does not exceed 100mmHg or 136cmH₂O. Bulb suctioning is preferred.
4. If drying and suctioning has not provided enough tactile stimulation, try flicking the infant's feet and or rubbing the infant's back. If this stimulation does not improve the infant's breathing, then BVM may be necessary.
5. Avoid direct application of cool oxygen to infant's facial area as this may cause respiratory depression due to a strong mammalian dive reflex immediately after birth.
6. Refer to length-based drug treatment guide (e.g. Broselow Pediatric Emergency Tape) when unsure

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about patient weight, age and/or drug dosage.

SPECIFIC CARE

1. Suction airway during delivery; continue suctioning with infant's head down until airway is clear and infant is breathing adequately.
2. After delivery of the infant, assess the airway and breathing while drying and positioning head down. If amniotic fluid not clear, continue to suction prior to ventilating and stimulating.
3. If heart rate is <100, BVM ventilation is necessary to increase heart rate.
4. Despite adequate ventilation, if heart rate is < 60 bpm cardiac compressions should be initiated.
5. BVM ventilation is also indicated for apnea and persistent central cyanosis
6. BVM ventilation rate should be between 30 – 60 breaths per minute. Cardiac compression rate should be at a rate of 120 times per minute (Compression to Breath Ratio 3:1)
7. Establish communications with Medical Control and advise of patient condition.
8. Apply monitor and check rhythm
9. Intubate patient if thick meconium is present in lower airway; suction through ET tube using a meconium aspirator and re-intubate with a new tube.
10. If asystole or spontaneous heart rate is < 60 bpm despite adequate ventilation and stimulation:
 - A. Establish IV/IO of **Normal Saline**.
 - B. Administer **Epinephrine** 0.02 mg/Kg (0.2 ml/Kg) of 1:10,000 via IV/IO/ETT.
 - C. If no response, repeat **Epinephrine** 0.02 mg/Kg (0.2 ml/Kg) every 3-5 minutes.
11. If infant shows signs of hypovolemia, administer saline 10ml/Kg over 5 minutes.
12. Consider **Narcan**: 0.1mg/Kg IV/IO/ETT repeated every 3 minutes until respirations improve administration, if respirations are depressed and narcotic dependence is suspected..
13. {Check blood sugar level} and administer 1ml/Kg of **12.5% Dextrose** (D25 diluted with equal amounts of sterile water) if level is below 40mg/dl.

8.1 - DELIVERY COMPLICATIONS

1. CONTACT MEDICAL CONTROL AS SOON AS FEASIBLE AFTER ANY COMPLICATION IS DISCOVERED.
2. **Cord around Baby's Neck:**
 - A. As baby's head passes out the vaginal opening, feel for the cord.
 - B. Initially try to slip cord over baby's head.
 - C. If too tight, clamp cord in two places and cut between clamps.
3. **Breech Delivery:**
 - A. May be **Footling Breech**, which is one or both feet delivered first, or **Frank Breech**, which is the buttocks first presentation.
 - B. When the feet or buttocks first become visible, there is usually time to transport patient to nearest facility.
 - C. If upper thighs or the buttock have come out of the vagina, delivery is imminent.
 - D. If the child's body has delivered and the head appears caught in the vagina, the EMT must support the child's body and insert two fingers into the vagina along the child's neck until the chin is located. At this point, the two fingers should be placed between the chin and vaginal canal and then advanced past the mouth and nose.
 - E. After achieving this position a passage for air must be created by pushing the vaginal canal away from the child's face. This air passage must be maintained until the child is completely delivered.
4. **Excessive Bleeding Pre-delivery:**
 - A. If bleeding is excessive pre-delivery and delivery is imminent, in addition to normal delivery

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- procedures, the EMT should use the **Hypovolemic Shock protocol, Section 3.4.**
- B. If delivery is not imminent, patient should be transported on her left side and **Shock** protocol followed, **Section 3.4.**
 - C. In either case, Load and Go to nearby hospital, preferably one with obstetrical capabilities.
 - D. Start IV of **Saline** while en route to the hospital!
5. **Excessive Bleeding Post-delivery:**
- A. If bleeding appears to be excessive, start IV of **Saline** while en route to the hospital!
 - B. If placenta has been delivered, massage uterus firmly and put baby to mother's breast.
 - C. Follow **Hypovolemia Shock protocol, Section 3.4.**
6. **Prolapsed Cord:**
- A. When the umbilical cord passes through the vagina and is exposed, prior to the baby's delivery, the EMT should check cord for a pulse.
 - B. The mother should be transported with hips elevated and a moist dressing around cord.
 - C. If umbilical cord is seen or felt in the vagina, insert two fingers to elevate presenting part away from cord, distribute pressure evenly when occiput presents.
 - D. DO NOT attempt to push the cord back.
 - E. Provide High flow **O2** by NRB mask to mother and transport IMMEDIATELY!



Excessive postpartum bleeding is characterized by more than 500 ml. of blood loss after delivery of the newborn.

9.0 - PSYCHIATRIC EMERGENCIES

1. **Patient should be searched for weapons.** Consider having police perform search, but don't assume that their search was adequate.
2. If not already contacted, contact local law enforcement for assistance with violent patients.
3. Obtain relevant history:
 - A. Note any suicidal or violent intent
 - B. Previous psychiatric hospitalization, when and where
 - C. Where does patient receive psychiatric care?
 - D. What drugs does patient take (including alcohol)?
4. **Is patient a danger to self or others?**
5. Calm the patient.
6. Evaluate patient's Vital Signs and general appearance.
7. Transport patient to appropriate facility.
8. Contact Medical Control.
9. ALL patients who are not making rational decisions and who are a threat to themselves or others should be transported for medical evaluation.
10. Threat of suicide, overdose of medication, drugs, or alcohol, and/or threats to the health and well being of others are NOT considered rational.

9.1 - VIOLENT PATIENTS

“Quick Look” for Determining Patient Incompetency

- acutely suicidal patient
- child under age 18, with urgent need for medical care
- confused patient
- developmentally or mentally disabled patient who is injured/ill

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- intoxicated patient who is injured/ill
- physically/verbally hostile patient
- unconscious patient

1. **Patient should be searched for weapons.** Consider having police perform search, but don't assume that their search was adequate.
2. Consider need for restraint. Call for police.
3. Patients should never be transported while restrained in a prone position with hands and feet behind the back, or sandwiched between backboards and mattresses. Restraint techniques must never constrict the neck or compromise the airway.
4. EMS personnel must have the ability to rapidly remove any restraints if the patient vomits or develops respiratory distress (e.g., there must be a handcuff key in the vehicle during transit).
5. Handcuffs are generally not appropriate medical restraints. If they are used, the handcuff key must accompany the patient during treatment and transportation.
6. Explain need for restraint to patient, and document both the need and the explanation.
7. Any form of restraint must be informed restraint.
8. Employ "reasonable force." Reasonable force is the use of force equal to or minimally greater than the amount of force being exerted by the patient.
9. Request that police fill out the "Pink Slip."
10. Preferably transport the patient to the facility where he or she was last hospitalized.
11. Paramedics must attempt to rule out the following conditions by the given method:
 - A. Anticholinergic poisoning must be ruled out by physical exam and incident history.
 - B. CVA must be ruled out by the absence of risk factors and focal neural deficits.
 - C. Ethanol withdrawal must be ruled out by patient history. Benzodiazepines (**Valium**, 5 mg slow IV push) should be used initially in these patients.
 - D. Head injury must be ruled out by physical exam and incident history.
 - E. Hypoglycemia must be ruled out by {blood glucose measurement} or by administering 25 grams of **50% Dextrose**
 - F. Hypotension must be ruled out by determining the presence of SBP > 100.
 - G. Hypoxia must be ruled out by {O₂ saturation measurement} or by supplemental O₂.

♦Paramedics may consider contacting Medical Control regarding the possible use of Valium or Versed as "chemical restraint."

See "IMPORTANT INFORMATION REGARDING IV VERSED" in Section 3.3.1.



Hypercapnia/hypercarbia (elevated levels of CO₂ caused by inadequate ventilation/respirations) can cause a respiratory failure patient (especially young asthmatics) to be combative **despite normal Pulse Ox readings**. EMS personnel have been successfully sued for failure to recognize medical causes of violent/bizarre behavior, including diabetic problems, head injuries, and other problems. The medical evaluation is a crucial component of this Standing Order.

9.2 - ELDER ABUSE/NEGLECT

1. Report all alleged or suspected elder abuse or neglect to the appropriate agency. This can be accomplished by completing the Social Services Referral Form provided by GMVEMSC.
2. EMS personnel **must** report any alleged abuse or neglect (including adults) to the appropriate agency, generally to the police, rather than social services, if victim is neither elderly or pediatric. Simply giving your report to the hospital staff does not meet your burden under the law

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10.0 - HOSPITALS' GUIDE FOR PUBLIC SAFETY WORKER (PSW) EXPOSURES

Updated 9-03 (Data subject to change-check periodically to ensure most current)

| Step | Childrens | Community | DHH | GSH | GVH/SVH | GMH | KMH/SYC | MMC & MMH | MVH |
|--|---|--|--------------------------------|-------------------------|---|-------------------|--|--|--|
| Wash Area | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Notify Supervisor | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Report to hospital | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Hospital Contact | NICU Charge Nurse | Infection Control | Resource Leader | ED or Infection Control | ED Staff -> EMS Coord. | Infection Control | ED Staff -> Infection Control | Infection Control | Security -> AOC |
| Complete "Request for Information Form for HCWs" | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Type into ED | If desired | Y | If desired | Y | Y | Y | If desired | Y | If desired |
| Have your lab drawn | If source is high risk (not routine) | If Indicated | If desired | If indicated | Y | Y | If desired | If indicated | If desired |
| Have source lab drawn (HIV, Hep B, Hep C) | Y | Y (Rapid HIV avail.) | Y (Rapid HIV avail.) | Y | Y (Rapid HIV avail.) | Y | Y | Y | Y (Rapid HIV avail.) |
| Follow-up: Consult <u>YOUR Fire/EMS/Police</u> Dept policies/procedures as well | Follow dept policy | Infection Control | Infection Control & EMS Liason | Infection Control | EMS Coord. or designee & Follow dept policy | WorkPlus Dept | Infection Control & Follow dept policy | Infection Control | Infection Control or Admin Officer |
| Comments | Infection Control Doc available 24/7 for RN contact if needed | Give form to EMS Coord who forwards to Infection Control for follow up | | Infection Control | EMS Coord. is to be paged 24/7 by ED or Prehospital care provider | | Infection Control to be paged 24/7 by ED | Give form to EMS Coord who forwards to Infection Control for follow up | Security page Infection Control Mon-Fri 8-4. Admin Officer to be paged at all other times including holidays |

Prepared by Lisa Faulkner, Infection Control Chair, GMVEMSC after consult with hospitals' EMS Coordinators and Infection Control Officers



Ohio Hospital Emergency Codes

All hospitals in Ohio, as well as some Nursing Homes and other facilities (including possibly some EMS agencies), are in the process of converting to the Ohio Hospital Association's standardized "Ohio Emergency Codes" for overhead emergency paging. Those codes are listed here for your information.

Not all hospitals will use all Codes. However, if a hospital uses a code, it must be used as written. The intent of the color and names is to standardize codes across our healthcare systems. If a hospital changes the color or name of the code, it defeats the purpose.

The list of Hospital Emergency Codes is not considered to be required information for EMS personnel.
No questions will be drawn from this section.

| CODE NAME | EVENT |
|--------------------|--|
| Code Red | Fire |
| Code Adam | Infant/Child Abduction |
| Code Black | Bomb/Bomb Threat |
| Code Gray | Severe Weather |
| Code Orange | Hazardous Material Spill/Release |
| Code Blue | Medical Emergency - Adult |
| Code Pink | Medical Emergency - Pediatric |
| Code Yellow | Disaster |
| Code Violet | Violent Patient/Combative |
| Code Silver | Person with Weapon/ Hostage Situation |
| Code Brown | Missing Adult Patient |

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Dangerous Latex



Crews need to be aware of a relatively new problem in the healthcare field: allergies to latex. This can involve our patients, and our coworkers. Many EMS personnel have latex allergies, and there are numerous patients in this area known to have this problem. Nationally, a number of people have died from allergic reactions to latex.

A few years ago, it was thought that the problem was just an allergy to the powder in latex gloves. Although some people are allergic to the powder, allergies to the latex itself are actually more common.

It's hard to overemphasize the magnitude of this problem. Latex dust, spread through the air when you take off a pair of gloves can trigger severe dyspnea in susceptible people. A BP cuff on a patient's arm, or even the rubber covered diaphragm of one of our stethoscopes, can cause a severe, and painful, skin rash.

And paramedics: our endotracheal tubes are latex. Imagine intubating someone who is allergic. By the time we figure out what's going on (if we do!) and extubate the patient, they can have inflammation extending from their mouth well into their lungs, to the point that it's impossible to ever get an airway again.

These allergies can get worse. The more the person is exposed to latex, the more likely it is that the allergy will become more severe. Therefore, whether we are dealing with our patients, or our own firefighters, EMTs, and paramedics, or with hospital personnel, we need to do all we can to minimize their exposures.

So what do we do? Nationally, many groups are working on it. A Department may want to purchase Latex-free equipment and supplies to use on selected patients. There was an excellent article on the topic in jems, and there will undoubtedly be more.

In the meantime, there are some things you can do. If you, or any member of your agency is allergic to latex, get non-latex gloves. Other members of the company need to be careful, as well. Try to remove gloves without "snapping" them, or doing anything that spreads dust into the air. Take the gloves off away from the allergic person if at all possible. After taking them off, **wash your hands** before touching a person who is allergic, cooking, or doing anything which would bring them into contact with the latex dust.

Every EMS unit and First Responder unit should carry at least a small supply of non-latex gloves, both to be prepared for patients you may encounter, and so you have some for a visiting co-worker. Wipe off the steering wheel before driving if another driver was wearing latex gloves.

When you are told a patient has this problem, use great caution. Ask the family if they have latex free gloves, stethoscopes, and other medical paraphernalia. If they do, use it! Don't intubate these patients. A latex ET tube is guaranteed to make things worse. Try to avoid having wires from ECG leads, Puls-ox cables, etc. resting on the patient, unless you know **for certain** that the wires are not latex-covered.

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Contacting Hospitals



ALS Medic Crews are not the only ones who should contact a hospital while on EMS runs. BLS Ambulances, as well as First Responder Engine or Ladder Crews should, at times, contact hospitals. All personnel should be familiar with the communications devices that their Department supplies to alert the hospitals.

There are basically three reasons for EMS crews to contact hospitals:

1. To notify the hospital of a patient (or a situation), and give them time to prepare.
 - Examples would include a patient in cardiac arrest, calling a “Trauma Alert” for a major trauma patient, any critical or combative patient, warnings about multiple or combative patients, and advising the ER about patients contaminated with hazardous materials, among others.
 - Several hospitals have requested that EMS crews contact them before arrival with **every patient**. Other hospitals may also make the same request. The Standing Orders Booklets identify hospitals desiring contact for all patients.
 - A. Children’s Medical Center
 - B. Veterans Administration Medical Center
 - C. Dayton Heart Hospital
 - D. Wright Patterson Air Force Base Medical Center
 - E. Kettering Medical Center
2. To ask for advice.
 - As an example, a crew dealing with a patient who has borderline vital signs could ask for advice on whether a certain medication would be appropriate.
3. To request orders.
 - There are numerous treatments in both EMT-B and Paramedic Standing Orders that can be administered only with direct permission from Medical Control. When calling for orders, make sure you do the following:
 - A. State who you are and your certification level, then give a very brief synopsis of the patient’s problem, and **ask to speak with a physician**: “This is Paramedic Simpson with Dayton Fire Department Medic 19. We have a 54-year-old male with severe pulmonary edema. We need to speak with a physician for orders.”
 - B. Paint a clear, concise verbal picture of the patient, so that the physician will understand the need for the order.
 - C. Don’t assume that the orders you want will be obvious. Ask for the order!

There are four primary methods of contacting hospitals.

1. BLS Radios, or other direct EMS to Hospital Radio Contact
2. Cellular or Wireless Telephones
3. Telephones at scenes in homes or businesses.
4. Request Dispatch to pass on a message.

Generally speaking, contact through a Dispatcher is the least effective method of communications with hospitals. Contacting the hospital directly allows a more complete report, permits the hospital to ask questions, helps to ensure accuracy, and reduces the workload on your Dispatchers.

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Physicians on Emergency Scenes



PURPOSE:

This SOP defines how EMS personnel interface with physicians who are present at emergency medical scenes.

DEFINITIONS:

Patient's Personal Physician: A Medical Doctor (MD) or Doctor of Osteopathy (DO) who is the private physician of a patient at an emergency scene.

Intervenor Physician: A physician at an emergency scene other than the physician's office, who is not the Patient's Personal Physician.

Medical Control Physician: An Emergency Medicine Physician who practices in a local Hospital Emergency Rooms, and who provides on-line medical control via radio or telephone to EMS.

PROCEDURES:

Intervenor Physician at an Emergency Scene

Some physicians may stop at emergency scenes to offer assistance. Their efforts and their interest are to be encouraged, so long as they do not place themselves, the patient, EMS personnel, or other persons at risk. As such, the following procedures will apply:

- 1) **Assure scene safety.** Physicians who are in a location or environment which places them at risk should be asked to leave, especially in view of the fact that they are unlikely to have personal protective equipment, or training in how to use it.
- 2) Provide the physician with a copy of the Physician on Scene Card. You may permit the physician to **assist with care** at the scene or en route to the hospital. Request to see a copy of the physician's medical license. An example of this license is provided in the "Definitions" section of this SOP.
- 3) If the intervenor physician wishes to provide **on-site medical direction**, all of the following conditions must be met. If so, EMT-Bs and Paramedics will defer to the orders of the physician.
 - The physician must provide evidence of a State of Ohio Medical License.
 - The physician must speak with an on-line Medical Control Physician.
 - The physician must agree to assume full responsibility for the patient and the patient's care, and the **on-line Medical Control Physician must directly advise the crews** that they may take medical direction from the intervenor physician;
 - The physician must accompany the patient to the hospital ***in the Ambulance or Medic Unit***; and
 - The physician must provide guidance for the run documentation, and sign three copies of the runsheet.
- 4) If all of the above stipulations do not apply, the physician may not provide on scene medical direction. Further participation at the scene is at the discretion of the crew.
- 5) Neither EMT-Bs nor Paramedics are to accept orders that are outside of your scope of practice, or beyond your training or capabilities.
- 6) If there is any disagreement, crews will defer to the on-line Medical Control Physician, and request the presence of their supervisor.
- 7) If the physician's actions jeopardize the safety of the patient or any other person, or jeopardize patient care in any way, crews should immediately call for their supervisor and the Police.

Please note the following exception: If the physician is a local Emergency Room physician who is

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personally known to the crew, only the stipulations concerning scene safety apply. Otherwise the crews should take direction from the doctor just as they would if they were speaking over the radio or telephone.

Patient in a Physician's Office, or Patient's Personal Physician on Scene

At a physician's office, there is little issue of identification. At other locations, if the patient or family members confirm that the person is the patient's private medical physician, and the physician confirms that there is a pre-existing doctor/patient relationship, the doctor enjoys special privileges by virtue of that relationship. As such, the following procedures will apply:

- 1) EMT-Bs and Paramedics will defer to the orders of the physician. This includes, but is not limited to, the right of that physician to pronounce death.
- 2) Provide the physician with a copy of the Physician on Scene Card.
- 3) Neither EMT-Bs nor Paramedics are to accept orders that are outside of your scope of practice, or beyond your training or capabilities.
- 4) If the physician's actions or orders would, in the opinion of our crews, put the patient at risk, or if the physician gives orders which are beyond our capabilities (see # 3), crews are to immediately contact the Medical Control Physician, and your supervisor. You must handle this situation with great sensitivity. Attempt to have the situation reconciled via peer-to-peer (doctor to doctor) consultation. That is, have the Medical Control Physician speak directly to the private physician, utilizing our communications gear if needed.
- 5) The physician may choose to continue care en route to the hospital. If the physician is willing to do **all** of the following, that physician will continue to be in charge of the patient's care:
 - Assume full responsibility for the patient and the patient's care;
 - Accompany the patient to the hospital *in the Ambulance or Medic Unit*; and
 - Provide guidance for the run documentation, and sign three copies of the runsheet.
- 6) If the physician is not willing to comply with all of the above stipulations, the physician may not accompany the patient to the hospital. Once the physician is no longer in attendance, revert to normal operating procedures and protocols.

Other Medical Personnel on Scene

From time to time, EMS personnel encounter dentists, paramedics, nurses, nurse anesthetists, nurse practitioners, physician's assistants, respiratory therapists, EMTs, and other medical professionals or para-professionals on emergency scenes. Although some of those personnel are legally authorized to write prescriptions, they may **NOT** assume medical control over EMTs and paramedics at scenes.

You may, at your discretion, allow such personnel to assist you at emergency scenes, as, in fact, you may utilize any bystander for appropriate tasks. Some of these personnel have special skills, including intubation and IV placement. However, it is generally not appropriate for us to permit them to perform invasive procedures (such as intubation, starting IVs, or administering medications) unless they are riding with us, or have otherwise been positively identified.

DISCUSSION:

You must handle these situations with great sensitivity. Crews should maintain a supply of the Physician on Scene Cards in each apparatus, and hand them out to any medical professional they encounter at an emergency scene.

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Greater Miami Valley EMS Council Physician on Scene Hand-out

Thank you for your efforts. We appreciate your willingness to assist with an emergency situation.

Paramedics and EMTs are not permitted to accept assistance from other medical professionals unless those persons can be positively identified. Please offer to show them your State Medical License.

Please understand that our Paramedics and Emergency Medical Technicians (EMTs) are trained to National EMS Standards, and are tested and expected to operate according to local operating protocols, also known as “Standing Orders.” Paramedics and EMTs are not permitted to perform procedures or offer treatments that exceed their training or scope of practice. If they decline any part of your help, advice, or orders, please understand that they are performing according to their protocols.

You should also realize that many of the situations which EMS deals with are:

- extremely hazardous
- may require use of specialized personal protective equipment
- may require training in hazard recognition and mitigation
- **If our crews ask you to leave the scene, it may be for your personal safety.**

If you believe that the crew’s actions are inappropriate, or in error, ask them to put you in contact with their Medical Control Physician, or ask them to contact their supervisor. Either or both will be immediately available.

If you, the physician, wish to provide on-site medical direction, or wish to continue care en route to the hospital, you MUST AGREE TO ALL of the following conditions:

- Provide evidence of a State of Ohio Medical License;
- Speak with the on-line Medical Control Physician;
- Agree to assume full responsibility for the patient and the patient’s care, and the **on-line Medical Control Physician must directly advise the crews** that they may take your medical directions;
- Accompany the patient to the hospital ***in the Ambulance or Medic Unit***; and
- Provide guidance for the run documentation, and sign three copies of the runsheet.

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FIELD TERMINATIONS OF PREHOSPITAL CARDIAC ARRESTS



As we all know, survival from out-of-hospital cardiac arrest is quite poor. Often the reported hospital discharge is only 1 - 2%. Survival is particularly dismal, unless the patient has “return of spontaneous circulation” (ROSC) **in the field**.

Defibrillation is the cornerstone of prehospital resuscitation, and sooner is definitely better. Whether you use an automated or a manual defibrillator, nothing, short of removing a patient from a hazardous environment, should delay defibrillations.

After that, you need to make a decision: when to “load and go,” and when to treat at the scene. For years, we have emphasized that, in many cases, the most important treatment is rapid transport. On the other hand, there are times when rapid transport actually **decreases** the chances that the patient will survive. Cardiac arrest is one example.

That still comes as a surprise to many EMTs and paramedics. But there are now multiple studies on prehospital arrest in the medical literature, totaling thousands of patients. Their conclusions are virtually uncontradicted: cardiac arrests are resuscitated in the field, or they die. It’s that simple.

Now, for that to apply, several factors do come into play. First, we must have advanced life support on the scene within a reasonable time. Second, we must be able to provide that ALS, meaning that we must be able to defibrillate, intubate, start IVs, and give medications. If you cannot get the IV, or the intubation, load and go. Finally, we are speaking only of “normal,” medical cardiac arrests. Arrests due to hypothermia, drowning, or overdose may benefit from rapid transport to a hospital.

Otherwise, treat the patient at the scene!

CPR during transport also places you and your partners at even greater risk than the dangers you always face in an emergency vehicle. You have to be standing to perform CPR, or push meds, and can easily be thrown into a wall. You’re certainly not prepared for a crash. And the chances of needle sticks, and other contact with infectious body fluids are much higher.

Treat the patients with cardiac arrest (with the exceptions, above) at the scene, and transport them **after** resuscitation. Both your patients, and you, will have a better chance to survive.

If, however, you’ve completed the ALS cardiac arrest protocol without success, why should you take the risks of emergency transport for someone who is dead? Consider field termination.

The patient must meet essentially the same criteria we discussed for load and go vs. work the arrest at the scene. The patient must be intubated, have an IV, and have received all appropriate therapies. The patient must be at least 18 years old, and the arrest cannot be due to trauma, hypothermia, or overdose. Finally, it’s a good idea to have two different people check for a pulse, and confirm that the patient is in asystole, or PEA. Research has shown that if the patient has persistent V Fib, transport may be beneficial.

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Remember: although the Medical Control Physician (MCP) at the ED must agree to it, initiation of the “Field Termination” protocol is your option. If you are uncomfortable with the situation, don’t even call for the order.

Once you and the MCP have agreed upon a Field Termination, you will need to tell the family that the patient has died. Advise them that you have consulted with the physician in the ED, and that there is nothing else that can be done for their loved one. If they voice strong objections, it may be better to go ahead and transport the patient. (For a longer discussion on informing families about a death, see that section, elsewhere in this Manual.)

Afterward, go to the hospital which authorized the field termination. They will replace your supplies, and exchange a new Drug Box for the one that you used. As always, make certain that you fill out the EMS Supply Usage Sheet. Finally, be sure to leave a copy of your runsheet for the EMS Coordinator at the hospital, so that they have a record of the Field Termination.

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The Hard Part -- Dealing with the Family



Whether you find a patient who meets the criteria for not initiating CPR, or you are a paramedic who goes through the process to terminate in the field, you need to inform the family of the patient's death. The way you do that is as important as it can be uncomfortable. An unthinking comment like, "If only you had called us sooner..." can cause a person to suffer terribly, blaming themselves for that death.

Try to sequester the family or close friends away from the body. Act concerned, professional, caring, and respectful. Unless the group is hostile, try to sit down with them, and become a part of the group. This helps to build mutual rapport. Finding out who is present, and their relationship to the patient, can help you gain control of the room. Try to pick out one of the family who seems to be relatively stable, and address that person. Introduce yourself, and your crew, giving names, position, and department.

After the introductions, briefly give the facts of the situation as you know them. Ask a question or two to establish your understanding. You might, for instance, ask about when they last spoke with the patient, or whether he had expressed any physical complaints. This helps establish your leadership. Expect that different families can have varied reactions, ranging from quiet, to hysterics, to calm weeping.

Once you have some control, gently inform them that the patient has died. You must refer to the patient by name, and you must use the word "dead," or some form of it (such as "died"). Any other terminology, (e.g., "passed on," "expired," "gone to a better world,") allows too much chance for misunderstanding or denial. Allow the family 30 to 60 seconds for a grief response. Even if it seems that they were aware of the death before your arrival, your statements have removed any lingering hope. A minute to recover from that shock is needed.

After a minute, ask a question. This will generally break the pattern of emotions quite sharply, snapping the person back to a rational mindset, so that you can discuss other matters. Something along the lines of "What do you think happened?" can be a good starting point.

That forces them to focus on you. Use the moment to minimize some of the long-term emotional difficulties which can result from the loss of a loved one. Some reassurances, that the patient did not appear to have suffered unduly, that the suffering of a chronic illness had at last ended, that everything feasible was done to care for the patient, chosen carefully, and as appropriate to the circumstance, can greatly ease the pain of the living.

Guilt can be an even worse burden than loss. Not only should you try to avoid creating guilt ("If only you had known how to open her airway..."), you should make strong efforts to alleviate its potential. Certainty is a hard commodity to come by; use that fact to help. When the family members begin their own series of "What if's," point out how unlikely it would have been to have changed the outcome. A few words can be the best emergency care for those family members.

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In some situations, there is no reassurance to be found. When there are major problems involved, with the death, the care, or whatever else, simply evade them for the time. If no other way can be found, equivocate. Problems will be far easier to deal with after a little time has passed.

Offer to call someone to be with them, or to notify someone of what has happened. You do not need to telephone a long list of friends, but placing the first call to a clergyman, or family member, is sometimes the hardest. After you have leave, the presence of another caring person can give comfort to all concerned.

Stand up, express your sorrow to the family, and explain that you need to complete some legal formalities. Call the coroner's office, and the police department. Make any other calls required by your department's standard procedures, such as to medical control, or your supervisor. Then return to the family, and explain what will be happening. Let them know if the body will be removed to the morgue. Suggest that they contact a funeral director and their clergy, who will help them deal with the procedures that follow a death.

Until the release of the body has been approved by the coroner, the immediate vicinity of the body must be treated as a crime scene, and everyone, including the family, kept out. You cannot allow the family to remove anything from the body, or the immediate area. Also, you may not remove any medical devices without the coroner's release, including endotracheal tubes, IVs, etc. Finally, make sure that you document everything you did, including IVs you missed, or other needle sticks. The coroner may need an explanation for that hole in the patient's skin.

If the body is released, cover it with a sheet or blanket. You can then offer to allow them to view the body if they wish. Before they do so, and when you are absolutely certain that no further investigation will be taking place, arrange the body and surroundings to avoid presenting a gruesome scene.

Some organs such as eyes can be donated even several hours post mortem. If you wish, you can consider suggesting this to the family. Many people receive comfort from such an action. If you are interested, contact your local organ procurement officer, who will give you information and suggestions on how best to broach the subject.

Forthrightly answer any questions the family asks, but don't hesitate to refer the questioner to some other authority if needed. Look around the family and friends, making certain that no one is immediately in need of your services or your support. Reemphasize your sorrow for their loss. Explain that you need to return to duty, and leave as gracefully as possible.

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DO NOT RESUSCITATE ORDERS



“DNR” stands for Do Not Resuscitate. For years, many of us have been frustrated because legal issues forced us to perform CPR on patients when they did not want it, and could not benefit from it. The law in Ohio has changed. The law and rules are in effect now. EMS personnel can and will honor DNR orders, within the limits of the law, effective immediately.

Ohio’s program is called, “DNR Comfort Care.” The concept is that terminally ill persons have the right to die with dignity, in comfort, and with their wishes respected. Comfort Care means that a dying person receives care that eases pain and suffering at the end of life, but without resuscitative measures. DNR Comfort Care **does not mean “do not treat.”** The law does not allow or condone mercy killing, assisted suicide, or euthanasia.

There are some terms that may be confusing because of the way that they are used in the law.

In this section of Ohio law, “**emergency medical services (EMS) personnel**” includes EMTs, paramedics, and police officers.

The term “**DNR Comfort Care**” is used three ways:

1. **DNR Comfort Care** is the title of the overall program for limiting care. As such it appears on all of the forms and identifications. A copy of the DNR Comfort Care Order Form is attached to this order. It is not valid unless it has been signed by a physician (MD or DO), a certified nurse practitioner (CRNP), or a clinical nurse specialist (CNS).

2. When referring to the specific type of limited care, the term **DNR Comfort Care** should be thought of as meaning “comfort care **only**.” These are usually (but not always) patients with terminal conditions, or patients who are frail and elderly and not likely to survive CPR.

Giving “**Comfort Care**” means providing **any medical treatment** to diminish pain or discomfort **that is not used to postpone the patient’s death**. You can, and should, provide treatments that will ease pain and suffering, but you may not attempt any resuscitative measures to sustain life.

3. The term “**DNR Comfort Care-Arrest**” means care is limited to comfort care **only after the patient goes into cardiac or respiratory arrest**. At that point, we cannot use any component of “**CPR**” listed in the new law (see below). Comfort Care-Arrest patients may be on DNR orders for a long period of time (12-18 months, or longer).

Many of these patients are less concerned about palliation of pain, and more concerned with the quality of life after stroke or heart attack. These patients can receive standard EMS care for problems other than cardiac or respiratory arrest, such as Lasix for pulmonary edema, epinephrine for anaphylaxis, and D50 for hypoglycemia, as long as they are still breathing. If they are in cardiac or respiratory arrest, they are not to receive any of the components of “**CPR**” listed in the new Ohio law.

Therefore, DNR Comfort Care and DNR Comfort Care-Arrest are exactly the same, except for what triggers them. With DNR Comfort Care, the protocol is in effect as soon as the order is written. You cannot at any time perform intubation, or any of the other components of “**CPR**.”

With DNR Comfort Care-Arrest, the DNR protocol does not apply **until** the patient stops breathing, or has no pulse. You can intubate these patients, provide resuscitative IVs, apply cardiac monitors, and give all normal care, until the patient stops breathing, or loses a pulse. After that, you may not start any of the components of “**CPR**,” as listed in the law.

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“**Identification**” and “**verification**” may seem to you to be reversed.

Identification, in the law, refers to ways to determine that a patient has a DNR status.

There are several forms of appropriate DNR identification. The State’s DNR Comfort Care Order form, wallet card, or a photocopy are among them. There are other forms of identification, including a bracelet, a necklace, and a hospital-type bracelet (in Dayton area hospitals, it will be pink) approved by the Ohio Department of Health.

Medical bracelets or medallions other than those using the DNR Comfort Care logo and approved by the Department of Health are unacceptable for identification.

Identification of Non-Comfort Care Orders

Acceptance of DNR Orders other than Ohio Comfort Care Orders is at the option of each Department or EMS Agency. Consult your Chief, Medical Director, and Legal Advisor!

Some EMS agencies do accept formal DNR orders that are not on State of Ohio forms, as long as you are comfortable with the identification of the patient.

There are several reasons why this may be beneficial to your patients:

1. There are still physicians who are unfamiliar with the Comfort Care Law, and who are writing older style DNR orders.
2. A terminal patient from another state may be visiting Ohio. Obviously, a person coming from out of the state to visit their relatives for one last time, is going to have a DNR Order from their home state, and would want it to be honored.
3. As a result of a quirk in the law, DNR Comfort Care does not apply to children. As such, any DNR Orders for pediatric patients will be a format other than the Comfort Care style.

On the other hand, the Ohio Comfort Care law specifically exempts you from civil liability if you follow Comfort Care DNR Orders. DNR Orders which do not follow the Comfort Care formats do not give you that protection. That does not mean you will be sued if you accept them, and you can also be sued for failing to accept them. It simply removes the “Good Samaritan” protection of the Comfort Care law.

If your agency accepts other format DNR Orders, you should follow these guidelines:

- The order must be typed or printed, and signed by a physician (MD or DO), a certified nurse practitioner (CRNP), or a clinical nurse specialist (CNS).
- This does not apply to Living Wills. See the discussion on Living Wills, in the section below, titled “What Can’t We Do.”
- If the patient is a child, the parent or guardian should be present, and agree to withhold resuscitation.

Verification means confirming that your patient is the same person specified in the DNR order.

We must use “reasonable steps” to verify who the person is. Provided we do, we are not liable for civil damages (i.e., lawsuit) for withholding or withdrawing CPR, provided we are following Ohio’s protocol. However, failure to comply with a DNR order removes the law’s protection.

Reasonable steps for verification include:

1. Verification by family, friend, or caregiver;

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2. Known by EMS or physician;
3. Wearing a healthcare facility ID band;
4. Driver's license, passport, or other ID with both name and photograph.

If you are unable to verify the patient's identity, you should still follow the DNR protocol.

Finally, in the context of this law, "**CPR**" has a very different meaning from the way we usually think of it. "**CPR**" is defined as **any one or more** of the following:

1. Chest compressions
2. Artificial airways (oral airways, nasal airways, or endotracheal tubes)
3. Resuscitative drugs
4. Defibrillation or cardioversion
5. Respiratory assistance
6. A resuscitative IV line
7. **Cardiac monitoring**

Now that we know the terminology, what do we do?

When we find a person with an emergency situation, we are **not** required to search for DNR identification. We simply perform our normal procedures. Unless we have reason to believe that a DNR may be present, we can and will perform CPR, and provide all other appropriate treatments.

However, once we become aware of a DNR identification, we must verify that our patient is, in fact, the person named on the DNR. See **identification** and **verification** in the section on terminology.

Once we know of a DNR identification, and have verified the patient's identity, we need to know whether they are DNR Comfort Care, or DNR Comfort Care-Arrest. We are **required** to comply with DNR orders, whether they are in writing, or by verbal order from a physician. If you receive a verbal order from a physician, whether in person or by phone, you must take "reasonable steps" to verify the identity of the physician. Regardless of how we get that information, we will withhold "**CPR**" from that patient, as appropriate for his or her DNR protocol. Remember that "**CPR**" in this context means any of the seven items listed in the definition above, not just ventilations and compressions.

If we become aware of the patient's DNR status after we have begun "**CPR**," we must cease immediately. Unlike other situations, it is not necessary for EMS personnel to obtain a physician's order to halt CPR if DNR identification is found.

Comfort Care and Comfort Care-Arrest are essentially two "trigger points" for the DNR protocol. If a patient's status is **DNR Comfort Care**, the protocol is in effect at any time. If their status is DNR Comfort Care—Arrest, it only becomes effective if the patient goes into cardiac or respiratory arrest.

If the patient has no respirations at the scene, contact the Coroner's Office. Advise them of the DNR. They will almost certainly release the body to the family in very short order. Explain the situation to the family, and return to service.

If the patient is near death, but is still breathing, you may transport or not, according to their wishes. If they have a DNR order and are unable to respond but the family is asking that they be removed to a hospital, let the family know that no resuscitative care will be provided at the hospital. If they still request transport, you may do so. According to legal counsel, in such a situation, assuming that there is no emergency, we are not required to remove the patient under the doctrine of implied consent, as we

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normally do with unresponsive patients.

If the patient arrests while you are en route to a hospital, simply continue transport to the most appropriate healthcare facility, but without further “**CPR**” (by the law’s definition). That may seem difficult to do, but please remember that you are following the patient’s wishes.

What is the most appropriate facility? Generally, that will be the hospital. However, if you removed the patient from a nursing home, you may return that patient to the nursing home. Doing so avoids the necessity of creating a hospital bill for the family. Please use discretion: try not to give the appearance to bystanders that you are taking a dead body into a nursing home. And notify the facility (hospital or nursing home) by cellular phone.

What can’t we do?

If the patient’s status is DNR Comfort Care-**Arrest**, we cannot perform any resuscitation **once the patient arrests**. That includes all of the components of “**CPR**” listed above.

If the patient’s status is DNR **Comfort Care**, then we are **even more limited**. We cannot use any of the components of “**CPR**” listed above at any time. That means we can’t even place the patient on a cardiac monitor.

We cannot perform CPR even if families or bystanders demand it. The PATIENT has the final right to determine DNR status. Provide comfort and supportive measures, and try to aid the family in understanding the dying process and the patient’s choice.

There is one exception: if the person demanding CPR holds Durable Power of Attorney (DPA) for Healthcare (DPA-HC), they may be able to request CPR for the patient. To determine if that is valid you must do two things. First, make sure that the person holds Durable Power of Attorney **for Healthcare**, not simply a monetary DPA. If so, then look at the DNR Comfort Care form (see the attachments to this General Order). The bottom half of the form has two checkboxes for “Certification of DNR Comfort Care Status (to be completed by the physician).” If the first box (“Do Not Resuscitate Order”) is checked, the person holding DPA-HC may give you valid orders contrary to the DNR Comfort Care protocol. If the second box (“Living Will and Qualifying Condition”) is checked, the DNR Comfort Care protocol applies, regardless of the wishes of the DPA-HC.

You should also know that Living Wills (referred to as “declarations” in the law) generally **do not apply** to EMS. A Living Will only takes effect after two physicians certify that a patient is terminal, or in a permanently unconscious state. Therefore, the only way that a Living Will applies to prehospital personnel is when it is the basis of a DNR Comfort Care Order (as discussed in the preceding paragraph). For EMS personnel to honor a **Living Will**, it must be accompanied by a DNR order, which has been signed by a physician.

We cannot conceal, cancel, deface, or obliterate the DNR identification of another person without their consent. We cannot forge or falsify a DNR order, or a revocation of a DNR. Doing so is a crime.

What can we do?

Clearing a person’s airway, such as by suctioning, for any purpose other than as part of CPR is

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permissible. We can administer oxygen, place the patient in a position of comfort, and provide pain management. We can control bleeding, splint suspected fractures, and provide emotional support. We can contact the physician, hospice, or home health care. We can call Medical Control and a supervisor for advice and assistance.

If at any time, the patient **revokes** Comfort Care, we can do **anything** within normal EMS procedures to help him or her. Any person who has a DNR may change their mind at any time, and request medical care including CPR. Regardless of age or competence, that is the choice of the patient. Patients can revoke it verbally, or in writing. Even saying, "Help me," may be enough to require us to use all of our normal resuscitative procedures. If the patient requests help, we will provide it to the best of our ability.

Healthcare facilities that are transferring a patient are **required** to notify us of the existence of a DNR order. For example, if we remove a patient from a nursing home, the nursing home should provide DNR information before we leave. By the same token, we are required to notify the emergency room staff, once we arrive.

How do we document this?

Record the patient's name, gender, age and attending physicians in the appropriate fields. Note "DNR Comfort Care," and the type of Comfort Care on the runsheet.

In your narrative, explain when the DNR order was found. Describe what steps you took to verify the identity of the patient. If a verbal order is obtained from a physician at the scene, the EMS personnel must verify the physician's identity and document verification. Document your assessment, and what care you provided.

If EMS personnel witness a patient revoke the DNR, document that. If the patient revokes the DNR, you must communicate that to the receiving hospital.

If you have questions or concerns about this law when you are on the scene, contact the Medical Control Physician, and your supervisor.

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MEDICAL ABBREVIATIONS

Following are approved and recommended abbreviations for use in writing EMS Run Reports.

N.B.: Computers may not be able to produce some of these abbreviations exactly. For example, “c”, rather than “c”, may be used as an abbreviation for “with”.

| | | |
|--------------|--|--|
| a | — before | failure |
| aa | — of each | CID — cervical immobilization device |
| A&Ox3 | — alert and oriented to time, place, and person | c/o — complains of |
| A&Ox4 | — alert and oriented to time, place, person, and event (accident, fall, or whatever) | COPD — Chronic Obstructive Pulmonary Disease |
| AAA | — abdominal aortic aneurysm | CO2 — carbon dioxide |
| AB | — abortion | CP — Chest Pain or Cerebral Palsy |
| abd. | — abdomen or abdominal | CPR — cardiopulmonary resuscitation |
| AER | — aerosol (i.e., nebulizer) | CSF — cerebrospinal fluid |
| AIDS | — Acquired Immune Deficiency Syndrome | CVA — cerebrovascular accident |
| AKA | — above the knee amputation | cx. — complication(s) |
| APE | — acute pulmonary edema | — down or decreased(ing) |
| approx. or ~ | — approximately | D50 — 50% Dextrose |
| ≈ | — approx. equal to | DC — District Chief |
| ASTI | — acute soft tissue injury | DM — diabetes mellitus |
| BB | — backboard | DO — Doctor of Osteopathy |
| bid | — (med) twice a day | Dx. — diagnosis or disease |
| BKA | — below the knee amputation | ECG — electrocardiogram |
| BVM | — bag-valve-mask | EDC — due date |
| ↑ BP or HTN | — hypertension | EDD — Esophageal Intubation Detection Device |
| c | — with | EDP — Emergency Department Physician |
| Ca | — cancer | EMT — Emergency Medical Technician |
| CABG | — coronary artery bypass graft | = — Equal (to) |
| cap. | — capsule | equip. — equipment |
| Capt. | — Captain | epi — epinephrine |
| cc. | — cubic centimeter <i>No longer used, per JCAHO. Use ml.</i> | esp. — especially |
| CC | — chief complaint or cervical collar | ET — endotracheal |
| CF | — cystic fibrosis | EtCO2 — End Tidal Carbon Dioxide Detector |
| CHF | — congestive heart | EtOH — alcohol |

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| | | | |
|------------|--|---------------------|---|
| ETT | — endotracheal tube | NaHCO ₃ | — sodium bicarbonate |
| FMP | — family physician | NC | — nasal cannula |
| fx. | — fracture | NIDDM | — non-insulin dependent diabetes mellitus |
| Gravida | — number of pregnancies | no. or # | — number |
| > | — greater than or more than | NS | — Normal Saline |
| GSW | — gunshot wound | NSR | — normal sinus rhythm |
| GYN | — gynecology or gynecological | NTG | — nitroglycerin |
| HA | — headache | OB | — obstetrics or obstetrical |
| HIV | — Human Immunodeficiency Virus | O ₂ | — oxygen |
| hr. | — hour | O ₂ Sat. | — oxygen saturation |
| hs | — (med) hour of sleep <i>No longer used</i> | OPT | — ophthalmically |
| Hx | — history | p | — after |
| IDDM | — insulin dependent diabetes mellitus | PAC | — premature atrial contraction(s) |
| IM | — intramuscular | Para | — number of live births |
| IO | — intraosseous | PE | — physical examination |
| IV | — intravenous | PEA | — pulseless electromechanical activity |
| IVD | — intravenous drip | PJC | — premature junctional contraction(s) |
| IVP | — intravenous push | PM | — Paramedic |
| JVD | — jugular venous distension | po | — by mouth |
| lac. | — laceration | POS | — physician on scene |
| < | — less than | postop. | — postoperative |
| lpm or l/m | — liters per minute | pr | — by rectum |
| LPN | — Licensed Practical Nurse | prn | — as needed |
| Lt. | — Lieutenant | Pt. | — patient |
| LUQ | — left upper quadrant of abdomen (RUQ, LUQ, RLQ) | PTCA | — angioplasty |
| mcg | — micrograms | PVC | — premature ventricular contraction(s) |
| MCP | — Medical Control Physician | PVD | — peripheral venous distension |
| MD | — Medical Doctor or Medical Director | q | — every |
| med | — medication | qd | — every day <i>No longer used, per JCAHO</i> |
| meds | — medications | q4h | — every four hours |
| mg. | — milligrams | qid | — four times a day |
| MI | — myocardial infarction | qod | — every other day <i>No longer used, per JCAHO</i> |
| min. | — minute | RAD | — reactive airway disease (asthma) |
| ml. | — milliliters | RN | — Registered Nurse |
| MS&P | — motor, sensation, and pulse | ROM | — Range of Motion or Rupture of Membranes |
| MVA | — motor vehicle accident | | |
| MVC | — motor vehicle crash | | |
| N&V | — nausea and vomiting | | |

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Rx. — treatment
s — without
S & S — signs and symptoms
SC or SQ — ~~subcutaneous~~ *No longer used, per JCAHO*
Sub-Q — subcutaneous
SL — saline lock
SO — Standing Orders
SOB — shortness of breath
SPM — Senior Paramedic
sts. — states
SVT — supraventricular
tachycardia
SW — shotgun wound
or stab wound
sxs. — symptoms
tab. — a tablet
TB — tuberculosis
TIA — transient ischemic attack
tid — three times a day
TOP — topically
TRN — transdermally
Tx. — transport
↑ — up or increased (increasing)
VF — ventricular fibrillation
VS — vital signs
VT — ventricular tachycardia
WNL — within normal limits
yo — years old

**Greater Miami Valley
EMS Council**

and

Ohio EMS Region 2

**Paramedic Standing Orders
Training Manual**

**Pediatric
Pre-Hospital Protocols
2004
for Paramedics**

For Use in Patients Under the Age of 16

Version: 12/16/03
Effective: 4 February, 2004

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ADDITIONAL PEDIATRIC INFORMATION

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1.0 - STIPULATIONS

1. This protocol is for use by those individuals operating in and under the authority of the Greater Miami Valley EMS Council (GMVEMSC) Drug Box Exchange Program, and Ohio EMS Region 2, under their authority and certified by the State of Ohio as an EMT-Paramedic
2. This protocol is to be used in the field only. Communications must be attempted as soon as practical for potentially unstable patients, or hospitals that request contact on all patients being transported to their facility.
3. **This protocol applies only to patients under age 16.**
4. Procedures that are marked with a diamond (♦) ARE **NEVER** TO BE PERFORMED WITHOUT A PHYSICIAN'S ORDER. The diamond provides rapid identification of procedures and medications that require **on-line medical control** authorization.
5. No procedures, techniques, or drugs will be used without the proper equipment or beyond the training or capabilities of the Pre-Hospital personnel. Nothing in this protocol may be used without specific pre-approval of the Medical Advisor for the local department or agency. **Items enclosed in braces ({} are at the option of the Department, and its Medical Director.**
6. Secondary intubation confirmation devices (EtCO₂ Detectors or Monitors, or Esophageal Detection Devices) are less available for pediatric patients than for adults. Nonetheless, it is **strongly** recommended that EMS personnel at all levels use all appropriate confirmation methods available when intubating children. Those confirmation methods include EtCO₂ Detectors or Monitors, and/or Esophageal Detection Devices (EDD) that are appropriate for the age and weight of the patient.
7. Bring the patient's medications, or a list of the medications, with the patient to the hospital. When supplying hospitals with documentation of patient meds, be certain to include the proper **dose**, and the **frequency** of administration.
8. Bring the patient's medications, or a list of the medications, with the patient to the hospital. When supplying hospitals with documentation of patient meds, be certain to include the proper **dose**, and the **frequency** of administration.



Identify yourself and Level of Certification as well as the person receiving the message at the medical facility.

2.0 - INITIAL CARE

1. Institute Basic and Advanced Life Support as indicated:
 - Establish unresponsiveness.
 - Stabilize neck and immobilize if history of trauma.
 - Open airway and assess breathing.
2. If not breathing, institute artificial ventilation (using mouth-to-mask, bag mask, and adjuncts such as oropharyngeal and nasopharyngeal airways).
3. Administer **Oxygen (O₂)**.
4. When indicated, endotracheal intubation should be performed. Paramedics may intubate using any appropriate route by which they have been trained.
5. Check pulse. If absent, CPR continuously until {AED} or other defibrillator is available.
6. Utilize Cardiac Monitor or other monitor {Pulse Oximeter, etc.} as appropriate.
7. Start IV of **0.9% Normal Saline (NS) (TKO)** or a **Saline Lock**. **If peripheral IVs cannot be established and patient is unresponsive and hemodynamically unstable access should be obtained by intraosseous route (IO), if appropriate.**
 - A. **IV Rates:**

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- **Shock** - Establish an IV/IO of **0.9% NS**, IV bolus of 20ml/kg using regular or macro-drip tubing. Titrate fluids to maintain perfusion.
 - **Medical Emergencies, Head Trauma, Cardiac Problems (with stable BP)** - Use TKO (to keep open) rate.
- B. **Saline Lock:** If appropriate for patient condition, establish a Saline Lock in place of an IV. **Contraindications:** Cases where an **IV Bolus** may be required, **IV Drip** medications are indicated, or multiple trauma related injuries.
- C. {With the approval of their Medical Director, Departments may purchase **IV pumps** for control of IV Drip medications. Paramedics must be properly trained and tested before being authorized to utilize IV Pumps.}

NOTE: IN ALL CASES WHEN ATTEMPTING TO START AN IV, SPEND NO MORE THAN FIVE (5) MINUTES AT THE SCENE ON THIS PROCEDURE.



IOs should not be used on postictal patients, unless the **patient is unresponsive and hemodynamically unstable**.



It is very important for Crews to realize that the section of the Drug Box that was used for a Supply Pouch will no longer be available for that purpose. All the supplies (syringes, alcohol preps, saline locks, needles, and IV tubing) that used to be carried in that pocket must now be stocked on your Medic.



Tubing and any other supplies for {IV pumps} must also be purchased by the EMS agency.

2.1 – PATIENT ASSESSMENT

1. Airway (Assess, establish, and maintain as needed)
2. Breathing
3. Circulation (Skin - capillary refill, warm, cool, dry, or moist;; peripheral pulses)
4. Present Complaint
5. Vital Signs
6. Signs & Symptoms (90 second survey)
7. Allergies
8. Medications – Current, with dose and frequency
9. Past Medical History
10. Last oral intake
11. Events leading up to illness/injury
12. Approximate Age/Weight.



EMS may use {Doppler Monitor} or {Doppler Stethoscope} to assist in obtaining accurate BP, or to verify effectiveness of treatment.

2.2 - AIRWAY MAINTENANCE

1. Administer Supplemental **O2** to all patients with respiratory distress, or whenever the working

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impression indicates that it is appropriate.

- A. Four to six (4-6) liters per minute by nasal cannula for most patients, or “blow-by O₂.
 - B. 100% by a NRB (12-15 liters per minute) for severe trauma patients, very distressed cardiac patients, and other patients who appear to need high flow **O₂**.
 - C. When using Bag-Valve-Mask (BVM) ventilation, cricoid pressure **should** be applied to occlude the esophagus and prevent gastric distention.
 - D. If patient becomes apneic, intubate.
2. Ventilate patients who are symptomatic with an insufficient respiratory rate, or insufficient respiratory depth. Patients with airway compromise or insufficient ventilations should be intubated.
- A. It is **strongly** recommended that EMS personnel at all levels use all appropriate confirmation methods available when intubating children. **Primary and Secondary Methods of tube placement confirmation** are listed below:
- Primary Methods:
 - ❖ Physical Assessment including auscultation of the epigastrium, midaxillary areas, and anterior chest
 - ❖ Repeat visualization of the tube between the cords
 - ❖ Condensation in the tube
 - ❖ {Pulse Oximeter}
 - Secondary Methods:
 - **{End Tidal Carbon Dioxide Monitor}** (electronic waveform EtCO₂ may be used for all intubations)
 - **{End Tidal Carbon Dioxide Detector}** (colorimetric EtCO₂ is limited to patients with pulses)
 - Pedi-Cap Detectors may be used in patients weighing 1 – 15 Kg.
 - Easy-Cap II Detectors may be used in patients weighing > 15 Kg.
 - **Esophageal Detection Device is limited to patients over the age of 5 years who weigh > 20 Kg** (may be used with any intubation, although EtCO₂ is preferable for patients who are still breathing)
- B. Always secure the ET tube in place as effectively as possible, preferably with a {commercial tube-securing device}.
- C. Re-assess tube placement EVERY TIME THE PATIENT IS MOVED.
3. **{Digital Intubation and Lighted Stylet Intubation are also acceptable insertion techniques, for appropriately trained paramedics.}**
4. {Dual Lumen Airways (e.g., {Combitube} or {Pharyngotracheal Lumen Airway (PtL)}), or a {Laryngeal Mask Airway (LMA)} , if available in a size appropriate for the pediatric patient, are acceptable rescue airway devices for properly trained and tested paramedics with the approval of their Medical Director, and may be used after **two** failed attempts to intubate patients in cardiac or respiratory arrest. Use of these devices is limited to patients who need an artificial airway, and who are able to tolerate the device (similar to use of oral airways).}
5. If basic procedures are unsuccessful, try to visualize obstruction with laryngoscope. If foreign body is seen, attempt to remove it using Magill Forceps if possible.
6. If an **awake** patient requires intubation, paramedics may apply **2% Lidocaine Jelly** to the ET tube, or 4 mg/Kg. of **2% Lidocaine** (20 mg/ml) **nebulized** with 8-12 liters/minute high flow **Oxygen**, or both. Maximum dose of nebulized Lidocaine is 4 ml. (80 mg). Nebulized **Lidocaine** can be administered simultaneously and in the same nebulizer with **Proventil (Albuterol)**.
- A. If feasible, wait one to two minutes before intubating.
- B. Premedicate awake patients under age 16 needing intubation with **Atropine** 0.02 mg/Kg. Minimum dose 0.1 mg. Maximum dose 1.0 mg.
7. Whenever all reasonable attempts to provide an adequate pediatric airway by less invasive means have failed, perform a **Needle Cricothyrotomy**, or utilize a **{Pediatric PerTrach, or other device**

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approved by the GMVEMSC Products and Procedures Committee, if authorized to do so.}

8. **Tension Pneumothorax Relief** - if indications of Tension Pneumothorax are present, decompress the chest with a 14 gauge Angiocath in the second intercostal space in the midclavicular line.



Dual Lumen Airways and the LMA may only be used for apneic patients with no gag reflex.



Definition – Rescue Airway: use of an alternative device such as a Dual Lumen Airway or LMA after attempts to use endotracheal intubation have failed.



Cervical spine immobilization is recommended to help avoid tube dislodgement.



Oral intubation is preferred for pediatric patients, although nasotracheal may be used for asthmatics and a few other situations. When performing nasotracheal intubation, the BAAM device is helpful in determining when the tube is close to the glottic opening as the whistling sound increases. Check BAAM limitations in smaller children from product insert information.



Nebulized medication(s) may be administered while bagging a patient. The process ideally requires two oxygen sources, one attached to the nebulizer and one attached to bag-valve device and an extra elbow. If you have only one oxygen source, attach it to the nebulizer until nebulized medication delivery is complete, then attach to bag-valve device. See the diagram of the proper way to combine the nebulizer kit with a bag-valve device in the Skills Sheets.



If relief of tension pneumothorax is indicated, be careful not to push too deeply in children. The tip of the needle should be just deeper than the ribs; stop as soon as you hear the rush of air.

3.0 - CARDIOVASCULAR EMERGENCIES

3.1 - CARDIAC ARREST

GENERAL CONSIDERATIONS

1. Cardiac arrest in children is primarily due to the lack of an adequate airway, resulting in hypoxia.
2. When using BVM ventilation, cricoid pressure **should** be applied to occlude the esophagus and prevent gastric distention.
3. Transport immediately when excessive hemorrhage or hypothermia is present.
4. If peripheral IVs cannot be immediately established, access should be obtained by intraosseous route (IO).
5. If IV or IO access is not established, administer appropriate medications through the endotracheal tube.
6. CPR should not be interrupted for more than 30 seconds until spontaneous pulse is established.
7. If IV cannot be established, **Epinephrine, Atropine, Lidocaine, and Narcan** may be administered through the endotracheal tube.
8. Each IV push medication should be followed by a 20ml NS flush.
9. **In all Cardiac Arrests, consider the ACLS “Treatable Causes:”**

The “H’s”

Hydrogen ion (acidosis)

Hyperkalemia/hypokalemia,

The “T’s”

Tablets (drug OD, accidents)

Tamponade, cardiac

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and other electrolyte/metabolic causes
Hypoglycemia/hyperglycemia
Hypothermia/ hyperthermia
Hypovolemia (tank/anaphylaxis/gravid)
Hypoxia

Tension pneumothorax
Thrombosis, pulmonary (embolism)
Trauma

3.1.1 - CARDIAC ARREST: AED PROTOCOL

Apply AED if patient is 8 years or older or greater than 25 Kg/55 lb.

AEDs with Pediatric Capability may be used on children 1 year of age or greater, with appropriate training, equipment, and pads, and approval of Department Medical Director

1. Evaluate ABCs.
2. Provide ventilations during CPR with a {Bag-Valve-Mask (BVM) or Positive Pressure Ventilation (PPV) with 100% {oxygen}}.
3. CPR continuously until {AED} or Monitor/Defibrillator is attached to patient.
4. Press to analyze. If no shock advised, continue CPR.
5. If shock advised, provide set of three Stacked shocks.
6. CPR continuously for one minute, if no pulse, then press to analyze. If shock advised, repeat set of three (3) stacked shocks.
7. If no shock advised by {AED} at any point, transport as soon as possible
8. CPR continuously.
9. Intubate patient.
10. Approximately every five (5) minutes, stop the vehicle, and reanalyze the patient as long as shocks are advised. Never analyze or defibrillate in a moving vehicle.



If your AED has recording capabilities, start verbal documentation at the time you attach AED to patient. Departments with biphasic AEDs will have to utilize equivalent energy settings.



Costs/Benefits of Stopping to Analyze on Long Transports: When faced with a pediatric patient in cardiac arrest and no advanced life support capabilities at the scene, time to the receiving medical facility is critical. Stopping to analyze on long transports will increase that time. A good rule of thumb: If AED is recommending you shock, stop for analysis; if no shock is advised, make less stops for analysis.

3.1.2 - CARDIAC ARREST: V-FIB/PULSELESS V-TACH

1. Evaluate ABCs; provide ventilations during CPR with a (BVM) with 100% **O2**.
2. Apply **AED** for appropriate age and weight (**per AED Protocol 3.1.1**) or conventional Monitor/Defibrillator. May also use {biphasic defibrillation} at equivalent doses. (Use length-based drug treatment guide, e.g. Broselow Pediatric Emergency Tape when unsure about patient weight, age and/or drug dosage.)
3. If ventricular fibrillation or pulseless ventricular tachycardia exists:
 - A. Defibrillate 2 joules/Kg.
 - B. If no change, defibrillate 4 joules/Kg.
 - C. If no change, defibrillate 4 joules/Kg.
 - D. If no change, continue CPR and transport.
4. Intubate the patient. Confirm tube placement using **Primary and Secondary Methods**, and secure tube.

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5. Establish an IV/IO of **0.9% NS**. Use an Intraosseous (IO), external jugular (EJ) or antecubital vein for cardiac arrest patients. IO is the preferred IV site for prehospital pediatric cardiac arrests under the age of 8; EJ is preferred for arrest in children 8 years of age and older. Use the site which can be established most quickly.
6. Administer **EPINEPHRINE** IV/IO/ ETT every 3-5 minutes.
 - **Epinephrine** IV/IO – 0.01mg/Kg (0.1 ml/Kg) 1:10,000.
 - **Epinephrine** ETT dose – 0.1mg/Kg (0.1 ml/Kg) 1:1,000 with 1-2ml **Saline**.
7. If no response, defibrillate 4 joules/Kg
8. Consider “treatable causes” (H’s and T’s). **NOTE: Nearly all medical cardiac arrests are “Altered Level of Consciousness – Unknown Cause.” If there is any evidence of hypoglycemia prior to arrest, administer 1 ml/Kg of 50% Dextrose IVP if child > 25 Kg, or 2 ml/Kg D25 if < 25 Kg. If there is a suspicion of drug overdose, administer Narcan 0.1 mg/kg up to 2mg max. dose IVP.**
9. Administer **Amiodarone**, 5 mg/Kg IV/IO. May repeat once after five to ten minutes at half the initial dose (2.5 mg/Kg, IV push), if VF persists or recurs. Draw up Amiodarone using a large bore needle to reduce foaming. Max total dose: 15 mg/Kg.
10. If no response, defibrillate 4 joules/Kg
11. If no response, repeat **EPINEPHRINE** every 3-5 minutes.
 - **Epinephrine** IV/IO – 0.01mg/Kg (0.1 ml/Kg) 1:10,000.
 - **Epinephrine** ETT dose – 0.1mg/Kg (0.1 ml/Kg) 1:1,000 with 1-2ml **Saline**.
12. If no response, defibrillate 4 joules/Kg.
13. If no response, administer **LIDOCAINE** 1 mg/Kg IV/IO/ETT.
14. If no response, defibrillate 4 joules/Kg
15. If no response, repeat **LIDOCAINE**, at 1 mg/kg.
16. If no response, defibrillate 4 joules/Kg.
17. If no response, continue CPR and transport.
18. Pattern should be CPR – drug – shock – CPR – drug – shock. Defibrillate within 30 – 60 seconds after each medication.



Previous Pediatric Standing Orders used a different concentration of IV/IO Epinephrine after the first dose. That has been changed to match the latest version of Pediatric Advanced Life Support (PALS). The same concentration of IV/IO Epi is used throughout the resuscitation effort. ETT Epi continues to use the 1:1,000 concentration, while the IV/IO dose uses 1:10,000 Epi.



Administration of Amiodarone:

- Break ampule as usual.
- Do not turn ampule upside down to insert needle. The medication will run out of the ampule.
- Use a 19 gauge or larger needle to withdraw medication to prevent foaming.

3.1.3 - CARDIAC ARREST: ASYSTOLE & PEA

1. Evaluate ABCs; provide ventilations during CPR with BVM with 100% **O2**.
2. CPR continuously, until Defibrillator or Monitor/Defibrillator is available. Apply Cardiac Monitor and check rhythm.
3. If monitor shows Asystole, check rhythm in two leads.

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4. Intubate the patient. Confirm tube placement using **Primary and Secondary Methods**, and secure tube.
5. Establish an IV/IO of **0.9% NS** and administer 20ml/Kg bolus. Use an Intraosseous (IO), external jugular (EJ) or antecubital vein for cardiac arrest patients. IO is the preferred IV site for prehospital pediatric cardiac arrests under the age of 8; EJ is preferred for arrest in children 8 years of age and older. Use the site which can be established most quickly.
6. For pediatric Asystole or PEA, administer **EPINEPHRINE** IV/IO/ETT every 3-5 minutes.
 - **Epinephrine** IV/IO – 0.01mg/Kg (0.1 ml/Kg) 1:10,000
 - **Epinephrine** ETT dose – 0.1mg/Kg 1:1,000 with 1-2ml **Saline**.
7. Consider “treatable causes” (H’s and T’s). **NOTE: Nearly all medical cardiac arrests are “Altered Level of Consciousness – Unknown Cause.” If there is any evidence of hypoglycemia prior to arrest, administer 1 ml/Kg of 50% Dextrose IVP if child > 25 Kg, or 2 ml/Kg D25 if < 25 Kg. If there is a suspicion of drug overdose, administer Narcan 0.1 mg/kg up to 2mg Max dose IVP.**
8. If no response, continue CPR for up to 3 minutes.
9. If no response, repeat **EPINEPHRINE** every 3-5 minutes.
 - **Epinephrine** IV/IO – 0.01mg/Kg (0.1 ml/Kg) 1:10,000
 - **Epinephrine** ETT dose – 0.1mg/Kg 1:1,000 with 1-2ml **Saline**.
10. If no response, continue CPR and transport as soon as possible.
11. For renal dialysis patients in arrest:
 - A. Administer 0.2 ml/Kg (20 mg/Kg) bolus of **Calcium Chloride 10%**.
 - B. **Flush IV line thoroughly** before and after Calcium and Bicarb. It is critical that these drugs not be given together.
 - C. Administer **Sodium Bicarb**, 1 mEq./Kg IVP.

3.1.4 - CARDIAC ARREST: PEA

This section intentionally left blank to match numbering in Adult Protocols.

PEA included with Asystole in Pediatric Protocols.

3.1.5 - NON-INITIATION OF CPR

1. **No** resuscitation will be attempted in cardiac arrest patients with the following:
 - A. Burned beyond recognition
 - B. Decapitation
 - C. Deep, penetrating, cranial injuries or massive truncal wounds
 - D. {DNR Order - present and valid, with parent or guardian present.} **If your Department decides to accept Pediatric (non-Comfort Care) DNR Orders, you must follow these guidelines:**
 - You must be comfortable with ID of patient
 - Order must be formal: typed or printed
 - Must be signed by MD, DO, CRNP or CNS
 - Does not apply to Living Wills
 - E. Frozen body (so severe that chest compression is impossible, or the nose and mouth are blocked with ice)
 - F. Hemorrhage (body cut in half)
 - G. Rigor mortis, tissue decomposition, or severe dependent post-mortem lividity (any one or more)
 - H. Scene Safety - Situations where the danger to rescuers is excessive
 - I. Triage
2. If CPR has been started on a patient with any of the conditions listed in # 1 of this Section, EMS may

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discontinue the resuscitation efforts.

3. EMS will not initiate resuscitation on victims of **blunt trauma** who are found in cardiac arrest on our arrival, or who arrest before being placed in the EMS vehicle, **unless** one or more of the following conditions are present:
 - A. Patient can be **delivered** to an Emergency Department within **5 minutes of the time patient is found to be in arrest**; **or**
 - B. You suspect that the arrest may have been caused by a medical condition (e.g., AMI) or a focused blunt trauma to the chest (e.g., baseball to the chest).
 - If you suspect that the arrest resulted from medical conditions or focused trauma, follow all normal cardiac arrest procedures.
4. EMS will not initiate resuscitation on victims of **penetrating trauma** who are in cardiac arrest on our arrival, unless the patient can be delivered to an Emergency Department within 15 minutes.
 - A. Resuscitation **will** be attempted on victims of penetrating trauma who arrest after they are in our care.
5. Once en route, continue care even if the above time limits have elapsed.



Risks and Benefits of Departments accepting DNR Orders that are not on Comfort Care forms:

Some EMS agencies do accept formal DNR orders that are not on State of Ohio forms, as long as you are comfortable with the identification of the patient. There are several reasons why this may be beneficial to your patients:

- There are still physicians who are unfamiliar with the Comfort Care Law, and who are writing older style DNR orders.
- A terminal patient from another state may be visiting Ohio. Obviously, a person coming from out of the state to visit their relatives for one last time, is going to have a DNR Order from their home state, and would want it to be honored.
- As a result of a quirk in the law, DNR Comfort Care does not apply to children. As such, any DNR Orders for pediatric patients will be a format other than the Comfort Care style.

See Appendix for more complete information on Ohio DNR.



Blunt Trauma Patient in V Fib/V Tach: When you find a patient with blunt trauma in cardiac arrest at an accident scene, it can be difficult to know if s/he is in arrest from blunt trauma due to the accident or if s/he had a congenital heart problem which could have caused him or her to go into arrest, and that caused the accident. If, in your judgment, the patient's injuries caused the cardiac arrest, make no resuscitative efforts, unless you can arrive at the hospital within five minutes of the time the patient arrested. On the other hand, if you have reason to suspect that the patient had a medical condition that caused his arrest, follow all of your normal cardiac arrest procedures.

One case which might be thought of as trauma is a child in cardiac arrest after being hit in the chest with a baseball. There have been numerous cases where this has occurred. There is actually no injury to the heart, however. The blow has essentially the same effect as a PVC, and if it falls on the T-wave, can cause VF or VT. These patients generally respond quickly to defibrillation, and have a good chance for survival.

3.1.5.A – DNR COMFORT CARE SYNOPSIS

This section intentionally left blank. Ohio Comfort Care law does not apply to pediatric patients.

3.1.6 and 3.1.6.A – FIELD TERMINATION OF RESUSCITATION EFFORT

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These sections intentionally left blank.

3.2 – SUSPECTED CARDIAC CHEST PAIN

This section intentionally left blank.

3.3 - ARRHYTHMIAS

1. Open and maintain the airway. Administer 100% **O2**.
2. Place patient on {Pulse Oximeter} and Cardiac Monitor. Obtain a strip from Cardiac Monitor, and mark it with the date and patient's name.
3. Establish IV/IO **0.9% NS** at TKO or **Saline Lock**, while en route to hospital.

3.3.1 – BRADYCARDIAS

Definition: Rate less than 60 with poor perfusion.

1. If signs of poor perfusion and a heart rate less than 60 bpm in children less than age 8, initiate CPR.
2. **If adequate perfusion, limit treatment to those in Section 3.3 - Arrhythmias, and transport.**
3. Administer **EPINEPHRINE**. May repeat dose every 3-5 minutes.
 - A. **Epinephrine** IV/IO – 0.01mg/Kg (0.1 ml/Kg) 1:10,000
 - B. **Epinephrine** ETT dose – 0.1mg/Kg 1:1,000 with 1-2ml **Saline**.
4. Administer **Atropine** IV/IO/ETT 0.02mg/Kg (Minimum Dose 0.1mg; Max. Dose 1.0 mg) – may repeat dose once.
5. Rapid transport.
6. If patient is conscious and alert, consider premedicating before pacing with **Versed**, 0.1 mg/Kg (Max. Dose 4 mg), slow IV/IO push over 1 – 2 minutes.
7. Consider use of the {**External Pacemaker**}. **Must use small or medium electrodes on patients weighing less than 15 Kg. Recommended starting with 5 MA and work up to 200 MA at a rate of 80 BPM until getting response.**

IMPORTANT INFORMATION REGARDING IV VERSED:

The concentration of Versed in the GMVEMSC Drug Bag is now 10mg/2ml. This concentration works well for the volumes used with the {Mucosal Atomizer Device (MAD)}. However, it is more difficult to deliver IVP over a 1 – 2 minute period of time, as required by Standing Orders.

When administering Versed IVP, use a TB syringe, which must be supplied by EMS (not carried in the Drug Bag). Draw up the correct amount of Versed, and deliver small pushes over 1 – 2 minutes.

0.5 mg = 0.1 ml
1 mg = 0.2 ml
1.5 mg = 0.3 ml
2 mg = 0.4 ml
2.5 mg = 0.5 ml
3 mg = 0.6 ml
3.5 mg = 0.7 ml
4 mg = 0.8 ml

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3.3.2 - TACHYCARDIAS

3.3.2.A – TACHYCARDIAS: UNSTABLE

(Tachycardia with Poor Perfusion: SVT and V-Tach)
(HR > 220 in infants or > 180 in children under age 8)

GENERAL CONSIDERATIONS

1. Unstable tachycardias result in hemodynamic instability, and are evidenced by loss of consciousness, CHF and diminished peripheral pulses, diminished capillary refill, increased respiratory effort, or hypotension.
2. Obtain 12 lead ECG if practical.
3. IV sites should be as proximal to the heart as possible. Right AC is preferable.

SPECIFIC CARE

1. Be prepared with suction and intubation equipment.
2. If patient has a Supraventricular (Narrow Complex) Tachycardia, paramedics may consider a **brief trial of Adenosine** (as below), provided an IV is in place or can be implemented within one minute.
 - A. **ADENOCARD (ADENOSINE)** 0.1mg/Kg Rapid IV/IO. Push followed by 10 ml Rapid Saline flush. Maximum dose 6mg.
 - B. If unsuccessful, administer **ADENOCARD (ADENOSINE)** 0.2mg/Kg Rapid IV. Push (Maximum dose 12mg.) followed by 10 ml Rapid **Saline** flush.
 - C. If unsuccessful, administer **ADENOCARD (ADENOSINE)** 0.2mg/Kg Rapid IV. Push (Maximum dose 12mg.) followed by 10 ml Rapid **Saline** flush.
 - D. If patient is becoming critical, Paramedic must proceed directly to cardioversion without waiting to start IV.
3. If the patient has a Wide Complex tachycardia, or the patient with any tachycardia is profoundly hypotensive or unconscious, do not use the trial of Adenosine.
4. Depending on Level of Consciousness, consider premedicating with **Versed**, 0.1 mg/Kg, slow IV push over 1 – 2 minutes (Max. Dose 4 mg), prior to synchronized cardioversion.
5. Deliver synchronized **Cardioversion** at 0.5 – 1.0 joules/Kg.
6. If no response, **Cardiovert** at 2.0 joules/Kg.
7. After delivering **Cardioversion** for a Wide Complex Tachycardia, administer **Amiodarone**, 5 mg/Kg, IV/IO push.

See “IMPORTANT INFORMATION REGARDING IV VERSED” in Section 3.3.1.



Poor Perfusion: Early shock is more difficult to diagnose in a child than an adult. Persistent tachycardia and delayed capillary refill are the most reliable indicators of shock in a child. A weak rapid pulse with a rate over 130 is usually a sign of shock in all children except neonates. Decreased tissue perfusion may be manifested by prolonged capillary refill and cool extremities. The child's level of consciousness is also a useful indicator of circulatory status, yet note that circulation can be poor even though the child appears awake. If the child is able to focus on the parent, or is consolable by the parent or member of the EMS team, there is enough circulation to allow the child's brain to be working.

3.3.2.B – TACHYCARDIAS: STABLE

(Tachycardia with Adequate Perfusion: Stable SVT and V-Tach)
(HR > 220 in infants or > 180 in children under age 8)

GENERAL CONSIDERATIONS

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1. Children with stable tachycardias are alert with good BP and palpable distal pulses, and with good perfusion.
2. Obtain {12 lead ECG} if practical.
3. IV sites should be as proximal to the heart as possible. Right AC is preferable.
4. Consider attempting a **vagal maneuver** by having the child blow through a straw or occluded O2 tubing.

SPECIFIC CARE

1. Consider specific diagnosis. Obtain all available clinical information.
2. If patient deteriorates, immediately move to Unstable algorithm (Section 3.3.2.A).

3.4 - SHOCK

1. Establish and maintain airway. Administer 100% O2 with NRB, regardless of {Pulse-ox readings}.
2. During transport to the hospital, start IV/IO of **0.9% NS** and deliver 20 ml/Kg, titrating flow to maintain perfusion. DO NOT DELAY TRANSPORT.
3. Apply ECG Monitor.
4. Hypothermia is a significant, and frequent, problem in Shock or Major Trauma patients. Do all that you can to maintain patients' body temperature.

3.4.1 - NON-TRAUMATIC SHOCK WITHOUT PULMONARY EDEMA

1. Place patient on 100% O2 with NRB, regardless of {Pulse-ox readings}.
2. Identify type of shock.
3. Establish IV/IO of **0.9% NS** at 20ml/Kg bolus as quickly as possible *while enroute to hospital*.
4. ♦Repeat the **fluid challenge** bolus on orders from Medical Control.
5. If Shock persists despite above measures or if transport will be prolonged, start second saline IV/IO.

3.4.2 – NON-TRAUMATIC SHOCK WITH PULMONARY EDEMA

This section intentionally left blank.

3.4.3 – EXSANGUINATING HEMORRHAGE

1. Establish and control airway.
2. Control external bleeding.
3. Place patient on 100% O2 with NRB, regardless of {Pulse-ox readings}.
4. Transport as soon as practical.
5. Establish multiple IV/IOs of **0.9% NS**, and use a pressure infusion device to deliver a 20 ml/Kg fluid bolus **while en route**. Titrate IV flow to obtain and maintain age appropriate SBP.
6. Administer repeated IV/IO fluid boluses of 20 ml/Kg, checking vital signs including **BP before and after each bolus**.
7. **Monitor perfusion and BP frequently, and avoid giving more IV/IO fluid than is needed.**
8. ♦After a total of three fluid boluses (60 ml/Kg), you must contact Medical Control before administering further fluids.

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Exsanguination is the loss of blood to the point at which life can no longer be sustained. A child's blood volume is about 80 – 90 ml/kg. Pay closer attention to blood loss in a child than you do an adult. What appears to be a relatively small amount of bleed loss may be life threatening.

Age Appropriate Ranges for Vital Signs

| AGE | WEIGHT (KG) | RESPIRATIONS | PULSE | SYSTOLIC BP |
|-------------|-------------|--------------|-----------|-------------|
| Newborn | 3 – 4 | 30 – 50 | 120 – 160 | >60 |
| 6 mo - 1 yr | 8 – 10 | 30 – 40 | 120 – 140 | 70 – 80 |
| 2 – 4 yr | 12 – 16 | 20 – 30 | 100 – 110 | 80 – 95 |
| 5 – 8 yr | 18 – 26 | 14 – 20 | 90 – 100 | 90 – 100 |
| 8 – 12 yr | 26 – 50 | 12 – 20 | 80 – 100 | 100 – 110 |
| >12 yr. | >50 | 12 - 16 | 80 - 100 | 100 - 120 |

3.5 – STROKE

This section intentionally left blank.

4.0 - TRAUMA EMERGENCIES

4.0.1 - GENERAL CONSIDERATIONS

1. Minor Trauma patients may be transported to non-Trauma Centers. Vital signs should be recorded; all necessary splinting and bandaging completed as needed.
2. Administer **O2** at 12-15 liters/minute by NRB mask to all significant trauma patients, regardless of {Pulse-ox readings}.
3. **Major Trauma** patients are to be transported as soon as possible to the nearest appropriate facility, according to **PRE-HOSPITAL Field Pediatric Trauma Triage Guidelines** (below).
 - F. 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.
 - G. Limit on-scene time to 10 minutes or less whenever feasible.
 - H. The Glasgow Coma Scale can be completed in seconds, and the component scores relayed to Medical Control. Communicate and document components, rather than overall score.
 - I. Hypothermia is a significant, and frequent, problem in Shock or Major Trauma patients. Do all that you can to maintain patients' body temperature.
 - J. Contact receiving hospital and provide Medical Control with **MIVT and ETA**.
 - Mechanism of Injury
 - Injuries
 - Vital Signs
 - Treatment
4. The Only procedures that should take precedence over transport of Major Trauma patients are:
 - A. Extrication
 - B. Airway Management
 - C. Stabilization of the neck/back or obvious femur fractures
 - D. Exsanguinating Hemorrhage Control



Mnemonic: EASE.

5. **IV's should be attempted en route to the hospital unless the patient is trapped**, or patient has no life threatening injuries, and transport prior to analgesia would be extremely painful. Start IV/IO **0.9% NS**.

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6. Pain Relief (Trauma Related)

- A. Only to be used if there is NO EVIDENCE of head trauma, intoxication, ingestion, overdose, major facial injuries, severe chest or abdominal injuries, or suspected decompression injury.
- B. Isolated extremity injuries should be treated with proper immobilization, ice and elevation. Use traction splint for femur fracture when appropriate.
- C. For Isolated extremity injury only. When pain is not relieved adequately by the above measures, the patient is conscious, alert, is not hypotensive, and an IV is established, consider **Morphine Sulfate** 0.1mg/Kg, (not to be given to anyone less than 2 years of age) slow IV (2-3 min) Maximum dose 5 mg.
- D. ♦ May repeat **Morphine Sulfate** only with direct order from Medical Control. Maximum total dose 10mg.



Morphine Sulfate: There are major differences in indications for Morphine Sulfate between the adult and pediatric protocols. Paramedics are encouraged to be more liberal in administering morphine to **adult** patients who have chest pain, abdominal pain, pain associated with burns, frostbite, extremity fractures, dislocations, and sprains. The first dose is at the paramedic's discretion with subsequent doses requiring medical control approval.

In the pediatric patient, morphine is only to be given for isolated extremity injuries, or for burns (not limited to extremities), when pain is not relieved by immobilization, ice, and elevation.

4.0.2 - TRIAGE and TRANSPORTATION GUIDELINES

4.0.2.1 - CONCEPTS

6. After the trauma patient's extrication, the on-scene time should be limited to TEN MINUTES or less, except when there are extenuating circumstances.
7. Trauma Patients, as identified in this document, should be transported to "THE NEAREST APPROPRIATE TRAUMA CENTER".
8. Use of on-line, active medical control for medical direction in the field, particularly for difficult cases, is encouraged in compliance with regional standing orders.
9. **PRE-ARRIVAL NOTIFICATION OF THE RECEIVING FACILITY IS ESSENTIAL!** Give **Mechanism of Injury, Injuries, Vital Signs, Treatment (MIVT) and ETA.**
10. List in the EMS Run Report which of the Trauma Triage Criteria (below) were met by the patient.

4.0.2.2 - TRAUMA CENTER/FACILITY CAPABILITIES

1. Regional Adult Trauma Centers
 - Level I – Miami Valley Hospital
 - Level II – Good Samaritan Hospital
 - Level III – Greene Memorial Hospital
2. Regional Pediatric Trauma Centers
 - Pediatric: Children's Medical Center
 - Adult and Pediatric: Miami Valley Hospital
3. In areas of the region where there are no verified Trauma Centers (within 30 minutes ground transport time) the acute care hospital may act as the primary receiving facility for critically injured trauma patients. EMS provider may arrange for air medical transport from the scene.
4. If a pediatric patient meets the trauma triage guidelines, then they are taken to a pediatric trauma center. If transportation time is >30 minutes to a pediatric trauma center, then transport to nearest acute care hospital for stabilization and transfer. EMS provider may arrange for air medical transport from the

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scene.

5. **All pregnant trauma patients should be transported to the NEAREST ADULT Trauma Center, unless transport time > 30 minutes.**

4.0.2.3 - AIR MEDICAL TRANSPORTATION

PRE-ARRIVAL NOTIFICATION OF THE RECEIVING FACILITY IS ESSENTIAL.

4. Prolonged delays at the scene waiting for air medical transport should be avoided.
5. Traumatic cardiac arrest due to blunt trauma is **not** appropriate for air transport.
6. In the rural environment, direct transfer of trauma patients by air medical transport may be appropriate and should be encouraged.

4.0.2.4 - USE OF GUIDELINES

2. EXCEPTIONS:

- F. It is medically necessary to transport the victim to another hospital for initial assessment and stabilization before transfer to an adult or pediatric trauma center;
- G. It is unsafe or medically inappropriate to transport the victim directly to an adult or pediatric trauma center due to adverse weather or ground conditions or excessive transport times;
- H. Transporting the victim to an adult or pediatric trauma center would cause a shortage of local emergency medical services resources.
- I. No appropriate trauma center is able to receive and provide trauma care to the victim without undue delay;
- J. Before transport of a patient begins, the patient requests to be taken to a particular hospital that is not a trauma center or, if patient is less than 18 years of age or is not able to communicate, such a request is made by an adult member of the patient's family or legal representative of the patient.

4.0.3 - PRE-HOSPITAL FIELD PEDIATRIC TRAUMA TRIAGE GUIDELINES

1. Utilized for persons under 16 years of age
2. Patients to be taken to the nearest hospital:
 - A. Unstable airway
 - B. Blunt trauma arrest, no pulse or respirations
 - C. **All pregnant trauma patients should be transported to the NEAREST ADULT Trauma Center, unless transport time > 30 minutes.**
3. Pediatric Trauma Center - Utilize length-based drug treatment guide (e.g. Broselow Pediatric Emergency Tape). Use Pedi-Wheel for determining normal vital signs.

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ANATOMY OF INJURY

1. Penetrating trauma to head, neck, torso, and extremities proximal to elbow and knee
2. Abdominal and/or chest injury with tenderness, distention, or seatbelt sign
3. Chest injury: Flail chest and/or tension pneumothorax
4. Two or more proximal long bone fractures
5. Evidence of pelvic fracture including hip
6. Signs or symptoms of a spinal cord injury
7. Burns greater than 5% Total BSA or other significant burns involving the face, feet, hands, genitalia, or airway
8. Amputation proximal to wrist and/or ankle
9. Evidence of serious injury of (two) 2 or more body systems
10. Crush injury to head, neck, torso, or extremities proximal to knee or elbow

| | |
|--|--------------------------------|
| YES = To Pediatric Trauma Center or Adult and Pediatric Trauma Center | NO = Assess Physiologic |
| Alert Trauma Team | |

PHYSIOLOGIC

1. GCS **less than or equal to 13**, Loss of consciousness or alteration in level of consciousness with evidence of head injury at time of exam or thereafter, or fails to localize pain
2. Evidence of poor perfusion (ie; weak distal pulse, pallor, cyanosis, delayed capillary refill, tachycardia)
3. Evidence of respiratory distress or failure (ie; stridor, grunting, retractions, cyanosis, nasal flaring, hoarseness or difficulty speaking)

| | |
|--|--|
| YES = To Pediatric Trauma Center or Adult and Pediatric Trauma Center | NO = Evaluate Mechanism of Injury if high energy impact |
| Alert Trauma Team | |

MECHANISM OF INJURY

11. Auto-pedestrian/auto-bicycle injury with significant (> 5 mph) impact
12. Death in same passenger compartment
13. Ejection or unrestrained occupant of a motor vehicle
14. Extrication time >20 minutes
15. Falls 3 times child's height
16. High Speed auto crash
 - D. Initial speed > 40 mph
 - E. Intrusion into passenger compartment > 12 inches
 - F. Major auto deformity > 20 inches
17. Open motor vehicle crash >20 mph or with separation of rider from vehicle
18. Pedestrian thrown or run over
19. Unrestrained rollover

| | |
|-------------------------------------|--------------------------------------|
| YES = Consider Trauma Center | NO = Check Special Situations |
| | |

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SPECIAL SITUATIONS

1. Congenital disorders
2. Cardiac or chronic respiratory condition
3. Insulin dependent diabetes, liver disease, morbid obesity
4. Patient with bleeding disorder or patient on anticoagulants
5. Immunosuppressed patients (renal dialysis, transplant, cancer, HIV)
6. **All pregnant trauma patients should go to nearest adult trauma center, if within 30 minutes transport time.**

| YES = To Trauma Center | NO = To Local Hospital |
|------------------------|------------------------|
| | |

4.1 – MULTIPLE TRAUMA

Patients meeting criteria for transport to a Trauma Center are considered “Load and Go.”

1. Establish airway, breathing and circulation. Maintain C-spine immobilization. Use the modified jaw-thrust if airway needs to be opened.
2. Assess patient and initiate 100 % **O2** therapy via NRB MASK, regardless of {Pulse-ox readings}.
3. If snoring is heard or patient unconscious: insert an oral or nasopharyngeal airway, and assist with ventilations with 100% **O2**.
4. If gurgling heard or secretions/blood/vomit present: suction upper airway.
5. Assure adequate ventilation. If breathing shallow and rapid (excessive for age of the child), or slow (less than 10 breaths per minute), assist breathing using bag-valve mask with 100% **O2** and reservoir. Consider intubation if indicated.
6. Utilize {**PerTrach**} or {**other approved cricothyrotomy**} device if available in appropriate pediatric size, or **needle cricothyrotomy** if needed to maintain or secure the airway.
7. Control hemorrhage by appropriate method, and splint/immobilize as indicated.
8. If patient resuscitation is consistent with **Section 3.1.5: Non-Initiation of CPR**, perform endotracheal intubation using in-line immobilization technique. Confirm tube placement using **Primary and appropriate {Secondary Methods}**, and secure tube.
9. Manage any injury that may compromise breathing. Place/maintain the patient in correct position to maintain the airway. Apply {Pulse Oximeter}.
 - Open pneumothorax: cover with an occlusive dressing, tape three sides down.
 - Tension pneumothorax:
 - lift one side of any occlusive dressing;
 - if patient has signs and symptoms of tension pneumothorax, perform needle decompression on the affected side;
 - if patient with torso trauma has rapidly and profoundly dropping or non-palpable BP, perform bilateral needle chest decompression.
 - After chest decompression, provide positive pressure ventilation. Need technique????
 - Flail chest: immobilize with a bulky dressing or towels taped to the chest.
10. **TRANSPORT immediately**
11. Contact Medical Control and advise of patient condition with MIVT & ETA, and need for Trauma Team.
12. **IV's should be attempted en route to the hospital unless the patient is trapped.** Start IV/IO **0.9% NS** at the following rates:
 - A. Keep open rate for Major Head Trauma with adequate perfusion.

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- B. In shock (inadequate perfusion, including head trauma), give fluid bolus of **0.9% NS** 20ml/Kg, rapidly. Use of {pressure infusion device} is appropriate.
- C. Titrate all IV/IO flow rates to maintain systolic BP appropriate for patient's weight or size per length based resuscitation guide.
- D. A second IV/IO should be started enroute if poor perfusion persists.
- 13. If signs of shock persist, the fluid bolus of 20ml/Kg may be repeated twice. Breath sounds must be reassessed, and the BP must be checked before and after each fluid bolus.
 - A. ♦No more than 60 ml/Kg may be given without orders from Medical Control.
- 14. Apply Cardiac Monitor and check rhythm.



During transportation:

- A. Continue to evaluate patient.
- B. Splint individual fractures.
- C. Check pulses distal to the fracture site.
- D. Check distal skin color, temperature, neurologic status.
- E. Obtain relevant history.



In lieu of an IV Pressure Infuser, you can use a BP cuff or squeeze IV bag by hand.

4.2 - TRAUMATIC FULL ARRESTS AFTER INITIATION OF CARE

- 1. Open, assess and maintain the airway, using the modified jaw-thrust, always assume C-spine injury.
- 2. Ventilate with 100% **O2** using BVM. If patient has severe head injury, ventilate at a rate of 10 faster than the normal respiratory rate. Avoid hyperventilation.
- 3. Check carotid or brachial pulse. If no pulse, or HR < 60 bpm, begin CPR and rapid transport to appropriate facility by ground, unless patient meets the criteria for **Non-Initiation of CPR** in **Section 3.1.5**.
- 4. Place on a Cardiac Monitor.
- 5. Contact Medical Control and advise of patient condition, while continuing CPR.
- 6. Perform endotracheal intubation using in-line immobilization technique. Confirm tube placement using **Primary** and appropriate {**Secondary Methods**}, and secure tube.
- 7. Establish 2 IV/IOs of **NS** to maintain perfusion. IV/IOs should be started en route to hospital unless patient is trapped.
- 8. If the patient has potential chest trauma, perform bilateral relief of tension pneumothorax.

4.3 - HEAD INJURY

- 1. Evaluate patient condition:
 - A. Level of Consciousness
 - B. Pupillary size and reaction
 - C. Glasgow Coma Scale results
- 2. Orotracheal, nasotracheal, or {digital intubation} may be indicated and should be accomplished gently with in-line C-spine immobilization, according to your level of certification. Confirm tube placement using **Primary** and appropriate {**Secondary Methods**}, and secure tube.
- 3. Do not hesitate to take control of airway.
- 4. Ventilate at a rate of 10 faster than the normal respiratory rate with severe head injury and the

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following signs of cerebral herniation, according to age. Avoid hyperventilation.

- A. Blown pupil(s), left and right pupil sizes different, bradycardia, posturing, and decreased Level of Consciousness.
- B. {If quantitative (i.e., numeric) End Tidal CO₂ (EtCO₂) readings are available, ventilate at a rate to maintain EtCO₂ readings at approximately 30 mmHg (30 torr).}
5. Notify hospital for all patients with serious signs and symptoms of Head Injury; advise of all three components of GCS.

4.3.1 - PEDIATRIC GLASGOW COMA SCALE

Use Adult GCS for children age > 5 years.

| | Infant < 2 years | GCS | Child Age 2 - 5 years | GCS |
|-----------------|----------------------------------|----------|--------------------------------|----------|
| EYES | SPONTANEOUSLY | 4 | SPONTANEOUSLY | 4 |
| | TO VOICE | 3 | TO VOICE | 3 |
| | TO PAIN | 2 | TO PAIN | 2 |
| | NO RESPONSE | 1 | NO RESPONSE | 1 |
| BEST | COOS, BABBLER | 5 | ORIENTED | 5 |
| VERBAL | IRRITABLE CRY, CONSOLABLE | 4 | CONFUSED | 4 |
| RESPONSE | CRIES TO PAIN | 3 | INAPPROPRIATE WORDS | 3 |
| | MOANS TO PAIN | 2 | GRUNTS, GARBLED SPEECH | 2 |
| | NO RESPONSE | 1 | NO RESPONSE | 1 |
| BEST | NORMAL MOVEMENT | 6 | OBEYS COMMANDS | 6 |
| MOTOR | WITHDRAWS TO TOUCH | 5 | LOCALIZES PAIN | 5 |
| RESPONSE | 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 |



Hyperventilation and EtCO₂ levels: Maintain good ventilation with high flow oxygen. Prophylactic hyperventilation for head injury is no longer recommended. Cerebral herniation syndrome is the only situation in which hyperventilation (ventilating @ a rate of 10 faster than the normal respiratory rate) is still indicated.

An increase in the level of CO₂ (hypoventilation) promotes cerebral vasodilation and increased swelling, while lowering the level of CO₂ (hyperventilation) promotes cerebral vasoconstriction and cerebral ischemia. Hyperventilation causes a significant decrease in cerebral perfusion from vasoconstriction, which results in cerebral hypoxia. Thus, both hyperventilation and hypoventilation cause cerebral hypoxia and increase mortality.

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The one time when you may hyperventilate is cerebral herniation syndrome. With 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 and 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, there will often be 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 ICP. In this situation, the danger of immediate herniation outweighs the risk of ischemia.

4.4 – EXTREMITY FRACTURES, DISLOCATIONS, SPRAINS

1. ABC's with C-spine control as indicated.
2. Control bleeding by direct pressure.
3. Assess extremity distal to the injury for color, pulses, sensation, temperature and movement.
4. For open fractures, control bleeding with direct pressure and cover with dry, sterile dressing.
5. Apply appropriate splinting device.
6. Re-assess color, pulses, sensation and movement after splinting and during transport.
7. Elevate extremity applying ice/cold pack to site.
8. If signs/symptoms of hypovolemic shock are present, establish an IV/IO of NS to maintain perfusion. Do NOT delay transport to establish venous access.
9. IV should be started en route to hospital unless patient is trapped, or patient has no life threatening injuries, and transport prior to analgesia would be extremely painful..
10. For pain relief when the patient is conscious, alert, is not hypotensive, and is complaining of severe pain, **Morphine Sulfate** 0.1mg/Kg, (Max. Dose 5.0 mg) slow IV (2-3 min). Not to be given to anyone less than 2 years of age
11. ♦ May repeat **Morphine** only with direct order from Medical Control. Max Total Dose: 10 mg.



Rules of Splinting

1. Adequately visualize the injured part.
 - Check and record distal sensation and circulation before and after splinting. Check movement distal to the fracture if possible (ask conscious patient to wiggle fingers or observe motion of the unconscious patient when a painful stimulus is applied)
 - If the extremity is severely angulated and pulses are absent, you should apply gentle traction in an attempt to straighten it. This traction should never exceed 10 pounds of pressure. If resistance is encountered, splint the extremity in the angulated position. When you are attempting to straighten an extremity, it is very important to be honest with yourself with regard to resistance. It takes very little force to lacerate the wall of a vessel or to interrupt the blood supply to a large nerve. If the trauma center is near, always splint in the position found. Consider pain relief as needed and appropriate!
 - Open wounds should be covered with a sterile dressing before you apply the splint. Splints should always be applied on the side of the extremity away from open wounds to prevent pressure necrosis.
 - Use the splint that will immobilize one joint above and below the injury.
 - Pad the splint well.
 - Do not attempt to push bone ends back under the skin. If you apply traction and the bone end retracts back into the wound, do not increase the amount of traction. You should not use your hands or any tools to try to pull the bone ends back out, but be sure to notify the receiving physician. Bone ends should be carefully padded by bandages before pneumatic splints are applied to the lower extremities. The healing of bone is improved if the bone ends are kept moist when transport time is prolonged.

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- In a life-threatening situation, injuries may be splinted while the patient is being transported. When the patient is stable, splint all injuries before moving the patient.
- If in doubt, splint a possible injury.

Reference: BTLS

Note: The patient who requires a load and go approach can be adequately immobilized by careful packaging on the long spineboard. You can then do some additional splinting in the vehicle en route to the hospital as time and the patient's condition permits.



Immobilization devices must be appropriately sized for infants and children. The pediatric patient should be placed supine and immobilized in a neutral in-line position. Infants, toddlers, and preschoolers should be padded from shoulders to hips. Equipment that may be used includes the following:

- Rigid, cervical collar
- Towel/blanket roll
- Child safety seat
- Pediatric immobilization device
- Vest-type/short spine board
- Long spine board
- Straps, cravats
- Tape
- Padding

4.5 - DROWNING AND NEAR DROWNING

1. **Maintain personal safety at all times.**
2. Assure ABCs, starting in the water if necessary
3. Consider spinal immobilization, and deliver 100% **O₂**.
4. If patient arrests, or is found in arrest, attempt to evaluate for the presence of hypothermia. If severe hypothermia is strongly suspected, limit defibrillation attempts to no more than three.
5. Check pulse, intubate patient and continue CPR.
6. Remove wet clothing, dry the child, wrap in warm blankets, and try to maintain the child's body temperature.
7. Apply Cardiac Monitor and check rhythm. Follow cardiac arrest guidelines.
8. Start IV/IO of **NS** {warmed if possible} while en route.
9. Evaluate neurological status including level of consciousness (GCS), pupillary response, and movement.
10. If feasible for patient condition, Near Drowning patients should be transported to a Trauma Center.

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4.6 – HYPOTHERMIA/FROSTBITE

GENERAL CONSIDERATIONS

1. Secure airway, and consider C-spine immobilization.
2. Administer {warmed, humidified} 100% **O2** by NRB mask and or BVM.
3. Attempt to evaluate the severity of hypothermia, if means are available.
4. Evaluate neurological status including level of consciousness (GCS) and pupillary response.
5. Notify hospital immediately.
6. Move patient to warm environment, remove all wet clothing and cover with blankets.
7. Take great care to avoid any rough movement, since that can precipitate VF. It may be beneficial to immobilize the victim on a backboard.
8. Assess vital signs, mental status, temperature of patient and environment, and evidence of local injury. It may be necessary to assess pulse and respirations for up to 30 seconds or more to confirm arrest in the profoundly hypothermic patient.
9. Diabetics are highly susceptible to cold illnesses. Consider the possibility of hypoglycemia, and treat accordingly.
20. If patient condition warrants, **Hypothermia** patients should be transported to a **Trauma Center**. Patients with severe **Frostbite** should be transported to a **Burn Center**.

4.6.1 – HYPOTHERMIA WITH ARREST

1. CPR continuously.
2. Consider spinal immobilization. Evaluate for other traumatic injuries.
3. Apply {AED} or Monitor/Defibrillator, and shock if indicated at 2 j/Kg, 4 j/Kg, and 4 j/Kg..
4. {Use a hypothermia thermometer.} If body temperature is < 30 degrees centigrade (86 degrees Fahrenheit), or severe hypothermia is strongly suspected, limit defibrillation attempts to no more than three, and withhold medications except on orders from Medical Control.
5. If body temperature is > 30 degrees centigrade (86 degrees Fahrenheit), follow normal arrest protocols.
6. Intubate and oxygenate the patient with 100% {warmed, humidified} **O2**. Confirm tube placement using **Primary** and appropriate {**Secondary Methods**}, and secure tube.
7. Transport IMMEDIATELY after ABC's and appropriate defibrillations (as above).
8. Continue resuscitative efforts for longer than normal, while in transit, even if there is no response.
9. IV/IO with {warm} **NS**. If hypotensive, give 20 ml/Kg push {warmed IV fluid}.
10. {Determine blood sugar level.}
11. If blood sugar (BS) less than 60, no {blood sugar monitor} is available, or there is a strong suspicion of hypoglycemia despite blood sugar readings:
 - A. Administer IV Bolus:
 - Use 1ml/Kg **50% Dextrose** for children over 25Kg
 - Use 2ml/Kg **25% Dextrose** for children under 25Kg, or 1ml/Kg of **50% Dextrose** diluted with equal volume of sterile water or saline.
 - For infants (< 1 year), use 2 ml/Kg **25% Dextrose** diluted with equal volume of sterile water or saline. If dilution is not feasible and straight **D25** is used, it must be given **very** slowly (minimum 1 – 2 minutes).
 - B. **Dextrose** may be repeated in 10 minutes if patient fails to respond, or blood sugar remains < 60mg/dl.
12. Consider possibility of other medical issues, including drug overdose and trauma.
13. Consider transport to a Level I or II Trauma Center. If Trauma Center is distant, consider aeromedical transport.

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4.6.2 - HYPOTHERMIA WITHOUT ARREST

1. Do not initiate CPR if there is any pulse present, no matter how slow.
2. Consider spinal immobilization; evaluate for other trauma.
3. Use **O2**, high flow. Do not hyperventilate. Do not use adjunctive airway equipment unless necessary. If necessary, use least intrusive measures that will adequately assure airway and ventilation.
4. Ventilate if necessary, and oxygenate with 100% **O2**, that is {warmed/humidified}.
5. Intubate if necessary, as gently as possible.
6. Avoid rough handling and unnecessary stimulation.
7. Apply Cardiac Monitor.
8. Do not allow conscious patients to ambulate, exercise or move about.
9. **Diabetics are highly susceptible to cold illnesses. Consider the possibility of hypoglycemia, and treat accordingly**

Complete the following Steps During Transport:

10. IV with {warm} **NS**. May use IO if patient is unresponsive. If hypotensive, give 20 ml/Kg bolus.
11. Do not treat bradycardia unless it is profound, and avoid the use of pacing for bradycardia unless specifically ordered to do so by Medical Control.
12. {Determine blood sugar level.}
13. If blood sugar (BS) less than 60, no {blood sugar monitor} is available, or there is a strong suspicion of hypoglycemia despite blood sugar readings:
 - A. Administer IV Bolus:
 - Use 1ml/Kg **50% Dextrose** for children over 25Kg
 - Use 2ml/Kg **25% Dextrose** for children under 25Kg, or 1ml/Kg of **50% Dextrose** diluted with equal volume of sterile water or saline.
 - For infants (< 1 year), use 2 ml/Kg **25% Dextrose** diluted with equal volume of sterile water or saline. If dilution is not feasible and straight **D25** is used, it must be given **very** slowly (minimum 1 – 2 minutes).
 - B. **Dextrose** may be repeated in 10 minutes if patient fails to respond, or blood sugar remains < 60mg/dl.
 - C. **IF unable to obtain IV, give Glucagon, 1mg IM.**
14. Consider possibility of other medical issues, including drug overdose and trauma.
15. If feasible for patient condition, Hypothermia patients should be transported to a Trauma Center.

4.6.3 - FROSTBITE

1. Protect injured areas from pressure, trauma, and friction. Remove all covering, including jewelry, from injured parts. Do not rub. Do not break blisters.
2. Do not attempt to thaw injured part with local heat.
3. Do not allow limb to thaw if there is a chance that limb may refreeze before evacuation is complete.
4. Maintain core temperature by keeping patient warm with blankets, warm fluids, etc.
5. Significant frostbite injuries should be transported to a Burn Center.
6. Transport and contact Medical Control.
7. Apply Cardiac Monitor.
8. IV with {warm} **NS**.
9. For pain relief when the patient is conscious, alert, is not hypotensive, and is complaining of severe pain, and an IV is established, consider **MORPHINE SULFATE** 0.1mg/Kg. Slow IVP over 2-3 minutes (Maximum dose 5 mg). Not to be give to anyone 2 years of age or under.
10. ♦ May repeat **Morphine Sulfate** only with direct order from Medical Control.
11. If patient condition warrants, transport severe Frostbite patients to a Burn Center.

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4.7 - BURNS/SMOKE INHALATION

GENERAL CONSIDERATIONS

1. **Burn Referral Centers:**
 - A. Transport patients under 16 years of age with severe burns to the pediatric regional burn center at the Children's Medical Center, unless > 30 minute transport time.
 - B. Transport patients 16 years of age and older with severe burns to the adult regional burn center at Miami Valley Hospital, unless > 30 minute transport time.
2. The first priority is to assure scene safety and then remove the patient from the heat and/or flame, electrical or chemical exposure.
 - A. When dealing with contaminated environments, EMTs must have appropriate protective clothing. If not available, contact appropriate Haz Mat service for such equipment.
3. Airway, Breathing, and Circulation must be stabilized before addressing the burn. Establish and maintain C-spine control if indication of neck/head trauma.
4. Patient with extensive burns must be monitored for hypothermia. Do not use of ice or prolonged cold compresses. When in doubt, cover with dry dressing. Cover burn areas with clean, dry sheets or dressings after cooling first. Remove all rings, watches, and jewelry. Superficial and partial thickness burns of less than 10% may have wet dressings applied. Do not remove items, which have adhered to the skin.
5. In caring for the burn, the EMT should:
 - A. Stop the Burning
 - B. Reduce the pain
 - C. Prevent contamination
6. Major burns should be transported directly to a Burn Center when possible, as above. Inhalation injuries with unsecured airway should be transported to the nearest facility. For patients with major burns, and long transports, you may contact Medical Control for destination:
 - A. Closest Hospital or
 - B. Burn Center
7. For chemical burns, gross decontamination **must be done at the scene. Always include removal of all involved clothing.** Advise receiving facility, and be prepared to transport to decontamination area. See **Section 6.6 – Haz-Mat.**
8. Keep patient warm – turn off air conditioner if appropriate.
9. The burn patient should be managed as any other trauma victim. The burn itself has a low priority over other associated injuries for which the patient must be completely evaluated. Vital signs may be taken over damaged tissue if no other area is accessible.

SPECIFIC CARE

1. Assess for respiratory distress, stridor, hoarseness, sooty sputum, singed eyebrows and nares or burns of the face or airway. Suspect airway injury. Assess neuro status.
2. Administer 100% **O2** by NRB mask or BVM.
3. Initiate cardiac monitoring, especially if patient has been involved with a lightning strike or electrical burn.
4. Determine types of burn and treat as follows:
 - A. Thermal (dry and moist):
 - 1) Stop burning process: i.e., remove patient from heat source, cool skin by applying water; remove clothing.
 - 2) If patient starts to shiver or skin is cool, stop cooling process.
 - 3) Estimate extent (%), depth, and seriousness of the burn. Contact Medical Control and transport.
 - 4) Avoid wet dressings if burn area is greater than 10% body surface area (BSA).
 - B. Radiation Burns:
 - 1) Treat as thermal burns except when burn is contaminated with radioactive source, then treat

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as chemical burn.

- 2) Contact HAZ-MAT TEAM for assistance in contamination cases

C. Chemical Burns:

- 1) EMS personnel must wear appropriate protective clothing and respirators
- 2) Remove patient from contaminated area to decontamination site (NOT AMBULANCE).
- 3) Determine chemicals involved; contact appropriate agency for chemical information.
- 4) If any possibility of continuing contamination, notify hospital promptly.
- 5) Remove patient's clothing and flush skin.
- 6) Leave contaminated clothes at scene. Cover patient completely before loading into squad.
- 7) Personnel not involved in decontamination process should transport patient.
- 8) See **Section 6.6 - Haz-Mat**, for some specific treatments.
- 9) For Chemical Burns, notify hospital as early as possible! It is imperative that the hospital be notified prior to your arrival.

D. Electrical Burns

- 1) Shut down electrical source; do not attempt to remove patient until electricity is confirmed to be shut off.
- 2) If no pulse, apply {AED} or **Monitor/Defibrillator and follow 3.1.1.**
- 3) Assess for visible entrance and exit wounds and treat as thermal burns.
- 4) Assess for internal injury, i.e., vascular damage, tissue damage, fractures, and treat.

E. For Inhalation Burns, Thermal Burns, and Smoke Inhalation:

- 1) Provide {humidified} **O₂** using a {wall humidifier} with **Saline**.
 - 2) If no humidifier is available, provide a **Saline Nebulizer** treatment by adding 3 ml **Saline** to a nebulizer, and give repeated treatments as needed while in transit.
 - 3) Apply endotracheal intubation as indicated. **Do Not Wait for complete airway obstruction or respiratory arrest to intubate!** If apneic, orally intubate with endotracheal tube 0.5-1 mm smaller than usual size.
5. Determine the severity of the burn, contact Medical Control and transport.
 6. If sign/symptoms of hypovolemic shock are present, establish IV/IO of **0.9% NS** at 20ml/Kg bolus as quickly as possible *while enroute to hospital*.
 - A. Re-assess pulse rate and peripheral perfusion, if no improvement, repeat bolus of **NS**.
 7. ♦For unconscious smoke inhalation patients, contact Medical Control regarding potential use of Sodium Thiosulfate. See **Section 6.6 – Haz-Mat** for specific information.
 8. For pain control, if IV is established and the patient is conscious, alert, is not hypotensive, and is complaining of severe pain, consider, **MORPHINE SULFATE** 0.1mg/Kg. slow IVP over 2-3 minutes (Maximum dose 5 mg). Not to be give to anyone 2 years of age or under.
 9. ♦Call for orders for repeat dose.

4.8 – HEAT EXPOSURE

GENERAL CONSIDERATIONS

1. Geriatric patients, pediatric patients, and patients with a history of spinal injury or diabetes mellitus are the ones most likely to suffer heat-related illness. Other contributory factors may include heart medications, diuretics, cold medications and/ or psychiatric medications.
2. Heat exposure can occur either due to increased environmental temperatures, prolonged exercise or a combination of both. Environments with temperature above 90 degrees Fahrenheit and humidity over 60% present the most risk.
3. When altered mental status is present consider other causes such as hypoglycemia, stroke and/ or shock.

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SPECIFIC CARE

1. Secure and maintain airway, and consider cervical spine injury.
2. Administer **O2**, maintaining at least 95% {SpO2}. Use BVM if needed.
3. Move patient to cool environment.
4. Assess mental status, temperature of patient and of environment. Assess vital signs at least every 15 minutes.
5. Strip the patient of clothing, cool the patient, and apply water to the skin. Provide oral fluids if patient is conscious, and not vomiting or extremely nauseous.
6. Apply Cardiac Monitor.
7. During transport, start IV/IO **NS** if the patient is hypotensive or there are mental status changes, and give 20 ml/Kg bolus of **NS**.
8. Be prepared for seizures.
9. Intubate if indicated, and oxygenate with 100% **O2**.
10. If feasible for patient condition, significant Heat Exposure patients should be transported to a Trauma Center.



Heat Stroke: Most serious type of exposure illness, usually due to prolonged exposure to heat, inadequate fluid replacement and deficient thermoregulatory function. Patient often experiences inadequate perspiration with body temperatures reaching 105 degrees F or greater. Skin is usually hot and dry and there may be an altered LOC and/or coma. Seizures may occur. Cardiovascular collapse is the usual cause of death.

Heat Exhaustion: More moderate form of heat exposure associated with dehydration combined with overexertion. Skin is cooler and the core temperature is below 105 degrees F. The patient may experience syncope with orthostatic hypotension.

Heat Cramps: the mildest form of heat exposure caused by dehydration, overexertion, and electrolyte abnormalities. the skin is moist with muscle cramps, usually affecting large muscle groups.

Altered Mental Status: When altered mental status is present, consider other causes such as hypoglycemia, stroke and/or shock.

4.9 – SYMPTOMATIC CARBON MONOXIDE POISONING

1. Remove the victim from the contaminated area.
2. Airway with C-spine control as indicated.
3. Provide high flow **O2** to all suspected CO poisonings **continuously**, including from Medic to ER.
 - A. Provide {humidified} **O2** using a {wall humidifier} with **Saline**.
 - B. If no humidifier is available, provide a **Saline Nebulizer** treatment by adding 3 ml **Saline** to a nebulizer, and give repeated treatments as needed while in transit.
4. **Pulse Oximetry will give false readings: Do not use it.**
5. If CO is suspected, and any of the following High Risk Factors are present, consider Hyperbaric Oxygen (HBO) Treatment. Contact Medical Control, and discuss where the patient should be transported.
 - A. Underlying cardiovascular disease, or cardiovascular symptoms such as chest pain or shortness of breath.
 - B. ANY interval of unconsciousness, or obvious neuro-psychological symptoms, such as loss of

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- time, inability to perform simple motor tasks, or loss of memory.
- D. Smoke inhalation victims.
 - E. Pregnancy.
6. If signs/symptoms of hypovolemic shock are present, establish an IV/IO of **0.9% NS**, 20 ml/Kg, to maintain systolic pressure of 100.
 - A. Do NOT delay transport to establish venous access.
 7. Place patient on Cardiac Monitor & treat any dysrhythmias.

4.10 - EYE INJURY

GENERAL CONSIDERATION: CONTACT LENSES

1. If possible, contact lenses should be removed from the eye. Be sure to transport them to the hospital with the patient. If the lenses cannot be removed, notify the ED personnel as soon as possible.

SPECIFIC CARE

1. In cases where eyes may need irrigation, and other appropriate situations with significant eye pain, administer two (2) drops of topical ophthalmic anesthetic (**Tetracaine**) in eyes.
2. **Tetracaine** must not be used if there is a possibility of penetrating trauma to the eye.
3. {Morgan Lens} may be used by paramedics, who have been appropriately trained/tested and with Medical Director approval, after administration of Tetracaine.



When eye irrigation is indicated and no appropriate sized Morgan Lens is available, the eyes can be irrigated with a nasal cannula.

- Place cannula over bridge of the nose with nasal prongs pointing down toward the eyes.
- Attach cannula to an intravenous administration set using normal saline.
- Run continually into both eyes.

4.10.1 - EYE INJURY: CHEMICAL BURNS

1. When possible determine type of chemical involved first. The eye should be flushed with copious amounts of water or saline. Irrigate for a **minimum** of 20 minutes, starting as soon as possible, and continue until the pain is relieved. Any delay may result in serious damage to the eye.
2. Always obtain name and, if possible, the Material Safety Data Sheet (MSDS), or ask that they be brought to the hospital as soon as possible. Knowing the pH of the chemical is crucial information for the ER.
3. Consider the use of two (2) drops of topical ophthalmic anesthetic (**Tetracaine**). Ideally, it should be placed in the eye prior to irrigation, but **must not delay the irrigation**. Always check to determine if the patient has any allergy to anesthetic agents
4. Use Nasal Cannula and IV tubing for irrigation. {Morgan Lens} may be used by paramedics who have been appropriately trained/tested and with Medical Director approval, after administration of Tetracaine.

4.10.2 – MAJOR EYE TRAUMA

8. Keep patient quiet.
9. Cover injured eye with Metal Eye Shield or Cardboard or Styrofoam cup, taped onto bony

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prominences.

10. Do not use a pressure patch, or any absorbent dressing on or near any eye that may have ruptured, or have any penetrating trauma.
11. Cover both eyes to limit movement.
12. Transport with head elevated.
13. Do not use eye drops.
14. In pediatric patients, it may be best to withhold IVs, unless otherwise essential.

4.11 – {SPINAL INJURY CLEARANCE ALGORITHM}

This section intentionally left blank. Not recommended for pediatric patients.

SEE ADULT 4.11 FOR CHILDREN >16 YRS.

4.12 - START TRIAGE SYSTEM FOR MASS CASUALTY INCIDENTS (MCIs)

START SYSTEM OF TRIAGE

I. INTRODUCTION. Use the Simple Triage And Rapid Treatment (START) method of triage to assess a large number of victims rapidly. It can be used easily and effectively by all EMS personnel. However, there are limitations to START (see section below).

II. PROCEDURE.

A. Initial Triage (Using the START Method).

- 1) Utilize the Triage Ribbons (color-coded strips). One should be tied to an upper extremity in a VISIBLE location (wrist if possible, preferably on the right).
 - a) RED - Immediate.
 - b) YELLOW- Delayed.
 - c) GREEN- Ambulatory (minor).
 - d) BLACK- Deceased (non-salvageable).
- 2) Independent decisions should be made for each victim. Do not base triage decisions on the perception of too many REDs, not enough GREENs, etc.
- 3) If borderline decisions are encountered, always triage to the most urgent priority (eg. GREEN/YELLOW patient, tag YELLOW). Move as quickly as possible!

B. Secondary Triage.

- 1) Will be performed on all victims in the Treatment Area.
- 2) Utilize the Triage Tags (METTAGs or START tags) and attempt to assess for and complete all information required on the tag (time permitting). Affix the tag to the victim and remove ribbon. This is done after patients enter the Treatment Area, not at the initial triage site!
- 3) The Triage priority determined in the Treatment Phase should be the priority use for transport.

III. START.

A. Locate and remove all of the walking wounded into one location away from the incident, if possible. Assign someone to keep them together (eg. PD, FD, or initially a bystander) and notify COMMAND of their location. Do not forget these victims. Someone should re-triage them as soon as possible.

B. Begin assessing all non-ambulatory victims where they lay, if possible. Each victim should be triaged in 60 seconds or less, preferably much less.

NOTE: Remember the pneumonic RPM (Respirations, Perfusion, Mental Status).

1) Assess RESPIRATIONS:

- a) If respiratory rate is 30/min. or less go to PERFUSION assessment.

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- b) If respiratory rate is over 30/min, tag RED.
- c) If victim is not breathing, open the airway, remove obstructions, if seen, and assess for (a) or (b) above.
- d) If victim is still not breathing, tag BLACK. (Depending on circumstances, you may attempt three rapid defibrillations before triage to BLACK.)
Consider pediatric Respiratory rates.

2) Assess PERFUSION:

- a) Performed by palpating a radial pulse or assessing capillary refill (CR) time.
 - b) If radial pulse is present or CR is 2 seconds or less, go to MENTAL STATUS assessment.
 - c) No radial pulse or CR is greater than 2 seconds, tag RED.
- NOTE: In addition, any major external bleeding should also be controlled.

3) Assess MENTAL STATUS:

- a) Assess the victim's ability to follow simple commands and their orientation to time, place, and person.
 - b) If the victim follows commands, oriented X3, tag GREEN.
- NOTE: Depending on injuries (eg. burns, fractures, bleeding) it may be necessary to tag YELLOW.
- c) If the victim does not follow commands, is unconscious, or is disoriented, tag RED.

V. SPECIAL CONSIDERATIONS.

- A. The first assessment that produces a RED tag stops further assessment.
- B. Only correction of life-threatening problems (eg. airway obstruction or severe hemorrhage) should be managed during triage.
- C. To help speed the process, Departments should consider utilizing colored (Red, Yellow, Green, Black) {Ribbons} to initially mark patients categories. Triage Tags are then attached and filled out once the patient reaches the Treatment Area.
- D. When using Triage Tags, if the patient's condition or the triage priority changes, the bottom portion of the tag should be removed, leaving only the injury information. Add a new tag to identify the new triage priority, and if time permits, the reason for the change.

Adapted from <http://www.co.broward.fl.us/tmi02719.htm>.

4.13 - START SYSTEM LIMITATIONS

See the Adult Standing Orders Training Manual for this Section, **including information on triaging pediatric patients.**

5.0 - RESPIRATORY DISTRESS

GENERAL CONSIDERATIONS

1. In children, open airway by using sniffing position.
2. Do not attempt to visualize the airway; unless a foreign body is suspected.
3. The use of **suction** may be critical.
4. Keep patient calm and transport upright.
5. Cricoid pressure can be applied while ventilating to minimize gastric distention.

SPECIFIC CARE

1. Open airway and check for breathing

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2. Administer **O₂** by NRB MASK mask or nasal cannula; be prepared to assist ventilations by BVM with 100% **O₂**.
3. Evaluate breath sounds, and obtain {Pulse Oximetry} reading:
 - A. **Clear breath sounds:** Treat cause (pulmonary embolism, metabolic disturbance, hyperventilation) and transport in position of comfort.
 - B. **If wheezes present:** Consider possibility of allergic reaction. See **Section 6.3 Anaphylaxis**.
 - C. **If wheezes present and not an allergic reaction**, and patient has history of **asthma, bronchitis, etc:**
 - Administer **Proventil**.
 - D. **Patient with Severe Distress:** Sit patient up, assist ventilations, and give HIGH flow **O₂**.
 - E. **Rales present:** Sit patient up, administer HIGH flow **O₂** by NRB mask and/or BVM and transport.
 - F. **Sucking chest wound:** Seal open wound on 3 sides, monitor for development of Tension Pneumothorax.
4. Reassess breath sounds.
5. Start Saline Lock or IV **Saline**, TKO, while en route to hospital. DO NOT DELAY TRANSPORT.
6. Apply Cardiac Monitor and check rhythm.
7. If breath sounds are asymmetrical or absent, consider possibility of pneumothorax, spontaneous or otherwise.
8. Endotracheal intubation if indicated and provide 100% **O₂** by BVM.
9. After intubation of an asthma patient, limit rate of ventilation to ten to fifteen breaths per minute, to avoid auto-PEEP and hypotension, provided that you can adequately ventilate the patient at that rate.
10. Transport in position of comfort.
11. Monitor for development of Tension Pneumothorax. If found perform immediate chest decompression.

5.1 - UPPER AIRWAY OBSTRUCTION

1. Manually clear airway if foreign body is visible
2. Apply appropriate obstructed airway maneuver.
3. Administer **O₂** by NRB mask or blow-by.
4. Transport in upright position
5. If foreign body is in airway in an unconscious patient with complete obstruction and basic procedures are unsuccessful, try to visualize obstruction with laryngoscope.
6. If foreign body is visualized with laryngoscope in an unconscious patient, attempt to remove obstruction with Magill forceps
7. If airway is completely obstructed, a needle or surgical cricothyrotomy may be life saving.

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5.2 - LOWER AIRWAY OBSTRUCTION/WHEEZING

1. Open airway and check for breathing
2. Administer **O2** by NRB mask or nasal cannula..
3. Evaluate breath sounds, and obtain {Pulse Oximetry} reading:
4. If respiratory effort is insufficient or patient becomes unconscious, be prepared to assist ventilations by BVM with 100%.
5. If allergic reaction is suspected, follow **Anaphylaxis** protocol. See **Section 6.3**.
6. Apply Cardiac Monitor and check rhythm.
7. **Transport as soon as practical.**
8. If patient's condition is severe, may start an IV of **NS**, **TKO**.
 9. Consider breathing treatment using 2.5mg (3ml), of **Proventil (Albuterol)** combined with **Atrovent**, 0.5 mg, in nebulizer with **O2** flow at 8-12 liters per minute.
 - A. May give repeat dose of **Proventil** times three.
 - B. **Proventil** and **Atrovent** may be administered simultaneously with 4 ml. of **2% Lidocaine** (80 mg.) in Nebulizer if intubation is anticipated.
 10. ♦ If patient remains in **severe** respiratory distress, call for 1:1,000 **Epinephrine** 0.01ml/Kg (0.01 mg/Kg) SUB-Q (or for repeat **Epinephrine**, if already given for suspected allergic reaction). (Maximum dose 0.3 mg, 0.3 ml)
 11. Consider need for possible early **Endotracheal Intubation**. The following signs indicate that the need for rapid endotracheal intubation is imminent:
 - E. Decreasing level of consciousness.
 - F. Profuse diaphoresis.
 - G. Poor ("floppy") muscle tone
 - H. Severe agitation, confusion, or fighting against the **O2** mask.
 - **Immediately after intubation**, give **Proventil (Albuterol)**, 2.5 mg (3 ml) via nebulizer into ETT. If **Atrovent** not given before intubation, add to **Proventil**.
 12. After intubation of an asthma patient, limit rate of ventilation to ten to fifteen breaths per minute, to avoid auto-PEEP and hypotension, provided that you can adequately ventilate the patient at that rate.
 13. **If patient arrests**, tension pneumothorax is a likely cause. Strongly consider bilateral needle decompression for relief of tension pneumothorax.

6.0 - OTHER MEDICAL ISSUES

6.1 - ALTERED LEVEL OF CONSCIOUSNESS – UNKNOWN CAUSE

1. Secure airway and consider cervical spine injury.
2. Administer 100% **O2** by NRB mask.
3. Apply {Pulse Oximeter}.
4. Apply restraints as necessary per restraint guidelines.
5. Consider **Oral Glucose** for patient
6. Be prepared to hyperventilate and/or assist ventilations with oral or nasal airway and BVM.
7. Apply Cardiac Monitor and check rhythm.
8. Start Saline Lock or IV **Saline**, **TKO**, and draw blood chemistry tube. **If peripheral IVs cannot be established and pt is unresponsive and hemodynamically unstable access start IO.**
9. Treat signs and symptoms of shock.
10. {Determine blood sugar level.}
11. If blood sugar (BS) less than 60, no {blood sugar monitor} is available, or there is a strong suspicion of hypoglycemia despite blood sugar readings:

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- A. Administer IV Bolus:
 - Use 1ml/Kg **50% Dextrose** for children over 25Kg
 - Use 2ml/Kg **25% Dextrose** for children under 25Kg, or 1ml/Kg of **50% Dextrose** diluted with equal volume of sterile water or saline.
 - For infants (< 1 year), use 2 ml/Kg **25% Dextrose** diluted with equal volume of sterile water or saline. If dilution is not feasible and straight **D25** is used, it must be given **very** slowly (minimum 1 – 2 minutes).
- B. **Dextrose** may be repeated in 10 minutes if patient fails to respond, or blood sugar remains < 60mg/dl.
- C. IF unable to obtain IV, give **Glucagon**, 1mg IM.
12. If any of the following are present: patient is unresponsive, appears dry, has a low BP, poor capillary refill give IV fluid bolus 20ml/Kg of **NS**. Do not delay transport for IV start, accomplish enroute.
11. Consider patient **restraint** before administration of **Narcan**.
13. If blood sugar is > 60mg/dl, respirations are impaired, or patient does not respond to **Dextrose** or fluid bolus, or history of ingestion of narcotic, administer **Narcan**, 0.1mg/Kg IV/IO/ETT/Sublingual up to 2 mg Max Dose.
14. If patient improves somewhat with **Narcan**, but is not fully awake, a repeat dose may be given.
15. Re-evaluate patient condition, contact Medical Control, and transport.

6.2 – DIABETIC EMERGENCIES

1. Secure and maintain airway. Support with 100% **O₂** by NRB mask.
2. Apply Cardiac Monitor and check rhythm.
3. Start Saline Lock or IV **Saline**, TKO, and draw blood chemistry tube. **If peripheral IVs cannot be established and pt is unresponsive and hemodynamically unstable, start IO.**
4. Treat signs and symptoms of shock.
5. {Determine blood sugar level.}
6. If blood sugar (BS) less than 60, no {blood sugar monitor} is available, or there is a strong suspicion of hypoglycemia despite blood sugar readings:
 - A. Administer IV Bolus:
 - Use 1ml/Kg **50% Dextrose** for children over 25Kg
 - Use 2ml/Kg **25% Dextrose** for children under 25Kg, or 1ml/Kg of **50% Dextrose** diluted with equal volume of sterile water or saline.
 - For infants (< 1 year), use 2 ml/Kg **25% Dextrose** diluted with equal volume of sterile water or saline. If dilution is not feasible and straight **D25** is used, it must be given **very** slowly (minimum 1 – 2 minutes).
 - B. **Dextrose** may be repeated in 10 minutes if patient fails to respond, or blood sugar remains < 60mg/dl.
 - C. **IF unable to obtain IV, give Glucagon, 1mg IM.**
7. If patient has a low BP and poor capillary refill, give IV fluid bolus 20ml/Kg of **NS**. Do not delay transport for IV start, accomplish enroute.
8. **Unconscious diabetics are often hypothermic. Be prepared, and treat hypothermia when indicated.**

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6.2.1 – DIABETIC EMERGENCIES: REFUSAL AFTER TREATMENT

This section intentionally left blank.

6.3 - ALLERGIC REACTION/ANAPHYLAXIS: WHEEZES PRESENT

1. Secure airway, and support with 100% **O2** by NRB mask.
2. If severe allergic reaction, administer **Epi-Pen**.
 - **Epi-Pen JR**. 0.15mg for patients < 30 Kg (< 66 pounds).
 - **Adult Epi-Pen** 0.3mg for patients > 30 Kg (> 66 pounds).
3. Apply {Pulse Oximeter}.
4. Apply ice pack to stings to slow swelling and spread of poison.
5. Start Saline Lock or IV **Saline**, TKO. DO NOT DELAY TRANSPORT
6. Severe systemic allergic reaction:
 - A. Administer 0.01 mg/Kg (0.01 ml/Kg) 1:1,000 **Epinephrine** subcutaneously (SUB-Q) (Maximum dose 0.3 mg, 0.3ml) if patient has not received **Epi-Pen** or it has been 20 minutes since last dose.
 - B. ♦Dose can be repeated during transport if patient's condition does not improve.
7. Establish IV **NS** TKO. Do not delay transport for IV.
 - A. If signs of hypovolemia or hypoperfusion are present, give IV fluid bolus of **NS**, 20ml/Kg.
8. Apply Cardiac Monitor and check rhythm.
9. If patient develops wheezing, administer **Proventil (Albuterol)** 3.0 ml solution with high flow **O2** at 8-12 lpm.
10. May also provide **Atrovent**, 0.5 mg in the nebulizer with an **O2** flow rate of 8-12 liters per minute. **Proventil** and **Atrovent** may be placed in the nebulizer simultaneously. If you anticipate needing to intubate, **Lidocaine** may also be placed in the nebulizer with the other two agents.
11. Severe systemic allergic reaction:
 - A. Administer **Benadryl (Diphenhydramine)** 1mg/Kg IV (or IM), enroute, maximum dose 50 mg.

6.4 - SEIZURES

GENERAL CONSIDERATIONS

1. Protect and support the patient.
2. Aspiration precautions should include:
 - A. Recovery position.
 - B. Suction readily available.
 - D. If possible, mouth cleared of foreign bodies (food and gum)
3. Pediatric patients who present with new onset of seizures or have no history of known seizure activity need to be transported for evaluation.

SPECIFIC CARE

1. Clear and maintain airway. Consider C-spine injury.
2. Administer 100% **O2**.
3. Be prepared to assist ventilations.
4. Obtain history from family and/or bystanders
 - A. Seizure history.
 - B. Description of onset of seizure.
 - C. Medication.
 - D. Other known history (i.e., fever, head trauma, drugs, etc).
5. Evaluate for evidence of injury, especially head trauma.

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6. Febrile Seizures
 - A. Remove clothing.
 - B. Do not cool with water or alcohol
7. Bring any medications with child to the hospital
8. Apply Cardiac Monitor and check rhythm.
9. Establish IV NS at TKO.
10. Ensure patent airway, monitor respirations. Assist as needed, intubate as necessary.
11. If patient is actively convulsing use **Valium (Diazepam)**:
 - A. 0.2 mg/Kg, IV push slowly (1mg/min) (Maximum dose of 5mg) or:
 - B. 0.5mg/Kg PR (rectally) (Maximum dose of 10mg). Use a TB syringe, draw up dose, remove needle, lubricate the syringe and insert syringe 1-2 inches into rectum, and instill **Valium**.
- C. **If Valium unavailable**, give **Versed (Midazolam)** 0.1 mg/kg slow IV push over 1-2 minutes. If seizure continues, call medical control for repeat dose. If IV unsuccessful, give Versed 0.1 mg/kg IM. Maximum dose not to exceed 4 mg..
12. {Determine blood sugar level.}
13. If blood sugar (BS) less than 60, no {blood sugar monitor} is available, or there is a strong suspicion of hypoglycemia despite blood sugar readings:
 - A. Administer IV Bolus:
 - Use 1ml/Kg **50% Dextrose** for children over 25Kg
 - Use 2ml/Kg **25% Dextrose** for children under 25Kg, or 1ml/Kg of **50% Dextrose** diluted with equal volume of sterile water or saline.
 - For infants (< 1 year), use 2 ml/Kg **25% Dextrose** diluted with equal volume of sterile water or saline. If dilution is not feasible and straight **D25** is used, it must be given **very** slowly (minimum 1 – 2 minutes).
 - B. **Dextrose** may be repeated in 10 minutes if patient fails to respond, or blood sugar remains < 60mg/dl.
 - C. IF unable to obtain IV, give **Glucagon**, 1mg IM.
14. ♦ **If patient is still actively seizing:** Repeat **Valium or Versed** as ordered by Medical Control.
15. Be prepared to assist ventilation if apnea or inadequate respirations occur.

See “IMPORTANT INFORMATION REGARDING IV VERSED” in Section 3.3.1.



Valium Vial Shortage

Due to Valium Vial shortages, hospitals are substituting the vials with carproject Valium pre-filled syringes. Pharmacists are attempting to put the carproject devices to enable you to administer the medication but they are not always available.

SEE ADULT SECTION 6.4 FOR FURTHER INSTRUCTIONS AND INFORMATION.

6.5 - POISONING/OVERDOSE

GENERAL CONSIDERATIONS

1. WHEN DEALING WITH CONTAMINATED ENVIRONMENTS, EMTs MUST HAVE APPROPRIATE PROTECTIVE CLOTHING. IF NOT AVAILABLE, CONTACT HAZ-MAT.
2. **Patient should be searched for weapons.** Consider having police perform search, but don't assume that their search was adequate.
3. EMTs and Paramedics will consider the possibility of accidental or intentional poisoning whenever any of the following conditions are present:

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- A. History of observed or admitted accidental or intentional ingestion.
- B. Coma.
- C. History of known suicide gesture.
- D. Suggestive intoxicated behavior (hyperactive, hypoactive, unstable walk, lethargic)
- 4. Bring all patients' prescription medications **and bottle or remaining poison** to the hospital, unless this results in an unreasonable delay of transport. **Consider having police take custody of substance and means.**

SPECIFIC CARE

- 1. Establish airway
- 2. Obtain relevant history
 - A. What, when, why taken (if known)
 - B. Quantity taken (if known)
 - C. Victim's age and weight
- 3. Make a thorough search for any and all potential poisonous substances (i.e. medications, drugs).
- 4. Evaluate patient's:
 - A. Breath sounds (rales)
 - B. Level of consciousness and gag reflex
 - C. Pupil size
 - D. Evidence of head injury
- 5. {Check finger stick blood sugar}.
- 6. If an **Ingested Poison** – Transport.
- 7. If an **Inhaled Poison**:
 - A. Remove from toxic area
 - B. Secure airway, support with 100% **O2**.
 - C. Assist in ventilation if necessary
- 8. If an **Absorbed Poison**:
 - A. Remove victim's clothing - protect EMS personnel from contaminated clothing. Consider Haz-Mat Team contact.
 - B. Identify substance.
 - C. Flush skin with water before and during transport if possible - at least 10-15 minutes.
 - D. If eyes are involved flush with water or **Saline** continuously.
- 9. If an **Injected Poison**:
 - A. Secure and maintain airway.
- 10. If possible, identify substance and method of injection.
- 11. Apply monitor and check rhythm
- 12. Start IV **Saline**, TKO, while en route to hospital. **DO NOT DELAY TRANSPORT**
- 13. If patient has an altered level of consciousness, follow the **Altered Level of Consciousness Protocol, Section 6.1**.
- 14. Consider patient **restraint** before administration of **Narcan**.
- 15. If respiration is impaired, or there is a high index of suspicion of narcotic overdose, administer **Narcan**, 0.1mg/Kg IV/IO/ETT/Sublingual up to 2 mg Max Dose.
 - A. If patient has a pulse, **Narcan** should be administered before inserting an endotracheal tube.
- 16. If patient improves somewhat with **Narcan**, but is not fully awake, a repeat dose may be given.
- 17. ♦ If known tricyclic overdose (examples of Tricyclic Antidepressants below), administer **Sodium Bicarbonate (NaHCO₃)**, 1 mEq/Kg IV/IO push for persistent QRS prolongation.
 - * Amitriptyline (Elavil, Endep, Etrafon, Limbitrol)
 - * Nortriptyline (Pamelor)
 - Amoxapine (Asendin)
 - Clomipramine (Anafranil)

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Desipramine (Norpramine)

Doxepin (Sinequan)

Imipramine (Tofranil)

Protriptyline (Vivactil)

Trimipramine (Surmontil)

Tricyclic Antidepressant Overdose is a special, potentially lethal overdose.

Known or suspected overdose with Tricyclic antidepressant medications may be evidenced by bradycardia, tachycardia, hypotension, and prolongation of the QRS complex. Risk of rapid deterioration or sudden onset Ventricular fibrillation is high.

* Most commonly seen Tricyclic overdoses.

18. ♦ If known Calcium Channel Blocker (examples below) overdose with hypotension or other serious symptoms, administer 0.2 ml/Kg (20 mg/Kg) of **Calcium Chloride 10%** very slow push IV/IO for symptomatic CCB overdose. **Max Dose: 500 mg**

Amlodipine (Norvasc)

Diltiazem (Cardizem, Dilacor)

Felodipine (Plendil)

Isradipine (Dynacirc)

Nifedipine (Procardia, Adalat)

Verapamil (Calan, Isoptin, Verelan)

19. ♦ Administer **Glucagon** 1 mg. IM or IVP/IO (preferred) if known symptomatic Calcium Channel Blocker overdose (examples above) or Beta-Blocker (examples below) overdose.

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)



In ingested poisoning, it is not necessary to transport emesis. Document if pills or fragments were seen in emesis. Do not give Ipecac or Activated Charcoal.



Narcan Administration: Caution should be exercised when administering Narcan to narcotic overdose patients, as rapid administration may precipitate withdrawal with hypertension, tachycardia, and violent behavior. Titrate to maintain adequate respiratory rate. and to avoid dealing with an agitated patient.

6.6 - HAZ-MAT

Contact receiving hospital immediately to allow for set up time on all Haz-Mat situations!

Any chemical burn is, by definition, a Haz-Mat incident.

1. Perform scene survey and practice Body Substance Isolation.
2. Do not attempt to treat patient until you have adequately protected yourself.
3. Consider calling for assistance.

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4. **Initiate field decontamination.** First step is to remove contaminated clothing.
5. If hazardous material is tenacious, thoroughly wash the patient using a solution of {**Dawn**} **Soap** (or equivalent) and water, paying special attention to skin folds and other areas where simple irrigation may not remove it. Do not abrade the skin!
6. **Do not** transport a patient until gross decontamination is completed.
7. ♦ Obtain **permission** from Medical Control before entering hospital with a potentially contaminated patient.
8. If patient is suffering effects from an identified Hazardous Material, refer to the relevant section below, and contact Medical Control for orders.
9. EMS crews should decontaminate themselves and vehicle before leaving hospital.



Field decontamination must be initiated. An example of the often overlooked importance of decon is a patient soaked in diesel fuel.

6.6.1 - HAZ-MAT: HYDROFLUORIC ACID (HF)

This section intentionally left blank.

6.6.2 - HAZ-MAT: CYANIDE

♦ In any case of known or strongly suspected cyanide intoxication, paramedics will utilize the following components of the {**Cyanide Kit**}:

1. **Conscious Victims Of Known Or Strongly Suspected Cyanide Poisoning**
 - A. ♦ {For victims of cyanide poisoning who are awake, administer one **Amyl Nitrite** ampule. Limit exposure to **Amyl Nitrite** ampule to 15 seconds, followed by 15 seconds of rest, then repeat until **next Cyanide Antidote** can be administered.}
 - B. ♦ {Do not administer **Sodium Nitrite** in the field unless lab values are available.}
 - C. ♦ Administer **Sodium Thiosulfate, 1.65 ml/Kg** of the 25% solution, not to exceed 12.5 grams, **slow IV push** over 3 minutes.
 - D. It is critical to control any seizure activity, using **Valium** or **Versed**.
2. **Unconscious Victims of Known or Strongly Suspected Cyanide Poisoning**
 - A. Provide 100% **O2** by BVM, preferably via endotracheal tube.
 - B. CPR if indicated. In cases of cardiac arrest associated with cyanide poisoning, the cyanide antidotes must have a very high priority. Only ABCs, defibrillation, intubation, and epinephrine should precede use of the {**Cyanide Kit**}, as authorized by Medical Control.
 - C. ♦ {While preparing to intubate, place one ampule of **Amyl Nitrite** into a nebulizer after breaking the ampule, and attach it to the Bag Mask while ventilating. Limit exposure to **Amyl Nitrite** ampule to 15 seconds, followed by 15 seconds of rest, then repeat until **Sodium Nitrite** can be administered.}
 - D. ♦ {Do not administer **Sodium Nitrite** in the field unless lab values are available.}
 - E. ♦ Administer **Sodium Thiosulfate, 1.65 ml/Kg** of the 25% solution, not to exceed 12.5 grams), **slow IV push**, over 3 minutes.
 - F. It is critical to control any seizure activity, using **Valium** or **Versed**.
3. **In Multiple Casualty Incidents with suspected cyanide poisoning:**
 - A. Provide 100% oxygen by Bag-Valve, preferably via endotracheal tube.
 - ♦ Administer **Sodium Thiosulfate, 1.65 ml/Kg** of 25% solution (12.5 grams), **slow IV push** over 3 minutes.

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- . It is critical to control any seizure activity, using **Valium** or **Versed**.
4. ♦ When paramedics are faced with any of the above scenarios, but do not have all three components of the Cyanide Kit, or have insufficient numbers to provide all patients with all three components, any one component (**Amyl Nitrite**, **Sodium Nitrite**, or **Sodium Thiosulfate**) is better than none, and may be administered alone. **The only exception is that Sodium Nitrite should not be used in pediatric patients.**
 5. **In cases of smoke inhalation where cyanide is a likely component of the smoke (i.e., structure fires), cases where cyanide intoxication is uncertain, or cases where multiple toxins may be present:**
 - A. Provide 100% oxygen by Bag-Valve, preferably via endotracheal tube.
 - B. CPR if indicated. In cases of cardiac arrest associated with cyanide poisoning, the cyanide antidotes must have a very high priority. Only ABCs, defibrillation, intubation, and epinephrine should precede use of the {**Cyanide Kit components**}, as authorized by Medical Control.
 - C. ♦ Administer **Sodium Thiosulfate**, **1.65 ml/Kg** of 25% solution (12.5 grams), **slow IV push**.
 - D. **It is critical to control any seizure activity, using Valium or Versed.**

6.6.3 - HAZ-MAT: ORGANOPHOSPHATE OR NERVE GAS POISONING

1. Any case of known or strongly suspected organophosphate or carbamate (e.g., insecticides such as parathion or malathion); or nerve agent (e.g., Tabun, Sarin, Soman, VX, etc.) exposure, symptoms may include miosis (pinpoint pupils), rhinorrhea (runny nose), copious secretions, localized sweating, nausea, vomiting, weakness, seizures, dyspnea, loss of consciousness, apnea, diarrhea, flaccid paralysis, and cardiac arrest.
2. Note well: **Patients with severe poisoning may or may not be bradycardic.**
3. ♦ Paramedics will administer **Atropine** 0.02 mg/Kg IVP/IO/IM every 3-5 minutes, as available, until lungs are clear to auscultation. Minimum dose 0.1 mg; Maximum **per dose** 2.0 mg.
 - Atropine is given as 1-2 mg in conventional form, or by the 2 mg Autoinjector, for adults and children weighing over 90 pounds.
 - Children weighing 40 – 90 pounds should be given 1.0 mg Atropine, or the 1.0 mg Atropen autoinjector.
 - Children weighing less than 40 pounds should be given 0.5 mg Atropine, or the 0.5 mg Atropen autoinjector.♦ If child is greater than 20 Kg., **Atropine** may be followed with 600 mg IM **Pralidoxime (2-PAM)**, **which is Mark I auto-injector Item 2.**
4. Treat any seizures with **Valium**, **Versed**, or {**Valium Autoinjector**}.
5. Treat seizures with **Valium**, **Versed**, or {**Valium Autoinjector**}.

6.6.4 - HAZ-MAT: BIOLOGICAL AGENTS

This section intentionally left blank.

See Section in Adult Orders regarding families of Public Safety personnel.

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6.6.5 - HAZ-MAT: Pepper Spray

1. Departments may purchase and utilize {Sudecon Wipes} to assist in the decontamination of patients or public safety personnel who have been sprayed with Pepper Spray.

6.7 - ABDOMINAL PAIN

1. Airway with C-spine control, if indicated. Provide O2 as indicated.
2. Transport in position of comfort.
3. Give nothing by mouth.
4. Start an IV of NS at a keep open rate if there is significant potential for hypotension.
5. If hypotensive, follow shock protocol. See Section 3.4.
6. Monitor ECG during transport
7. If patient is adolescent female, ask for an estimate of blood loss, and perform a visual perineal exam if any of the following are present:
 - A. Patient pregnant, voices possibility of pregnancy, or has had multiple missed menstrual periods, **and** has significant abdominal pains.
 - B. Presenting large clots and/or suspected products of conception.
 - C. Any history of trauma below umbilicus with vaginal bleeding.
 - D. Patient states use of more than two pads saturated with blood per hour.
 - E. Visual observation of large vaginal blood loss.
 - F. If any of the above are present, consider transport to an adult facility.
8. Pregnant patients > 20 weeks gestation should be taken to a Maternity Department if feasible; < 20 weeks should go to the Emergency Room.



The position of comfort for most patients with abdominal pain is supine with knees flexed, unless there is respiratory distress.

Orthostatic Vital Signs: Consider evaluation of orthostatic vital signs in a conscious patient suspected of being volume depleted, provided that there is no suspicion of spinal injury or another condition precluding this assessment. A rise from a recumbent position to a sitting or standing position associated with a fall in systolic pressure (after 1 minute) of 10 to 15 mm Hg. And/or a concurrent rise in pulse rate (after 1 minute of 10 – 15 beats per minute indicates a significant (at least 10%) volume depletion (postural hypotension) and a decrease in perfusion status.

6.8 - FEVER

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

6.9 - NEWBORN RESUSCITATION

GENERAL CONSIDERATIONS

1. *Thermal regulation is an important aspect of the new born.* Body heat must always be maintained. As soon as the baby is born, wipe the baby dry and place in a warm environment. Ways to maintain body heat:

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- A. Cover infant's head with a cap, place infant against mother's skin, and cover both.
- B. Use car seat with heat packs under and beside infant. Be sure to place towels between heat packs and infant.
2. Use {heated, humidified **O2**}. Always position infant in the sniffing position (1" towel under shoulders). This will allow for an adequate open airway and drainage of secretions.
3. Suction infant until all secretions are clear of airway.
 - A. Meconium aspiration is a major cause of death and morbidity among infants. If thick meconium is present and not removed adequately a high percentage (60%) of these infants will aspirate the meconium.
 - B. If the newborn delivers with meconium-stained amniotic fluid and is vigorous, with strong respirations, good muscle tone, and heart rate greater than 100 bpm, suction the mouth and nose in the same way as for infants with clear fluid.
 - C. If the newborn delivers with meconium-stained amniotic fluid and is depressed, has poor respiratory effort, decreased muscle tone, or heart rate less than 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. Each time this suctioning is done, the infant will have to be re-intubated with a new tube. This lower airway suctioning is only done when thick meconium is present. Watery or thin meconium does not require routine endotracheal intubation.
 - D. Mechanical suction may be used on infants but only if the suction pressure does not exceed 100mmHg or 136cmH₂O. Bulb suctioning is preferred.
4. If drying and suctioning has not provided enough tactile stimulation, try flicking the infant's feet and or rubbing the infant's back. If this stimulation does not improve the infant's breathing, then BVM may be necessary.
5. Avoid direct application of cool oxygen to infant's facial area as this may cause respiratory depression due to a strong mammalian dive reflex immediately after birth.
6. Refer to length-based drug treatment guide (e.g. Broselow Pediatric Emergency Tape) when unsure about patient weight, age and/or drug dosage.

SPECIFIC CARE

1. Suction airway during delivery; continue suctioning with infant's head down until airway is clear and infant is breathing adequately.
2. After delivery of the infant, assess the airway and breathing while drying and positioning head down. If amniotic fluid not clear, continue to suction prior to ventilating and stimulating.
3. If heart rate is <100, BVM ventilation is necessary to increase heart rate.
4. Despite adequate ventilation, if heart rate is < 60 bpm cardiac compressions should be initiated.
5. BVM ventilation is also indicated for apnea and persistent central cyanosis
6. BVM ventilation rate should be between 30 – 60 breaths per minute. Cardiac compression rate should be at a rate of 120 times per minute (Compression to Breath Ratio 3:1)
7. Establish communications with Medical Control and advise of patient condition.
8. Apply Cardiac Monitor and check rhythm
9. Intubate patient if thick meconium is present in lower airway; suction through ET tube using a meconium aspirator and re-intubate with a new tube.
10. If asystole or spontaneous heart rate is < 60 bpm despite adequate ventilation and stimulation:
 - A. Establish IV/IO of **NS**.
 - B. Administer **Epinephrine** 0.02 mg/Kg (0.2 ml/Kg) of 1:10,000 via IV/IO/ETT.
 - C. If no response, repeat **Epinephrine** 0.02 mg/Kg (0.2 ml/Kg) of 1:10,000, every 3-5 minutes.
11. If infant shows signs of hypovolemia, administer **Saline** 10ml/Kg over 5 minutes.
12. Consider **Narcan**: 0.1mg/Kg IV/IO/ETT repeated every 3 minutes until respirations improve, if respirations are depressed and narcotic dependence is suspected.
13. Check blood sugar level and administer 1ml/Kg of **12.5% Dextrose (D25)** diluted with equal amounts

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of sterile water or **Saline**) if level is below 40mg/dl.

7.0 - OBSTETRICAL EMERGENCIES

See Section 7 of the Adult Orders.

Unless delivery is imminent, transport to a hospital with obstetrical capabilities. Delivery is imminent when the baby is crowning during a contraction.

8.0 and 8.1 – CHILDBIRTH and DELIVERY COMPLICATIONS

See Section 8 & 8.1 of Adult Orders.

9.0 - PSYCHIATRIC EMERGENCIES

1. **Patient should be searched for weapons.** Consider having police perform search, but don't assume that their search was adequate.
2. Contact local law enforcement for assistance with violent patients, if not already contacted.
3. Obtain relevant history:
 - A. Note any suicidal or violent intent
 - B. Previous psychiatric hospitalization, when and where
 - C. Where does patient receive psychiatric care?
 - D. What drugs does patient take (including alcohol)?
4. **Is patient a danger to self or others?**
5. Calm the patient.
6. Evaluate patient's Vital Signs and general appearance.
7. Transport patients to appropriate facility.
8. Contact Medical Control.
9. ALL patients who are not making rational decisions and who are a threat to themselves or others should be transported for medical evaluation.
10. Threat of suicide, overdose of medication, drugs, or alcohol, and/or threats to the health and well being of others are NOT considered rational.

9.1 - VIOLENT PATIENTS

“Quick Look” for Determining Patient Incompetency

- acutely suicidal patient
- confused patient
- developmentally or mentally disabled patient who is injured/ill
- intoxicated patient who is injured/ill
- physically/verbally hostile patient
- unconscious patient
- **any child under age 18, with urgent need for medical care**

1. **Patient should be searched for weapons.** Consider having police perform search, but don't assume that their search was adequate.
2. Consider need for restraint. Call for police.
3. Patients should never be transported while restrained in a prone position with hands and feet behind the back, or sandwiched between backboards and mattresses. Restraint techniques must never constrict the neck or compromise the airway.

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4. EMS personnel must have the ability to rapidly remove any restraints if the patient vomits or develops respiratory distress (e.g., there must be a handcuff key in the vehicle during transit).
 5. Handcuffs are generally not appropriate medical restraints. If they are used, the handcuff key must accompany the patient during treatment and transportation.
 6. Explain and Document need for restraint to patient.
 7. Any form of restraint must be informed restraint.
 8. Employ “reasonable force.” Reasonable force is the use of force equal to or minimally greater than the amount of force being exerted by the patient.
 9. Request that police fill out a “Pink Slip.”
 10. Preferably transport the patient to the facility where he or she was last hospitalized.
 11. Paramedics must attempt to rule out the following conditions by the given method:
 - H. Anticholinergic poisoning must be ruled out by physical exam and incident history.
 - I. CVA must be ruled out by the absence of risk factors and focal neural deficits.
 - J. Ethanol withdrawal must be ruled out by patient history. Benzodiazepines (**Valium**, 0.1 mg/Kg mg slow IV push) should be used initially in these patients.
 - K. Head injury must be ruled out by physical exam and incident history.
 - L. Hypoglycemia must be ruled out by {blood glucose measurement} or by administering **Dextrose**
 - M. Hypotension must be ruled out by determining the presence of SBP > 100.
 - N. Hypoxia must be ruled out by {O₂ saturation measurement} or by supplemental O₂.
- ◆Paramedics may consider contacting Medical Control regarding the possible use of Valium or Versed as “chemical restraint.”

See “IMPORTANT INFORMATION REGARDING IV VERSED” in Section 3.3.1.

9.2 - CHILD ABUSE/NEGLECT

1. Report all alleged or suspected child abuse or neglect to the appropriate agency. This can be accomplished by completing the Social Services Referral Form provided by GMVEMSC.
2. EMS personnel **must** report any alleged abuse or neglect (including adults) to the appropriate agency. Generally contact the police, rather than social services, if victim is not pediatric. **Simply giving your report to hospital staff does not meet your burden under the law.**

9.3 - SAFE HARBOR

1. **Voluntary Separation of Newborn Infant**
 - A. Safe Harbor (Ohio House Bill 660) is designed to allow desperate parents to separate from their babies confidentially to hospitals, EMS, or law enforcement agencies.
 - B. Stipulations of separation:
 - Infant must be 3 days old or less
 - No signs of abuse or neglect
 - C. History which should be obtained:
 - Date and time of birth
 - Any family medical history
 - Information concerning prenatal care
 - Information concerning birth
 - D. Information should be obtained in a manner, which will not lead to the revealing the identity of the parents. Information collected should be based on patient (infant) care needs and assure confidentiality.
 - E. Transport infant.



Ethan Allen Pediatric IV/IO Drug Dosage Mnemonic

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This is just a quick reminder, not a replacement for your Standing Orders Pocket Guide!

“Ethan Allen Never Ate Very Much Breakfast, Lunch, or Dinner.”

Pennies

| | |
|------------------------|--|
| <u>E</u> – Epinephrine | 0.01 mg/Kg (0.1 mg/Kg by ETT) |
| <u>A</u> – Atropine | 0.01 – <u>0.02</u> mg/Kg (min. 0.1 mg) |

Dimes

| | |
|---------------------------|----------------------------|
| <u>N</u> – Narcan | 0.1 mg/Kg |
| <u>A</u> – Adenosine | 0.1 mg/Kg |
| <u>V</u> – Versed, Valium | 0.1 mg/Kg (know max doses) |
| <u>M</u> – Morphine | 0.1 mg/Kg |

Dollars

| | |
|-------------------------|--|
| <u>B</u> – Bicarb | 1.0 mEq/Kg |
| <u>L</u> – Lidocaine | 1.0 mg/Kg (1.5 mg/Kg also common) |
| <u>D</u> – Dextrose 50% | 1.0 ml/Kg, diluted 1:1, or 2 ml/Kg 25% |

0.01 = penny

0.1 = dime (0.10)

1.0 = dollar (1.00)



Calculations

Weight 2.2 lbs = 1 kg

To Calculate mcg/kg/min to ml/hr from premixed medications:

$$\frac{(\text{mcg/kg/min}) \times (\text{weight in kg}) \times (60 \text{ min/hr})}{(1000 \text{ mcg/mg}) \times (\text{\#mg/ml medication})}$$

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Pediatric Rule of Nines

Child

| | | |
|----------------------|----|-----|
| Head (back & front) | | 12% |
| Chest & Abdomin | | 18% |
| Back | | 18% |
| Arms (back & front) | ea | 9% |
| Legs (back & front) | ea | 16% |
| Buttocks (each side) | | 2% |
| Genitals | | 1% |

Infant

| | | |
|----------------------|----|-----|
| Head (back & front) | | 18% |
| Chest & Abdomin | | 18% |
| Back | | 18% |
| Arms (back & front) | ea | 8% |
| Legs (back & front) | ea | 14% |
| Buttocks (each side) | | 2% |
| Genitals | | 1% |



Trauma Fluid Resuscitation

20ml/kg IV Bolus if systolic pressure below normal.



Defibrillation Guidelines

Defibrillation 2-4 joules/kg
Start with 2 joules/kg, then go to 4 joules/kg if no effect.

Synchronized Cardioversion 0.5 –1 joule/kg
Use with SVT, start with 0.5 joules/kg, then double if no effect.



Patient Reporting Guidelines

- Children's Medical Center asks that you call with report for all patients being transported to the emergency department.

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- Please report the following:
 - Squad Name
 - Age and Sex of Patient
 - Mechanism of injury
 - Injuries sustained
 - Vital signs
 - Treatment
 - Estimate Time of Arrival



Prehospital Medications

| <u>Drug</u> | <u>Dose</u> | <u>Route</u> | <u>Indications</u> | <u>Notes</u> |
|----------------------|-------------|--------------|--|-------------------------------------|
| Adenosine | 0.1 mg/kg | IV | SVT | Rapid push/rapid flush |
| Albuterol | 2.5 mg | Neb | Asthma, wheezing | |
| Atropine | 0.02 mg/kg | IV,IO,ET | Bradycardia | Max dose 2 mg; Min. Dose 0.1 mg |
| Atrovent | 0.5 mg | Neb | Asthma, wheezing | |
| Calcium Chloride 10% | 0.2 ml/kg | IV OD | Suspected OD calcium channel blockers | Max 500 |
| Diphenhydramine | | 1 mg/kg | IV,IM Allergic Reaction | max dose 50 mg |
| Dextrose 25% | 2 mg/kg | IV | Diabetic | children <25 kg |
| Dextrose 50% | 1 mg/kg | IV | Diabetic | children >25kg |
| Diazepam | 0.2 mg/kg | IV | Seizure | max dose 5 mg/ slow IV push |
| | 0.5 mg/kg | PR | Seizure | max dose 10 mg |
| Epinephrine 1:10,000 | 0.01 mg/kg | IV,IO | Bradycardia, arrest | may repeat every 3-5 min |
| Epinephrine 1:1,000 | 0.1 mg/kg | ET | Arrest | may repeat every 3-5 min |
| | 0.01 mg/kg | SUB-Q | Allergic reaction | max dose 0.3 mg |
| | | | respiratory distress | |
| Glucagon | 1 mg | IM | diabetic | |
| Lidocaine | 1 mg/kg | IV,IO,ET | arrest | |
| Morphine Sulfate | 0.1 mg/kg | IV | injury max dose 5 mg/ isolated injury only | |
| Naloxone | 0.1 mg/kg | IV,IO,ET | Altered LOC | 0.1 mg/Kg; Max of 2.0 mg |
| Sodium Bicarbonate | 1 mEq/kg | IV,IO OD | suspected OD tricyclic antidepressants | |
| Tetracaine | 2 gtts | TOP | eye irrigation | not to be use if penetrating injury |

Greater Miami Valley EMS Council & Ohio EMS Region 2

EMS CHECKLIST: SUSPECTED CARDIAC CHEST PAIN OR EQUIVALENTS

Patient Name _____ EMS Agency/Unit: _____

Date: _____ Run # _____ Time of Pain Onset: _____

(Y)es or (N)o

_____ 1. **HISTORY & PHYSICAL EXAM compatible with Acute MI?** Pain Scale (1-10): _____

_____ 2. **INITIAL THERAPY per Standing Orders?**
Oxygen, Aspirin, Nitro, IV, possibly Morphine. Check for Aspirin Allergy and Viagra use.
Monitor cardiac rhythm.

_____ 3. **12-LEAD EKG CHANGES compatible with Acute MI?**
Use 12-Lead liberally in women, diabetics, and the elderly. (N/A if no 12-Lead available.)

_____ 4. **TRANSPORT as rapidly as is possible and safe.**

_____ 5. **If patient has 12-Lead EKG evidence of Acute MI, follow destination considerations regarding transport to an Interventional Facility, especially if patient has contraindication to thrombolytics, pulmonary edema or signs of shock.**

Presently, those facilities include DHH, GSH, GvH, KMH, MVH, Springfield Mercy, & Springfield Community.

_____ 6. **CONTRAINDICATIONS: Circle any Contraindications to Thrombolytic Therapy (e.g., tPA) that your patient has:**

| Absolute and Relative Contraindications to Thrombolytic Therapy (Adapted from ACLS) | | |
|---|---|--|
| Time Frame | Absolute Contraindications | Relative Contraindications |
| Right Now | <input type="checkbox"/> Suspected aortic dissection <input type="checkbox"/> Known intracranial neoplasm <input type="checkbox"/> Pregnancy (certain lytic agents) | <input type="checkbox"/> Severe, uncontrolled hypertension (BP > 180/110) <input type="checkbox"/> Current anticoagulant use <input type="checkbox"/> Prolonged (> 10 minutes) and potentially traumatic CPR |
| Past 2 – 4 Weeks | <input type="checkbox"/> Active internal bleeding (except menses) | <input type="checkbox"/> Trauma, especially head trauma <input type="checkbox"/> Major surgery <input type="checkbox"/> Noncompressible vascular punctures <input type="checkbox"/> Internal bleeding |
| Past Year | <input type="checkbox"/> Non-hemorrhagic stroke or TIA <input type="checkbox"/> Prior exposure to specific lytic agent | <input type="checkbox"/> Intracerebral pathology |
| Ever | <input type="checkbox"/> Hemorrhagic stroke <input type="checkbox"/> Prior allergic reaction to streptokinase | <input type="checkbox"/> Known bleeding disorder |

_____ 7. **NOTIFY the hospital of the transport of all possible MI patients, with or without 12-Lead EKG.**

_____ a) Give verbal report.

_____ b) Include evaluation of EKG.

(Label copy of EKG Strip/12-Lead EKG with patient name, and leave at hospital.)

_____ c) Complete this Checklist

_____ 8. **If patient has 12-Lead EKG evidence of Acute MI, follow destination considerations regarding**

_____ a) Complete Cardiac Alert Checklist.

_____ b) Advise MCP ASAP that you are transporting a CARDIAC ALERT patient.

_____ c) Attempt to limit scene time to 10 minutes or less.

_____ d) Follow appropriate Treatment Considerations for Specific AMI types.

Greater Miami Valley EMS Council & Ohio EMS Region 2

PREHOSPITAL SUSPECTED CVA/TIA CHECKLIST

Patient Name _____ EMS Agency/Unit: _____

Date: _____ Run # _____ Time Onset of S/S: _____

(Y)es or (N)o

S/S: Unilateral weakness
Unilateral numbness
Facial Droop
Slurred speech
Inappropriate words

Exam: Facial droop
Arm drift
Abnormal speech

_____ 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 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)

_____ BEST VERBAL RESPONSE (1 – 5)

_____ BEST MOTOR RESPONSE (1 – 6)

_____ **Total GCS** (3 – 15)

_____ 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. Hyperventilate if signs of herniation.

_____ 5. **TRANSPORT WITHOUT DELAY to most appropriate hospital. NOTIFY hospital ASAP.**

Contact MCP for advice on transport to facility offering thrombolytics for stroke ***if*** you can arrive within **two hours** of onset of symptoms. Consider air transport for Stroke patients with long transport times.

_____ 6. **CONTRAINDICATIONS to Thrombolytic Therapy (e.g., tPA)?**

ABSOLUTE (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) Severe uncontrolled hypertension (>200/>120).

_____ g) Pregnancy.

_____ h) Seizure at time of onset of symptoms.

RELATIVE

_____ a) Abnormal blood glucose (< 60 or > 400 mg/dL).

_____ b) Recent major surgery or trauma (< 2 months).

_____ c) BP > 180/110.

_____ d) Active peptic ulcer or guaiac positive stools (GI or GU bleeding).

_____ e) Recent prolonged or traumatic CPR.

_____ f) Hx of CVA, or brain tumor/injury/surgery

_____ g) Current use of anticoagulants (e.g. Coumadin)

2004 PARAMEDIC DRUG INFORMATION

| | |
|--|-----------------|
| Adult Drugs - Indications, Dosages | Page 138 |
| Pediatric Drugs - Indications, Dosages | Page 148 |
| Therapeutic Actions, Contraindications, Precautions, Side Effects | Pages 154 - 160 |

2004 PARAMEDIC DRUG INFORMATION

| SPECIAL INFO. | DRUG NAME | INDICATION | DOSAGE (ADULT) | REQUIRES MCP |
|---|--|---|--|--|
| | Adenocard (Adenosine) | Stable PSVT & as a brief trial in unstable narrow complex tachycardia unless pt. is profoundly hypotensive or unconscious. No longer used even as a trial for Wide Complex tachycardias, as per ACLS. | 6 mg rapid IVP followed by up to 12 mg rapid IVP if not successful. Go directly to 12 mg. If pt w/ hx. of PSVT advises it takes 12 mg. | No |
| | Albuterol (Proventil) | Asthma/Emphysema/COPD | 2 puffs from Inhaler | No |
| New Drug | Amiodarone (Cordarone) | V Fib/Pulseless V Tach. Stable Wide Complex Tach & as a brief trial in Unstable Wide Complex Tach | <u>V Fib/Pulseless V Tach:</u> 300 mg. IVP. May repeat 1/2 initial dose (150 mg) in 5 - 10 min. <u>Wide Complex Tachycardia:</u> <u>IV Infusion - Add 150 mg. to 50 ml. Bag of D5W with Microdrip tubing wide open (over 10 min.)</u> | No |
| | Aspirin | Suspected Cardiac Chest Pain | 325 mg 4 chewable 81 mg tablets - MUST CHEW | No |
| New Drug Kit (Mark 1) To provide protection for public safety personnel who walk into a scene & become unexpectedly contaminated as well as for treatment of all affected patients at the scene | Atropine For Organophosphate or Nerve Gas Poisoning (Mark 1 Autoinjector, Item 1) to be followed with Item 2 - 2-PAM | Symptomatic Brady, Asystole, PEA with slow rate Organophosphate, or Nerve Gas Poisoning (regardless of cardiac rate). | <u>Bradycardia:</u> 0.5 mg IVP q 3 – 5 min for brady. <u>Asystole, PEA w/ brady:</u> 1 mg (0.01 mg/kg) IVP q 3 min, repeated up to 3 mg total dose <u>Organophosphate, or Nerve Gas Poisoning:</u> 1-2 mg. IVP or IM q 3 – 5 min. or Mark 1 Item 1, 2 mg. until lungs are clear to auscultation | Brady – No Organophosphate, Nerve Gas Poisoning - Yes |

2004 PARAMEDIC DRUG INFORMATION

| SPECIAL INFO. | DRUG NAME | INDICATION | DOSAGE (ADULT) | REQUIRES MCP |
|--|-------------------------------|---|---|--|
| | Atrovent | Bronchospasm in Asthma/COPD, Pulmonary Edema | 0.5 mg. combined w/ first dose of Proventil nebulized | No |
| | Benadryl (Diphenhydramine) | Allergic Reaction/Anaphylaxis: Wheezes Present In anaphylaxis pt. who goes into arrest if not already given. | <u>Anaphylaxis</u> 1 mg/kg (Max Dose 50 mg) slow IVP over 3 minutes | No |
| New drug (Replaces Ca. Gluconate) | Calcium Chloride 10% | Renal dialysis patient in cardiac arrest. Ca. Channel Blocker OD HF exposure with tetany or cardiac arrest | <u>Arrest & OD</u> 1000 mg.(10 ml) IVP <u>HF Exposure with tetany or cardiac arrest</u> Dosage as above IV | Arrest – No Ca. Channel Blocker OD – Yes HF exposure - Yes |
| | Cardizem | Stable Narrow Complex Tachycardia unresponsive to Adenocard. As a brief trial in unstable A Fib/A Flutter with rapid vent. response unless pt. is profoundly hypotensive or unconscious. | 0.25 mg/kg (average about 20 mg) slow IVP over 2 minutes. | No |
| | Ciprofloxacin (Cipro) | As prophylaxis against Anthrax, Cholera, or Plague. | 500 mg. tablet by mouth | Yes |

2004 PARAMEDIC DRUG INFORMATION

| SPECIAL INFO. | DRUG NAME | INDICATION | DOSAGE (ADULT) | REQUIRES MCP |
|---|--|---|--|--------------|
| Sodium Thiosulfate is no longer an optional drug, as it is being added to the Drug Bags. | Cyanide Kit: - Amyl Nitrite - Sodium Nitrite - Sodium Thiosulfate | Smoke Inhalation in unconscious pt. Known or strongly suspected Cyanide Poisoning | <u>Conscious pt w/ known or strongly suspected Cyanide Poisoning</u> Amyl Nitrite pearl - Break & inhale for 30 seconds out of each minute q 10 min. until Sodium Nitrite can be administered. Sodium Nitrite - 300 mg. (10 ml). 3% solution, slow IVP over 5 minutes. Sodium Thiosulfate - 50 ml. 25% solution (12.5 grams) slow IVP over 3 minutes immediately following Sodium Nitrite <u>Unconscious pt. w/ known or strongly suspected Cyanide Poisoning or smoke inhalation</u> Amyl Nitrite pearl - break & place 1 ampule into nebulizer. Attach to BVM & ventilate until Sodium Nitrite and Sodium Thiosulfate can be administered | Yes |
| | Dawn Soap | Decontamination of tenacious hazardous material on skin | Solution of Dawn soap & water | No |
| | Dextrose | Diabetic with mental status changes Evidence of hypoglycemia in cardiac arrest. Stroke, Generalized Hypothermia With or Without Arrest, Altered Level of Consciousness of Unknown Cause, or Seizures with BS<60, no BS monitor available, or strong suspicion of hypoglycemia despite BS reading | 50% solution, 25 gm IVP In Non Arrest Pt.: May repeat in 10 min. if pt. fails to respond or BS remains <60. | No |

2004 PARAMEDIC DRUG INFORMATION

| SPECIAL INFO. | DRUG NAME | INDICATION | DOSAGE (ADULT) | REQUIRES MCP |
|--|---|---|---|---|
| | Dopamine | Non Traumatic Shock With or Without Pulmonary Edema. Bradycardia w/ BP <100 | Dopamine Drip 2 – 20 mcg/kg/min of premix drip with 400 mg/250 ml. Start @5 mcg/kg/min (15 gtts/min) Titrate to keep BP >100 | No |
| | Doxycycline For members of department, members of area police, fire, & EMS Agencies, & members of their immediate families | As prophylaxis against Anthrax, cholera, & Plague | 500 mg tablet by mouth | Yes |
| | Epinephrine | V Fib, Pulseless V tach, Asystole, PEA Asthma in severe distress, anaphylaxis Allergic Reaction/Anaphylaxis who remains hypotensive after fluid bolus. Allergic Reaction/Anaphylaxis who goes into arrest. | <u>V fib & Pulseless V tach</u> : 10 – 15 min. after Vasopressin, same dose as for asystole <u>Asystole & PEA</u> : 1 mg of 1:10,000 IVP, or 2 mg using 1 mg of both 1:10,000 and 1:1000 ETT. Repeat q 3 min. <u>Asthma</u> : 0.3 mg of 1:1000 SC. May be repeated during transport <u>Allergic Reaction/Anaphylaxis – pt. remains hypotensive after fluid bolus</u> : 0.5 mg of 1:10,000 very slow IVP <u>Allergic Reaction/Anaphylaxis – pt. goes into arrest</u> : 3 mg. Of 1:10,000 rapid IVP | For arrest - No For repeat in asthma - Yes For anaphylaxis - No |
| | Epipen | Severe symptomatic allergic reaction | Autoinject | No |
| New use for drug for depts. doing Sedate to Intubate | Etomidate | To provide sedation prior to Sedate to Intubate procedure. | 0.3 mg/kg. IVP May repeat within 2 min if pt. resistant to intubation | No - Must be authorized by dept. Med. Dir. |
| | Furosemide (Lasix) | Pulmonary Edema with BP greater than 100 | 80 mg slow IVP over 1 min. | No |

2004 PARAMEDIC DRUG INFORMATION

| SPECIAL INFO. | DRUG NAME | INDICATION | DOSAGE (ADULT) | REQUIRES MCP |
|---|------------------|---|---|---|
| | Glucagon | Hypoglycemia if no IV access Calcium Channel Blocker or Beta Blocker Overdose Stroke, generalized hypothermia without arrest, altered level of consciousness of unknown cause, or seizures with BS<60, no BS monitor available, or strong suspicion of hypoglycemia despite BS reading if no IV access.. Allergic reaction/ Anaphylaxis unresponsive to Epinephrine. | <u>Hypoglycemia:</u> 1 mg IM <u>Ca. Channel Blocker or Beta Blocker Overdose:</u> 1 mg IVP/IM <u>Allergic reaction/Anaphylaxis unresponsive to Epinephrine:</u> 1-2 mg. IVP or IM | Hypo-glycemia: No Calcium Channel Blocker or Beta Blocker overdose: - Yes Allergic Reaction/ Anaphylaxis - No |
| | Lidocaine 2% Gel | Intubation on awake patient. | Apply to ETT | No |
| New use for drug for departments doing Sedate to Intubate | Lidocaine | V Fib, Pulseless V Tach, When V fib/Pulseless V Tach pt. converts to perfusing rhythm. Stable wide complex tachycardia – May give in place of Amiodarone if pt. allergic to Amiodarone or profoundly hypotensive. Intubation on awake patient Premedication for Sedate To Intubate for pt. with suspected stroke, intracranial hemorrhage, head injury or signs of increased ICP | <u>V fib/Pulseless V Tach:</u> 1.5 mg/kg IVP . Repeat bolus one-half initial dose (0.75 mg/kg) after 5 min. Conversion to perfusing rhythm: Lidocaine Drip @ 2-4 mg/min. For drips, use pre-mix 1 gm/250 ml. <u>Stable wide complex tachycardia:</u> 1.5 mg/kg IVP. <u>Intubation on awake patient:</u> 4 ml. 2% nebulized <u>Premedication for Sedate to Intubate</u> 100 mg. IVP for pt. with suspected stroke, intracranial hemorrhage, head injury or signs of increased ICP. | No |

2004 PARAMEDIC DRUG INFORMATION

| SPECIAL INFO. | DRUG NAME | INDICATION | DOSAGE (ADULT) | REQUIRES MCP |
|---------------|--|--|--|--------------|
| | Magnesium-containing antacid (Maalox or Mylanta) | Ingestion of Hydrofluoric Acid Hydrofluoric Acid on Skin | <u>Ingestion of HF Acid</u> Following dilution with water or milk, have pt. drink 3 - 4 oz. Maalox or Mylanta HF Acid on Skin: Following irrigation, apply topically to burned area unless industry has already applied topical agents. | No |
| | Magnesium Sulfate solution (Epsom salt) | Hydrofluoric Acid on skin | Following irrigation with water, use as additional irrigating solution for at least 30 minutes | No |
| | Morphine | Pulmonary Edema with CHF. Pain relief in AMI and other painful conditions. | 1st dose - Up to 5 mg slow IVP (2-3 minutes) based on patient's weight, provided SBP>100. Repeat Dose - May repeat up to 5 mg | No |
| | Narcan | Respirations depressed or high index of suspicion of narcotic overdose. If patient has a pulse, Narcan should be administered before intubating, as per ACLS. Suspicion of drug abuse in cardiac arrest | Up to 4 mg IVP varying rate according to patient severity. IM, SC, or ETT if IV unsuccessful. OR 2 mg intranasally using Mucosal Atomization device (MAD) -Administer 1 mg in each nostril. If no arousal occurs after 3 minutes, establish IV & administer IV dose. | No |

2004 PARAMEDIC DRUG INFORMATION

| SPECIAL INFO. | DRUG NAME | INDICATION | DOSAGE (ADULT) | REQUIRES MCP |
|-----------------------|--|---|--|--|
| | Nitrostat | Chest pain or pulmonary edema with BP over 100 in pt. who is at least 25 yrs old or has prescribed Nitro. | 0.4 mg SL q 5 min for continued chest pain up to a total of 3 tablets. <u>Exception:</u> 1 mm ST elevation in any 2 inferior leads – must contact Medical Control for repeat doses | No <u>Exception:</u> Repeat dose in pt. with 1 mm ST elevation in any 2 inferior leads. |
| | Phenergan (Promethazine) | For active vomiting under Abdominal Pain protocol | 12.5 mg. IVP over 30 sec. in continually running IV. Do not pinch tubing. | No |
| New Drug Kit (Mark 1) | Pralidoxime (2-PAM) (Mark 1 Autoinjector, Item 2) to be used following Atropine | To be used following Atropine in Organophosphate, or Nerve Gas Poisoning Both for protection of public safety personnel who walk into a scene & become unexpectedly contaminated as well as for treatment of civilian patients at the scene | 600 mg. IM | Yes |
| | Proventil | Bronchospasm in asthma/COPD, pulmonary edema with wheezing | 2.5 mg (3 ml.) with 8 - 10 liters/minute high flow oxygen by nebulizer. Combine Atrovent with first Proventil. Repeat Proventil x 3 May repeat continuously in pulmonary edema with pt. who show signs of benefit. | No |

2004 PARAMEDIC DRUG INFORMATION

| SPECIAL INFO. | DRUG NAME | INDICATION | DOSAGE (ADULT) | REQUIRES MCP |
|--------------------------|--------------------|---|---|---------------------------------------|
| | Sodium Bicarbonate | Renal dialysis pt. in Asystole or PEA cardiac arrest. Known tricyclic overdose | <u>Arrest in renal dialysis pt.:</u> 100 mEq IVP <u>Tricyclic antidepressant OD:</u> 1 mEq/Kg IVP May repeat dose of 0.5 mEq/kg for persistent prolonged QRS | Arrest - No Tricyclic OD - Yes |
| New Optional Drug | Sudecon Wipes | Pepper Spray | Use as needed to assist with decontamination | No |
| | Tetracaine | Prior to eye irrigation in Rx. of chemical injury to eye & in other situations with significant eye pain <u>without</u> possibility of penetrating trauma to eye. | 2 drops in each affected eye | No |
| | Valium | Seizures Violent pt. in whom Ethanol Withdrawal must be ruled out Recent Cocaine/Crack use with significant hypertension or hemodynamically significant tachycardia (HR>100 SBP <100) | 5 mg slow IVP over 2 minutes. May repeat dose once. If unable to start IV, consider Valium 10 mg. Rectally using syringe with needle removed. | No |
| | Vasopressin | V Fib, Pulseless V Tach Anaphylaxis pt. who goes into V Fib | 40 units IVP | No |

2004 PARAMEDIC DRUG INFORMATION

| SPECIAL INFO. | DRUG NAME | INDICATION | DOSAGE (ADULT) | REQUIRES MCP |
|---|-----------|---|--|---|
| New use for drug for departments doing Sedate To Intubate | Versed | <p>Conscious pt. requiring cardioversion. Conscious pt. requiring pacing. In Allergic Reaction/Anaphylaxis, before intubation of conscious patient</p> <p>For seizures during Valium Shortage, or for seizures if Departments carry the {Mucosal Atomizer Devices (MAD)}.</p> <p>After intubation in Sedate to Intubate, if pt. resisting and SBP >100. ONLY to be used by trained and approved paramedics whose Departments have adopted the Sedate to Intubate protocol.</p> | <p>2 – 4 mg IVP over 1 –2 minutes.</p> <p>If Valium unavailable, 2-4 mg slow IVP over 1 - 2 minutes.</p> <p>Versed 5.0 mg IM or 10 mg. intranasally using MAD.</p> <p>Administer 5 mg in each nostril. If seizure persists 5 minutes after treatment, consider repeating 1/2 dose either intranasally or IV.</p> <p>After intubation in Sedate to Intubate: 2-4 mg IVP over 1-2 minutes.</p> | <p>No</p> <p>Sedate to Intubate requires Medical Director's approval.</p> |

2004 PARAMEDIC DRUG INFORMATION

| SPECIAL INFO. | DRUG NAME | INDICATION | DOSAGE (PEDIATRIC) Maximum dose should not exceed adult dose. | REQUIRES MCP |
|---|---|---|--|--|
| | Adenocard (Adenosine) | Brief trial in unstable SVT unless pt. is profoundly hypotensive or unconscious, provided an IV is in place or can be implemented within one minute. | 0.1 mg/kg rapid IVP followed by 10 ml rapid saline flush. Maximum dose 6 mg. If unsuccessful, 0.2 mg/kg rapid IVP followed by rapid saline flush. Maximum dose 12 mg. | No |
| <u>New Drug</u> | Amiodarone (Cordarone) | <u>V Fib/Pulseless V Tach</u> | 5 mg/kg IV/IO May repeat 1/2 initial dose (2.5 mg/kg) in 5 - 10 min. if V Fib persists or reoccurs. Max dose 15 mg/kg. <u>Memory aid: same dose as Bretylium in old Sos.</u> | <u>No</u> |
| | Atropine <u>For Organophosphate or Nerve Gas Poisoning</u> <u>May use Atropine Autoinjector</u> | Symptomatic Brady if epinephrine is unsuccessful Premedicate awake pt. under 16 needing intubation. <u>Organophosphate or Nerve Gas Poisoning</u> | <u>Bradycardia following epinephrine:</u> 0.02 mg/kg IV/IO (minimum dose 0.1 mg) – may repeat once. (Alternated with Epinephrine) <u>Premedicate for intubation</u> 0.02 mg/kg Minimum 0.1 mg. Maximum - 1.0 mg. <u>Organophosphate or Nerve Gas Poisoning</u> < 40 lbs: 0.5 mg IVP/IO/IM or 0.5 mg Atropine Autoinjector > 40 lbs: 1.0 mg IVP/IO/IM or 1.0 mg Atropine Autoinjector. > 90 lbs: 2.0 mg IVP/IO/IM or 2.0 mg Atropine Autoinjector. | Brady & Pre-medication for Intubation - No Organophosphate or Nerve Gas Poisoning - Yes |
| | Atrovent | Lower Airway Obstruction/Wheezing | 0.5 mg. combined w/ first dose of Proventil nebulized. | No |
| | Benadryl (Diphenhydramine) | Allergic Reaction/Anaphylaxis: Wheezes Present | 1 mg/kg IVP (or IM) enroute. Maximum 50 mg. | No |
| New drug Replaces Ca. gluconate | Calcium Chloride 10% | Known Ca. Channel Blocker OD w/ hypotension or other serious symptoms. Renal Dialysis Pt. in cardiac arrest | 0.2 ml/kg (20mg/kg) IVP Max. dose 500 mg. | Ca. Channel Blocker- Yes Renal Dialysis Pt. in Cardiac Arrest -No |

2004 PARAMEDIC DRUG INFORMATION

| SPECIAL INFO. | DRUG NAME | INDICATION | DOSAGE (PEDIATRIC) Maximum dose should not exceed adult dose. | REQUIRES MCP |
|---------------|--|---|--|--------------|
| | Cyanide Kit: Amyl Nitrite Sodium Nitrite Sodium Thiosulfate | Smoke Inhalation in unconscious pt. Known or strongly suspected Cyanide Poisoning | <u>Conscious pt w/ known or strongly suspected Cyanide Poisoning</u> Amyl Nitrite pearl - Break & inhale for 15 seconds out of each minute until Sodium Nitrite can be administered. Sodium Nitrite –Do not administer in the field unless lab values are available. Sodium Thiosulfate - 1.65 ml/kg of the 25% solution very slow IVP over 3 minutes, not to exceed 12.5 grams. <u>Unconscious pt. w/ known or strongly suspected Cyanide Poisoning or smoke inhalation:</u> Amyl Nitrite pearl - break & place 1 ampule into nebulizer. Attach to BVM & ventilate until IV available. Administer Sodium Nitrite & Sodium Thiosulfate as stated above. | Yes |
| | Dawn Soap | Decontamination of tenacious hazardous material on skin | Solution of Dawn soap & water | No |
| | Dextrose | Diabetic Emergency, Altered LOC, or Seizures with BS <60 in diabetic emergency. No blood sugar monitor available or strong suspicion of hypoglycemia despite BS reading Altered LOC, Generalized hypothermia with or without arrest. Cardiac arrest if hypoglycemia suspected. Neonate w/ BS < 40 | <u>Children under 25 kg. - 2 ml/kg 25% Dextrose or 1 ml/kg of 50% Dextrose diluted with equal volume of saline IVP .</u> May repeat in 10 min. if pt. fails to respond or BS remains < 60. <u>Children over 25 kg. - 1 ml/kg 50% Dextrose IVP – May repeat as stated above.</u> <u>Infants < 1 yr. - 2 ml/kg 25% Dextrose diluted with equal volume of saline IVP. If dilution is not feasible and straight D25 is used, it must be given very slowly (minimum 1 - 2 min.)</u> <u>Neonate - 12.5 % Dextrose 1 ml/kg of D25 .diluted with equal amounts of saline IVP</u> | No |

2004 PARAMEDIC DRUG INFORMATION

| SPECIAL INFO. | DRUG NAME | INDICATION | DOSAGE (PEDIATRIC) Maximum dose should not exceed adult dose. | REQUIRES MCP |
|---------------|-------------|--|---|---|
| | Epinephrine | <p>Bradycardia, V fib/Pulseless V tach, Asystole/PEA</p> <p>Neonate in asystole or spontaneous heart rate less than 60 bpm despite adequate ventilation & stimulation.</p> <p>Lower Airway Obstruction/Wheezing After 1st Proventil/Atrovent Aerosol & Pt. remains in respiratory distress.</p> <p>Allergic Reaction/Anaphylaxis: Wheezes Present</p> | <p><u>Bradycardia w/ poor perfusion</u> 0.01mg/kg (0.1 ml/kg) 1:10,000 IV/IO. May repeat 0.1 ml/kg 1:1,000 with 1 - 2 cc Saline q 3 – 5 min. (Alternated with Atropine)</p> <p><u>Arrest:</u> First dose IV/IO – 0.01 mg/kg (0.1 ml/kg) 1:10,000. May repeat q 3 - 5 min. First dose ETT dose – 0.1 mg/kg (0.1 ml/kg) 1:1,000 w/ 1 –2 ml saline. May repeat q 3 - 5 min..</p> <p><u>Neonate</u> 0.02 mg/kg (0.2 ml/kg) 1:10,000 IV/IO/ETT Repeat q 3 – 5 min if no response.</p> <p><u>Lower Airway Obstruction/Wheezing After 1st Proventil/Atrovent Aerosol & Pt. remains in Respiratory Distress</u> 0.01mg/kg (0.01 ml/kg) 1:1,000 SQ (Maximum dose 0.3mg (0.3 ml)</p> <p><u>Allergic Reaction/Anaphylaxis:</u> Same dose as above in lower airway obstruction. if pt. has not received Epipen or it has been 20 minutes since last dose. May repeat enroute</p> | <p>For arrest - No</p> <p>For lower airway obstruction/ Wheezing & for repeat dose in allergic reaction – Yes</p> |
| | Epipen | Severe symptomatic allergic reaction | <p><u>Children < 30 kg (<66 lbs)</u> Epipen Jr. 0.15 mg Autoinject</p> <p><u>Children >30 kg (>66 lbs)</u> Epipen 0.3 mg</p> | No |

2004 PARAMEDIC DRUG INFORMATION

| SPECIAL INFO. | DRUG NAME | INDICATION | DOSAGE (PEDIATRIC) Maximum dose should not exceed adult dose. | REQUIRES MCP |
|---------------|------------------|---|--|--|
| | Glucagon | Diabetic Emergency ,Altered LOC , or Seizures with BS <60 No blood sugar monitor available or strong suspicion of hypoglycemia despite BS reading & unable to obtain IV Known Ca. Channel Blocker/Beta Blocker OD. Hypoglycemia Without Arrest & unable to start IV | 1mg. IM | Hypo-glycemia: no Calcium Channel Blocker or Beta Blocker overdose: - Yes |
| | Lidocaine 2% Gel | Intubation on awake patient. | Apply to ETT | No |
| | Lidocaine | V fib, Pulseless V Tach, After cardioversion of wide complex tachycardia Unstable wide complex tachycardia – May give brief trial of medication unless pt. is profoundly hypotensive or unconscious. Intubation on awake patient | <u>V fib/Pulseless V Tach:</u> 1.0 mg/kg IVP. Repeat once. <u>.After cardioversion of wide complex tachycardia</u> 1 mg/kg IVP <u>Unstable wide complex tachycardia:</u> Brief trial: 1.0 mg/kg IVP. <u>Intubation on awake patient:</u> 4 mg/kg. 2% nebulized w/ 8 – 12 liters oxygen. Max. dose: 80 mg (4 ml) | No |
| | Morphine | Pain relief in trauma, local hypothermia, burns | 0.1 mg/kg slow IVP over 2 – 3 minutes. May repeat. Maximum Total dose – 10 mg. Pt. must be 2 yrs. old or older | Repeat - Yes |

2004 PARAMEDIC DRUG INFORMATION

| SPECIAL INFO. | DRUG NAME | INDICATION | DOSAGE (PEDIATRIC) Maximum dose should not exceed adult dose. | REQUIRES MCP |
|--|---------------------|--|---|--|
| | Narcan | Poisoning/Overdose, Altered LOC - Unknown Cause with respirations impaired, or pt. doesn't respond to Dextrose or fluid bolus or Hx. of ingestion of narcotic. Suspicion of drug abuse in cardiac arrest Neonate w/ resp. depression & narcotic OD is suspected. | <u>Patient under 5</u> 0.1 mg/kg IV/IO/ETT up to 2 mg. Max Dose For Narcotic Injection, may also use sublingual route. May repeat dose if pt. improves somewhat with Narcan but is not fully awake. <u>Patient greater than 20 kg.</u> 2 mg IV/IO/ETT <u>Neonate</u> 0.1 mg/kg IV/IO/ETT q 3 min. until respirations improve. | No |
| | Proventil | Lower Airway Obstruction/Wheezing Allergic Reaction/Anaphylaxis if wheezing develops. | <u>Lower Airway Obs./Wheezing</u> 2.5 mg (3 ml.) with 8 liters/minute high flow oxygen nebulized.. Combine Atrovent with first Proventil. <u>If wheezing continues :</u> May repeat Proventil aerosol x 3. <u>Allergic Reaction/Anaphylaxis w/ Wheezing</u> Same dose as above | No |
| New use for existing drug in pediatric orders. | Sodium Bicarbonate. | Renal dialysis Pt. in Cardiac Arrest. Known tricyclic overdose w/ persistent QRS prolongation. | 1 mEq/kg IVP | Arrest - No Tricyclic Antidepressant OD - Yes |
| New Optional Drug | Sudecon Wipes | Pepper Spray | Use as needed to assist with decontamination | No |
| | Tetracaine | Prior to eye irrigation in Rx. of chemical injury to eye & in other situations with significant eye pain <u>without</u> possibility of penetrating trauma to eye. | 2 drops in each affected eye | No |

2004 PARAMEDIC DRUG INFORMATION

| SPECIAL INFO. | DRUG NAME | INDICATION | DOSAGE (PEDIATRIC) Maximum dose should not exceed adult dose. | REQUIRES MCP |
|---------------|-----------|--|--|--|
| | Valium | Seizures – Pt. actively convulsing. Violent pt in whom Ethanol Withdrawal must be ruled out. | 0.2 mg/kg IVP slowly (1 mg/min) Maximum dose 5 mg. OR 0.5 mg/kg rectally. Maximum dose 10 mg. Use TB syringe, draw up dose, remove. needle, lubricate syringe, insert 1 – 2 inches into rectum & instill Valium | Initial dose - No Repeat dose - No |
| | Versed | Unstable pt.. requiring cardioversion. Stable pt. requiring cardioversion Conscious pt. requiring pacing Seizures during Valium shortage. | 0.1 mg/kg IVP/IO over 1-2 min.. Max 4 mg. I <u>Seizures during Valium Shortage</u> 0.1 mg/kg slow IV push over 1-2 minutes. If seizure continues, call medical control for repeat dose. If IV unsuccessful, give Versed 0.1 mg/kg IM. Maximum dose not to exceed 4 mg. | Conscious Pt. needing cardioversion - No For Seizure Initial Dose - No Repeat Dose - Yes |

2004 PARAMEDIC DRUG INFORMATION

| DRUG | THERAPEUTIC ACTION | CONTRAINDICATION | PRECAUTIONS/ SIDE EFFECTS |
|---------------------------|---|---|---|
| Adenosine (Adenocard) | Decreases electrical conduction through the AV node without causing negative inotropic effects. Acts directly on SA node to decrease chronotropic activity. | Second or third degree AV block, or sick sinus syndrome. Hypersensitivity to adenosine, atrial flutter, atrial fibrillation, ventricular tachycardia. | Lightheadedness, paresthesias, headache, diaphoresis, palpitations, chest pain, hypotension, shortness of breath, transient periods of sinus bradycardia, sinus pause, or bradysystole, ventricular ectopy, nausea, metallic taste. May produce bronchoconstriction in patients with asthma and in patients with bronchopulmonary disease. |
| Albuterol (Proventil) | Bronchodilator | Prior hypersensitivity reaction to albuterol, cardiac dysrhythmias associated with tachycardia | Usually dose related, restlessness, apprehension, dizziness, palpitations, tachycardia, dysrhythmias. May precipitate angina pectoris and dysrhythmias |
| Amiodarone (Cordarone) | Antidysrhythmic agent with multiple mechanisms of action. | Pulmonary congestion, cardiogenic shock, hypotension, sensitivity to amiodarone. | Hypotension, headache, dizziness, bradycardia, AV conduction abnormalities, flushing, abnormal salivation. Continuous ECG monitoring is required. |
| Aspirin | Antiplatelet | Hypersensitivity to salicylates, GI bleeding, active ulcer disease, hemorrhagic stroke, bleeding disorders, children with flu-like symptoms | Stomach irritation, heartburn or indigestion, nausea or vomiting, allergic reaction Should be given as soon as possible to the patient with AMI |

2004 PARAMEDIC DRUG INFORMATION

| DRUG | THERAPEUTIC ACTION | CONTRAINDICATION | PRECAUTIONS/ SIDE EFFECTS |
|-----------------------------------|--|--|--|
| Atropine Sulfate (Atropine) | Anticholinergic | Tachycardia, hypersensitivity to atropine, obstructive disease of GI tract, obstructive uropathy, unstable cardiovascular status in acute hemorrhage with myocardial ischemia, narrow angle glaucoma, thyrotoxicosis | 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 and vomiting, flushed, hot, dry skin, allergic reactions. Atropine causes pupillary dilation rendering the pupils nonreactive. Pupil response may not be useful in monitoring CNS status. |
| Atrovent (Ipratropium Bromide) | Causes bronchodilation by anticholinergic effect. | Hypersensitivity to atropine, ipratropium, or derivatives; | Use w/ caution in pts. w/ narrow-angle glaucoma, prostatic hypertrophy, or bladder neck obstruction, & during lactation. |
| Calcium Chloride 10% | Antagonizes cardiac toxicity in hyperkalemia assoc. w/ dialysis pts. Reverses symptoms of Ca. Channel Blocker. | VF during cardiac resuscitation, in patients with digitalis toxicity, hypercalcemia, renal or cardiac disease. | 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. |

2004 PARAMEDIC DRUG INFORMATION

| DRUG | THERAPEUTIC ACTION | CONTRAINDICATION | PRECAUTIONS/ SIDE EFFECTS |
|-------------------------------|--|--|---|
| Dextrose | Principal form of carbohydrate utilized by the body | Intracranial hemorrhage, increased intracranial pressure, known or suspected CVA in the absence of hypoglycemia | Warmth, pain, burning from medication infusion, hyperglycemia, thrombophlebitis Extravasation may cause tissue necrosis; use large vein and aspirate occasionally to ensure route patency. May precipitate severe neurologic symptoms in thiamine deficient patients. |
| Diazepam (Valium) | Treats alcohol withdrawal and grand mal seizure activity. Used to treat anxiety & stress. | 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 | Hypotension, reflex tachycardia (rare), respiratory depression, ataxia, psychomotor impairment, confusion, nausea. May cause local venous irritation. |
| Diltiazem (Cardizem) | Stable narrow complex tachycardia unresponsive to Adenocard. As a brief trial in unstable A Fib/A. Flutter with rapid vent. response unless pt. is profoundly hypotensive or unconscious | Sick sinus syndrome, second or third degree AV block (except with a functioning pacemaker), hypotension (less than 90 mmHg), cardiogenic shock, hypersensitivity to diltiazem, atrial fib or atrial flutter associated with WPW syndrome or a short PR syndrome, concomitant use of IV beta blockers, ventricular tachycardia, wide complex tachycardia of unknown origin, AMI | Atrial flutter, first and second degree AV block, bradycardia, hypotension, chest pain, congestive heart failure, peripheral edema, syncope, ventricular dysrhythmias, sweating, nausea and vomiting, dizziness, dry mouth, dyspnea, headache. Use with caution in patients with impaired renal or hepatic function. Hypotension may occasionally result (carefully monitor vital signs) |
| Diphenhydramine (Benadryl) | Prevents the physiologic actions of histamine by blocking histamine receptors. | Patients taking monoamine oxidase (MAO) inhibitors, hypersensitivity, narrow angle glaucoma (relative), newborns and nursing mothers. | 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. |

2004 PARAMEDIC DRUG INFORMATION

| DRUG | THERAPEUTIC ACTION | CONTRAINDICATION | PRECAUTIONS/ SIDE EFFECTS |
|----------------------------|---|---|---|
| Dopamine (Intropin) | Acts on alpha, beta, & dopaminergic receptors in dose-dependent fashion. Increases cardiac output.in higher doses. | Tachydysrhythmias, ventricular fib, patients with pheochromocytoma | Dose related tachydysrhythmias, hypertension, increased myocardial oxygen demand (ischemia) Infuse through large stable vein to avoid the possibility of extravasation injury. Correct hypovolemia prior to using dopamine in hypotensive patients. |
| Epinephrine (Adrenalin) | Directly stimulates alpha and beta adrenergic receptors in dose-related fashion. Causes bronchodilation , vasoconstriction, and increased cardiac output. | Hypersensitivity (not an issue especially in emergencies - the dose should be lowered or given slowly in noncardiac arrest patients with heart disease), hypovolemic shock (as with other catecholamines, correct hypovolemia prior to use), coronary insufficiency (use with caution) | Headache, nausea, restlessness, weakness, dysrhythmias, including ventricular tachycardia and ventricular fib., hypertension, precipitation of angina pectoris, tachycardia. May increase myocardial oxygen demand. Syncope has occurred following epinephrine administration to asthmatic children. |
| Epi-Pen | Causes bronchodilation | Same as Epinephrine | Same as Epinephrine at low doses. |
| Furosemide (Lasix) | Diuretic. Reduces cardiac preload by increasing venous capacitance. | Anuria, hypersensitivity, hypovolemia/dehydration, known hypersensitivity to sulfonamides, severe electrolyte depletion (hypokalemia) | Hypotension, ECG changes associated with electrolyte disturbances, dry mouth, hypochloremia, hypokalemia, hyponatremia, hypercalcemia, hyperglycemia, hearing loss can rarely occur after too rapid infusion of large doses especially in patients with renal impairment. |

2004 PARAMEDIC DRUG INFORMATION

| DRUG | THERAPEUTIC ACTION | CONTRAINDICATION | PRECAUTIONS/ SIDE EFFECTS |
|---|--|---|--|
| Glucagon | Increases breakdown of glycogen to glucose and stimulates glucose synthesis thereby raising blood sugar. | Hypersensitivity (allergy to proteins) | Tachycardia, hypotension, nausea and vomiting, urticaria Should not be considered a first line choice for hypoglycemia. |
| Lidocaine Gel or nebulized 2% Lidocaine | Suppresses stimulation of the upper airway (activation of swallowing, gagging, or coughing) that can cause cardiovascular stimulation & elevation in intracranial pressure | Hypersensitivity | |
| Lidocaine | Decreases automaticity | Hypersensitivity, Adams-Stokes syndrome, second or third degree heart block in the absence of an artificial pacemaker | 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. |
| Midazolam Hydrochloride (Versed) | Provides sedation. | Hypersensitivity to benzodiazepines. Acute narrow-angle glaucoma. Do not use in obstetrics, coma, shock, or acute alcohol intoxication where vital signs are depressed. | Use with caution during lactation. Geriatric & debilitated pts. require lower doses & are more prone to side effects. Provide continuous monitoring of respiratory and cardiac function. Have resuscitation equipment and medication readily at hand. |

2004 PARAMEDIC DRUG INFORMATION

| DRUG | THERAPEUTIC ACTION | CONTRAINDICATION | PRECAUTIONS/ SIDE EFFECTS |
|---------------------------|--|--|---|
| Morphine Sulfate | Provides analgesia. Reduces cardiac preload by ncreasing venous capacitance and decreases afterload. | Hypersensitivity to narcotics, hypovolemia, hypotension, head injury or undiagnosed abdominal pain, increased ICP, severe respiratory depression, patients who have taken MAO inhibitors within 14 days. | Hypotension, tachcardia, 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). |
| Naloxone (Narcan) | A competitive narcotic antagonist. | Hypersensitivity, use with caution in narcotic-dependent patients who may experience withdrawal syndrome (including neonates of narcotic-dependent mothers) | Tachycardia, hypertension, dysrhythmias, nausea and vomiting, diaphoresis, blurred vision, withdrawal (opiate) May not reverse hypotension. Caution should be exercised when administering to narcotic addicts (may precipitate withdrawal with hypertension, tachycardia, and violent behavior). |
| Nitroglycerin (Nitrostat) | Vasodilator which decreases preload and to a lesser extent, afterload. | Hypersensitivity, hypotension, head injury, cerebral hemorrhage | Transient headache, reflex tachycardia, hypotension, nausea and vomiting, postural syncope, diaphoresis |

2004 PARAMEDIC DRUG INFORMATION

| DRUG | THERAPEUTIC ACTION | CONTRAINDICATION | PRECAUTIONS/ SIDE EFFECTS |
|--------------------------------------|--|--|--|
| Phenergan (Promethazine) | Antiemetic | Hypersensitivity, comatose states, CNS depression from alcohol, barbiturates, or narcotics, signs associated with Reye's syndrome | Sedation, dizziness, may impair mental and physical ability, allergic reactions, dysrhythmias, nausea and vomiting, hyperexcitability, dystonias. Use in children may cause hallucinations, convulsions, and sudden death. Use caution in patients with asthma, peptic ulcer, and bone marrow depression. Administer in running IV rather than pinching off. |
| Pralidoxime (2-PAM) In Mark I Kit | Reactivates cholinesterase after poisoning with anticholinesterase agents. (organophosphates or nerve gas) Reverses muscle paralysis after organophosphate poisoning. | Hypersensitivity. | Use with caution in myasthenia gravis, renal impairment, pregnancy, lactation, or children. |
| Sodium Bicarbonate | Buffers metabolic acidosis | In patients with chloride loss from vomiting, metabolic and respiratory alkalosis, severe pulmonary edema, abdominal pain of unknown origin, hypocalcemia, hypokalemia, hypernatremia. | Metabolic alkalosis, hypoxia, rise in intracellular PCO ₂ and increased tissue acidosis, electrolyte imbalance (hypernatremia), seizures, tissue sloughing at injection site. |
| Tetracaine | Provides rapid, brief, superficial anesthesia by inhibiting conduction of nerve impulses from sensory nerves. | Hypersensitivity to tetracaine. Open injury to the eye. | May cause burning or stinging sensation or irritation. Can cause epithelial damage & systemic toxicity. Incompatible w/ mercury or silver salts often found in ophthalmic products. |
| Vasopressin | Potent peripheral vasoconstrictor. May be used as an alternative pressor to epinephrine in the treatment of adult shock-refractory VF. | Not recommended for responsive patients with coronary artery disease. | May produce cardiac ischemia and angina. |

Avulsed Teeth

If the patient's injury involves a single tooth, you may attempt to reimplant it. Simply rinse or brush any obvious dirt off, and gently push it back into the socket. Do not wipe the tooth with any pressure.

Any tooth that you do not reimplant should be transported in a saline or milk solution to the hospital.

Bring all avulsed teeth, as well as any dental appliances (dentures, retainers, etc.) to the hospital. Notify the triage nurse immediately upon your arrival of the potential for reimplantation of a tooth or teeth.

2004 PARAMEDIC PRETEST

1. When there is a drug box discrepancy, which of the following actions should the EMS provider who encounters the discrepancy do?
 - a. Contact the hospital EMS Coordinator of the hospital in which the bag originated.
 - b. Log the ALS/BLS bag into the ED using the Drug Box check-in form.
 - c. Contact the State Pharmacy Office of the nature of the discrepancy.
 - d. Turn in the blue seal with hospital sticker that was attached to the drug bag in question, along with a written description of the problem noted to his/her EMS Officer.
 - e. Send a statement of what occurred to the GMVEMSC
2. Which of the following actions should the EMS provider do to a used drug bag before turning it in to the hospital?
 - a. Place red seals on both compartment used and outside of bag.
 - b. Place red seals on only the compartment used
 - c. Place red seals on only the outside of bag.
 - d. Place blue seals on both compartment used and outside of bag.
 - e. Place blue seals on only the compartment used
 - f. Place blue seals on only the outside of bag.
3. When administering oxygen by nonrebreather mask to a patient who appears in need of high flow oxygen, set the flow rate at _____ L/min.
4. How/Why do the following factors limit the use of the colorimetric CO₂ detection device (Nellcor Easy Cap)?
 - Perfusion -
 - Emesis -
 - Carbonated beverage -
5. List causes for false positive or false negative readings when using the Esophageal Detector Device (EDD)
6. FROPVD stands for:
7. When preparing to administer Amiodarone, how do you handle the ampule and what size needle do you use to draw up? Why?
8. How does the administration of Amiodarone differ between patient in V Fib/Pulseless V Tach and the patient in Wide Complex Tachycardia with a perfusing pulse?
9. List an exception to NOT beginning resuscitation on a victim of blunt trauma found in arrest who cannot be delivered to the Emergency Department within 5 minutes of the time patient is found to be in arrest..
10. What is the difference in care for the nonarrest patient between one who has a DNR Comfort Care form and one who has a DNR Comfort Care-Arrest form.

2004 Paramedic Pretest

11. Which of the following drugs can cause hypotension as a side effect?

| | |
|------------------|------------------|
| Adenosine | Furosemide |
| Amiodarone | Glucagon |
| Calcium Chloride | Lidocaine |
| Diazepam | Morphine Sulfate |
| Diltiazem | Nitroglycerin |
| Diphenhydramine | Vasopressin |

12. List the four pieces of information that should be documented on the run report after using an external pacer.

- a.
- b.
- c.
- d.

13. Regarding an External Pacer:

What indicates mechanical capture when using an external pacer?

What indicates electrical capture?

14. List the two drugs contained in the Mark I Kit .

15. Identify the type(s) of patient (s) in which the Dual Lumen Airway and LMA may be used.

16. When dealing with a Major Trauma patient, you are to contact the receiving hospital and provide Medical Control with "MIVT" (and ETA).. The letters MIVT stand for:

M _____
I _____
V _____
T _____

17. The only procedures that should take precedence to transport of Major Trauma patients are remembered by the mnemonic "EASE". Those letters stand for:

E _____
A _____
S _____
E _____

18. Of the following contraindications, which are absolute contraindications to the use of thrombolytics::

Suspected aortic dissection
Severe, uncontrolled hypertension
Pregnancy (only for streptokinase and anistreplase)
Current anticoagulant use
Known intracranial neoplasm

2004 Paramedic Pretest

19. List 5 contraindications to the use of Versed (Midazolam).
 - a.
 - b.
 - c.
 - d.
 - e.
20. Assuming you have a patient with Hydrofluoric Acid burns, what drugs should be used.
21. Assume there is a Valium shortage and you are going to administer Versed 2-4 mg IVP over 1-2 minutes. The concentration in your drug bag is 10 mg/2 ml (concentration of 5 mg/ml). Which of the following volumes would contain the correct amount of Versed (there is more than one correct answer)?
 - a. 0.4 ml of drug
 - b. 0.5 ml of drug
 - c. 0.8 ml of drug
 - d. 1 ml of drug
 - e. 2 ml of drug
22. In the evaluation of chest pain patients, how should the pain be categorized?
23. In what percentage of patients is it estimated that the Spinal Injury Clearance Algorithm will permit avoidance of spinal immobilization?
24. How does the BAAM device provide confirmation of tube placement?
25. List three drugs that require medical control approval to administer.
 - a.
 - b.
 - c.
26. In what situation (s) is pulse oximetry contraindicated or may be inaccurate?
27. Why is hyperventilation reserved for patient with signs of herniation?
 - a. Hyperventilation causes cerebral arteries to constrict and can cause hypoxia of brain tissue.
 - b. Decreasing the CO₂ level will dilate the cerebral arteries and improve perfusion.
 - c. Neither of the above.
28. List two criteria for doing needle chest decompression.
 - a.
 - b.
29. In the pediatric patient, what are the age and/or weight limits for use of the EDD?
30. At what rate and milliamp setting should you begin when using an external pacer on a pediatric patient?
31. List the two most reliable indicators of shock in a child..

2004 Paramedic Pretest

32. What is the minimum weight for the pediatric patient to receive 50% Dextrose as opposed to 25%.
33. What age/weight restrictions are there for using an AED (not one with pediatric capabilities) on a pediatric patient?
34. What are the tachycardia rates for infants and for children under the age of 8?
35. In a child less than 8 years of age with poor perfusion, below what heart rate should CPR be begun?
36. In START Triage, what does the mnemonic RPM stand for?
R _____
P _____
M _____
37. If patient condition warrants, where should the **Hypothermia** patient be transported and where should the patient with severe **Frostbite** be transported?
38. What two signs will pneumonia patients often have that will differentiate them from a CHF patient with pulmonary edema? Why is it important to differentiate?
39. When dealing with a neonate in which you suspect meconium aspiration,, what criteria do you use to make the decision to suction the trachea before taking other resuscitative steps?
40. In the GMVEMSC Drug Box Exchange Program, what three drugs are listed in the Wasted Drug Procedure section because they are scheduled drugs?
41. If one of the scheduled drugs is drawn up in a syringe and only partially used, what does the paramedic do with the syringe and contents?
 - a. How must syringe be marked and by whom?
 - b. What options are there for the syringe with unused portion when paramedic gets to hospital.
42. To insure wasted drug is properly accounted for, paramedics will document the following four items:
 - a.
 - b.
 - c.
 - d.

2004 Paramedic Pretest

43 - 50. Match the following drugs with the correct dose. Use each answer only once.

- | | | |
|--|-----|--|
| 43. Amiodarone for V Fib/Pulseless V Tach | ___ | a. 0,5 mg IVP |
| 44. Amiodarone for Wide Complex Tach. | ___ | b. 1000 mg. IVP |
| 45. Atropine for Bradycardia (first 2 doses) | ___ | c. 1 mg. IM |
| 46. Atropine for Organophosphate Poisoning | ___ | d. 300 mg. IVP |
| 47. Calcium Chloride | ___ | e. 1 - 2 mg. IVP or IM |
| 48. Glucagon for Hypoglycemia | ___ | f. 2 - 4 mg. IVP over 1 - min. |
| 49. Phenergan | ___ | g. 150 mg in 50 ml. D5W over 10 min. |
| 50. Versed | ___ | h. 12.5 mg. IVP over 30 sec. in running IV |

GREATER MIAMI VALLEY EMS COUNCIL

YEAR 2004 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 Megacode - Separate Paramedic Megacode sheets used for testing.

Medications (verbal)

Manual External Defibrillator

Orotracheal Intubation of Nontrauma Patient 167

Automated External Defibrillator 168

Pediatric Megacode - Separate Paramedic Megacode sheets used for testing.

Use of Braslow Tape (cover in Megacode)

Orotracheal Intubation 169

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IV and Medications

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Trauma

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Nasotracheal Intubation 178

Needle Cricothyrotomy 179

Chest Decompression 180

ADULT PROTOCOL SKILL EVALUATION
SUBJECT: Orotacheal Intubation of the Non-Trauma Patient

NAME _____ DATE _____

LEVEL: _____ Paramedic _____ Intermediate _____ Basic

| STEPS | 1st Testing Comments | 2nd Testing Comments |
|---|----------------------|----------------------|
| 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. Position the head. | | |
| G. Demonstrate the performance of cricoid pressure. | | |
| H. Assemble equipment. | | |
| I. Insert Laryngoscope. | | |
| J. Elevate the mandible. | | |
| K. Insert the ET tube. | | |
| L. Remove the stylet. | | |
| M. Inflate the cuff with 5 to 10 ml. of air. | | |
| N. Ventilate the patient. | | |
| O. Confirm tube placement, using the End Tidal CO ₂ Detector for patients with a perfusing rhythm, or the Esophageal Detection Device for patients in cardiac arrest. Be able to discuss the indications and limitations of each device. | | |
| a. *NOTE: EDDs will fill more slowly in humans than in manikins | | |
| b. Compress EDD first, then place it on the ETT before ventilating pt. | | |
| c. If bulb fills in <5 seconds, ETT is likely successful | | |
| d. If bulb fails to fill, or takes >5 seconds, or fills with vomit, esophageal placement is probable. | | |
| e. Contraindicated in pregnancy, or children under 5 yoa or 20 kg. | | |
| P. Confirm tube placement with at least 3 other methods of verification. | | |
| Q. Secure tube in place & reassess placement after any movement of patient. | | |

EQUIPMENT

- | | | |
|----------------------------------|----------------------|--|
| 1. Proper size Endotracheal tube | 4. Magill forceps | 7. Stethoscope |
| 2. Stylet | 5. 10 ml. syringe | 8. Gloves & Eye protection |
| 3. Laryngoscope and handle | 6. Suction equipment | 9. Commercial tube holder or proper taping method. |

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: Automated External Defibrillators

NAME _____ DATE _____

LEVEL: ____ Paramedic ____ Intermediate ____ Basic ____ First Responder

| STEPS | 1st Testing Comments | 2nd Testing Comments |
|--|-------------------------|-------------------------|
| A. Perform an initial assessment of the patient. | | |
| B. Begin CPR with 100% oxygen if AED delayed. | | |
| a. If witnessed arrest and no defibrillator available, precordial thump. | | |
| b. CPR continuously until AED is attached to patient. | | |
| C. Turn on the AED. | | |
| D. Place the defibrillator pads onto the patient. | | |
| E. Stop CPR. Allow AED to analyze rhythm. | | |
| F. If shock is advised, clear all personnel from around the patient. | | |
| G. Deliver up to three (3) shocks if indicated. | | |
| H. Resume CPR if no response to the shocks. | | |
| I. Repeat steps E, F and G in one minute if needed. | | |

PEDIATRIC PROTOCOL SKILL EVALUATION
SUBJECT: Pediatric Endotracheal Intubation

NAME _____ DATE _____
 LEVEL: _____ Paramedic _____ Intermediate _____ Basic

| STEPS | 1st Testing Comments | 2nd Testing Comments |
|---|-------------------------|-------------------------|
| 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. Position the head. | | |
| G. Assemble equipment, choosing the proper size ETT and laryngoscope blade. | | |
| H. Insert Laryngoscope. | | |
| I. Elevate the mandible slightly to visualize the cords. | | |
| J. Insert the ET tube. | | |
| K. Remove the stylet. | | |
| L. Ventilate the patient. | | |
| M. Confirm tube placement, using at least three methods for verification. | | |
| N. Secure the ET tube. | | |
| O. Reassess the ET tube after any movements of the patient. | | |

EQUIPMENT

- | | |
|---|----------------------|
| 1. Proper size Endotracheal tube | 6. 10 ml. syringe |
| 2. Stylet | 7. Suction equipment |
| 3. Laryngoscope and handle | 8. Stethoscope |
| 4. Magill forceps | 8. Gloves & Eye |
| 5. Commercial Tube Holder or proper taping protection | |

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.

PEDIATRIC PROTOCOL SKILL EVALUATION

SUBJECT: Intraosseous Infusion

NAME _____ DATE _____

LEVEL: _____ Paramedic _____ Intermediate

| STEPS | 1st Testing Comments | 2nd Testing Comments |
|---|-------------------------|-------------------------|
| 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 fingerbreaths below the tibial tuberosity. | | |
| D. Place a small sandbag or towel behind the knee for support. | | |
| E. Prepare the skin with iodine or alcohol. | | |
| F. Adjust the depth guard on the needle. | | |
| G. Insert the needle perpendicular to the skin, directed away from the epiphyseal plate. Advance through the periosteum | | |
| 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 and/or medication, using pressure infuser. | | |
| J. Tape the tubing to the skin. Secure the bone marrow needle. | | |
| K. List the signs of possible infiltration. | | |

EQUIPMENT

- | | |
|----------------------------------|-------------------|
| 1. Bone Marrow Aspiration needle | 5. 10 ml. syringe |
| 2. Iodine/Alcohol prep | 6. Tape, 4x4s |
| 3. Small sandbag or towels | 7. 2 Rolls Kerlix |
| 4. IV Solution and tubing | 8. Gloves |

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.

ADULT PROTOCOL SKILL EVALUATION

SUBJECT: Saline Lock

NAME _____ DATE _____

LEVEL: _____ Paramedic _____ Intermediate

| STEPS | 1st Testing Comments | 2nd Testing Comments |
|--|-------------------------|-------------------------|
| A. List at least five indications for a Saline Lock. | | |
| B. List the contraindications to a Saline Lock. | | |
| C. Gather the necessary equipment. | | |
| D. Draw up 3 ml. of 0.9% NS. | | |
| E. Insert the angiocath. | | |
| F. Place cap onto the hub of the angiocath. | | |
| G. Inject the 3 ml. of 0.9% NS into the IV access. | | |
| H. Secure the IV site. | | |

This procedure applies to all patients that require intravenous access but do not require fluid resuscitation.

NOTE: Any patients requiring IV fluids should be immediately placed on fluid administration when indicated.

Examples of indications for a Saline Lock include the following:

1. Chest pain/cardiac related
2. Syncopal episode
3. Pulmonary problems
4. Hypertensive crisis
5. Postictal seizure patient
6. Possible stroke
7. Combative or unruly patient

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

NOTE: The saline vial is for one time patient use. Please dispose of the vial after use. DO NOT save for another patient.

Note also that the protocols have changed. Use of the Saline Lock is now at your discretion. The list above consists of examples of indications for saline locks, but there are many other situations in which it will be appropriate. Make sure that you remember the contraindications for its use.

ADULT PROTOCOL SKILL EVALUATION
SUBJECT: Nebulizer with Mouthpiece

NAME _____ DATE _____

LEVEL: _____ Paramedic

| STEPS | 1st Testing Comments | 2nd Testing Comments |
|--|----------------------|----------------------|
| A. List the indications for the use of Proventil & Atrovent | | |
| A. Unscrew plastic cap from container. | | |
| B. Assemble the parts of the nebulizer. | | |
| C. Empty the Proventil (Albuterol) and Atrovent into the nebulizer, stating the correct dosages. | | |
| D. Connect the Oxygen supply. | | |
| E. Place the nebulizer or mask to the patient. | | |
| F. Set the Oxygen flow rate at 8-10 liters/minute. | | |
| G. Allow patient to begin inhaling slow and deep. Every 3 to 5 breaths have the patient take a slow deep breath and hold it about 5 seconds, then exhale slowly. | | |
| H. Repeat Step G until all medication is gone. | | |

ADULT PROTOCOL SKILL EVALUATION
SUBJECT: EpiPen Administration

NAME _____ DATE _____

LEVEL: _____ Paramedic _____ Intermediate _____ Basic _____ First Responder

| STEPS | 1st Testing Comments | 2nd Testing Comments |
|--|----------------------|----------------------|
| A. Evaluate the patient, with attention to S&S of anaphylaxis. | | |
| B. Obtain the patient's EpiPen auto-injector. | | |
| C. Assure that it is prescribed to the patient. | | |
| 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. | | |

Note: First Responders may only assist patient with their own EpiPen . Under the direction of a Physician, the EMT-Basic may access the BLS Bag for a patient who has currently prescribed EpiPen but has outdated, damaged, or contaminated medication on hand, or does not have their own medication with them at the time of the emergency.

ADULT PROTOCOL SKILL EVALUATION
SUBJECT: COMPLEX MEDICATION ADMINISTRATIONS

NAME _____ DATE _____
 LEVEL: _____ Paramedic _____ Intermediate _____ Basic _____

| STEPS | 1st Testing Comments | 2nd Testing Comments |
|---|----------------------|----------------------|
| <u>AMIODARONE</u> | | |
| A. List the indications for Amiodarone. | | |
| B. List the equipment required to draw up Amiodarone. | | |
| C. List the problems with drawing up Amiodarone and administration. | | |
| D. Discuss contraindications and precautions regarding Amiodarone. | | |
| E. Use large bore (e.g., 19 gu.) needle to draw up Amiodarone to prevent foaming. | | |
| F. Do NOT invert the ampule (liquid will run out). | | |
| G. Discuss differences in administration in cardiac arrest vs. non-arrest. | | |
| <u>VERSED</u> | | |
| A. List the indications for VERSED. | | |
| B. Discuss contraindications and precautions regarding VERSED. | | |
| C. Discuss the issue of drug concentration (10 mg/2 ml.) with Versed. | | |
| D. Using a TB syringe, demonstrate drawing up an appropriate amount of simulated Versed, and correct administration: 0.4 ml = 2 mg 0.8 ml = 4 mg | | |
| E. Discuss timing for administration of Versed (over 1-2 minutes). | | |
| <u>MARK I KITS</u> | | |
| A. Don appropriate PPE. If patient or public safety worker exhibits symptoms of nerve agent exposure, utilize Mark I Kit. | | |
| B. Remove Mark I simulation kit from protective pouch. | | |
| C. Hold unit by plastic clip. | | |
| D. Remove AtroPen Simulator from slot number 1 of the plastic clip. The yellow safety cap will remain in the clip and the AtroPen will now be armed. DO NOT hold unit by green tip. The needle ejects from the green tip. | | |
| E. Grasp unit, and position green tip of AtroPen Simulator on victim's outer thigh. | | |
| F. Push firmly until auto-injector fires. | | |
| G. Hold in place for 10 seconds to ensure Atropine has been fully delivered. | | |
| H. Remove 2-PAM Cl ComboPen Simulator from slot number 2 of the plastic clip. The gray safety cap will remain in the clip, and the ComboPen will now be armed. DO NOT hold unit by the black tip. Needle ejects from the black tip. | | |
| I. Grasp unit and position black tip of the ComboPen Simulator on victim's outer thigh. | | |
| J. Push firmly until auto-injector fires. | | |
| K. Hold in place for 10 seconds to ensure 2-PAM has been properly delivered. | | |
| L. If nerve agent symptoms are still present after 15 minutes, repeat injections. If symptoms still exist after an additional 15 minutes, repeat injections for a third time. If after the third set of injections, symptoms remain, do not give any more antidotes but seek medical help. | | |

ADULT PROTOCOL SKILL EVALUATION
SUBJECT: Use of Nebulizer with Bag-Valve Device

NAME _____

DATE _____

LEVEL: _____ Paramedic

| STEPS | 1st Testing Comments | 2nd Testing Comments |
|---|-------------------------|-------------------------|
| A. List the indications for the use of nebulized drugs with bag-valve device | | |
| To administer nebulized medications via an ETT, you must have all of the following: <ol style="list-style-type: none"> 1. ETT 2. BVM 3. O2 Source (preferably two) (not shown) 4. Nebulizer set, which includes "Tee" 5. "Ventilator Elbow with Suction Port and Cap" (<u>new</u> hospital exchange item) | | |
| A. Connect Bag-valve to Tee piece and Tee to Nebulizer unit without mouthpiece, as shown in photos. | | |
| B. Connect Tee to Reservoir, as shown in photos. | | |
| C. Connect Reservoir to elbow, then connect elbow to Endotracheal tube (or mask), then connect as shown in drawing. | | |
| D. Place medications and saline solution in the reservoir well of the nebulizer. | | |
| E. Connect 1st oxygen supply to nebulizer @ 8-12L/min. and 2 nd oxygen supply to bag-valve @ 12-15 L/min. (If only one oxygen source available, attach to nebulizer, until medications have been administered.) | | |
| F. Begin bagging patient, being careful to keep reservoir well of the nebulizer in an upright position.. | | |
| G. If only one oxygen source is available, connect oxygen tubing to bag-valve device after medication has been administered.. | | |
| H. Monitor patient for effects of medications. | | |





ADULT PROTOCOL SKILL EVALUATION
SUBJECT: Oropharyngeal Intubation of the Trauma Patient

NAME _____ DATE _____

LEVEL: _____ Paramedic _____ Intermediate _____ Basic

| STEPS | 1st Testing Comments | 2nd Testing Comments |
|---|----------------------|----------------------|
| 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 with C Spine precautions. | | |
| E. Pre-oxygenate patient during preparations to intubate. | | |
| F. Keep head in an in-line neutral position. | | |
| G. Demonstrate the performance of cricoid pressure. | | |
| H. Assemble equipment. | | |
| I. Insert Laryngoscope. | | |
| J. Elevate the mandible. | | |
| K. Insert the ET tube. | | |
| L. Remove the stylet. | | |
| M. Inflate the cuff with 5 to 10 ml. of air. | | |
| N. Ventilate the patient. | | |
| O. Confirm tube placement, using the End Tidal CO ₂ Detector for patients with a perfusing rhythm, or the Esophageal Detection Device for patients in cardiac arrest. Be able to discuss the indications and limitations of each device. | | |
| a. *NOTE: EDDs will fill more slowly in humans than in manikins | | |
| b. Compress EDD first, then place it on the ETT before ventilating pt. | | |
| c. If bulb fills in <5 seconds, ETT is likely successful | | |
| f. If bulb fails to fill, or takes >5 seconds, or fills with vomit, esophageal placement is probable. | | |
| g. Contraindicated in pregnancy, or children under 5 yoa or 20 kg. | | |
| P. Confirm tube placement with at least 3 other methods of verification. | | |
| Q. Secure tube in place& reassess after any movements of the patient. | | |

EQUIPMENT

- | | | |
|----------------------------------|----------------------|--|
| 1. Proper size Endotracheal tube | 4. Magill forceps | 7. Stethoscope |
| 2. Stylet | 5. 10 ml. syringe | 8. Gloves & Eye protection |
| 3. Laryngoscope and handle | 6. Suction equipment | 9. Commercial tube holder or proper taping method. |

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 Testing Comments | 2nd Testing Comments |
|--|----------------------|----------------------|
| 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. Oxygenate patient during preparations to intubate. | | |
| F. Assemble equipment. | | |
| G. If patient's condition is potentially due to trauma, maintain the head in neutral position with in-line traction. | | |
| H. Select appropriate ET tube. | | |
| I. Insert ET tube into the most patent nostril. | | |
| J. Pass the tube along the floor of the nostril until it passes into the back of the throat. | | |
| K. Advance tube slowly forward monitoring air flow via tube and from the patient's mouth. (Use BAAM device if available) | | |
| a. If the tube passes into the esophagus, air flow stops via the tube and continues from the mouth. | | |
| b. If the tube passes into the trachea, often the patient will cough. Air will continue via the tube but stop via the mouth, except for slight flow. Asking the patient to take a deep breath can also help pass the tube. | | |
| c. If using an endotrol, flexing the tube with its control loop will help align it with the trachea. | | |
| d. Once the tube is in the trachea, inflate the cuff. Tape the ETT in place after assuring proper position. | | |
| L. Inflate cuff with 5 to 10 ml. of air. | | |
| M. Ventilate the patient. | | |
| N. Confirm tube placement, specifying at least three methods of verification | | |
| O. Tape in place | | |

EQUIPMENT

1. Endotracheal tube, standard or endotrol (adult - appropriate size; child - size of child's little finger).
2. Lubricant
3. Laryngoscope and handle
4. Magill forceps
5. 10 ml. syringe
6. BAAM device (if available)
7. Tape

When preparing for this skill evaluation, be sure that you are able to meet the objectives A, B, C, and N. 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 Testing Comments | 2nd Testing Comments |
|---|-------------------------|-------------------------|
| 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 to intubate. | | |
| 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. | | |
| a. 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. Hyperventilate the patient. | | |
| P. Confirm tube placement, specifying at least three methods of verification. | | |
| 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

| STEPS | 1st Testing Comments | 2nd Testing Comments |
|--|-------------------------|-------------------------|
| A. List the signs and symptoms which identify a tension pneumothorax. | | |
| B. Administer high concentration Oxygen. If wound is a sucking chest wound, tape dressing so that air may escape. | | |
| C. Locate the 2nd or 3rd intercostal space in the mid-clavicular line on the affected side, or the 4th or 5th intercostal space in the mid-axillary line. Locate site on the affected side, just above the rib margin. | | |
| a. If patient is pregnant in the 2nd or 3rd trimester, must use the 2nd or 3rd intercostal space, mid-clavicular. | | |
| D. Prepare the skin. | | |
| E. Insert the needle into the pleural cavity, just above the rib margin | | |
| F. Advance the catheter while holding the needle in position. Withdraw the needle. | | |
| G. Securely tape the catheter in place without kinking it. | | |

EQUIPMENT

1. 14 gauge over-the-needle catheter
2. Rubber gloves
3. Rubber band
4. Scissors
5. Stethoscope
6. Betadine or alcohol swab
7. Tape

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

I. DRUG BOX EXCHANGE PROGRAM**II. STANDING ORDERS**

Revised: November 1999; November 2000; May 2002, November 12, 2003

I. DRUG BOX 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.

LEVELS OF PARTICIPATION**Paramedic Level**

- Each drug bag consists of a navy, standard issue drug bag with a separate, red outside pouch sewn into it.
- The red pouch is used to carry the following medications: Albuterol **Inhaler**, Nitrostat, EpiPen, EpiPen Jr. and baby Aspirin. All other medications are carried in the standard issue drug bag.
- Each standard issue bag is labeled with a metal tag from 850 – up.
- Upon completion of a transport, the entire unit is exchanged at the receiving hospital **with the appropriate paperwork.**

Intermediate Level

A side compartment labeled “intermediate” to carry the following medications ONLY: 50% Dextrose in Water, 25% Dextrose in Water, Diazepam, Diphenhydramine, Epinephrine 1:1,000 multidose vial, Glucagon, Morphine Sulfate, Narcan

Basic Life Support

- A fanny-pack style bag used to carry the following medications ONLY: Albuterol **Inhaler**, Nitrostat, EpiPen, EpiPen Jr., and baby Aspirin.
- 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.**

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 combo-bags may be exchanged one-for-one with another ALS/BLS combo-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 sheets when exchanging a drug bag.

WASTED DRUG PROCEDURE

- Morphine, **Versed** and Valium are scheduled drugs, which means they must be tracked from the time they are dispensed into the drug bag up to the time of administration. If a

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medication is partially administered, any unused portion must also be accounted for. If a medication is drawn up in a syringe for administration, then the partially used syringe shall have the name of the drug put on the syringe by the person drawing the medication. That unused portion can be left with the nurse or physician who is caring for the patient, should they decide to use the remaining portions.

- If the unused portion is not going to be used and needs to be wasted, then the EMS provider must have a nurse or physician present to witness the waste of the drug. A pharmacist can also be a witness if a nurse or physician is not available.
- To insure the medications are properly accounted for, all EMS providers will document:
 1. The drug name
 2. The amount used
 3. The amount wasted
 4. The signature of the two witnesses
- One witness will be the EMS provider wasting the medication and the second witness signature will be the nurse/physician/pharmacist 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 medication sheet in addition to documentation on the run sheet.*** 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 advisors will be notified that the annual test and skill 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 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.
- If copy of drug license(s) is not received by due date, GMVEMS Council notifies EMS department medical advisor. GMVEMS Council reserves the right to initiate the non-compliance action process for any Fire/EMS/Private Ambulance service that cannot provide documentation for drug license(s) renewal.

Drug Box Discrepancies

All discrepancies (missing meds, expired meds, wrong medication or dose, altered or tampered meds, drug box number discrepancy, etc.) that are found by any agency or department (EMS provider, pharmacist, and/or EMS Coordinator) shall be reported to the GMVEMSC and to the appropriate state agency as noted in the following. This information will be forwarded to the Drug Box Committee Chairperson.

I. DRUG BOX EXCHANGE PROGRAM**II. STANDING ORDERS**

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EMS providers:

- A. If, while on a call, an EMS provider encounters a discrepancy he/she will:
1. Log the ALS/BLS bag into the ED using the Drug Box check-in form (patient name, metal tag # of bag being checked in and metal # of bag being taken).
 2. The EMS provider will turn in the blue seal with hospital sticker that was attached to the drug bag in question, along with a written description of the problem noted to his/her EMS Officer. This written description shall include the Drug Bag # of the bag in question. The written description of the discrepancy shall be dated and signed by the EMS provider reporting the complaint.
 3. The EMS Officer will contact the EMS Coordinator of the hospital in which the bag originated (hospital name on Blue Seal).
 4. The EMS Officer will contact the State Pharmacy Office of the nature of the following discrepancies:
 - a. Missing medication
 - b. Wrong medication in drug bag
 - c. Missing or Stolen drug bag
 - d. Altered medicationsThe EMS Officer will report the following:
 - e. Name of drug
 - f. What occurred
 - g. What hospital the bag originated from
 - h. What EMS Agency was involved

The State Pharmacy number is 614.466.4143. Advise them you want to report a drug bag discrepancy and they will connect you to the appropriate person.
 5. If the drug is a controlled drug (Valium, **Versed** or Morphine), the bag has been stolen or is missing, or any medication appears altered or tampered with, the EMS Agency will make a police report to the department in which the discrepancy was found.
 6. The EMS Officer will send the following to the Hospital EMS Coordinator from which the discrepancy occurred:
 - a. The blue seal with hospital name and tag number on drug bag to which seal was attached.
 - b. A statement of what occurred.
 - c. A statement indicating that the Pharmacy Board was contacted and to whom the report was given.
 - d. A copy of the police report, if requested by the Hospital Pharmacist.
 7. The EMS Officer will send the following to the GMVEMSC:
 - a. A statement of what occurred.
 - b. A statement indicating that the Pharmacy Board was contacted and to whom the report was given.
 - c. A copy of the police report if the bag was stolen, lost, or controlled meds are missing and /or any medications altered.

EMS Coordinators:

- A. When the EMS agency contacts you about a drug bag discrepancy that occurred that had a blue seal from your hospital pharmacy, you shall:

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1. Insure that agency has completed the tasks listed in the EMS providers responsibilities listed in part A.
- B. If the EMS Coordinator discovers any discrepancies (missing meds, expired meds, wrong medication or dose, altered or tampered meds, drug box number discrepancy, etc.) the EMS Coordinator will:
 1. Contact the EMS Coordinator of the hospital in which the discrepancy originated (hospital name on Blue Seal). The EMS Coordinator who discovers the discrepancy will also send the blue seal to that EMS Coordinator so he/she can follow up with the pharmacy that filled the bag.
 2. The EMS Coordinator who discovers the discrepancy will contact the State Pharmacy Office of the following discrepancies:
 - a. Missing medication
 - b. Wrong medication in drug bag
 - c. Missing or Stolen drug bag
 - d. Altered medicationThe EMS Coordinator who discovers this will also report to the pharmacist:
 - a. Name of drug
 - b. What occurred
 - c. What hospital the bag originated from
 - d. What EMS Agency was involved*The State Pharmacy number is 614.466.4143. Advise them you want to report a drug bag discrepancy and they will connect you to the appropriate person.*
 3. If the drug involved is a controlled medication (Valium, **Versed** or Morphine), the bag has been stolen or is missing or any medication appears altered or tampered with, the EMS Coordinator will:
 - a. Contact his/her hospital pharmacist
 - b. A police report is made according to their hospital protocol
 4. The EMS Coordinator discovering discrepancy will then send the following to the GMVEMSC:
 - a. A statement of what occurred
 - b. A statement indicating that the Pharmacy Board was contacted (if indicated i.e. controlled meds, lost or stolen bags) and whom the report was given.
 - c. A copy of the police report if bag was stolen lost, or controlled meds missing and or any medications altered.

Pharmacy department personnel:

When a discrepancy is noted, notify the EMS Coordinator of your facility and advise him/her of the discrepancy encountered and he/she will assist you with the steps outlined in the EMS Coordinator section.

The GMVEMSC will:

- Maintain a record of all discrepancies that occur.
- Follow up with the agencies involved as needed.
- Advise the Drug Box Chairperson of any and all discrepancies and action taken.

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Drug Box 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).

Red Seals:

Red seals identify ALS/BLS boxes as being used. The EMS provider will discard any used sharps and clean any contaminants from bag used and will then take the red seal from inside the bag (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.

I. DRUG BOX EXCHANGE PROGRAM**II. STANDING ORDERS**

Revised: November 1999; November 2000; May 2002, November 12, 2003

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:
 1. Determine if drug bag was left at the scene.
 2. Determine if drug bag was not exchanged on last run.
 3. Determine if drug bag is in the wrong vehicle.
 4. Interview all personnel who had access to the drug bag.
- Notify the following upon determination that a drug bag has been lost or stolen:
 1. "Responsible party" as listed on the drug license
 2. GMVEMS Council
 3. Assigned hospital pharmacy
 4. Assigned hospital EMS Coordinator
 5. Local police department
- Send copy of the police report to the assigned hospital pharmacy.
ASSIGNED HOSPITAL PHARMACY WILL:
 1. Check hospital inventory to determine if appropriate number of bags are present and accounted for.
 2. Distribute a replacement drug bag to the Fire/EMS/Private Ambulance department.
 3. Contact hospital EMS Coordinator who in turn will contact the GMVEMS Council to obtain new bag for the hospital pharmacy inventory.
 4. Number new drug bag with the next sequential number per the numbering system.
 5. Complete DEA Form 106 within 30 days of notification and send electronically:
 - Original to the State Board of Pharmacy
 - Two copies to the DEA
 - One copy to the Fire/EMS/Private Ambulance department
 - Maintain one copy

EMS COORDINATOR WILL:

- Contact other hospitals to determine if the drug bag is in another hospital's inventory. This can be checked through the pre-assigned numbering system, or by counting the number of drug bags at the hospital.

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