

MEDICAL PROTOCOL

Allen Township Fire

Leesburg Township Fire

Marysville Fire Division

Northern Union County Joint Fire District

S.E. Hardin N.W. Union Joint Fire District

Union County Sherriff's Office

Union Township Fire Department

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Signed before me the 29th day of December, 2015

Jennifer Michael, Notary Public

General Transport Guidelines

1. Establish and maintain a patent airway. Use supplemental oxygen via nasal cannula, mask, or adjunctive device or secure airway with an advanced airway.
2. Transport patient in a position of comfort when possible. Use and document appropriate measures to provide a normal-thermic environment.
3. Perform a primary and secondary assessment. Obtain and gather all pertinent information regarding the patient. Bring the patients medications and records to the hospital with the patient when possible.
4. Establish an IV as patient's condition indicates. Control of nausea and vomiting, motion sickness and pain control medication when appropriate and necessary.
5. Apply cardiac monitor, obtain vital signs every 5 to 15 minutes as the patients clinical condition indicates. Transmit all 12 EKG's to the receiving facility if applicable.
6. Advise receiving hospital as soon as possible of patient alert status and all changes in condition. Information shall include:
 - a. Alert status if applicable, (i.e. **STEMI** Alert, **STROKE** Alert, **TRAUMA** Alert)
 - b. Age/Sex
 - c. Chief Complaint
 - d. Signs & Symptoms
 - e. Vital signs with GCS score
 - f. Procedures and treatments given & response
 - g. 12-lead EKG transmission (if applicable)
 - h. Estimated arrival time

System of Care

It is imperative that Medical Directors, receiving physicians, Hospital staff, Fire Chiefs, and EMS personnel work together to provide the best and most efficient patient care. The Fire Departments under this protocol strive to provide excellent customer service and patient care to time sensitive patient's whereas:

- Upon recognition of a time sensitive condition and/or a critical patient the EMS shall immediately notify the receiving facility by radio or phone. Provide concise yet detailed patient report to include 12 EKG transmission if applicable.
- It is generally known that critically ill or seriously injured patients will be stabilized and subsequently transferred from Memorial Health or other receiving facilities to a tertiary center in a relatively short time period.
- The transporting agency will remain at the hospital (if possible) and provide a secondary means of transport in cases where all primary transport/transfer resources are not immediately available. This, of course, is pending approval of OIC and/or Fire Department Administrative Staff.
- The transporting agency shall return to service once a determination is made that their services will not be needed.

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Patient Assessment

GENERAL GUIDELINES

Scene Size-up

All Levels

1. Consider appropriate level of Body Substance Isolation (BSI) utilizing appropriate personal protective equipment (PPE) precautions.
2. Assess the scene for dangers to the rescuer and victim(s). Consider the number of patients, mechanism of injury, or nature of the illness. Request additional resources if necessary.

Initial Rapid Assessment

Priorities of management are established on a life-threatening basis. Begin a CAB approach to the patient to form a general impression and establish the presence of a life threatening injury or illness. Obtain and record the chief complaint of the patient.

1. Quickly assess level of consciousness using the AVPU method:
 - **A** - Alert - eyes open
 - **V** - Verbal - responds to vocal stimuli
 - **P** - Pain - responds only to painful stimuli
 - **U** - Unresponsive - no response to Verbal or Painful stimuli.
2. Assess the circulation/perfusion:
 - Assess rate and quality of pulses - peripheral and central pulses.
 - If there is no palpable pulse or rate is too slow to maintain cerebral blood flow, begin CPR.
 - Stop any vigorous bleeding immediately, assess skin color, temperature, and obtain blood pressure.
3. Assess the airway (protect c-spine if uncertain):
 - Responsive - no intervention needed.
 - If unresponsive - use the appropriate medical or trauma maneuver to open the airway.
 - If airway remains partially or totally obstructed, continue attempts to clear the airway (refer to airway emergencies).
4. Assess adequacy of breathing:
 - Observe chest rise and fall, auscultate breath sounds anteriorly and posteriorly.
 - Observe for signs of distress - use of secondary muscles, cyanosis.
 - Count the respiratory rate and obtain pulse oximeter reading (SpO₂), if available.
 - If breathing is inadequate and patient is unresponsive - assist breathing with Bag-Valve-Mask (BVM).
 - If breathing is inadequate and patient is responsive - administer high flow oxygen.

Basic

5. Provide care for any compromise in airway, breathing, circulation, or neurological status per protocol and perform basic life support as per current American Heart Association Guidelines.
6. Identify priority patients and make a transport decision (Triage).
 - Priority patients include those with compromises in airway, level of consciousness, breathing, and circulation, which are not easily remedied with basic intervention. Go to **Rapid Assessment or Rapid Trauma Assessment**.
 - If identified as a non-priority medical patient, go to **Non priority Medical Patients**.
If identified as a non-priority trauma patient, go to **Non Priority Trauma Patients**

FOCUSED HISTORY AND PHYSICAL EXAM

Non-Priority Medical Patients

1. If patient is unresponsive, go to **Rapid Assessment**.
2. Obtain history of present illness including but not limited to:
 - O** - Onset of the problem
 - P** – Provocation
 - Q** - Quality - "Crushing, Pressure, Stabbing"
 - R** - Radiating
 - S** - Severity "1-10 Scale" and Duration
 - T** - Time since this onset of this episode
3. Assess the affected body part/system. If indicated at any time, complete a **Rapid Assessment**.
4. Obtain Vital Signs.
5. Provide appropriate interventions as per protocols. Splint injured, painful or swollen extremities while maintaining circulation. Apply dressings and bandage all wounds. Consult Medical Control Physician (MCP) with any questions, further treatments, or omission of interventions as written.

Non-Priority Trauma Patients

1. Assess injuries based on chief complaint.
2. Obtain Vital Signs.
3. Provide care based on signs and symptoms.
4. Continue with Detailed Assessment as appropriate.
5. C-spine clearance per Selective Rule-in Spinal Protocol

FOCUSED ASSESSMENT

Priority Medical Patients

General

A Rapid Assessment should be performed on all priority transport patients after the **Initial Rapid Assessment**. Patient with a mechanism or nature of illness consistent with the possibility of spinal trauma should first have manual spinal control, and after the rapid assessment should have Spinal Motion Restriction protocol implemented.

1. Rapidly assess the patient "head to toe" (1 - 3 minutes total).
 - Head, Ears, Eyes, Nose, Throat (& Neck)
 1. The head should be examined for signs of abnormality.
 2. The ears should be examined for presence of fluid and foreign bodies.
 3. The pupils should be checked for symmetry and response to light.
 4. The nose should be examined for presence of fluid and patency.
 5. Examine the throat for signs of obstruction, redness and patency. The neck should be examined for pain, stiffness or injury. The neck veins should be assessed for signs of extreme distention. If there is any evidence or concern of neck injury, employ cervical spine precautions.
 - Chest and Abdomen
 1. The chest should be examined for signs of visible injury. Assess for breath sounds as well as chest movement, symmetry, and effort. The chest should be palpated for pain.
 2. The abdomen should be assessed for signs of injury, pain, tenderness, rigidity, and guarding. The pelvis should be palpated for stability if any history of trauma.
 - Extremities and Back
 1. The lower as well as the upper extremities should be examined and assessed for presence of pulses, sensation, and motor function. Note if edematous or signs of poor perfusion exist.
 2. The back should be examined for signs of pain. For patients with possible spinal injury, assess the back during the log roll procedure.
2. A SAMPLE history should also be obtained if possible. This should include:
 - S**- Signs and Symptoms.
 - A**- Medication Allergies.
 - M**- Medications.
 - P**- Past illnesses, possible pregnancy for female pt.'s between ages of 11 - 55.
 - L**- Last oral intake.
 - E**- Events of the injury/illness.
3. Obtain baseline vital signs and prepare the patient for transport.
4. Any patient with a complaint of nausea may be treated with ondansetron (Zofran) 4 mg slow IVP, IM, IO. (EMT-P only)
 - Pediatric dose is 0.1 mg/kg up to 4 mg, slow IVP. May be administered p.o. or IM if no IV or IO is available.
 - May repeat dose in 10-20 minutes, if no relief, up to an 8 mg max total adult dose. Max total pediatric dose is 4 mg.

Priority Trauma Patients

General

Rapid Assessment should be performed on all priority transport patients after the **Initial Rapid Assessment**. Patient with a mechanism or nature of illness consistent with the possibility of spinal trauma should first have manual spinal control and after the rapid assessment they should have Spinal Motion Restriction protocol implemented. Utilize the general BTLIS procedures outlined below for a rapid head to toe assessment and interventions.

The priority trauma patient should be completely exposed for this exam. Keep the patient warm, use blankets, warmed IV fluids, and other methods to prevent temperature loss. Hypothermia will result in coagulopathy, acidosis, and death if not treated. Keep trauma patients warm...ALWAYS.

Reconsider Mechanism of Injury.

1. Neurological Survey
 - a. If not already done, a neurological evaluation as well as a history should be obtained. The pupils should be assessed for equality and reaction to light. The level of consciousness should be assessed using the AVPU method:
 - A – Alert
 - V – Verbal
 - P – Pain
 - U – Unresponsive
2. Head, Ears, Eyes, Nose, Throat (**HEENT**), Neck
 - a. The head should be examined for signs of trauma.
 - b. The ears should be examined for presence of blood, Cerebrospinal fluid (CSF), or foreign bodies.
 - c. The pupils should be checked for symmetry and response to light.
 - d. The nose should be examined for presence of injury, blood, or CSF.
 - e. Examine the throat for signs of bleeding or obstruction.
 - f. The neck should be examined for pain, stiffness, or injury. The neck veins should be assessed for signs of extreme distention. If there is any evidence of neck injury, employ cervical spine precautions. Assess for any signs of Deformity, Contusions, Abrasions, Penetrations, Burns, Lacerations, Swelling, Tenderness, Instability or Crepitus (DCAP-BLS TIC).
3. Chest and Abdomen
 - a. The chest should be examined for signs of blunt or penetrating trauma including bleeding or visible injury.
 - b. Breath sounds as well as chest movement, symmetry, and effort should be noted. The chest should be palpated for pain. Assess for DCAP-BLS TIC.
 - c. The abdomen should be assessed for signs of blunt or penetrating injury, pain, tenderness, rigidity, and guarding.
 - d. Auscultate for bowel sounds.
 - e. The pelvis should be palpated for stability if any history of trauma. Assess for DCAP-BLS TIC.
4. Extremities and Back
 - a. The lower as well as the upper extremities should be examined for signs of injury including DCAP-BLS TIC and assessed for presence of pulses, sensation, and motor function. Note if edematous or signs of poor perfusion exist.
 - b. The back should be examined for visible signs of injury or pain. For patients with possible spinal injury, assess the back during the log roll procedure.

5. Past History: A SAMPLE history should also be obtained if possible. This should include:
 - S- Signs and Symptoms
 - A- Allergies
 - M- Medications
 - P- Past illnesses
 - L- Last oral intake
 - E- Events of the injury/illness

6. Exposure

A thorough exam cannot be accomplished without properly exposing a patient. However, keep modesty in mind for those without a history of injury. The patient must be kept warm during the process. Passive warming (using warm blankets, hot packs) may be necessary to preserve body temperature. For the stable patient, exposure may be delayed until patient is in the back of the medic.

7. Obtain Baseline Vital Signs and repeat every 5 – 10 minutes.

DETAILED ASSESSMENT

Multiple body system trauma patients should be packaged using a properly fitting cervical collar, spinal immobilization device and/or long backboard, at least 3 patient immobilization straps and an acceptable cervical immobilization device.

Complete a detailed examination of the patient en-route to the hospital as needed or time permits. A "head to toe" approach similar to the rapid assessment (except slow and detailed) should be utilized. Reassess for DCAP-BLS TIC (5-10 minutes).

ONGOING ASSESSMENT

Repeat Initial Assessment and obtain vital signs every five minutes for priority patients and every fifteen minutes for non-priority patients or as often as practical during transport. Reassess after all interventions performed.

Circulatory Emergencies

THE ALGORITHM APPROACH TO EMERGENCY CARDIAC CARE

Providers of emergency care should view algorithms as a summary and a memory aid. Algorithms, by nature, oversimplify. The provider will use them wisely, not blindly. When clinically appropriate, flexibility is accepted and encouraged. Algorithms do not replace clinical understanding. **Although the algorithms provide a good "cookbook," the patient always requires a "thinking cook."**

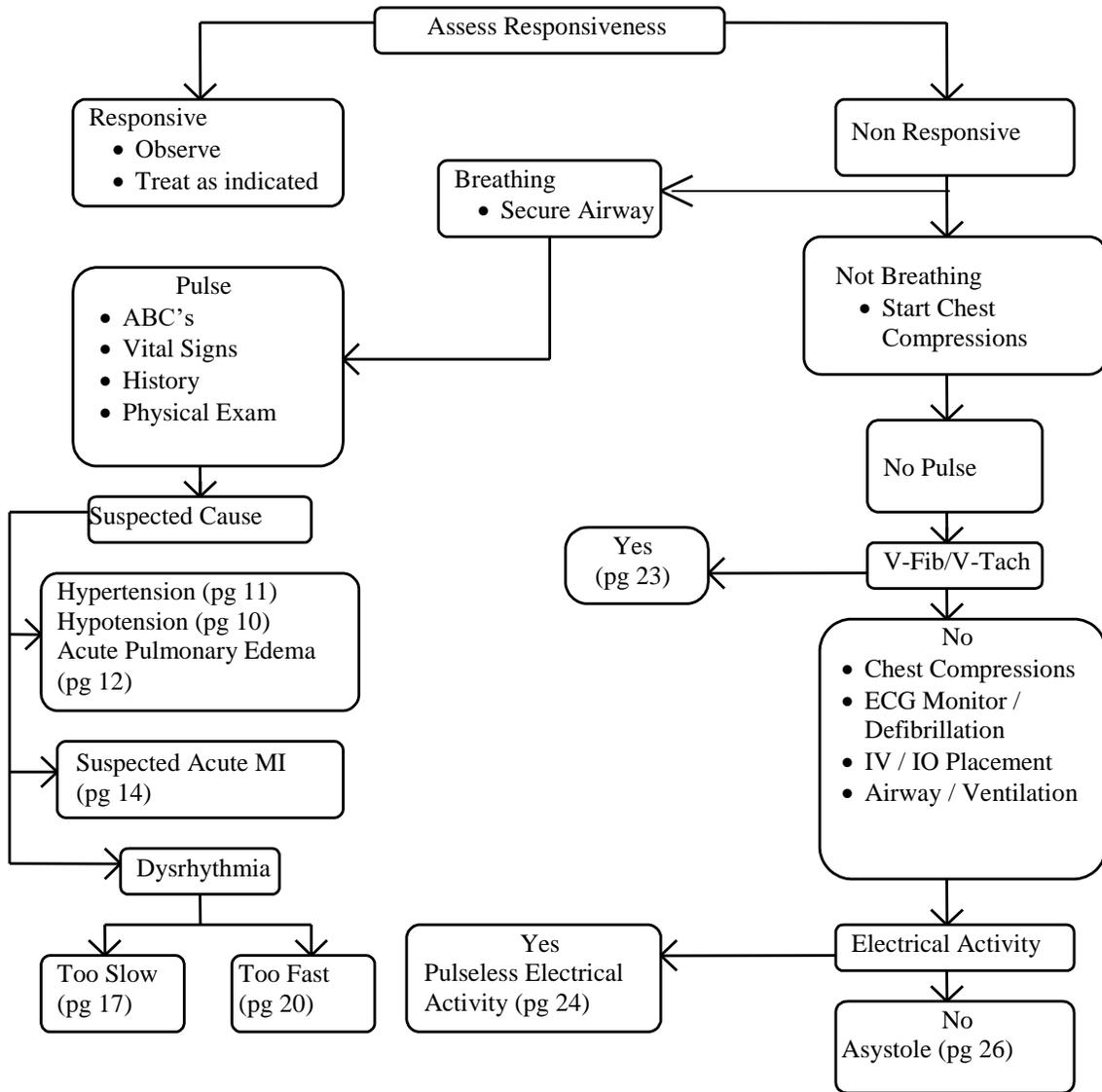
The following clinical recommendations apply to all treatment algorithms:

1. ***First, treat the patient, not the monitor.***
2. Algorithms for cardiac arrest presume that the condition under discussion continually persists, that the patient remains in cardiac arrest, and that CPR (with an emphasis on CAB) is always performed.
3. Apply different interventions whenever appropriate indications exist.
4. Adequate airway, ventilation, oxygenation, chest compressions, and defibrillation are more important than administration of medications and take precedence over initiating an intravenous line or injecting pharmacological agents.
 - a) Several medications (Epinephrine, Lidocaine, and Atropine) can be administered via the endotracheal tube but medics must use an endotracheal dose 2 to 2.5 times the intravenous dose.
5. With a few exceptions, intravenous medications should always be administered rapidly, in bolus method.
6. After each intravenous medication, give a 20 to 30 ml bolus of intravenous fluid.
7. ***Last, treat the patient, not the monitor.***

ROUTINE CARE FOR ALL PATIENTS REQUIRING ADVANCED CARDIAC LIFE SUPPORT

1. Establish and maintain airway. Intubate if indicated. Cardiopulmonary resuscitation (CPR) if needed. AED (or manual defib) is to be used ASAP if patient is pulseless.
2. Oxygen per nasal cannula at 2-6 LPM, or non-rebreather mask at a flow rate rate sufficient to maintain bag inflation. Use 100% oxygen for cardiopulmonary resuscitation. **DO NOT WITHHOLD OXYGEN FROM A PATIENT WHO NEEDS IT.**
3. Obtain and record vital signs. Re-check all vital signs approximately every 5-10 min. or when patient condition warrants closer monitoring.
 - a) Perform a 3 lead EKG, 12-lead if available, and continuously monitor.
 - b) Properly trained/certified personnel are directed to start a peripheral intravenous infusion as indicated by the patient's condition and/or protocol.
 - Use **Normal Saline** for all emergencies. Use **Lactated Ringers** as backup.
 - Use **Normal Saline** for piggyback drug administration.
 - Use **Normal Saline** with Buretrol tubing for patients under 8 years old, unless condition is volume or trauma related, and then use **Normal Saline** with standard (10 gtts/ml) tubing.
 - In children less than 8 years of age when IV access cannot be obtained in two attempts or 90 seconds, and patient is unconscious and unstable, intraosseous infusion is indicated.

UNIVERSAL ALGORITHM FOR ADULT EMERGENCY CARDIAC CARE



HYPOTENSION, HYPERTENSION, SHOCK, AND ACUTE PULMONARY EDEMA

Hypotension

First Responder/Basic/AEMT

1. Perform Baseline Physical Assessment.
2. Provide Oxygen to Patient.
3. If hypotensive without signs of pulmonary edema, Trendelenburg position.
4. Passively warm the patient if able.
5. Summon ALS or rapidly transport. Consider ALS rendezvous.

AEMT

6. IV **Normal Saline**, KVO
7. If not in pulmonary edema and systolic BP is less than 90 mmHg with signs and symptoms of decreased cardiac output give a 300 ml rapid IV bolus of **Normal Saline**. Auscultate lungs for rales. If rales develop or dyspnea increases, terminate fluid bolus. If hypotension continues, repeat an additional 300 ml fluid bolus. If not effective, continue as follows.
8. Cardiac monitor
9. Summon ALS. If not available rapidly transport to nearest ED. Consider ALS rendezvous.

Paramedic

9. If patient remains hypotensive after fluid bolus or rales are auscultated in the lungs, begin an infusion of **DOPAMINE** premix or mix 400mg/250ml **Normal Saline** at 5 µg/kg/min and titrate in 5 µg increments to maintain SBP >90 to a maximum dose of 20 µg/kg/min.

HYPERTENSION

Hypertensive Urgency

All Levels

1. **Definition - Hypertensive Urgency:** Diastolic BP > 130 mmHg without signs or symptoms of organ compromise.
2. If no signs of respiratory distress, pain, or decreased level of consciousness offer transport to hospital.

Hypertensive Emergencies and Gestational Hypertension

3. **Hypertensive Emergency:** diastolic BP > 130 mmHg or systolic BP > 220 mmHg with signs of end organ damage; altered consciousness, CHF, intracranial hemorrhage (sudden, severe headache and/or unconsciousness), aortic dissection (sudden, severe tearing pain often radiating between the shoulder blades -- BP may show right to left upper arm discrepancy).
4. **Gestational Hypertension:** (greater than 20 weeks gestation) systolic B/P >140 mmHg or diastolic B/P > 90 mmHg.

First Responder/Basic/AEMT

5. Baseline Physical Assessment as per protocol. Repeats VS's frequently.
6. Apply oxygen at 10 – 15 lpm via non-rebreather mask.

AEMT

7. Initiate an IV of **Normal Saline** at a keep open rate.
8. Apply ECG monitor.
9. If not pregnant, and SBP is > 220 administer one **NITROGLYCERIN spray 0.4 mg. or tablet 1/150** sublingual, if BP is not reduced and/or patient remains symptomatic repeat two more times prn. If no IV pump is available or **squad is staffed as an AEMT unit**, then administer SL spray or tablet q 5 minutes, prn.

Paramedic

10. If patient is still symptomatic then a **NITROGLYCERIN** Infusion (50mg in 250cc Normal Saline) may be initiated (with physician order). Begin the infusion rate at 5 µg/min and titrate in 5 - 10 µg increments every 10 minutes until the BP decreases. If no **IV pump is available administer SL spray or tablet q 5 minutes, prn, while maintaining pressures** as above.
11. IN THE CASE OF ELEVATED BLOOD PRESSURE DUE TO INCREASED INTERCRANIAL PRESSURE, TIA OR CVA, **DO NOT DECREASE BLOOD PRESSURE WITHOUT ONLINE DOCTORS ORDERS.** Keep SBP >160, AND <220 IF ICP, TIA OR CVA IS SUSPECTED AND PATIENT IS ALREADY HYPERTENSIVE.
12. Transport with head elevated.
13. If pregnant, transport immediately to an appropriate obstetrical facility on L side to reduce pressure on maternal great vessels.
14. If Pregnant, and symptomatic (seizing), administer 6 gm. **MAGNESIUM SULFATE** in 50 cc Normal Saline over 10-20 minutes. Keep systolic BP above 110 mmHg.

NOTE: Hypertension may be a symptom rather than the primary disease (e.g. hypertension due to a seizure rather than a seizure due to hypertension). Always consider other causes of symptoms, especially in cases of altered consciousness, but do not delay transport. **Lowering BP may cause brain injury.**

ACUTE PULMONARY EDEMA

Signs and Symptoms

1. Difficulty breathing, particularly lying flat.
2. Sudden shortness of breath at night.
3. Tachycardia and tachypnea.
4. Variable blood pressure response.
5. Anxiety.
6. Rales on auscultation.
Note: Wheezing may also be heard with pulmonary edema. This is referred to as cardiac wheezing.
7. Pale, moist skin.
8. Distended neck veins.
9. Swollen lower extremities (sacrum, if bedridden).

First Responder/Basic/AEMT

10. Baseline Physical Assessment as per protocol. Repeats VS's frequently.
11. Apply oxygen at 10 – 15 lpm via non-rebreather mask.
12. Apply CPAP if indicated. (EMT-B, AEMT and EMT-P only)
13. Apply pulse oximeter, if available.
14. Sit patient upright.
15. Summon ALS.

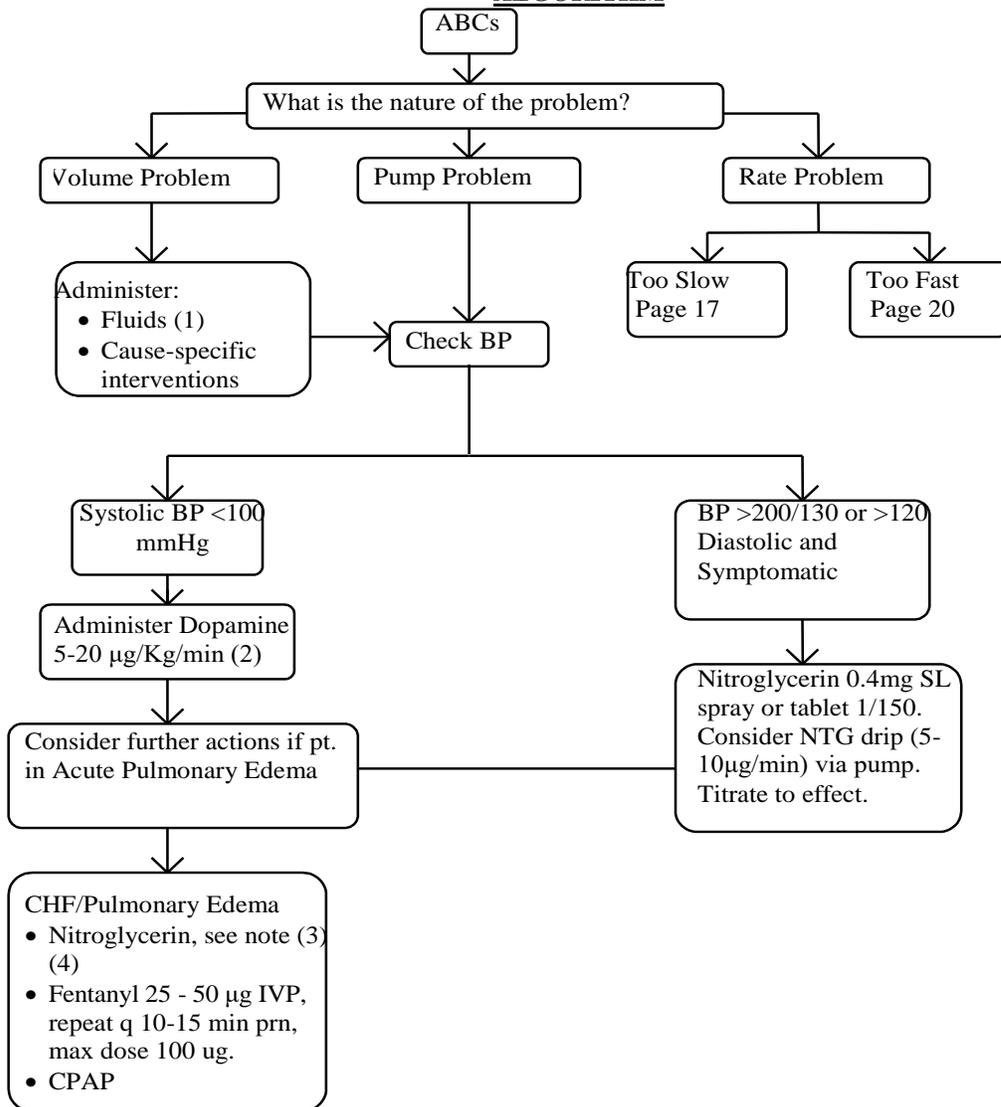
AEMT/Paramedic

16. Initiate an IV of **Normal Saline** at a keep open rate.
17. Apply ECG monitor. Obtain and transmit 12-lead ECG.
18. Administer one **NITROGLYCERIN spray or tablet**, 1/150 (0.4 mg) sublingual, if BP is not reduced and/or patient remains symptomatic, repeat **NITROGLYCERIN SL Spray** two more times prn. If patient is still symptomatic then a **NITROGLYCERIN Infusion** (50mg in 250cc **Normal Saline**) may be initiated (when available and practical). Begin the infusion rate at 5 µg/min and titrate in 5 – 10µg increments every 10 minutes until the BP decreases, and pain is relieved or the patient becomes less symptomatic. Keep systolic blood pressure >100 mmHg. If systolic blood pressure drops below 90 mmHg, decrease the infusion in 5 - 10 µg increments until systolic blood pressure is greater than 100 mmHg. If no IV pump is available or **squad is staffed as an AEMT unit**, then administer NTG SL spray or tablet q 5 minutes, prn, while maintaining pressures as above.
19. If anxiety interferes with CPAP therapy paramedics may consider **Midazolam (Versed)** 1-2 mg IVP, repeat prn to a maximum of 10 mg.
20. **FENTANYL 25 -50 µg IVP**. May repeat q 10 minutes. Maximum total dose is 100 ug.
21. Consider Albuterol 2.5 mg via Nebulizer, q 10 minutes x 2.

Paramedic

22. Consider AMI and obtain a 12 LEAD ECG.

HYPERTENSION, HYPOTENSION, SHOCK, AND ACUTE PULMONARY EDEMA
ALGORITHM



1. A fluid bolus of 250-500 ml **Normal Saline** should be tried. Fluid bolus is contraindicated in CHF/APE.
2. Dopamine - 400 mg/250 ml D5W or **Normal Saline** @ 5-20 µg/kg/min.
3. Administer one **NITROGLYCERIN spray 0.4 mg, or tablet 1/150** sublingual, if BP is not reduced and/or patient remains symptomatic, repeat **NITROGLYCERIN SL Spray or tablet** q 5 minutes. If patient is still symptomatic then a **NITROGLYCERIN Infusion (50mg in 250cc Normal Saline)** may be initiated by paramedics (when available and practical). Begin the infusion rate at 5 µg/min and titrate in 5 - 10 µg increments every 10 minutes until the BP decreases, and pain is relieved and the patient becomes less symptomatic. Keep systolic blood pressure >100 mmHg. If systolic blood pressure drops below 90 mmHg, decrease the infusion in 5 - 10 µg increments until systolic blood pressure is greater than 100 mmHg. If no IV pump is available or **squad is staffed as an AEMT unit**, then administer NTG SL spray or tablet q 5 minutes, prn, while maintaining pressures as above.
4. May repeat at 5 minute intervals if systolic BP > 90mmHg or follow guidelines in 3, above.
5. Monitor closely for respiratory depression.

CHEST PAIN/SUSPECTED MYOCARDIAL INFARCTION

Everyone has heard the statement "time is muscle" therefore on-scene times should be limited to < 10 minutes if possible. Only essential ABC's, and lifesaving intervention should be completed on scene. It is acknowledged that completion of this protocol in the pre-hospital setting might exacerbate the patients' condition; therefore only applicable interventions should be completed. Remember that O₂ and NITRO will save heart muscle in the pre-hospital setting.

First Responder/Basic/AEMT

1. Summon ALS
2. Baseline assessment per protocol.
 - a) If no pulse, apply and use AED and begin CPR prn.
3. If the patient complains of chest discomfort, be sure to evaluate and document the:
 - O** - Onset of the problem
 - P** - Provocation
 - Q** - Quality
 - R** - Radiating
 - S** - Severity
 - T** - Time since onset
4. Administer high flow O₂, 10 – 15 lpm via non-rebreather mask, check SpO₂ if available.
5. Apply monitor and obtain 12-lead ECG. Patches to be placed using pre-manufactured 12-lead device for Basic and AEMT EMT's and no medic present.
6. Transmit 12-lead to receiving hospital, if cardiac monitor is so equipped. If 12-lead cannot be transmitted, bring rhythm strip to ED and give it to the ED physician for interpretation.

Basic/AEMT

7. Call for ALS support.
8. Administer 4 Baby Aspirin P.O. (324mg).
9. If BP > 100 systolic and pt. has been prescribed **NITROGLYCERIN** assist pt. in the administration of 1 tablet 1/150 (.4 mg) or 1 spray SL of their own **NTG** and repeat VS every 3-5 minutes. Basic EMT's must use pt.'s prescribed **NITROGLYCERIN**. **If pt's own NITROGLYCERIN is empty, out dated, or not present you may use the NITROGLYCERIN spray carried on the Squad /Medic ONLY after receiving orders from the online medical control physician.**

AEMT/Paramedic

10. Establish IV **Normal Saline** TKO.
11. Put pt. on monitor, obtain 3 lead ECG.
12. Obtain 3 or 12 lead ECG **prior to NITROGLYCERIN** (*if possible*) and repeat at least once prior to arrival at the hospital or with every critical event during the run (i.e.: pain increase, BP drop, dysrhythmia, etc...). Also, document pain levels with each 3 or 12 lead obtained.
13. **NITROGLYCERIN** spray (tab) sublingually. May repeat q 5 minutes, prn (maintain systolic blood pressure ≥ 90 mmHg, ≥120 mmHg if signs of neurological deficits).
14. In acute MI with pain unresolved by **NITROGLYCERIN**, consider **FENTANYL** 100 µg IVP. May repeat 50 µg prn q 10 minutes until pain is relieved (monitor pt. for respiratory depression).
15. For hypotension, consider volume infusion (200 to 300 ml **Normal Saline**).
16. If myocardial infarction is **strongly** suspected, the heart rate is 50 or greater, (and no third degree block is present) and chest discomfort is present, begin the following:
 - a) After administration of three **NITROGLYCERIN** SL sprays (tabs); after an IV is established, a **NITROGLYCERIN** Infusion (50mg in 250 cc **Normal Saline**) may be initiated (when available and practical). Begin the infusion rate at 5 µg/min and titrate in 5 - 10 µg increments every 10 minutes until pain is relieved. Keep systolic blood pressure ≥ 90

mmHg. If systolic blood pressure drops below 90 mmHg, decrease the infusion in 5 - 10 µg increments until systolic blood pressure is greater than 100 mmHg. If no IV pump is available or if the **squad is staffed as an AEMT unit**, then additional NTG SL sprays (tabs) can be given q 5 minutes prn while maintaining pressures as above.

Paramedic

17. Any patient with suspected myocardial infarction and hemodynamically unstable, who is having sustained runs of 6 or more consecutive PVC's in a row (V-Tach) should receive **LIDOCAINE 1 - 1.5 mg/kg IV** push over 2 minutes. **Pt. should only receive anti-arrhythmic if unstable.**
- After first bolus, initiate a **LIDOCAINE INFUSION (2 grams/500 ml D5W)** with mini drip tubing at 30 gtts/minute (2 mg/min).
 - If signs of **LIDOCAINE toxicity** appear (slurred speech, vomiting, altered consciousness, muscle twitching, seizures), **discontinue infusion immediately.**

OR

- Patients allergic to Lidocaine should receive **Amiodarone 150 mg in 100 cc's** of Normal Saline over 10 minutes.
18. If heart rate is less than 60, refer to bradycardia protocol.
- For symptomatic bradycardia consider external pacing over the use of ATROPINE.
19. Complete the Thrombolytic Check Sheet, Figure 2-1, prior to ED arrival if time permits and/or the patient's condition facilitates its completion.

PREMATURE VENTRICULAR CONTRACTIONS (PVC'S) – SIX OR MORE IN SUCCESSION

First Responder/Basic/AEMT

1. Summon ALS
2. Baseline assessment per protocol.
3. If the patient complains of chest discomfort, be sure to evaluate and document the **OPQRST**.
4. Administer high flow O₂, 10 – 15 lpm via non-rebreather mask, check SpO₂ if available.

Basic

5. If BP > 100 systolic and pt. has been prescribed **NITROGLYCERIN** assist pt. in the administration of 1 tablet 1/150 (0.4 mg) or 1 spray SL of their own **NITROGLYCERIN** and repeat VS every 3-5 min. Basic EMT's must use pt.'s prescribed **NITROGLYCERIN**. **If pt's own NITROGLYCERIN is empty, out dated, or not present you may use the NITROGLYCERIN spray (tab) carried on the Squad /Medic ONLY after receiving orders from the online medical control physician.**

AEMT

6. Establish IV **Normal Saline** TKO.
7. Put pt. on monitor, obtain 3 lead ECG.
8. Summon ALS

Paramedic

In patients without suspected myocardial infarction that are having symptomatic (lightheadedness) PVC's, administer **anti-dysrhythmic** according to the following guidelines:

9. Consecutive PVC's (>6) in succession (V-Tach), and pulse is greater than or equal to 60 bpm, initiate the following:
 - a. **LIDOCAINE 1 - 1.5 mg/kg** IV push over to 2 minutes.
 - b. After first bolus if PVC's (V-Tach) is NOT resolved, then rebolus with 0.5 to 1.5 mg/kg to a maximum of 3 mg/kg every 5 to 10 minutes until ectopy is resolved.

OR

- c. **AMIODARONE 150 mg** in 100 cc's Normal Saline over 10 minutes

OR

- d. **MAGNESIUM SULFATE 1 to 2 gm.** in 50 cc's Normal Saline over 10 to 20 minutes.

10. Once ectopy (V-Tach) resolved, maintain as follows:
 - a. After Lidocaine, 1 mg/kg. Lidocaine Drip, 2mg/min
 - b. After Lidocaine, 1-2 mg/kg. Lidocaine Drip, 3mg/min
 - c. After Lidocaine, 2-3 mg/kg. Lidocaine Drip, 4mg/min
 - d. If ectopy returns after Amiodarone infusion rebolus with 150 mg in 100 cc's Normal Saline over 10 minutes, then 150 mg Amiodarone in 250 cc Normal Saline at 100 ml per hour.

BRADYCARDIA

First Responder/Basic/AEMT

1. Baseline assessment per protocol.
2. Summon ALS.
3. If the patient complains of chest discomfort, be sure to evaluate and document the **OPQRST**.
4. Administer high flow O₂, 10 – 15 lpm via non-rebreather mask, check SpO₂ if available.

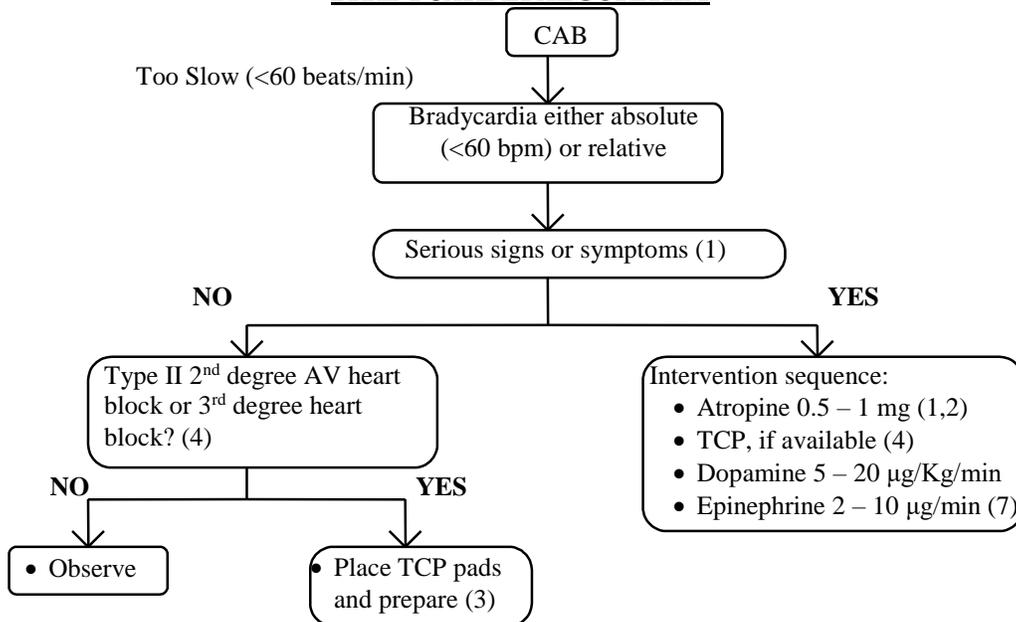
AEMT

5. Establish IV **Normal Saline** TKO.
6. Put pt. on 3-lead cardiac monitor.

Paramedic

7. Determine if patient is symptomatic. If so, administer **ATROPINE** 0.5 – 1 mg IV. Repeat in 3 to 5 minutes if not resolved to a maximum dose of 0.04 mg/kg or 3 mg max. Patients with AMI should not receive atropine, go directly to TCP protocol.
8. If not resolved with Atropine, use **TCP**. Verify patient tolerance and mechanical capture. For pain control **FENTANYL** 50-100 mcg, or **KETAMINE** (0.1-0.3 mg/kg)
9. Administer **DOPAMINE**, 400 mg/250 cc D5W or **Normal Saline**, at 5 µg/kg/min, titrate to effect to a maximum of 20 µg/kg/min.
10. Administer **EPINEPHRINE**, 1 mg (1:1000)/250 cc **Normal Saline**, at 2 – 10 µg/min., titrate to effect.

BRADYCARDIA ALGORITHM



1. Serious signs or symptoms must be related to the slow rate.
2. Clinical manifestations include:
 - a. Symptoms: chest pain, shortness of breath, decreased LOC
 - b. Signs: low BP, shock, pulmonary congestion, CHF, acute MI
3. **ATROPINE** should be given in repeat doses in 3-5 min up to total of 0.04 mg/kg or 3 mg maximum. Consider shorter dosing intervals in severe clinical conditions.
4. Do not delay **TCP** while awaiting IV access or for **ATROPINE** to take effect if patient is symptomatic. Verify patient tolerance and mechanical capture. For pain control use **FENTANYL** 50-100 mcg, or **KETAMINE** (0.1-0.3 mg/kg).
5. Never treat third-degree heart block plus ventricular escape beats with **LIDOCAINE**.
6. **DOPAMINE**: 400 mg/250 ml **Normal Saline** at 5 µg /kg/min., titrate to effect to a max dose of 20 µg /kg/min.
7. **EPINEPHRINE**: 1mg (1:1000) ampule/250 ml **Normal Saline** at 2-10 µg /min., titrate to effect.

TACHYCARDIA

All Levels (for all Tachycardia Patients)

1. Baseline assessment per protocol.
2. Summon ALS.
3. If the patient complains of chest discomfort, be sure to evaluate and document the **OPQRST**.
4. Administer high flow O₂, 10 – 15 lpm via non-rebreather mask, check SpO₂ if available.

AEMT (for all Tachycardia Patients)

5. Put pt. on 3-lead cardiac monitor.
6. Establish IV access with large bore Angiocath and regular tubing in an antecubital vein at TKO rate.

Supraventricular Tachycardia (SVT/PSVT) (Narrow Complex Tachycardia)

Paramedic

7. If unstable with serious signs or symptoms, prepare for immediate synchronized cardioversion.

NOTE: Cardioversion is seldom needed for heart rates less than 150.

8. If heart rate is greater than 150 and patient stable, attempt any of the following measures:
 - Valsalva maneuver.
 - Palpate carotid arteries one at a time to ensure strong, equal pulses are present bilaterally. Auscultate for bruits. Carotid massage (max. 20 seconds) if no bruits are present and both carotid pulses are palpable. Massage one side only (right side preferred). **NOTE: Carotid massage is contraindicated in patients with carotid bruits and should be avoided in older patients.**
9. If Narrow Complex Rhythm continues or patient is unstable but responsive (systolic BP < 90 mmHg and or symptoms of chest pain, shortness of breath or mental status changes):
 - a) Administer **ADENOSINE**, 6 mg IVP over 1 - 3 seconds and flush immediately with 20 ml of **Normal Saline** (or pressure infuse IV for one minute).
 - b) If after 1 - 2 minutes the patient remains in PSVT, administer **ADENOSINE** 12 mg IVP over 1 - 3 seconds and flush immediately with 20 ml of **Normal Saline**. May repeat 12 mg dose in 2 to 3 minutes if unsuccessful.
 - c) Assess complex width: If Narrow Complex Rhythm is found to be atrial fibrillation or atrial flutter after trial of adenosine give **DILTIAZEM (Cardizem)** (if available) 0.25 mg/kg over two minutes IV. May repeat **DILTIAZEM** in 15min. at 0.35mg/kg. Withhold **DILTIAZEM** for patients with WPW.
 - d) If narrow complex persists, then proceed with **cardioversion** if pt. has low BP or becomes unstable.
 - e) If wide complex, administer **LIDOCAINE** bolus of 1 – 1.5 mg/kg IVP. If pt. converts hang a drip at 2 mg/min.
 - f) Monitor blood pressure closely after each medication.
 - g) If at any time the patient becomes unresponsive or unstable, proceed to (10).
10. If heart rate >150 bpm and patient with PSVT is unresponsive or unstable (or becomes unresponsive or unstable after failing to convert with **ADENOSINE**), proceed with the following steps:
 - Consider pain control with **FENTANYL** 50-100 mcg, or **KETAMINE** (0.1-0.3 mg/kg) IV. Do Not Delay Cardioversion for Pain Medication.
 - **Synchronized Cardioversion** 50 joules, if unsuccessful, then
 - **Synchronized Cardioversion** 100 joules, if unsuccessful, then
 - **Synchronized Cardioversion** 200 joules, if unsuccessful, then
 - **Synchronized Cardioversion** 300 joules, if unsuccessful, then
 - **Synchronized Cardioversion** 360 joules, repeat at 360 joules prn.

Wide Complex Tachycardia

Paramedic

1. If unstable with serious signs or symptoms, prepare for immediate cardioversion.
NOTE: Cardioversion is seldom needed for heart rates less than 150.
2. For STABLE Uncertain Wide Complex Tachycardia proceed as follows:
 - a. Administer 1 – 1.5 mg/kg **LIDOCAINE** IVP over 2 to 3 minutes. Repeat at 0.5 to 0.75 mg/kg prn every 3 – 5 minutes to maximum dose of 3 mg/kg.
 - b. Administer **AMIODARONE** 150 mg in 100 ml NS over 10 minutes if allergic to Lidocaine.

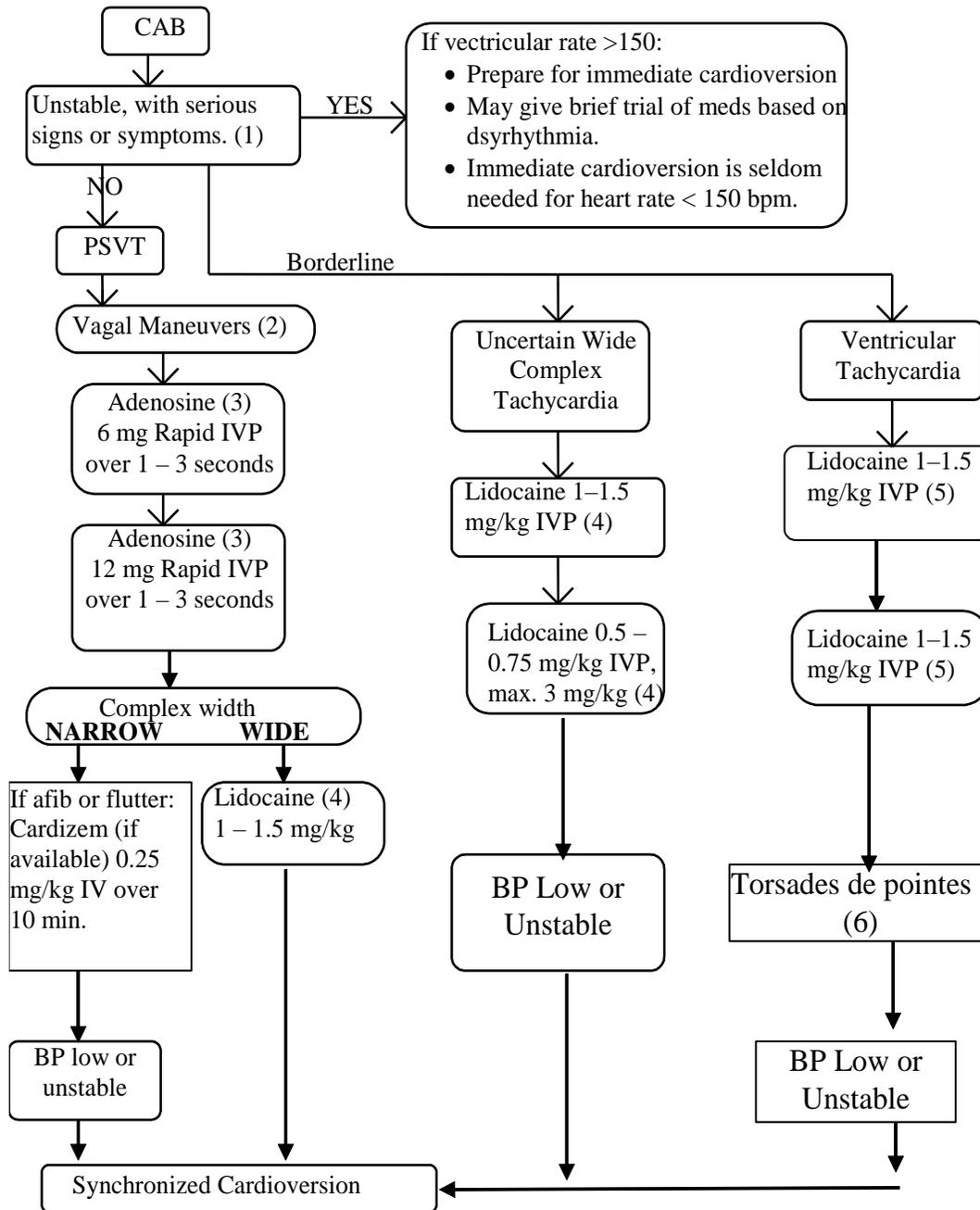
NOTE: If rhythm converts with Lidocaine, a maintenance infusion is to follow.

- c. If no conversion occurs, then proceed with synchronized cardioversion starting at 100 Joules on the first shock.

Notes:

- If patient becomes unstable at any time, move to "unstable" arm of following algorithm.
- Unstable symptoms include chest pain, dyspnea, hypotension (systolic BP < 90 mmHg), CHF, ischemia, or infarction.
- Pain control should be achieved with **FENTANYL** 50-100 mcg, or **KETAMINE** 0.1 – 0.3 mg/kg IV.
- If hypotension, pulmonary edema or unconsciousness present, unsynchronized cardioversion should be done due to the delay sometimes associated with synchronization. In the absence of hypotension, pulmonary edema, or unconsciousness, a precordial thump may be employed prior to cardioversion.
- Administer a bolus of **LIDOCAINE** 1 to 1.5 mg/kg followed by a **LIDOCAINE INFUSION** if cardioversion alone is successful.

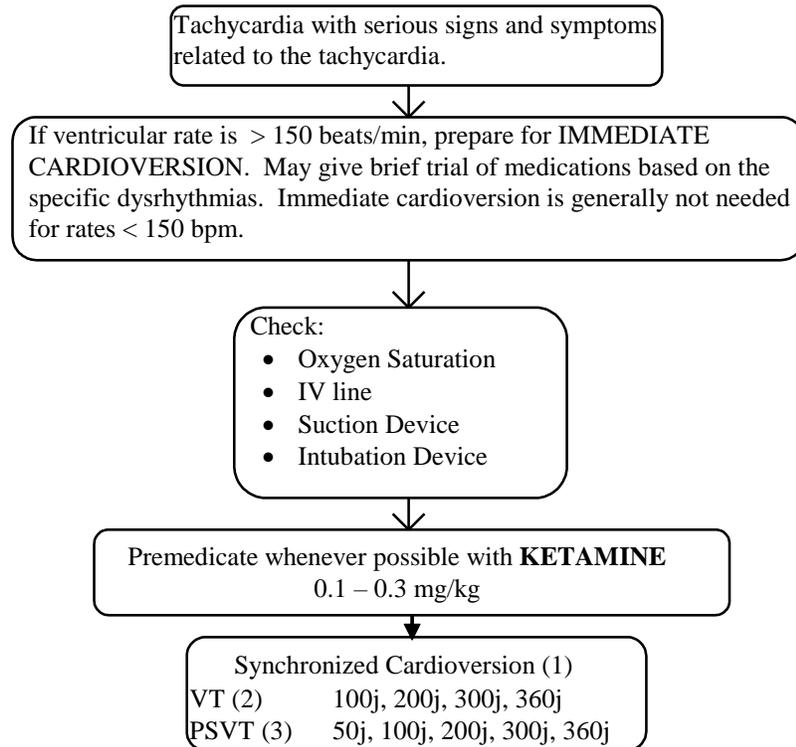
TACHYCARDIA ALGORITHM



- (1) Unstable condition must be related to the tachycardia. Signs and symptoms may include chest pain, shortness of breath, decreased LOC, low BP, shock, pulmonary congestion, congestive heart failure, acute MI.
- (2) Carotid sinus pressure is contraindicated in patients with carotid bruits and should be avoided in older patients. Avoid ice water immersion in patients with ischemic heart disease.
- (3) **Adenosine** must be given as a RAPID IV BOLUS followed by an IV flush. Give in an IV site as proximal as possible and elevate the extremity during bolus. Avoid distal IV sites.
- (4) If **Lidocaine** is successful, initiate an infusion.
- (5) If allergic to Lidocaine administer **AMIODARONE** 150 mg in 100 ml NS over 10 minutes.
- (6) Torsades de Pointes (with pulse) **MAGNESIUM SULFATE** 2 gm in 50 ml NS over 10 minutes.

ELECTRICAL CARIOVERSION ALGORITHM

Paramedic



- (1) Note possible need to resynchronize each cardioversion. If delays in synchronization occur and clinical conditions are critical, go to immediate unsynchronized shocks.
- (2) Treat polymorphic VT (irregular form and rate) like VF: 200J, 200-300J, 360J.
- (3) PSVT often responds to lower energy levels (start @ 50J).

VENTRICULAR FIBRILLATION / PULSELESS V-TACH ALGORITHM

First Responder/Basic/AEMT

1. If presented with a Do Not Resuscitate order, refer to DNR Section.
2. Assess CAB. Immediately begin vigorous CPR following current AHA standards, 2 minutes of CPR followed by a single shock. Repeat sequence as long as necessary. Use AED if readily available and CPR is not interrupted. Otherwise complete 2 minutes of CPR prior to electrical therapy.
3. If Unresponsive, Pulseless and Apneic proceed as follows:
4. Establish an airway utilizing an oral or nasal pharyngeal airway device and BVM with high flow O₂. Insert a Dual Lumen airway or Extraglottic airway if pulseless and apneic.
5. Summon ALS.
6. Consider Load and Go after two shocks.

AEMT

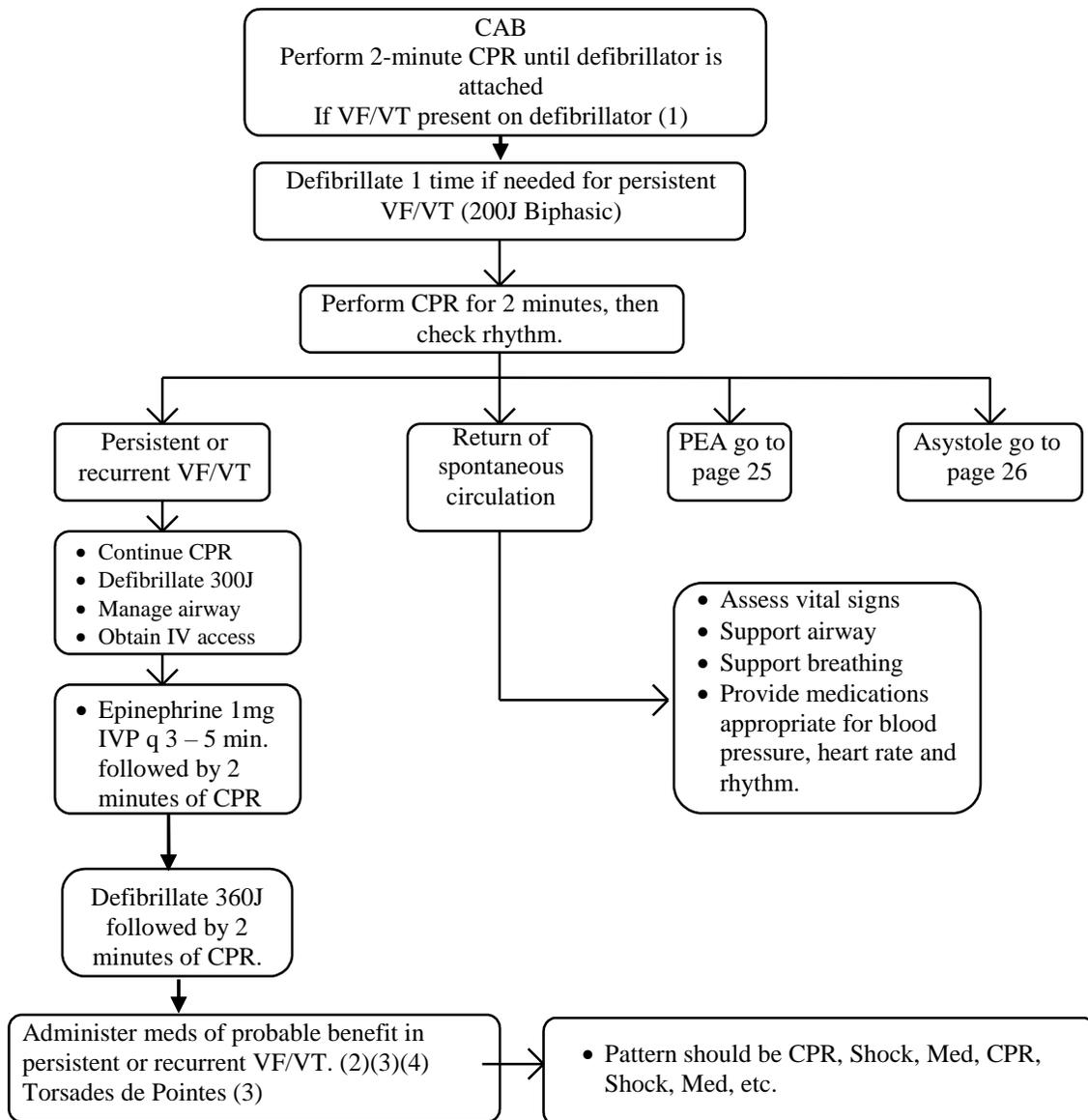
7. Place patient on 3 lead ECG monitor.
8. Establish an IV of **Normal Saline**, flow wide open.
9. Defibrillate as necessary by rhythm indicated on monitor (biphasic 200J, 300J, 360J) using current AHA guidelines.
10. Establish a secure airway. Intubate a pulseless, apneic patient. Assess ETT placement by auscultation over epigastrium first, then over both lung fields and use an end-tidal CO₂ detector. Secure properly placed tube and inflate cuff. Ventilate 8 to 10 times per minute with high flow O₂ (10 to 15 lpm). Use a PEEP device to maintain Positive End Expiratory Pressure of 5 cm/H₂O.

Paramedic

NOTE: When administering drugs in an arrest the sequence to be followed should be CPR-SHOCK – DRUG, CPR-SHOCK-DRUG etc. until the arrest is resolved. The paramedic sequence listed below assumes that the initial round of CPR and initial shock has been completed prior to any drug administration. It is assumed that a shock is administered between each drug administration and CPR continues between shocks. Emphasize high quality CPR without interruption of more than 3-5 seconds. Switch compressors every 200 compressions unless AutoPulse or LUCAS device is available.

11. Administer **EPINEPHRINE** 1 mg (10cc of 1:10,000) IVP, or 2 – 2.5 times IV dose via ETT. Repeat q 3 -5 minutes prn.
12. **LIDOCAINE** 1.5 mg/kg IVP. Repeat in 3 – 5 minutes at 1.5 mg/kg. 2 – 4 mg/kg via ETT. If rhythm converts, initiate a **LIDOCAIN INFUSION**.
13. If allergy to **Lidocaine**, administer **AMIODARONE** 300 mg IVP
14. **SODIUM BICARBONATE** 1 mEq/kg IVP if patient has been down for more than ten minutes.
15. If evidence of Torsades de Pointes give **MAGNESIUM SULFATE** 1 – 2 gm. diluted to 50cc's with **Normal Saline** IVP bolus (Contraindicated in Renal Dialysis patients).

VENTRICULAR FIBRILLATION/PULSELESS VENTRICULAR TACHYCARDIA
ALGORITHM



1. When using an Automated External Defibrillator (AED) press "Analyze", then defibrillate up to 3 times as above.
2. **LIDOCAINE** 1.5 mg/kg IV push. Repeat once in 3-5 minutes.
3. **MAGNESIUM SULFATE** 1 - 2 gm diluted into 50 ml NS IVP Bolus. (Contra indicated in Renal Dialysis patients).
4. If conversion after **LIDOCAINE** bolus, initiate **LIDOCAINE INFUSION**.
5. If allergy to **Lidocaine**, administer **AMIODARONE** 300 mg IV

PULSELESS ELECTRICAL ACTIVITY

First Responder/Basic/AEMT

1. If presented with a Do Not Resuscitate order, refer to DNR Section.
2. Assess CAB. If Unresponsive, Pulseless and Apneic proceed as follows:
3. Begin vigorous CPR following current AHA standards.
4. Establish an airway utilizing an oral or nasal pharyngeal airway device and BVM with high flow O₂. Insert a Dual Lumen airway or Extraglottic airway if pulseless and apneic.
5. Summon ALS.
6. Consider load and go and ALS rendezvous.

AEMT

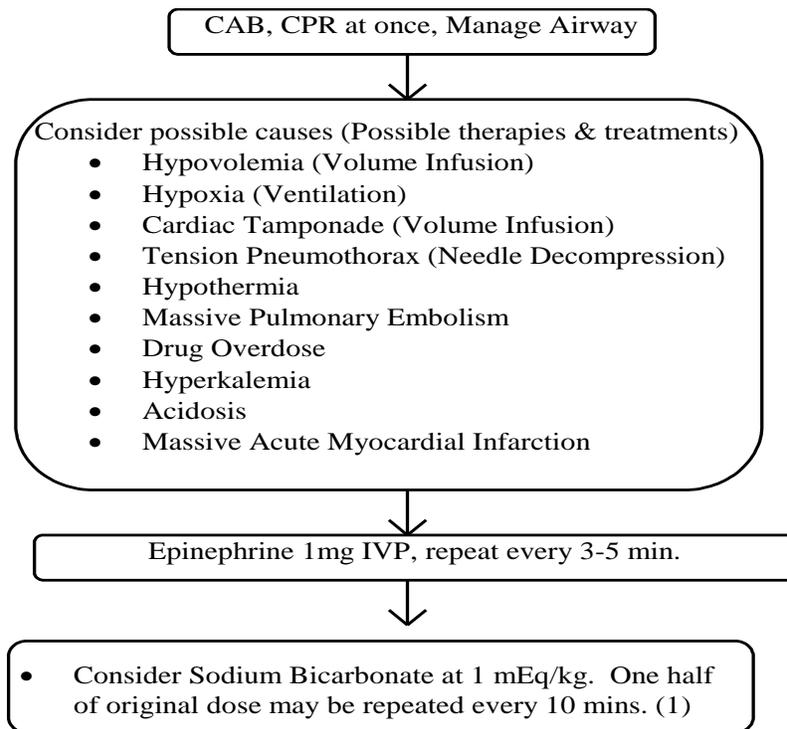
7. Defibrillate as necessary by rhythm indicated on monitor (200J, 300J, 360J) using current AHA guidelines.
8. Establish a secure airway. Intubate a pulseless, apneic patient. Assess ETT placement by auscultation over epigastrium first, then over both lung fields, and use of end tidal CO₂ detector. Secure properly placed tube and inflate cuff.
9. Ventilate 10 to 12 times per minute with high flow O₂ (10 to 15 lpm). Use PEEP device to maintain Positive End Expiratory Pressure of 5 cm/H₂O
10. Establish an IV of **Normal Saline**, flow wide open.
11. Place patient on 3 lead ECG monitor.

Paramedics

PEA includes: Any rhythm that does not have a corresponding pulse, and:

- Idioventricular rhythms
 - Ventricular escape rhythms
 - Brady-asystolic rhythms
 - Post defibrillation idioventricular rhythms
12. Consider possible causes and treat appropriately.
 13. Administer **EPINEPHRINE** 1 mg (10 cc, 1:10,000) IVP, repeat q 3 – 5 minutes. ETT dose is 2 – 2.5 times (2-2.5 mg) the IV dose utilizing Epinephrine 1:1000 concentration followed by 3ml saline flush.

PULSELESS ELECTRICAL ACTIVITY ALGORITHM



- (1) **SODIUM BICARBONATE** - Consideration of its use in a dose of 1 mEq/kg is appropriate at this point. One half of the original dose may be repeated every 10 minutes if it is used.

SODIUM BICARBONATE should be considered if:

1. Patient has preexisting hyperkalemia.
2. Patient is suspected tricyclic antidepressant overdose.
3. Patient is intubated and in cardiac arrest greater than 10 minutes.

SODIUM BICARBONATE is contraindicated if the patient is hypoxic (i.e. not intubated). Use with caution in CHF and chronic renal failure patients.

ASYSTOLE

First Responder/Basic/AEMT

1. If presented with a Do Not Resuscitate order, refer to DNR Section.
2. CAB. If Unresponsive, Pulseless and Apneic proceed as follows:
3. Consider termination of activities if patient has been down for at least 15 minutes prior to arrival of EMS, no electrical activity is present and no resuscitative efforts have been initiated.
 - If unknown down time look for signs of death including livor mortis, rigor mortis, cold body temperature.
4. Begin vigorous CPR.
5. Apply AED (page 81).
6. Establish an airway utilizing an oral or nasal pharyngeal airway device and BVM with high flow O₂. Insert a Dual Lumen airway or Extraglottic airway if pulseless and apneic.
7. Call for ALS Assistance.

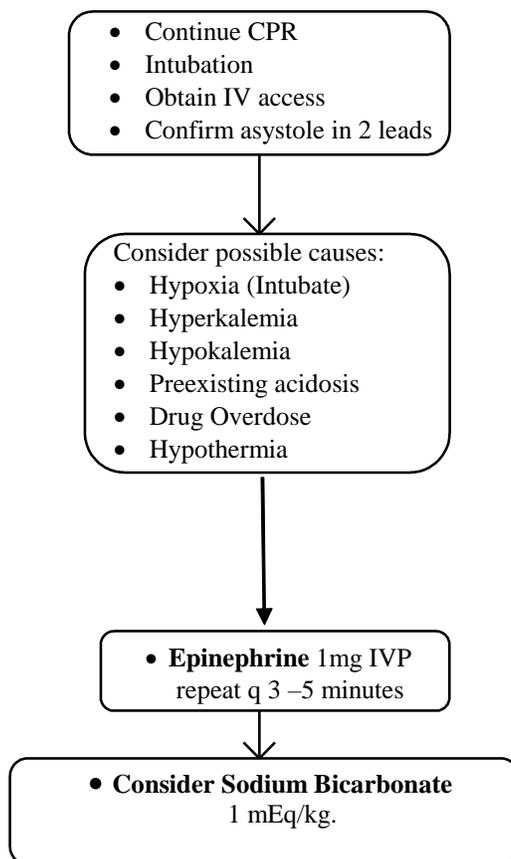
AEMT

8. Defibrillate as necessary by rhythm indicated on monitor (200J, 300J, 360J).
9. Establish a secure airway. Intubate a pulseless, apneic patient. Assess ETT placement by auscultation over epigastrium first, then over both lung fields, and use of end tidal CO₂ detector. Secure properly placed tube and inflate cuff. Ventilate 10 to 12 times per minute with high flow O₂ (10 to 15 lpm). Use PEEP device to maintain Positive End Expiratory Pressure of 5 cm/H₂O.
10. Establish an IV of **Normal Saline**, flow wide open.
11. Place patient on 3 lead ECG monitor. Confirm asystole in 2 leads.

Paramedic

8. Administer **EPINEPHRINE** 1mg IVP (10cc, 1:10,000). Repeat prn q 3 – 5 minutes. ETT dose is 2 – 2.5 times IV dose.
9. Consider **SODIUM BICARBONATE** 1 mEq/kg IVP. Repeat q 10 minutes at ½ original dose for sustained arrest.

ASYSTOLE TREATMENT ALGORITHM



- (1) Confirm asystole in two leads.
- (2) The value of **SODIUM BICARBONATE** is questionable during cardiac arrest, and it is not recommended for the routine arrest sequence. Consideration of its use is a dose of 1 mEq/kg. One half of the original dose may be repeated every 10 minutes if it is used.
- (3) **SODIUM BICARBONATE** should be considered if:
 - Patient has preexisting hyperkalemia.
 - Patient is suspected tricyclic antidepressant overdose.
 - Patient is intubated and in cardiac arrest greater than 10 minutes.
 - Sodium Bicarbonate is contraindicated if the patient is hypoxic (i.e. not intubated). Use w/ caution in CHF and chronic renal failure patients.

Respiratory Emergencies

GENERAL PROCEDURES

First Responder/Basic

1. Baseline assessment per protocol.
2. Assure open airway.
3. Assess respiratory rate:
 - If rate is < 8 , assist ventilations with Bag Valve Mask using high flow O₂. Summon ALS. Use supplemental oxygen at 15 L/min and assist at a rate of 10-12 breaths per minute.
 - If rate is ≥ 25 , place patient in a position of comfort, provide high flow O₂ using non-rebreather mask. Summon ALS
 - If rate is ≥ 8 or < 25 , maintain an open airway and provide O₂ at 10 lpm via NRB.
4. Check for pulse, if no pulse present or pulse is weak, go to Circulatory Emergencies protocol.
5. Check SpO₂ using pulse oximeter.

Basic

6. Assess for signs of trauma. If trauma is present or suspected, go to Trauma protocol.
7. For respiratory rate ≥ 8 , assess for wheezing:
 - If the patient has a history of reactive airway disease and has a prescription aerosol inhaler or nebulizer, assist with aerosol administration;
 - If the patient has a history of allergic reactions, exhibits hives, itching or airway swelling and has a prescription auto-inject epinephrine pen, assist with epinephrine administration.

AEMT

8. Establish an IV of Normal Saline using 10 gtts tubing at KVO. Do not delay transport.
9. Apply cardiac monitor.

Paramedic

10. Assess respiratory rate and ventilatory effort. Perform endotracheal intubation for respiratory rate < 8 or signs of inadequate ventilation (mental status changes, cyanosis, severe use of accessory muscles, etc.).

ASTHMA / COPD

ACUTE ASTHMA/CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

First Responder/Basic

1. Summon ALS.
2. Baseline assessment per protocol.
3. Procedures as above.
4. Find out what medications the patient has already taken within the past 4 hours.
5. If pt. presents with wheezing and has been prescribed an aerosol inhaler, assist with inhaler. If patients' own inhaler is empty, out dated, or not present, establish on-line Medical Control for orders to use the **ALBUTEROL** inhaler carried on Squad/Medic.
6. Apply CPAP, if indicated (EMT-B only)

AEMT

7. Establish an IV of **NORMAL SALINE**, KVO.
8. Apply monitor and monitor endtidal CO₂
9. Administer **ALBUTEROL** 2.5 mg by nebulizer over 10 minutes. Continuous administration may be used for transports of less than 30 minutes. Use with caution in any patient who has had repeated doses of bronchodilators within the last hour.
10. Consider adding **ATROVENT** (Ipratropium bromide) 0.5 mg X 1 to the first nebulizer treatment.

Paramedic

11. For critical patients or if patient condition deteriorates, consider intubation and **EPINEPHRINE** 1:1000 (0.3 to 0.5 mg) (0.3-0.5 cc's) IM for adults and children over 65 pounds. Use with caution in patients with preexisting heart conditions or significant risk factors for coronary artery disease.
12. If condition not improved with aerosol treatment, administer **SOLUMEDROL** (Methyl-prednisolone) 125 mg IVP.
13. Consider **MAGNESIUM SULFATE**, 2 gm. diluted in 50cc **Normal Saline** over 20 minutes.
14. Rapid transport for severe cases.

ALLERGIC REACTION AND ANAPHYLAXIS

First Responder/Basic

1. Summon ALS.
2. Baseline assessment per protocol.
3. General procedures as above.
4. If pt. has a history of *allergic reactions, exhibits hives, itching, or airway edema* and has a prescribed **Auto-inject EPINEPHRINE PEN**, Basic EMT's may assist with its administration. If pt.'s **EPINEPHRINE PEN** is empty, out dated, or not present establish on line *Medical Control* for orders to use the **EPINEPHRINE PEN** from the Squad/Medic if available.

AEMT

5. Establish an IV of **Normal Saline**, KVO.
6. Apply cardiac monitor.
7. If the above signs and symptoms are present, administer **EPINEPHRINE** 1:1000 0.3 - 0.5 mg intramuscular (IM) (0.3-0.5 cc) and start an IV with **Normal Saline** with regular tubing and a large bore needle. If none of the above are present, then treat symptomatically. However, if the patient has a history of *allergic reactions, exhibits hives, itching, airway edema, or hypotension*, then proceed with the following procedures.
8. In asymptomatic patients with known history of anaphylactic reaction (as opposed to a local reaction), administer **EPINEPHRINE** 1:1000 0.3 to 0.5 mg (0.3 – 0.5 cc) IM.
9. If age ≥ 10 then administer **BENADRYL** 25mg IVP over three minutes or deep IM. May repeat once prn up to 50 mg total dose.

Paramedic

10. With glottic obstruction, give 0.3 – 0.5 mg (0.3-0.5 cc's) **EPINEPHRINE** 1:1000 IM.
11. For severe cases such as anaphylactic reaction, bronchospasm, severe shock or signs and symptoms as listed above, proceed as follows:
 - Administer **EPINEPHRINE** 0.3 – 0.5 mg (0.3-0.5 cc's) (Epi 1:1000) IM.
 - Administer **SOLUMEDROL** 125mg IVP.
 - Administer **ALBUTEROL** 2.5 mg in 3 cc saline (0.083%) by nebulizer.
 - For profound shock or full circulatory collapse, give IV boluses of **Normal Saline** and **EPINEPHRINE** 0.3-0.5 mg (3 to 5 ml) (Epi 1:10,000) IVP.
 - Place patient in Trendelenburg position, if tolerated.
 - Consider **DOPAMINE** premix (400mg/500cc [800 μ g/cc]) or mix 400 mg **DOPAMINE** in 250 cc **Normal Saline** [**1600 μ g/cc**] at 5 – 20 μ g /kg/min. Titrate to maintain systolic blood pressure equal to or greater than 100 mmHg.
 - Rapid transport.

FOREIGN BODY AIRWAY OBSTRUCTION

ADULT PROCEDURES

First Responder/Basic/AEMT

1. Baseline assessment per protocol.
2. Conscious victim, sitting or standing:
 - a. If respiration present but compromised, provide support and assurance
 - b. If respiration absent or patient increasingly hypoxic:
 - Administer abdominal thrusts until either the foreign body is expelled and respirations are restored or the victim loses consciousness
 - If airway cleared, reassess ABC's and transport
3. If airway is not clear or unconscious victim:
 - a. Summon ALS.
 - b. Attempt ventilation with BVM device.
 - c. Reposition head and try to re-ventilate.
 - d. Chest compression.
 - e. Finger probe and remove foreign matter, if possible.
 - f. Establish airway and attempt to re-ventilate.
 - g. If unable to ventilate, repeat chest compressions.
 - h. Continue above sequence until successful or delivered to next level of care.
 - i.
4. Apply oxygen at 10 –15 lpm via non-rebreather mask and assist respirations as determined by patient's condition.

AEMT

5. Establish an IV of **Normal Saline KVO**
6. Apply cardiac monitor.

Paramedic

7. In addition to the above measures:
 - a. Intubation should be performed on patients unable to manage their own airway.
 - b. If unable to ventilate the unconscious patient after "3f" above perform a cricothyroidotomy and attempt positive pressure ventilation with 100% oxygen.

Altered Level of Consciousness

GENERAL APPROACH

First Responder

1. Baseline assessment as per protocol. Consider possible causes of an altered level of consciousness such as diabetes, stroke, hypo perfusion, poisoning, infection, hypoxia, and injury. Spinal Motion Restriction (SMR) is necessary for all unconscious patients with unknown mechanism of injury.
2. Maintain an open airway and provide 100% O₂ via NRB or BVM, as appropriate.
3. Apply pulse oximeter, if available.
4. Examine patient closely for signs of trauma, refer to Trauma protocol. If no trauma is suspected, transport pt. with head slightly elevated.
5. Note any motor deficits.
6. Summon ALS.

Basic

7. Observe for seizure activity.
8. Measure Blood Glucose level if possible. **If patient is able to protect/control their airway and blood glucose is <60 mg/dl, administer one tube of oral glucose.**

AEMT

9. Initiate IV of **Normal Saline** at KVO rate using a large bore needle and large vein where possible.
10. Apply cardiac monitor.
11. Obtain finger stick Chemstrip or sample with IV.
12. If finger stick Chemstrip is <60 mg/dl or if there is any doubt as to the patient's status, administer **DEXTROSE 50% IV**. If Chemstrip is unavailable then administer **DEXTROSE 50% IV** if patient is unconscious.

Paramedic

13. Intubate and ventilate unconscious, unknown etiology patients at 10 – 12 breaths/min with 100% **OXYGEN**. Use PEEP device to maintain Positive End Expiratory Pressure of 5 cm/H₂O.

CVA / UNCONSCIOUS, UNKNOWN ETIOLOGY

First Responder/Basic

1. General procedures as above.
2. Treat all suspected stroke/TIA patients as a “LOAD and GO” situation. **LIMIT ON SCENE TIME TO < 10 MINUTES.**
3. Keep head of bed elevated to 30 degrees.

AEMT/Paramedic

4. Complete Cincinnati Pre-hospital Stroke Survey on all suspected stroke/TIA patients.
 - a. Smile or show teeth (Cranial Nerve Test);
 - b. Arm drift (Motor Function);
 - c. Speech – “You can’t teach an old dog new tricks.” (Mental Status).
5. Announce “Stroke Alert” to receiving hospital ASAP, for all suspected strokes, so they can activate their stroke team protocol. Determine Last Known Well Time and notify receiving facility.
6. Administer a fluid bolus of 300-500 cc of **Normal Saline** if level of consciousness diminished and systolic B/P is less than 90.
7. Obtain FS glucose reading. Administer 50% **DEXTROSE 25 gm IV** if Blood Glucose level is less than 60 mg/dl or if patient is symptomatic and BG level is less than 90 mg/dl.
8. Administer **GLUCAGON 1 mg SC** or **IM** if unable to establish an IV.
9. In patients with decreased level of consciousness of unknown etiology and **narcotic overdose** is suspected, (i.e. injection marks, constricted pupils) administer **NALOXONE 2 mg slow IVP, IM, IO or IN**. May repeat **NALOXONE 2 mg** in 5 to 10 minutes to achieve adequate respiratory effort and/or respiratory rate. (**Administer Naloxone cautiously as fully awakened patients may become extremely agitated and dangerous.**)
10. Complete MEND exam on suspected stroke patients while en route to hospital, time permitting, checking Mental Status, Cranial Nerves and Limb Function.
 - Mental Status Check
 - Level of Consciousness – AVPU
 - Speech – “You can’t teach an old dog new tricks.”
 - Have pt. answer questions on current month and their age.
 - Pt. ability to follow commands by closing and opening eyes.
 - Cranial Nerves Check
 - Facial Droop – Have pt. show their teeth or smile.
 - Visual Fields in all 4 quadrants.
 - Horizontal Gaze (following your finger) side to side.
 - Limb Function Check
 - Motor Skills –
 - Arm drift (close eyes – hold out arms for 5 count)
 - Leg drift (open eyes – lift each leg separately for 5 count)
 - Sensory – Pt. closes eyes and we touch/pinch each arm and leg.
 - Coordination – Arms and Legs
 - Pt. takes their index finger and touches it to MIC’s finger then to pt.’s nose and back to MIC’s finger. Repeat w/ both arms.
 - Pt. takes one leg and rubs heel of that leg down shin of other leg. Repeat with opposite leg.

Paramedic

4. If known or strongly suspected Benzodiazepine overdose, manage the pt.’s airway appropriately and transport.

SEIZURES

First Responder/Basic

1. Maintain **airway** but do not try to insert oral airway or orally suction during a seizure.
 - a. Protect patient from injury.
 - b. Consider the cause (epilepsy, hypoglycemia, CVA, infection, head injury, overdose).
 - c. Transport medications to the hospital.
2. Administer high flow O₂ via non-rebreather mask at 10 – 15 lpm.

AEMT/Paramedic

3. Obtain chemstrip reading. If Blood Glucose level less than 60 mg/dl, administer **50% DEXTROSE 25 gm IV**. If there is any doubt about the patient or if the patient is exhibiting decreased level of consciousness or is disoriented administer the **50% DEXTROSE IV**. All unconscious patients should be administered **50% DEXTROSE IV**, unless the cause is known.
4. Administer **GLUCAGON 1 mg SC** or **IM** if unable to establish an **IV**.
7. Consider **VERSED** (midazolam) 2 mg to 4mg slow **IVP** to a total dose of 5 mg.
8. If no **IV**, consider **VERSED** (midazolam) 5 mg/1cc via intranasal route utilizing mucosal atomizing device (**MAD**). Administer by forcefully depressing plunger to atomize **VERSED** (midazolam) into one nares, selecting the nares that is free of mucous.
9. If **Versed** is not effective, and seizure activity continues administer **DIAZEPAM** 0.1 - 0.2 mg/kg **IV, IO, IM, R**. (If administered **IV** or **IO** give slowly over 2-3 minutes) May repeat ½ initial dose in 5-10 minutes if seizure activity continues. Max total dose 30 mg.

Paramedic:

10. Intubate to secure the airway if patient is unable to protect airway. Use **PEEP** device to maintain Positive End Expiratory Pressure of 5 cm/H₂O.

HYPERGLYCEMIA / HYPOGLYCEMIA

First Responder/Basic/AEMT

1. General procedures as above.
2. If patient is conscious, has a patent airway, with symptoms of hypoglycemia (blood sugar <60 mg/dl), administer one tube of **Oral Glucose** (Basic/AEMT).

AEMT/Paramedic

3. If disoriented or decreased level of consciousness, obtain chemstrip. If below 60 or if there is any doubt as to patient's status, administer **50% DEXTROSE 25 gm IV**.
4. If unconscious, administer **50% DEXTROSE 25 gm IV** initially.
5. Administer an additional **50% DEXTROSE 25 gm IV**, depending on patient response.
6. Administer **GLUCAGON 1 mg SC** or **IM** if unable to establish an IV.

Environmental Emergencies

GENERAL APPROACH

First Responder/Basic/AEMT

1. Consider environmental factors regardless of the situation. Always attempt to maintain a safe and normothermic environment for the patient.
2. Remove the patient from any unfriendly environment as soon as practical. *Always consider the safety of the rescuer.*
3. Patient assessment per protocol.
4. Summon ALS as indicated by situation.
5. Administer high flow O₂ via non-rebreather mask at 10 – 15 lpm
6. Move patient to temperature-controlled environment, remove their clothing and heat or cool as appropriate.

AEMT/Paramedic

7. Establish an IV of **Normal Saline** @ KVO with 10 gtts tubing. Titrate to maintain Systolic BP > 100 mmHg.
8. Apply cardiac monitor, obtain 3 lead ECG.

HEAT EXPOSURE / HYPERTHERMIA

First Responder/Basic/AEMT

1. Complete general procedures as above.
2. Remove clothing, as appropriate and move to cooler environment. Be considerate of patients privacy.
3. For heat stroke, institute rapid cooling measures:
 - Ice packs to major artery sites.
 - Sponge patient with cold water, tepid water for children.
 - Don't give fluids orally.
4. In heat stroke patients, be aware of the development of cardiovascular shut down, heart failure, and pulmonary edema.

AEMT/Paramedic

5. For seizures, give **VERSED** 2-4 mg slow IVP, maximum total dose is 5 mg. Be prepared to protect the patient's airway.
6. If no IV consider **VERSED** (midazolam) 5 mg/1cc via intranasal route utilizing mucosal atomizing device (MAD). Administer by forcefully depressing plunger to atomize VERSED into one nares, selecting the nares that is free of mucous.
7. If Versed not effective and seizure continues administer **DIAZEPAM** 0.1 - 0.2 mg/kg IV, IO, IM, R. (If administered IV or IO give slowly over 2-3 minutes) May repeat ½ initial dose in 5-10 minutes if seizure activity continues. Max total dose 30 mg.

Paramedic

8. Intubate to secure the airway if patient is unable to protect airway. Use PEEP device to maintain Positive End Expiratory Pressure of 5 cm/H₂O.

HYPOTHERMIA / HYPOTHERMIC DROWNING

Hypothermia Definition:

| | |
|-----------|---------------------------------------|
| Mild: | Core temperature of 34-36 C (92-96 F) |
| Moderate: | Core temperature of 31-34 C (88-92 F) |
| Severe: | Core temperature of < 31 C (< 88 F) |

First Responder/Basic

1. Remove patient from cold environment. Remove all wet clothing. Handle patient gently when removing clothing as rough handling may cause patient to degenerate into a fatal dysrhythmia. Protect against heat loss and wind chill. Wrap in a warm/dry blanket.
2. Provide **OXYGEN** as appropriate via non-rebreather or BVM.

AEMT

3. Apply cardiac monitor.
4. If the patient shows signs of life and/or an identifiable QRS on the monitor but has evidence of moderate or severe hypothermia or body temperature less than 31 C (< 88 F), **PERFORM BLS AS NEEDED REGARDLESS OF CORE TEMPERATURE, DO NOT GIVE ANYTHING BY MOUTH.** Endotracheal intubation as needed to support the patient's airway.
5. **DO NOT ATTEMPT RAPID EXTERNAL REWARMING WHILE IN THE FIELD.** Bring the patient in cold. It is best to rewarm this group of patients in a controlled environment.
6. Frozen extremities should not be thawed in the field.
7. Start two large bore (14-16ga) IVs of **Normal Saline** with 10gtt set.
8. Infuse 1-2 liters of warmed **Normal Saline** over 30 minutes. If IV solutions are cold, run IV at TKO to avoid worsening the hypothermia.
9. If the patient is in V-Fib *and if their central temperature is < 88 F (Severe hypothermia)*, defibrillate as in V-fib algorithm, intubate the trachea, and do basic CPR. Recent studies have shown that these patients could respond to early electrical therapy. Limit defibrillation to three counter shocks. Attempt further defibrillation attempts only when core temperature rises.

Paramedic

10. For patients in **severe hypothermia** limit cardiac resuscitation medications until the patient has a documented core temperature above 31 C (88 F). Limit defibrillation to three countershocks.
11. For patients in **moderate hypothermia** use the standard ACLS protocols but decrease the dosage by doubling the suggested time of administration (e.g. epinephrine every 6-10 minutes instead of 3-5 minutes). Administer drugs per the VF/VT algorithm but limit cardiac resuscitation medications until the patient has a documented core temperature >31 C (88 F). Subsequent rounds of drug administration should be delayed to minimize the shock on the heart as the body is rewarmed and circulation is restored.
12. For patients in **mild hypothermia** treat using the standard ACLS protocols with standard drug dosages.
13. Mild to moderate hypotension is appropriate for the hypothermic condition and need not be treated.
14. Bradycardia is appropriate for the hypothermic condition and need not be treated.
15. Atrial dysrhythmias will convert upon re-warming and need no treatment.
16. Patients with moderate to severe hypothermia need acute care from a Level I or II Trauma Center with **ECMO** (Extracorporeal Membrane Oxygenation) capabilities. Consider aeromedical transfer.

Toxic Exposure / Overdose

First Responder/Basic/AEMT

1. Assess the environment and protect yourself and others from toxic exposure. Decontaminate patient prior to treatment and transport, as appropriate.
2. Obtain history:
 - Medications - type, dose, bring container with patient.
 - Time and duration of exposure and via what route.
 - Past medical history.
 - If time permits, **contact Poison Control Center @ (800) 222-1222.**
3. Management:
 - Skin exposure - remove clothing and wash skin with copious amounts of water (brush off any dry chemicals before applying water).
 - Respiratory exposure - 100% O₂ via non-rebreather mask.
 - GI exposure – follow poison control recommendations and transport to hospital.
4. Establish an IV **Normal Saline KVO.**
5. Apply cardiac monitor and obtain 3 lead ECG.

AEMT/Paramedic

6. Administer **DEXTROSE 50% IV** after obtaining a chemstrip reading that is < 60 mg/dl.
7. If the patient is lethargic then manage the airway, anticipate intubation and ventilate as needed.
8. If a narcotic ingestion is suspected or the patient is unconscious give **NALOXONE** (narcan) 2mg IVP, IO, IM or IN. May repeat **NALOXONE** 2 mg in 5 to 10 minutes to achieve adequate respiratory effort and/or respiratory rate. (**Use Naloxone cautiously as fully awakened patients may become extremely agitated and dangerous.**)

Paramedic

9. If known or strongly suspected Benzodiazepine overdose manage the airway and transport to hospital.
10. If organophosphate exposure (i.e. insecticides) and development of coma, ataxia, psychosis, dyspnea, convulsions, bradycardia or cyanosis, give **ATROPINE** 2mg IVP. May repeat q 5 minutes as needed until signs of flushing, dry mouth and dilated pupils appear.
11. If known or suspected cyanide exposure, administer **SODIUM THIOSULFATE** 12.5 gm./50cc IVP over 10 minutes
12. If known or suspected tricyclic antidepressants (Elavil, Sinequan, Flexeril, etc.) overdose:
 - Manage seizure activity per protocol. (AEMT and EMT-P)
 - Consider **SODIUM BICARBONATE** 1 mEq/kg IVP.

MULTIPLE TRAUMA

All Levels

1. Assess the patients Level of Consciousness and perform a brief neurological assessment (e.g. AVPU), note any disability.
2. Assess airway with C-spine control. Use 100% oxygen via appropriate route.
 - a. Assume cervical spine injuries on all unconscious patients with known or suspected trauma, and on all patients with multiple trauma.
 - b. **EMT**- Insert Dual Lumen airway or Extraglottic airway in pulseless and apneic patients
 - c. **AEMT** – Orotracheal intubation using c-spine control if pulseless and apneic.
 - d. **EMTP** -Orotracheal intubation using C-spine control, or nasotracheal intubation, needle, or surgical cricothyroidotomy, if indicated.
3. Complete Baseline Physical Assessment per protocol. Keep the patient warm, use blankets, warmed IV fluids, and other methods to prevent temperature loss. Hypothermia will result in coagulopathy, acidosis, and death if not treated. Keep trauma patients warm...ALWAYS.
4. Complete Rapid Trauma Assessment per protocol (DCAP-BLS TIC) from head to toe.
5. Assess for adequacy of ventilation including: bilateral breath sounds, tension pneumothorax, open pneumothorax and flail chest.
6. Control active bleeding. For major bleeding uncontrolled by other measures (i.e. direct pressure, digital pressure, pressure dressing) apply clotting agent dressing if available (i.e. HemCon dressing) OR apply tourniquet (i.e. CAT or similar device) 2-3 inches proximal to the wound site. A secondary tourniquet may be placed if necessary.
7. Assess for adequacy of perfusion including: level of consciousness, peripheral pulses (rate & quality) vs. central pulses, capillary refill, tachycardia, skin color and temperature.
8. Presence of radial pulse indicates BP of at least 80 mmHg systolic.
9. Presence of femoral pulse indicates BP of at least 70 mmHg systolic.
10. Presence of carotid pulse indicates BP of at least 60 mmHg systolic.
11. Assess for disability, check pupillary response (AVPU).
12. Obtain SAMPLE history if possible.
13. Expose patient as injuries, environment or conditions dictate.
14. Immobilize, splint and restrain as appropriate and as time allows.
15. If patient combative or seizing, consider neurological trauma and treat per appropriate protocol.
16. Transport as quickly as possible. Provide continuous monitoring and re-evaluation.
17. Consider Aeromedical transportation for multiple trauma patient.

EMT

18. Obtain vital signs (SBP, Pulse/HR, RR).

19. Obtain pulse oximetry reading.
20. Administer high flow O₂ via non-rebreather mask or BVM and resuscitate as needed per this protocol.
21. Apply a rigid cervical collar, and secure patient to a backboard utilizing straps and other appropriate devices to insure **Spinal Motion Restriction (SMR)**. Spinal Motion Restriction includes taking steps to minimize head movement including the use of a cervical collar, padding, coaching, and positioning. Long Backboards, scoop stretchers, and other devices MAY be used for extrication purposes. These are not necessary for spinal motion restriction and **should be removed as soon as practical and safe for the patient and crew and ideally prior to transport**. Backboards and other devices are tools whose use may occasionally be required for movement, restraint or extrication purposes, and may be appropriate in cases where the patient is unable to participate in the coaching or self-stabilization aspects spinal motion restriction.
22. Visualize and inspect the patient's posterior aspect whenever possible.
23. Consider transporting the patient as soon as practical.
24. Perform a detailed assessment of the patient, including the reevaluation of the patient's ABC's and perform a focused assessment of the head, neck, chest, abdomen, pelvis, and extremities x4 and repeat neuro assessment.

AEMT/Paramedic

25. Establish two large-bore IV's of **Normal Saline** (14 or 16 ga.) with blood tubing flow at rate to maintain patient's systolic BP of 90-100.
26. Apply cardiac monitor and obtain 3 lead ECG, 12 lead if available.
27. Continue resuscitation, evaluation and reevaluation en route to the medical facility.
28. Monitor patient's cardiac rhythm, SpO₂, and vital signs, en route.

CHEST TRAUMA

All Levels

- Multiple trauma protocol as indicated.
- Do Not Remove Impaled objects. Stabilize in place for transport.

Tension Pneumothorax

AEMT/Paramedic

- Load & go.
- Perform needle decompression of affected chest side. Insert over the rib a 14 or 16 gauge angiocath into second or third intercostal space, midclavicular line. Repeat as needed.
- Reassess adequacy of ventilation and perfusion.

Open Chest Wounds

First Responder/Basic/AEMT

- Cover sucking chest wounds with a non-porous dressing (Vaseline gauze, gelled defibrillator pad, cellophane) taped over three (3) sides.
- Reassess adequacy of ventilation.
- If ventilation is inadequate, consider positive pressure ventilation via BVM.

AEMT/Paramedic

- Monitor for development of a tension pneumothorax. Treat accordingly.

Flail Chest

- Stabilize flail segment with bulky dressing and tape, if possible.
- Reassess adequacy of ventilation.
- If ventilation is inadequate, consider positive pressure ventilation via BVM.
- Treatment as listed in Multiple Trauma.

Simple Pneumothorax

- Treatment is supportive.
- High flow O2 by NRB mask.
- Monitor for development of tension pneumothorax particularly if positive pressure ventilation is employed.
- Procedures as listed in Multiple Trauma.

Hemothorax

- Treat for hypovolemic shock.
- Do not delay transport.
- Support ventilations.
- Procedures as listed in Multiple Trauma.
- Do not needle decompress chest.

Myocardial Contusion

- Procedures as listed in Multiple Trauma.
- Monitor for and treat dysrhythmias prn.

Pericardial Tamponade

- Procedures as listed in Multiple Trauma.
- Rapid transport.
- Flow IV's at wide open rate.

Notes: Blunt or penetrating injuries to the chest with shock that are not immediately responsive to the above measures should be transported without delay. Minimize scene time.

ABDOMINAL TRAUMA

All Levels

1. Multiple trauma protocol as indicated.
2. DO NOT remove any impaled foreign objects. Stabilize object securely for transport.
3. If eviscerated bowel present, cover with saline soaked sterile dressings.

NOTE: Any injury below the nipple line and above the thigh is considered an abdominal injury until proven otherwise.

UNSTABLE PELVIS / PELVIC FRACTURE

All Levels

1. An unstable pelvis shall be stabilized (binded) by a commercially available Pelvic Binder Splint or binded by other means such as a bed sheet.

NEUROLOGICAL TRAUMA

All Levels

1. Perform baseline physical assessment.
2. Multiple trauma protocol as indicated.
3. Provide high flow O₂ at 15 lpm using a non-rebreather mask. Assist ventilations with BVM, if necessary.
4. Apply pulse oximeter, if available.
5. Anticipate spinal shock secondary to a spinal cord injury, and be prepared to support vital signs.
6. With head injuries, anticipate intubation and give controlled ventilation at a rate of 10 - 12 breaths/minute with high flow O₂. If Neurologic deterioration is witnessed, or hypoxemia is suspected, a ventilatory rate of 20 may be appropriate, particularly if the higher rate improves oxygenation (*EMT-P*). If patient is apneic, intubate.
7. Full c-spine immobilization including backboard.
8. Control severe bleeding. May apply sterile dressings.
9. In the head injured patient with signs of shock, look for other sources of bleeding; i.e. chest, abdomen, pelvis, femurs, and treat for hypovolemic shock.

AEMT

10. Establish large bore IV of **Normal Saline**, flow wide open to maintain vital signs.
11. Apply cardiac monitor and obtain 3 lead ECG, 12 lead if available.
12. Anticipate and control seizure activity per seizure protocol.

Paramedic

13. Observe spine injured patients for neurogenic shock i.e., hypotension with bradycardia. If signs of inadequate perfusion are present, treat with fluid administration.
14. For combative head injuries consider Rapid Sequence Intubation for c-spine and airway control via intubation. For sedation administer **VERSED** (midazolam) 1 – 2.5 mg IVP over 1 – 2 minutes. May increase dose in 0.5 mg increments, titrating to effect. Maximum dose is 10 mg. Contact MCP prior to escalating dosage if possible.

FRACTURES / AVULSIONS / AMPUTATIONS

First Responder/Basic/AEMT

1. Baseline physical assessment per protocol.
2. Spinal Motion Restriction as indicated.
3. Assess PMS (Pulse, motor, and sensation) before splinting.
4. If no pulse(s), reposition extremity until pulse(s) return.
5. Control bleeding via appropriate measures.
6. If patient shows signs of shock or is short of breath, administer oxygen by non-rebreather mask.
7. If no pulse, cold, or lack of feeling, transport patient immediately.
8. Consider proper splints (traction splints may be used on long bone fractures, pelvic binders).
9. Splint fractures as patient condition and time allows, monitoring pulse, motor, sensory, color and temperature distal to the injury site before and after immobilization.
10. Splint in position found whenever possible, unless manipulated to restore pulse.
11. Position for comfort (use blankets, pads, etc.).
12. Consider ice packs to prevent swelling.
13. Reassess PMS every 5 - 10 minutes.
14. If a prolonged crush injury is suspected, follow crushing injury protocol.
15. For amputations, apply sterile dressing to stump.
16. Wrap amputated part in damp dressing and place inside a plastic bag and float in icy water.
17. Immobilize partial amputations for best vascular status.

AEMT/Paramedic

18. Establish a large bore IV of **Normal Saline** at a 100 cc/hr rate. Titrate to keep systolic blood pressure above 90 mmHg.
19. If patient has multiple fractures or shows signs of shock, consider a second large bore IV.
20. Apply cardiac monitor and obtain 3 lead ECG, 12 lead if available
21. In cases of isolated extremity trauma, consider administration of **FENTANYL** 50 - 100 µg for pain control. May repeat 50 µg in 5-10 minutes, then may repeat 50 µg q 10 minutes. If no IV or IO is available, **FENTANYL** may be administrated IM or IN at the same dosage. Pediatric **FENTANYL**: Ages 1-12 is 2.0 µg/kg. Age > 12 use adult dose. Repeat initial dose q 10 minutes until desired effect is reached.

OR

- KETAMINE** 0.1-0.3 mg/kg slow IV, IO, or IN. (May repeat x1 in 10 minutes.
(Pediatric dose is 0.1-0.3 mg/kg slow IV, IO) (May repeat x 1 in 10 minutes)
22. Monitor for respiratory depression or hypovolemia if analgesics are administered.

CRUSH INJURIES

First Responder/Basic/AEMT

1. Baseline physical assessment per protocol.
2. If the patient is accessible, provide high flow O₂ at 15 lpm via non-rebreather mask.
3. Apply pulse oximeter.

AEMT

4. If patient has been trapped/pinned for longer than 30 minutes, and exhibits signs/symptoms of relevant mechanism of injury to suspect crushing injury, then prior to extrication:
 - Coordinate time of release with rescue personnel
 - Establish at least one (1) large-bore IV of **Normal Saline**.
5. Apply cardiac monitor and obtain 3 lead ECG.

Paramedic

6. Add **SODIUM BICARBONATE** 1 amp (50 mEq) to one liter of NS IV solution. Begin a maintenance infusion at wide open rate (1500 cc/hr), and then administer 1 liter to 1.5 liter bolus just prior to extrication.
6. Consider aeromedical evacuation to Level 1 Trauma Center.
7. Contact receiving ED and notify them of the patient's crushing injury. Consider requesting Surgical Intervention team from OSU or Grant Medical Center to the scene if needed.
8. Anticipate crushing syndrome and possible cardiac arrest upon extrication of the patient.
9. Upon extrication continue aggressive fluid resuscitation with **Normal Saline-Sodium Bicarbonate** mix listed in 6 above.
10. Monitor ECG closely. Watch for:
 - Widened QRS complexes - 0.12 seconds (120 msec) or greater.
 - Presence of PVC's.
 - V-tach / V-fib / idioventricular rhythms.
11. If patient has cardiac arrest, treat as traumatic arrest.

BURNS

First Responder/Basic/AEMT

1. Remove victim to safe area while considering possible C-spine injuries. Control and maintain Spinal Motion Restriction.
2. Open and maintain airway.
3. Apply pulse oximeter if available.
4. Apply high flow O₂ at 15 lpm via non-rebreather mask.
5. If patient shows signs of smoke inhalation follow respiratory protocol.
6. If patient shows signs of cyanide exposure follow cyanide exposure protocol.
7. Summon ALS as necessary.
8. If chemical burn(s) - identify the chemical and follow Toxic Exposure protocol.
9. Stop the burning process. Cool any hot areas with water or a moistened dressing. Remove clothing and jewelry.
10. Evaluate patient for other injuries (consider nature of accident).
11. Multiple injuries - see multiple trauma protocol.
12. Document approximate time of burn(s).

Basic/AEMT

13. Assess the depth and extent of burns.
14. If second or third degree burns <15% of body surface area, immerse burned area in cold sterile water or, treat with cold sterile water or Normal Saline.
15. Cover with dry sterile dressing or sheets.
16. If electrical burn(s), the depth of the burn and extent of burn injury cannot be readily assessed..

AEMT/Paramedic

17. Establish a large bore IV of **Normal Saline** at a keep open rate.
18. If patient shows signs of shock or has greater than 15% body involvement, consider second large bore IV.
19. Apply cardiac monitor and obtain 3 lead ECG or 12 lead if available.
20. If electrical burn(s), monitor patient's EKG and treat with appropriate algorithm.
21. If second or third degree burns affect more than 15% of the body or are accompanied by first degree burns covering more than 30% of the body, then:
 - a. Initiate IV of **Normal Saline** @ KVO. Avoid multiple attempts. Do not delay transport to initiate IV.
 - b. Be prepared to intubate in the event of respiratory complications.
 - c. Consider the administration of **FENTANYL CITRATE** 50-100 µg for initial dose. May repeat 50 µg in 5-10 minutes, then may repeat 50 µg q 10 minutes to manage pain. If no IV or IO is available, **FENTANYL CITRATE** may be administered IM or IN at the same dosage. (Pediatric dose: Ages 1-12: 2.0 µg/kg. Age > 12: Use Adult dose). Repeat initial dose q 10 minutes until desired effect is reached.

OR
 - d. **KETAMINE** 0.1-0.3 mg/kg slow IV, IO, or IN. May repeat x 1 in 10 minutes. (Pediatric dose is 0.1-0.3 mg/kg slow IV, IO) (May repeat x 1 in 10 minutes)

MONITOR FOR RESPIRATORY DEPRESSION OR HYPOTENSION

Paramedic

22. If evidence of burns to the patients airway (soot in nose and mouth, facial burns, burned or singed hair, raspy voice, wheezing or other abnormal breath sounds) strongly consider Drug Assisted intubation as soon as possible.

23. For closed-space fire victims who are unconscious, have an altered mental status or an unexplained deterioration in clinical signs, administer **SODIUM THIOSULFATE** 12.5 gm IVP over 10 minutes for an adult, 0.4 g/kg up to a maximum dose of 12.5 gm. IVP over 10 minutes for a child.

LOAD & GO SITUATIONS

All Levels

1. An airway obstruction that does not respond to standard maneuvers.
2. Traumatic cardio-respiratory arrest.
3. Pericardial tamponade.
4. Major chest injury (i.e., tension pneumothorax, massive hemothorax, sucking chest wound, penetrating wounds with shock flail chest).
5. Adults with systolic BP less than 80 mmHg and LOC.
6. Head injury with decreasing level of consciousness and/or unilateral dilated pupil.

As soon as any of the above conditions are recognized, **urgent transportation should be undertaken to the closest appropriate hospital-based Emergency Department.** The Emergency Department should be notified immediately as to the extent of injury and ETA. Consider aeromedical transport for trauma victims; however, do not delay transportation if helicopter is > 15 minutes away. Consider aeromedical rendezvous.

The only field treatment to be instituted prior to transport (and only if specifically needed) are as follows:

1. Airway management with C-spine control.
2. Chest wound management (i.e., tension pneumothorax, sucking chest wound, and flail chest stabilization).
3. Basic CPR in cases of traumatic arrest (may defibrillate x1 and give one dose of epinephrine). Prolonged resuscitation should never be attempted at the scene.
4. Pelvic binder (if unstable pelvic fracture).
5. IV's if placed during or within three (3) minutes of extrication.
6. Cervical spinal immobilization and Spinal Motion Restriction when indicated.
7. Cardiac monitor.

TRAUMA ARREST

A determination that the victim is dead (without signs of life) rests with the technician in charge. Any of the following may be used as guidelines to support the determination that a victim is deceased:

- There is an injury which is incompatible with life (i.e.: decapitated, or burned beyond recognition). Cardiac arrest, secondary to massive blunt trauma without signs of exsanguinating hemorrhage (i.e. limb amputation).

If any of these conditions are met the trauma patient may not be resuscitated at the discretion of the technician in charge. If any question exists as to whether to resuscitate a patient, either full resuscitative measures should be immediately undertaken, or MCP may be contacted for medical direction.

DOMESTIC VIOLENCE / ELDER ABUSE

All Levels

- Ensure scene is safe prior to entering.
- Unless victim has life threatening injuries, verbally obtain permission to treat before you begin.
- Universal precautions.

DOMESTIC VIOLENCE is physical, sexual, or psychological abuse and / or intimidation which one attempts to control another person in a current or former family, dating, or household relationship. The recognition, appropriate reporting, and referral of abuse is a critical step to improving patient safety, providing quality healthcare, and preventing further abuse.

ELDER ABUSE is the physical and / or mental injury, sexual abuse, negligent treatment, or maltreatment of a senior citizen by another person. Abuse may be at the hand of a caregiver, spouse, neighbor, or adult child of the patient. The recognition of the abuse and the proper reporting is a critical step to improve the health and the well-being of senior citizens.

PURPOSE:

Assessment of an abuse case based on the following principles:

- **Protect** the patient from harm, as well as protecting the EMS team from harm and liability.
- **Suspect** that the patient may be a victim of abuse, especially if the injury / illness is not consistent with the reported history.
- **Respect** the privacy of the patient and the family.
- **Collect** as much information and evidence as possible and preserve physical evidence.

PROCEDURE:

1. Assess the patient(s) for any psychological characteristics of abuse, including excessive passivity, compliant or fearful behavior, and excessive aggression, violent tendencies crying, behavioral disorders, substance abuse, medical non-compliance, or repeated EMS requests. This is typically best done in private with the patient.
2. Assess the patient for physical signs of abuse, especially any injuries that are inconsistent with the reported mechanism of injury. The back, chest, abdomen, genitals, arms, legs, face, and scalp are common sites for abusive injuries. Defensive injuries (e.g. to forearms), and injury during pregnancy are also suggestive of abuse. Injuries in different stages of healing may indicate and on-going and repeated episodes of violence.
3. Assess all patients for signs of neglect, including inappropriate levels of clothing for weather, inadequate hygiene, absence of attentive caregiver(s), or physical signs of malnutrition.
4. Assess all patients for signs of sexual abuse, including torn, stained, or bloody underclothing, unexplained injuries, pregnancy, or sexually transmitted diseases.
5. Immediately report any suspicious findings to the receiving hospital (if transported). If elder (age 65 or older) or disabled adult is involved, also contact Adult Protective Services and local law enforcement agency. If after hours the on-call social services investigator can be contacted by the 911 communications center.
6. Domestic violence victims (age 18 to 64) must give permission to report incident to Law Enforcement.

SEXUAL ASSAULT / RAPE

KEY POINTS:

- A victim of sexual assault has experienced an emotionally traumatic event. It is imperative to be compassionate and non-judgmental. Respect their personal space yet be sensitive to the victim. Expect a wide range of response to such an assault, depending upon social, cultural, and religious background.
- An abbreviated assessment may be indicated based on the patient's mental state
- Your responsibility is patient care and not detective work. Questioning of the patient should be limited, because there is no need for the EMS provider to attempt to get a detailed description of the assault. That type of questioning can harm the investigation, and should be left up to the professional investigators. However, document verbatim anything the patient says about the attack. **DO NOT** paraphrase. Based on the patient's mental state, the following questions may be asked and documented:
 1. What happened? (A brief description is acceptable)
 2. When did the attack occur?
 3. Did the patient bathe or clean up after the attack?
- If the patient changed his/ her cloths, attempt to bring the clothes in a brown paper bag. **DO NOT** use a plastic bag.
- If the patient did not change his / her clothes, have the patient bring a change of clothes to the hospital (if possible).
- Transport the patient to an appropriate medical facility capable of providing additional sexual assault care (SANE Program).

CHILD ABUSE

- Child abuse is the physical and mental injury, sexual abuse, negligent treatment, or maltreatment of a child under the age of 18 by a person who is responsible for the child's welfare. The recognition and the proper reporting is a critical step to improving the safety of children and preventing child abuse.

PURPOSE

Assessment of a child abuse case based on the following principles:

- **Protect** the life of the child from harm, as well as that of the EMS team from liability
- **Suspect** that the child may be a victim of abuse, especially if the injury / illness is not consistent with the reported history.
- **Respect** the privacy of the child and family
- **Collect** as much evidence as possible, especially observations and information.

PROCEDURE

1. With all children, assess for and document psychological characteristics of abuse, including excessively passivity, compliant or fearful behavior, excessive aggression, violent tendencies, excessive crying, fussy behavior, hyperactivity, or other behavior disorders.
2. With all children, assess for and document physical signs of abuse, including especially any injuries that are inconsistent with the reported mechanism of injury. The back, buttocks, genitals, and face are common sites for abusive injuries.
3. With all children, assess for and document signs and symptoms of neglect, including inappropriate level of clothing for weather, inadequate hygiene, absence of attentive caregiver(s), or physical signs of malnutrition.
4. With all children, assess for and document signs of sexual abuse, including torn, stained, bloody underclothing, unexplained injuries, pregnancy, or sexually transmitted diseases.
5. Immediately report any suspicious findings to both the receiving hospital (if transported). Law Enforcement must also be notified.
6. EMS personnel should not accuse or challenge the suspected abuser. This is a legal requirement to report, not an accusation.
7. In the event of a child fatality local law enforcement must be notified.

KEY POINTS

- Child abuse / neglect are widespread enough that nearly all EMS providers will see these problems at some time. The first step in recognizing abuse or neglect is to accept that they exist and to learn the signs and symptoms.
- Initiate treatment as necessary for the situation using established protocols.
- If possible remove child from scene, transporting to the hospital even if there is no medical reason for transport.
- If parents, or adults refuse permission to transport, notify law enforcement for appropriate disposition. If the patient is in immediate danger, let law enforcement handle the scene.
- Advise the parents to go to the hospital. **AVOID ACCUSATIONS** as this may delay transport. Adult with the child may not be the abuser.

RED FLAGS TO ABUSE:

Signs a parent may display may include (not all inclusive):

- Parent apathy
- Parent over reaction
- A story that changes or that is different when told by two different "witnesses"
- Story does not match the injury
- Injuries not appropriate for the child's age
- Unexplained injuries

Agitated Patient / Excited Delirium Syndrome

GENERAL GUIDELINES

All Levels

1. Definition: When the patient acts abnormally in a way that is unacceptable or intolerable to the patient, family, or community.
2. Possible causes include:
 - **Behavioral** changes may be due to psychological, emotional, or physical conditions.
 - **Psychological** causes include depression, mania, paranoia, suicidal, and environmental changes.
 - **Physical** causes may include excessive heat or cold, lack of oxygen, lack of blood flow to the brain, head injuries, stroke, alcohol or drug abuse, high or low blood sugar, medications, narcotics, metabolic disorders, and neurologic disease.

Interventions:

AGITATED PATIENT

1. An agitated patient has been described as an individual who displays excessive verbal or motor activity including; physical or verbal abuse, threatening gestures or language, physical destructiveness, and / or excessive verbalizations of distress.
2. Enough providers should be on scene to adequately handle the situation. Secure the scene and use universal precautions. A Fire Officer or Battalion Chief should be summoned to. Providers should utilize “the least restrictive method of restraint”, meaning the patient should be provided with alternatives to correct inappropriate behavior in order to obtain and maintain a positive relationship.
3. Providers shall always be considerate of their own safety. Never underestimate the potential for violence or turn your back on a potentially violent patient.
4. Paramedic level: If necessary, initially sedate the patient as necessary by administering **MIDAZOLAM** (Versed) 2-5 mg at a time via MAD up to 10 mg total dose, or 0.1 mg/kg to a max of 10 mg. If Ketamine is given before Versed, administer Midazolam (Versed) 2-5 mg via MAD device up to 10 mg total dose or 0.1 mg/kg to a maximum of 10 mg.
5. Establish IV access with 0.9% NS at KVO rate.
6. Sedation can be continued by using Ketamine (Ketalar) in the following dosages and routes of administration.

KETAMINE 4 mg/kg IM
OR
KETAMINE 2 mg/kg IV
7. Use restraints if the patient is perceived to be a threat to themselves or others.
8. Assess ABC's. Obtain vital signs q 10 minutes including **SpO2 and temperature.**

EXCITED DELIRIUM SYNDROME

1. Excited Delirium has been described as “a state of extreme mental and physiological excitement,” characterized by exceptional agitation and hyperactivity, overheating, excessive tearing of the eyes, hostility, superhuman strength, aggression, acute paranoia, and “endurance without fatigue.” Individuals displaying this behavior may have been TASERED or restrained by law enforcement prior to EMS arrival.
2. Excited Delirium Syndrome is a **SEVERE MEDICAL EMERGENCY** and initiation of treatment **must not be delayed!**
3. Using the acronym PRIORITY, EMS should look for the following:

| | |
|---|---|
| P | Psychological issues |
| R | Recent drug/alcohol use |
| I | Incoherent thought process |
| O | Off (clothes) and sweating |
| R | Resistant to presence or dialog |
| I | Inanimate objects/shinny/glass – violent toward |
| T | Tough, unstoppable, superhuman strength |
| Y | Yelling |

4. Paramedic level: If necessary, initially sedate the patient as necessary by administering **MIDAZOLAM** (Versed) 2-5 mg at a time via MAD up to 10 mg total dose, or 0.1 mg/kg to a max of 10 mg. If Ketamine is given before Versed, administer Midazolam (Versed) 2-5 mg at time via MAD device up to 10 mg total dose or 0.1 mg/kg to a maximum total dose of 10 mg.
5. Establish IV access with 0.9% NS at KVO rate.
6. Sedation can be continued by using **KETAMINE** (Ketalar) in the following dosages and routes of administration.

KETAMINE 4 mg/kg IM
OR
KETAMINE 2 mg/kg IV

7. Use restraints if the patient is perceived to be a threat to themselves or others.
8. Assess ABC's. Obtain vital signs q 10 minutes including **SpO2 and temperature**.
9. If patient has been TASERED, had extensive muscle activity, or has elevated skin temperature initiate:
 - 500 ml fluid bolus of cold 0.9% NS over 20 minutes. (Add 50 mEq **SODIUM BICARBONATE** to 1000 ml bag NS, administer 500 ml.)

Use of Restraints

1. Attempt to transport without restraint whenever possible (no immediate threat to rescuer).
2. Refer to Restraint Procedure and Prisoner Transport Policy.
3. Consult with law enforcement. Law enforcement should perform physical restraint if possible.
4. After patient is physically restrained, use wide leather or cloth restraints to immobilize. Pay particular attention to **not compromise the patients' ability to have spontaneous respirations.**

Obstetric Emergencies

VAGINAL BLEEDING < 20 WEEKS (MISCARRIAGE)

First Responder/Basic/AEMT

1. Perform baseline assessment per protocol.
2. Obtain history of pregnancy and estimate amount of bleeding (e.g.; number of pads changed in last hour).
3. If duration of pregnancy is unknown, treat as if >20 weeks.
4. Obtain baseline vitals.

Basic/AEMT

5. Perform focused physical exam.
6. Administer high flow O₂ via non-rebreather mask at 10-15 lpm.
7. Apply external vaginal pads.
8. Bring any fetal tissues to hospital.
9. Consider performing orthostatic vital signs.
10. Transport to appropriate medical facility.

AEMT/Paramedic

11. Consider performing orthostatic vital signs.
12. Establish large bore IV of **Normal Saline**. Titrate to keep BP \geq 90.
13. Consider second IV enroute if patient unstable.
14. Apply cardiac monitor if hemodynamically unstable.

VAGINAL BLEEDING >20 WEEKS (ABRUPTION OR PLACENTA PREVIA)

First Responder/Basic

1. Apply O₂ via non-rebreather mask at 10 –15 lpm.
2. Perform baseline assessment per protocol.
3. Obtain history of pregnancy and estimate amount of bleeding (e.g.; number of pads changed in last hour).
4. Obtain baseline vitals.

Basic/AEMT

5. Apply external vaginal pads.
6. Consider initiating transport if transport time to an appropriate facility is less than the time required for an ALS unit to reach the scene.

AEMT/Paramedic

7. Establish large bore IV of **Normal Saline**. Titrate to keep BP \geq 90.
8. Consider second IV ENROUTE if condition deteriorating.
9. Apply cardiac monitor if hemodynamically unstable.
10. Assess for fetal heart tones q 5 minutes by Doppler (if available) and over 20 weeks gestation (EMT-P).

SEIZURE DURING PREGNANCY (ECLAMPSIA)

First Responder/Basic/AEMT

1. Apply O₂ via non-rebreather mask at 10 –15 lpm.
2. Complete baseline assessment per protocol.
3. Obtain history if possible.
4. Call for ALS if still seizing on arrival.
5. Protect patient from seizure activity.
6. Obtain baseline vitals.

Basic/AEMT

7. Maintain airway using oral or nasal airway adjuncts prn.
8. Obtain chemstrip. If < 60 mg/dl or symptomatic follow hypoglycemia protocol.
9. Suction secretions, prn.
10. Transport in left lateral position.

AEMT/Paramedic

11. Establish IV of **Normal Saline** at wide open rate (1 L/hr).
12. Apply cardiac monitor.
13. If chemstrip < 60, follow hypoglycemia protocol.

Paramedic

14. Consider endotracheal intubation to protect airway.
15. If seizing, **MAGNESIUM SULFATE** 6 gm. in 50 cc **Normal Saline** over 10 - 20 minutes.
16. If unresolved seizure, administer **VERSED** (midazolam) 2 mg to 4mg slow IVP to a total of 5 mg
17. Consider **VERSED** (midazolam) 5 mg/1cc via intranasal route utilizing mucosal atomizing device (MAD). Administer by forcefully depressing plunger to atomize **VERSED** (midazolam) into one nares, selecting the nares that is free of mucous.

NORMAL DELIVERY

First Responder/Basic/AEMT

1. Observe universal precautions.
2. Administer high flow O₂ at 15 lpm via non-rebreather mask.
3. Complete baseline assessment per protocol.
4. Summon ALS.
5. Ask mother the following to assess the for the possibility of a depressed infant or possibly more personnel/equipment:
 - a. Gestational age of the fetus?
 - b. Possibility of multiple births?
 - c. Membranes ruptured...was the fluid clear? Signs of Meconium?
 - d. Possibility of drug/narcotic use?
 - e. Any fever? Maternal fever is a sign of maternal infection.
6. Check for crowning - Not crowning, transport in Left Lateral Recumbent Position.
7. If crowning, prepare for imminent delivery. Have the mother lie with knees drawn up and spread apart.
8. Elevate buttocks with blanket or pillow.
9. If available, place sterile towels or sheets around vaginal opening.
10. When infant's head appears, place one hand on top of head and exert gentle pressure to prevent explosive delivery.
11. If amniotic sac (bag of water) has not broken after head delivered, use a clamp to puncture or your fingers to tear the sac open and pull it away from the face.
12. As the head is born, check to see if the cord is around the neck. If it is then slip the cord over the head or clamp twice and cut between the clamps, then unwrap.
13. Suction mouth and nostrils with bulb syringe as the head is delivered.
14. Support the head and body with both hands as it is born.
15. Stimulate baby by rubbing feet and buttocks
16. Wipe fluids from mouth and nose and suction again
17. Wrap baby in warm blanket, put newborn cap on head and keep baby below or level with vagina until cord is cut.
18. Clamp or tie cord twice and cut between clamps at least 6 inches from infant.
19. Assess infant for APGAR score at 1 and 5 minutes (APGAR scale on pg. 9-4).
20. **DO NOT PULL ON CORD!!!** Once placenta delivers (usually less than 20 min. after infant), bleeding can be controlled by fundal massage (massage abdomen over uterus). Place placenta in plastic bag or large plastic tub and transport to hospital with mother.
21. Place sterile pad over vaginal opening, lower mother's legs.
22. Record time of delivery and transport mother, infant and placenta to hospital.
23. If infant is not in distress, put the infant to the mother's breast and keep it warm.

AEMT

24. Establish an IV of **Normal Saline** if time allows, at 150 cc/hr.
25. Apply cardiac monitor if time allows.

Paramedic

26. Monitor fetal heart tones by Doppler (if available) every 5 min. until delivery.

Vaginal bleeding after delivery

Up to 500 cc blood loss following delivery is normal and well tolerated by the mother.

First Responder/Basic/AEMT

1. If brisk bleeding continues, massage (“knead”) the uterus over the lower abdomen above the pubis with firm pressure.
2. Continue O₂ at 10 -15 lpm via non-rebreather mask.
3. If bleeding continues, check massage technique, evaluate and treat for shock, transport.

AEMT/Paramedic

4. If not done before delivery, establish IV of Normal Saline and titrate to keep systolic BP ≥ 90. If signs or symptoms of shock appear, give patient fluid bolus and run IV wide open.
5. Apply cardiac monitor if hemodynamically unstable.

| <u>APGAR SCORE</u> | |
|--------------------------------------|---------------------------------|
| <u>SIGNS</u> | <u>SCORE</u> |
| A - Appearance (color) | 0 - Blue, pale |
| | 1 - Body pink, extremities blue |
| | 2- Completely pink |
| P – Pulse | 0 – Absent |
| | 1 - Less than 100 |
| | 2 - Greater than 100 |
| G – Grimace (reflex irritability) | 0 - No response |
| | 1 – Grimace |
| | 2 - Cough or sneeze |
| A – Activity (muscle tone) | 0 - Limp |
| | 1 - Some flexion of extremities |
| | 2 - Active motion |
| R – Respiration (respiratory effort) | 0 – Absent |
| | 1 - Slow, irregular |
| | 2 - Good, crying |

ABNORMAL DELIVERIES

PROLAPSED CORD

First Responder/Basic/AEMT

1. Apply high flow O₂ via non-rebreather mask.
2. Perform baseline physical assessment per protocol.
3. Obtain history and perform physical exam.
4. Obtain baseline vital signs.
5. Apply pulse oximeter, if available.
6. Position mother with head down and buttocks raised.

Basic/AEMT

7. Check cord pulsations: if <120 bpm, keep hips elevated, recheck q 5 min., rapid transport. If at any time cord pulse is <120 bpm, explain procedure to patient, then insert one sterile gloved hand into vagina following cord as far as possible and gently push the baby's head or presenting part off cord.
8. Transport while maintaining this position. Effective pressure indicated by return of normal (120-160) cord pulse.

AEMT/Paramedic

9. Establish IV of **Normal Saline** enroute to hospital.
10. Apply cardiac monitor to patient.
11. Monitor cord pulse.

BREECH DELIVERY (Anything but head first)

First Responder/Basic/AEMT

1. Summon ALS upon recognition.
2. Complete baseline physical assessment per protocol.
3. Initiate high flow O₂ via non-rebreather mask at 15 lpm.
4. Apply pulse oximeter, if available.
5. Place mother in head down position with hips elevated.
6. Immediate and rapid transport, notify receiving hospital ASAP.
7. If delivery progressing, support legs and buttocks, then assist with delivery of head (avoid over extending of head).
8. If head does not deliver in 4-6 min., insert gloved hand into vagina and create an airway for the infant. Do not remove hand until relieved by hospital staff.

AEMT/Paramedic

9. May attempt **IV Normal Saline** @ wide open rate enroute to hospital.
10. Apply cardiac monitor if time permits.

Paramedic

11. Monitor fetal heart tones by Doppler (if available) every 5 min. or palpate cord.

MULTIPLE BIRTHS

All Levels

- Call for assistance. Be prepared for multiple resuscitation efforts. Consider 1 ALS unit per infant.

Meconium Delivery

Amniotic fluid any color other than clear may indicate fetal distress.

First Responder/Basic/AEMT

1. Call for ALS upon recognition.
2. Delivery as for normal delivery with the following additional steps:
 - Do not stimulate the infant before suctioning mouth.
 - Suction mouth and nose with bulb syringe.
 - Maintain airway.
 - Transport as soon as possible.

Paramedic

1. If meconium is present and infant is vigorous and crying bulb syringe suction mouth and nose and monitor.
2. If meconium is present and infant non-vigorous, intubate and deep suction with meconium aspirator device until clear. If not clear on third pass with clean tube, leave in place and ventilate.
3. Rapid transport to hospital.

TRAUMA IN PREGNANCY

First Responder/Basic/AEMT

1. Complete baseline physical assessment per protocol.
2. Obtain history of pregnancy and estimate amount of bleeding.
3. Obtain baseline vital signs.
4. Refer to Multiple System Trauma, Section 8.
5. Immobilize per protocol.
6. Tilt backboard to left side, while maintaining C-spine, if patient is more than 6 months pregnant, or manually displace uterus to the left.
7. Check for fetal heart tones. Don't rely on vital signs to indicate shock in pregnancy. Start multiple large bore IV's.

AEMT/Paramedic

8. Treat hypovolemia aggressively with warmed IV fluids,
9. Aggressive resuscitation efforts and CPR if mother suddenly arrests and uterine height is between umbilicus and xiphoid process (>28 weeks gestation) – the fetus may be viable!!!

Pediatric Protocol

NORMAL PEDIATRIC VITAL SIGNS

| Age | Pulse | Respirations | Blood Pressure |
|---------|---------|--------------|-----------------|
| NB | 120-160 | 40-60 | 60-70 Systolic |
| 1 yr | 120-140 | 30-40 | 70-80 |
| 2-6 yr | 100-120 | 20-30 | 80-90 |
| 7-12 yr | 80-100 | 12-20 | 90-110 Systolic |

| Age | Weight | ET Tube | Suction | TKO IV Rate |
|-------|--------|---------|----------|-------------|
| NB | 3.5 kg | 3.5 | 6-8 Fr | 15 cc/hr |
| 6 mo | 07 kg | 4.0 | 8 Fr | 30 cc/hr |
| 1 yr | 10 kg | 4.5 | 8 Fr | 40 cc/hr |
| 2 yr | 12 kg | 5.0 | 8-10Fr | 45 cc/hr |
| 3 yr | 14 kg | 5.0 | 10 Fr | 50 cc/hr |
| 4 yr | 16 kg | 5.5 | 10 Fr | 55 cc/hr |
| 5 yr | 18 kg | 5.5 | 10 Fr | 60 cc/hr |
| 6 yr | 21 kg | 6.0 | 10-12Fr | 63 cc/hr |
| 7 yr | 24 kg | 6.0 | 10-12Fr | 66 cc/hr |
| 8 yr | 27 kg | 6.5 | 12 Fr | 68 cc/hr |
| 9 yr | 28 kg | 6.5 | 12 Fr | 70 cc/hr |
| 10 yr | 30 kg | 7.0 | 12-14 Fr | 70 cc/hr |

SINUS TACHYCARDIA V SVT

| | Sinus Tach | SVT |
|------------|--|---|
| HR | 180-200 | >220 (usually 250-300), at a constant rate |
| HX | Fever, anxiety loss from bleeding or GI tract. | Irritability, poor feeding, vomiting, tachypnea, pallor, altered mental status. |
| PE | Normal, fever, signs of dehydration, poor perfusion. | Signs of poor skin perfusion, rapid rate rales, hepatomegaly, edema. |
| ECG | Rarely helpful, P-wave may not be seen. | Regular rhythm, P-wave not seen. |
| CXR | Lungs clear or evidence of pneumonia. | Cardiomegaly, signs of pulmonary edema. |

PEDIATRIC MEDICATIONS

| <u>Drug</u> | <u>Dose</u> | <u>Route</u> |
|--------------------------|--|---------------------|
| Adenosine (c) | 0.1mg/kg IV flush | IV, IO |
| Albuterol | 2.5mg | Nebulizer |
| Atrovent | 0.5mg | Nebulizer |
| Atropine (b) | .02 mg/kg/dose (minimum dose 0.1mg) | IV, ET, IO |
| Benadryl | 25 - 50mg > 10years | IV, IM |
| Benadryl | 1mg/kg < 10years | IV, IM |
| Dextrose | 2cc/kg (25%) | IV, IO |
| Diazepam | 0.1-0.2 mg/kg | IV, IO, R |
| Dopamine (a) | 5-20µg/kg/min | IV, IO |
| Epinephrine 1:1,000 | 0.01mg/kg (maximum 0.3ml) | IM |
| Epinephrine 1:10,000 | 0.01mg/kg | IV, ET, IO |
| Epinephrine Infusion (a) | 0.1-1.0 µg/kg/min | IV, IO |
| Fentanyl Citrate | 2 µg/kg (1-12 yrs old) Adult dose (>12 yrs old) | IV, IO, IM, IN |
| Ketamine | 0.1-0.3 mg/kg <u>slow</u> over 1 min (> age 2) | IV, IO, IM, IN |
| Lidocaine | 1mg/kg | IV, ET, IO |
| Lidocaine Drip | 20-50 µg/kg/min. | IV, IO |
| Naloxone | 0.1 mg/kg | IV, IO, IM, IN |
| Ondansetron | 0.1 mg/kg (max. dose 4 mg) | IV, IO, IM, PO |
| Pontocaine (Tetracaine) | 1-2 gtts | Topical |
| Versed | 0.3 mg/kg | IV, IO, IN |
| Vecuronium | 0.2 mg/kg | IV, IO |

- (a) When infusing **DOPAMINE** or **EPINEPHRINE**, remember that at the usual infusion rates the drug may take 20 or more minutes to reach the patient. Therefore the drip should be run at five to tenfold the initial rate while carefully monitoring the heart rate and blood pressure. As soon as the heart rate begins to increase, decrease the drip rate to the desired infusion dose.
- (b) All drugs when administered endotracheally should be followed with 1-2ml of saline to help distribute the drug into the lower airways.
- (c) If unsuccessful double the initial dose, max dose is 12mg.

PEDIATRIC PROCEDURES

Patient Assessment

1. Complete baseline assessment per protocol.
2. Evaluate for shock. Early signs and symptoms of shock in children include a rapid heart and respiratory rate (again, remember age-dependent vital signs), agitation, and poor peripheral perfusion (capillary refill > 2 seconds). Hypotension is a LATE and ominous finding. Document vital signs (including temperature and blood pressure if appropriate) and peripheral perfusion.
3. Complete rapid assessment procedures, identified in Section 1, on all priority patients.

Routine for all pediatric patients requiring advanced life support

First Responder/Basic

1. Baseline assessment per protocol.
2. Establish and maintain airway. If respirations adequate, use non-rebreathing mask at rate sufficient to maintain bag inflation.
3. If inadequate respirations, summon ALS, support ventilations with bag-valve mask. Use 100% oxygen.
4. Obtain baseline vital signs. Obtain temperature if appropriate. Use pulse oximetry if available.

AEMT/Paramedic

5. Establish IV of **Normal Saline** at a keep open rate except as otherwise noted. Use a Buretrol with mini drip tubing except in trauma patients.
6. In children less than 8 years of age when IV access cannot be obtained in two attempts or less than 90 seconds, and patient is unconscious and unstable, Intraosseous Infusion is indicated.
7. Apply cardiac monitor.
8. Transport all children requiring ALS, summon ALS

MANAGEMENT OF CARDIAC DYSRHYTHMIAS

First Responder/Basic

- Baseline assessment per protocol.
- ABC's as above.
- Summon ALS.
- Baseline interventions as above.

AEMT/Paramedic

- Establish an IV of **Normal Saline** KVO per procedure as above.
- Apply cardiac monitor and obtain 3 lead ECG, 12 lead if available.
- Treatment as per Pediatric Advanced Life Support (PALS) protocol with appropriate drug dosages.

Paramedic

- For unstable SVT, give **ADENOSINE** 0.1 mg/kg. May repeat prn at 0.2 mg/kg to a maximum of 12mg. If **ADENOSINE** is unsuccessful, then:
- **Synchronized cardioversion** at 0.5 joule/kg, if SVT persists, increase the dose to 1.0 joule/kg. **DO NOT DELAY CARДИOVERSION TRYING TO ESTABLISH AN IV**

SUMMARY OF UNSTABLE RHYTHM TREATMENTS

| Heart Rate | Most Common Diagnosis | Treatment |
|------------|---------------------------------|--|
| Slow | Sinus Bradycardia ** | Newborn: 1) Ventilation and oxygenation, 2) Chest compressions, 3) Epinephrine Child: 1) Ventilation and oxygenation, 2) Chest compression, 3) Epinephrine, (if Primary Cardiac Disease use Atropine) |
| | Heart Block | Ventilation, oxygenation, chest compressions atropine, (or epinephrine infusion) |
| Fast | SVT, PAT Wide QRS* V-Tach | Synchronized Cardioversion or defibrillation |
| Absent | V-Fib | CPR, Defibrillation, oxygen, epinephrine, Lidocaine |
| | Asystole | CPR, oxygen, epinephrine |
| | PEA | CPR, epinephrine, treat underlying causes, e.g., hypovolemia, tension pneumothorax, cardiac tamponade, etc. |

* Although wide complex SVT does not need Lidocaine, in the unstable situation the differentiation between ventricular and supraventricular origin is often difficult. When in doubt, it should be treated as ventricular tachycardia.

** Epinephrine is repeated q 3-5 minutes at the same initial dose.

PEDIATRIC MULTIPLE TRAUMA

First Responder/Basic

- Establish airway while maintaining C-spine control.
- Assess the patient's Level of Consciousness and perform brief neurological assessment (AVPU).
- Baseline Assessment per protocol.
- Complete Rapid Trauma Assessment per protocol.
- Assess adequacy of ventilations. Evaluate for bilateral breath sounds, tension pneumothorax, open pneumothorax, and flail chest. Use non-rebreather on children with adequate respirations.
- Treatment as per adult protocol.
- Give early warning (Trauma Alert) to receiving medical facility.

AEMT/Paramedic

- Start IV of **Normal Saline**. If blood pressure is less than expected or shock symptoms present, administer 20 cc/kg bolus as rapidly as possible. Otherwise run IV @ TKO and closely observe child. If no improvement or vital signs deteriorate, repeat bolus (20cc/kg), continue to re-evaluate and repeat fluid bolus as necessary. Inform hospital of responses to treatment and re-communicate any change. After three boluses (MAX 60cc/Kg), must have orders from on-line medical control physician for any further boluses.
- Evaluate for neurological deficit.

Paramedic

- Evaluate for further injuries and treat as needed.
- After all other measures have been attempted, if unable to use bag-valve and a cricothyroidotomy is considered, a needle cricothyroidotomy should be done on patients less than 8 years of age.
- Remember, shock in children is primarily recognized by: Tachycardia, Anxiety, Restlessness, Poor Peripheral Perfusion (cool, clammy skin with slow capillary refill, weak pulses). **BLOOD PRESSURE FALLS LATE IN SHOCK AND IS AN OMINOUS SIGN!**

HEAD TRAUMA

First Responder/Basic

- Baseline assessment per protocol.
- Multiple Trauma protocol prn.
- Patients with suspected head trauma should have C-spine immobilized.

AEMT/Paramedic

- Do not restrict fluids in a patient who is hypotensive or has shock signs and symptoms.
- Establish an IV of **Normal Saline KVO**.
- Apply Cardiac Monitor and obtain 3 lead ECG.
- Anticipate and control seizure activity per Seizure Protocol.

Paramedic

- Consider intubation to protect patient's airway.

HYPOVOLEMIC SHOCK (DUE TO DEHYDRATION, DIABETES, ETC.)

First Responder/Basic

- Baseline assessment.
- Treat and control any significant bleeding.
- Obtain Chemstrip, if available.

AEMT/Paramedic

- Establish an IV of **Normal Saline** with blood tubing.
- Fluid bolus 20 cc/kg of Normal Saline. Repeat if no improvement up to 60cc/kg.
- Apply cardiac monitor and obtain 3 lead ECG.
- Administer 10cc **DEXTROSE 25%** IVPB if blood sugar <60 mg/dl.

BURNS

First Responder/Basic

- Baseline assessment.
- Maintain a high level of suspicion for inhalation injury in patients with singed hairs or eyebrows, mucosal burns or cough.
- Remove patient from source of burns. Decontaminate is necessary.

AEMT

- Establish large bore IV's with **Normal Saline** and run at maintenance rate. If signs of shock are present, administer fluid bolus of 20 cc/kg and follow trauma protocol.
- Apply cardiac monitor and obtain 3 lead ECG.
- Burn treatment per adult burn protocol. Do not delay transport with multiple IV attempts.

Paramedic

- Administer **SODIUM THIOSULFATE**, if indicated, 0.4g/kg to a maximum of 12.5g IVP or IO over 10 minutes.

ACUTE ASTHMA

First Responder/Basic

- Baseline assessment. **Not all asthmatics wheeze, it is an ominous sign in a child.**
- Allow child to assume position of comfort, preferably with head of bed elevated.
- Find out what medications the patient has already taken within the past 4 hours.
- Administer high flow O2 via NRB.
- Obtain and monitor pulse oximeter reading.

AEMT/Paramedic

- Establish an IV of **Normal Saline** @ KVO with Buretrol.
- Apply cardiac and obtain 3 lead ECG.
- Administer 2.5 mg **ALBUTEROL** by nebulizer, repeat as needed.
- For Children with **KNOWN** asthma, add **ATROVENT** 0.5mg to each albuterol treatment.

Paramedic

- Administer **Solu-Medrol** (methylprednisolone) slow IVP at 2mg/kg.
- Consider **Magnesium Sulfate** 25 mg/kg over twenty minutes (Maximum dose 2 gms)
- If patient condition deteriorates, **CONSIDER INTUBATION AND EPINEPHRINE 1:1000** 0.01 cc/kg IM, minimum dose is 0.1 cc.
- Epinephrine should be withheld in the following situations:
 - No previous history of wheezing.
 - Pulse rate greater than 180.
 - The child has had repeated doses of aerosol bronchodilators.

ANAPHYLAXIS

First Responder/Basic/AEMT

1. Follow Adult procedures.

AEMT/Paramedic

2. **EPINEPHRINE** (1:1000) 0.01 mg/kg, not to exceed 0.3 mg total dose.
3. Use **Normal Saline** and bolus with 20 cc/kg and repeat prn for a total bolus not to exceed 3 x 20cc. If additional fluids are needed obtain on-line MCP authorization for additional fluids.
4. If hives, itching, swelling about the face, wheezing, and/or stridor are present, and if age ≥ 10 then administer **BENADRYL** 25mg IVP over three minutes or deep IM. May repeat once prn up to 50 mg total dose. Give IV dose over three min. If less than ten years of age give **BENADRYL** 1mg/kg IV or IM. Maximum dose is 25 mg. **PREPARE FOR POSSIBLE HYPOTENSION OR AIRWAY COMPROMISE!!!**

Paramedic

5. Prepare to intubate and/or fluid resuscitation if hypotension continues. Repeat **EPINEPHRINE (1:1000) 0.01 mg/kg IM.**

UPPER AIRWAY OBSTRUCTION: RESPIRATORY DISTRESS

All Levels

1. Baseline assessment, obtain pulse oximeter if available.
2. Always use a combination of 5 back blows and 5 chest thrusts in infants under one year of age.
3. Do not probe blindly for a foreign body you cannot see in infants or children (you may make it worse).
4. Follow steps for adults.
5. Relieve complete airway obstruction by using abdominal thrusts as recommended by the AHA for children.
6. If child is breathing adequately, obtain a complete history prior to any medical intervention. An accurate history is by far the most important tool for establishing a diagnosis in pediatric patients with upper airway obstruction.
7. Keep child with parent if possible, in sitting position. Keep lights and noise to an absolute minimum.
8. If child is showing signs of hypoxia (agitated, restless, etc.), give as high an oxygen concentration as possible - usually by placing O₂ connecting tubing directly by their face or through a disposable paper cup. Do not cause any further agitation or start IV.
9. If child has respiratory arrest, assist ventilation using the bag-valve-mask with 100% O₂. If able to adequately ventilate, continue to use bag-valve-mask or mouth to mouth. If child goes in to cardiac arrest, follow the arrest protocol.

Paramedic

10. Perform needle cricothyroidotomy on children ages 2-8. **Never perform a surgical cricothyroidotomy on children less than 8 years old.** If unable to adequately ventilate child w/ needle cricothyroidotomy, MIC can request MCP authorization for surgical cricothyroidotomy.

Common Pediatric Airway Problems

| | |
|------------------------------|---|
| <u>Common Age</u> | Croup: 6 months-3 years Epiglottitis: 2 - 6 years Foreign Body: 6 months - 4 years |
| <u>Onset of Symptoms</u> | Croup: Gradual Epiglottitis: Sudden, 4-12 hours Foreign Body: Usually sudden |
| <u>Clinical Presentation</u> | Croup: Stridor, barking cough, may be hoarse Epiglottitis: Toxic, muffled voice, drooling, stridor, flushed, sore throat Foreign Body: May have: cough, drooling, stridor |
| <u>Fever</u> | Croup: Low grade Epiglottitis: High Foreign Body: Absent |
| <u>Treatment</u> | Croup: Steam, cool environment Epiglottitis: O ₂ , Transport w/o delay Foreign Body: Supportive |

UNCONSCIOUS, SYNCOPE, STUPOR

First Responder/Basic

1. Baseline assessment per protocol.
2. Protect airway.
3. Apply O₂ via NRB at 10 lpm.
4. If disoriented or decreased level of consciousness, obtain chemstrip if available. If it is <60 mg/dl or if there is any doubt as to patient's status, administer oral dextrose if patient is conscious and able to take it.
5. If unable to take oral glucose, or if decreased level of consciousness, summon ALS.
6. Administer **NARCAN** via auto-injector, or by intranasal route not to exceed 2 mg.

AEMT/ Paramedic

7. Establish IV of **Normal Saline @ KVO**.
8. Apply cardiac monitor and obtain 3 lead ECG.
9. If unconscious, administer **DEXTROSE 25%** 2 cc/kg IV to a maximum of 50 cc. Obtain blood sample or Chemstrip if possible prior to Dextrose administration. If unable to establish an IV, administer **GLUCAGON** as follows: Neonates - 0.3 mg/kg to a maximum 1 mg dose; infant/children 0.1mg/kg up to 1 mg dose.
10. Administer **NARCAN (NALOXONE)** 0.1 mg/kg IV to a maximum of 2 mg/dose q 2-3 minutes. May administer IM/SC/ET/IN if unable to initiate IV.

PEDIATRIC OVERDOSE

All Levels

1. Baseline assessment.
2. Obtain history (medication or agent, when ingested, amount, vomiting, antidote). **Contact Poison Control @ (800) 222-1222.**
3. If child is unconscious, refer to unconscious protocol.

AEMT

4. Establish IV of **Normal Saline @ KVO**, if indicated.
5. Apply cardiac monitor and obtain 3 lead ECG.

Paramedic

6. If known or suspected cyanide exposure, administer **SODIUM THIOSULFATE. Pediatric dose is 0.4 g/kg to a maximum dose 12.5 gm. of sodium thiosulfate.**

PAIN MANAGEMENT

Assessment and management of pain in children is difficult in the prehospital environment, but should be considered a priority. Intense pain may increase respiratory, cardiovascular, and immunologic complications. Pain activates the sympathetic nervous system inducing a variety of objective signs as noted below. Early recognition of pain in children and aggressive treatment may reduce complications and should be initiated in the field setting whenever possible.

First Responder

1. Assessment per protocol. Keep with primary care provider and offer reassurance.

Basic/AEMT

2. Perform a quick pain assessment. Signs and symptoms may include:

| | |
|-------------|--|
| Infant | Physiologic response, withdrawn or unusual stillness, crying, whimpering, difficult to console, |
| Toddler | Physiologic response, crying (from whimpering to outright screaming), refusal of everything, withdrawn, anxious facial expression or hiding face, describes pain as “hurt” or “owchie” |
| Preschooler | Physiologic response, crying (screaming), withdrawn, able to localize, fearful of pain-relieving interventions and constantly asking questions (“What are you doing? Why?” |
| School age | Physiologic response, accurately describes location and intensity of pain (may be able to use pain scale), may moan, wince, scream, but tries to “be brave”, may request pain medications provided they are not injections, anxious facial expression and poor eye contact |

- The physiologic response to pain is associated with catecholamine release resulting in tachycardia, increased blood pressure, dilated pupils, and diaphoresis. Pain may also result in decreased oxygen saturation and hyperglycemia.

3. Consider the following non-pharmacologic interventions:

| | |
|-------------|---|
| Infant | Keep with primary caregiver*, offer pacifier, offer self-comforter (blanket, stuffed animal, etc.), |
| Toddler | Keep with primary caregiver*, offer self-comforter or toy, distract with stories, music, toys if possible, |
| Preschooler | Keep with primary caregiver*, offer self-comforter or familiar toys, explain routines and interventions simply, |
| School age | Keep with primary caregiver*, explain routines and interventions simply, use of imagination, |

* Parents or primary caregivers are the single most powerful non-pharmacologic method of pain relief available to critically ill or injured children -- the vast majority of parents can comfort their child far better than anyone else and will instinctively provide therapeutic touch.

AEMT/Paramedic

4. Consider pharmacologic intervention:
- d. Consider the administration of **FENTANYL CITRATE**: Ages 1-12 give 3 µg/kg. Age > 12 use Adult dose. Repeat initial dose q 10 minutes to manage pain. If no IV or IO is available, **FENTANYL CITRATE** may be administered IM or IN at the same dosage.

Procedures

PROCEDURE - TRACHEAL INTUBATION

AEMT

1. **AEMT's** are directed to intubate any **ADULT** victim who has **NO** spontaneous respiratory effort and is pulseless. EMT-AEMT may attempt intubation on patients 8 years of age and older.
2. All patients should be pre-oxygenated with high flow (10-15 lpm) oxygen by nasal cannula for 60 seconds prior and during any intubation attempt.
3. The intubation attempt should be no longer than 30 seconds. If so, the attempt should be stopped and the patient should be re-oxygenated for 60 seconds with 100% oxygen.
4. After the trachea is intubated, proper tube placement must be assured by:
 - a. Observing rise and fall of both sides of the chest wall;
 - b. Confirming the presence of bilateral breath sounds;
 - c. Observing the absence of air movement out of the mouth or into the epigastrium with each bagged ventilation;
 - d. Mandatory - Appropriate color change noted on an end-tidal CO₂ detector placed on the end of the endotracheal tube during ventilation.
5. If there is any doubt as to proper tube placement, remove the tube and resume ventilation with the bag-valve-mask using 100% oxygen before re-attempting.
6. If tube placement is confirmed, inflate the cuff.
7. Tracheal intubation should be approached with extreme caution in patients with suspected cervical fractures. Preferred methods of intubating these patients include:
 - a. Proper two-man oral intubation using cervical spine control;

Paramedic

- b. Nasotracheal intubation;
 - c. Cricothyroidotomy.
8. **Paramedics** are directed to intubate any victim who has inadequate or no spontaneous respiratory effort or has significant airway compromise.
9. Nasotracheal and/or endotracheal intubation may be attempted on patients who are breathing but are unable to protect their airway. Patients who are in extreme respiratory distress and are decompensating may be selectively intubated. If the patient is going to be sedated and paralyzed prior to intubation, the Medic-in-Charge should request a second medic to respond to the scene for assistance. *However, patients in immediate need of an emergent airway should be intubated without delay, instead of waiting for a second medic to arrive on the scene.* Sellick's maneuver, or cricoid pressure shall be maintained on all patients that are selectively intubated. All medications should be readied, BVM with O₂ and suction should be readied, and an alternative airway plan (example: Bag valve mask, Combi-tube or other supra-glottic device, surgical airway) should be prepared for this procedure.
10. Patients with suspected head injury and no contraindications should be given a 1 – 1.5 mg/kg **LIDOCAINE** bolus prior to intubation for ICP.

11. When intubating a combative/anxious/awake patient in need of an emergent airway see Rapid Sequence Induction protocol see page 69.

Combitube or other comparable device:

12. If tracheal intubation cannot be achieved using an ET tube after at least two (2) attempts, the use of a Combitube or comparable device is acceptable. **NOTE: The same age restrictions for ET use apply for the use of a Combitube.** Select the appropriate sized tube based on the height of the patient (Combitube >5 feet, or Combitube SA 4 feet -5 feet). **Note: The use of a Combitube is contraindicated in persons less than 4 feet tall.**
13. Insert tube until the teeth or alveolar ridges are aligned between the two black rings. Then inflate Line 1 using the blue pilot balloon with 100 cc's of air. Inflate Line 2 using the white pilot balloon with 15 cc's of air.
14. Begin ventilation by ventilating the longer blue connecting tube marked No. 1. If positive breath sounds are heard when auscultating lung fields, and no abdominal sounds are heard, continue ventilations. If auscultation of breath sounds is negative, and bowel sounds are present during assessment, cease ventilations through tube No. 1 and begin ventilations through tube No. 2. The Combitube is then functioning as a normal ET tube.

NOTE: Assessment of lung and abdominal fields must be accomplished before, during and after placement of tube and initial ventilations.

PROCEDURE – RSI

RAPID SEQUENCE INDUCTION / DRUG ASSISTED INTUBATION (PARAMEDIC)

Rapid Sequence Intubation should be avoided, or performed with extreme caution in patients whom bag mask ventilation OR orotracheal intubation are anticipated to be difficult to perform. (LEMON / MOANS)
Consider alternate methods to support the airway.

Paramedic level:

1. All patients should be pre-oxygenated with high flow (10-15 lpm) oxygen by both nasal cannula, and a NRB mask for 1 to 2 minutes prior to and during any intubation attempt.
2. Patients with signs and symptoms of suspected head injury and no contraindications should be given a 1 - 1.5 mg/kg **LIDOCAINE** IV bolus 2-3 minutes prior to Intubation; and
3. **Administer Induction Agents Etomidate and/or Ketamine** - as follows:

ETOMIDATE 0.1 to 0.3 mg/kg slow IVP

AND / OR

KETAMINE 1-2 mg/kg slow IV, IO for induction

OR

For seizing or status **MIDAZOLAM** 1-2 mg IV, IO, IN (max dose 5 mg).

Note: If Midazolam is not effective, and seizure activity continues administer **DIAZEPAM** 0.1 - 0.2 mg/kg IV, IO, IM, R. (If administered IV or IO give slowly over 2-3 minutes) May repeat ½ initial dose in 5-10 minutes if seizure activity continues. Max dose infant < 1yo is 5 mg. Max dose child (age 1-8) is 10 mg.

4. If adequate sedation is achieved proceed to **step 6**. If adequate sedation **IS NOT** achieved, use **step 5**.
5. **Administer Paralytic Agent SUCCYNLCHOLINE** 1.5 mg/kg, slow IVP. Pt. must be ventilated after succinylcholine is administered.
6. **Intubate and ventilate the patient after adequate sedation is achieved.**
7. Confirm ET tube placement by auscultation of the lung fields and abdomen, and by visualizing normal chest rise. Additional confirmation of ETT placement should be done with a secondary device such as an ETCO₂ measurement after 6 breaths, ET placement detector or both.
8. Use a PEEP device to maintain Positive End Expiratory Pressure of 5 cm/H₂O.
9. Administer **VECURONIUM** 0.1 mg/kg for continued paralysis.
10. For sedation administer: **MIDAZOLAM** 2 mg IV, IO

OR

FENTANYL 50-100 mcg IV, IO.

PROCEDURE - CRICOTHYROIDOTOMY (PARAMEDIC)

NOTE: In most situations, cricothyroidotomy should be used only after other methods of airway management have failed.

1. Indications
 - a. Suspected cervical spine fracture with inability to control the airway by other methods.
 - b. Impacted foreign bodies.
 - c. Severe facial trauma or oropharyngeal hemorrhage.
 - d. Severe laryngeal trauma.
 - e. Laryngeal spasm (epiglottitis).
 - f. Obstructing tumors.
 - g. Burns of the face and/or upper airway precluding intubation.
 - h. Pharyngeal hematoma usually secondary to cervical fractures.

Procedure: Needle Cricothyroidotomy

Ages 2 – 8 Years

1. Palpate cricothyroid membrane anteriorly between thyroid cartilage and cricoid cartilage.
2. If time allows, prep area with Betadine and alcohol.
3. Use 14 gauge or larger catheter over needle device with syringe and puncture skin midline and directly over cricothyroid membrane.
4. Direct needle at 45 degree angle caudally.
5. Insert needle through lower half of cricothyroid membrane, aspiration of air signifies entry into tracheal lumen.
6. Withdraw needle while advancing catheter downward.
7. Attach the catheter needle hub to IV extension tubing and then to a 3mm pediatric endotracheal tube adaptor. Ventilate at 1:4 ratio.
8. Auscultate chest for adequate ventilation. An end-tidal CO₂ detector should be placed on the end of the 3mm tube adaptor during ventilation to assure proper placement.

Procedure: Surgical Cricothyroidotomy

Ages 8 and older

1. Palpate cricothyroid membrane anteriorly between thyroid and cricoid cartilages.
2. Prep area with Betadine and alcohol if possible.
3. Stabilize thyroid cartilage and make skin incision approximately 2.5cm (1 inch) across the cricothyroid membrane. Carefully incise through the membrane.
4. Insert scalpel handle into incision and rotate 90 degrees to open the airway. Use Bougie to maintain incision patency if available.
5. Insert an appropriately sized cuffed tracheostomy or ET tube through the incision.
6. Inflate cuff and ventilate patient.
7. Auscultate chest. An end-tidal CO₂ detector should be placed on the end of the tube during ventilation to assure proper tube placement.

PROCEDURE - RELIEF OF TENSION PNEUMOTHORAX (AEMT, PARAMEDIC)

1. Signs of tension pneumothorax include:
 - a. Progressive severe respiratory distress and/or cyanosis.
 - b. Hyper-resonance on percussion of the affected side.
 - c. Tracheal shift away from the affected side.
 - d. Distended neck veins.
 - e. Hypotension.
 - f. Sudden difficulty bag ventilating the patient.
 - g. Reduced or absent breath sounds over the affected lung.
2. Administer 100% oxygen to patients with suspected pneumothorax.
3. If signs of tension pneumothorax are present, decompression should be accomplished as follows:
 - a. Expose entire chest area and clean site vigorously with alcohol and Betadine if available
 - b. Prepare large bore Angiocath, 14 gauge or larger.
 - c. Insert Angiocath in mid-clavicular line on affected side, into second or third intercostal space. Hit the rib and then slide **OVER** it. Thus, the needle should be "walked" upward (**NEVER BELOW RIB**) on the rib until it slides off the upper edge and penetrates into the parietal space.
 - d. If air is under tension, it will exit under pressure.
 - e. If no air is obtained, remove needle and cover site with dressing and inform receiving facility of attempt.
 - f. Continuously re-assess adequacy of ventilations.

PROCEDURE - INTRAOSSEOUS INFUSION (AEMT, PARAMEDIC)

Indications: Route of choice for emergent vascular access for drug and fluid administration in all patients when patient is **unconscious and unstable**. IO devices utilized include: Sternal IO, Bone Gun and EZIO Drill or other FDA-certified IO devices. Use Manufactures recommendations regarding patients' age and insertion sites.

Contraindications:

- Fracture of the femur or tibia
- Prior IO attempt in the same extremity
- Prior orthopedic procedures
- Pre-existing medical condition such as bone disorder
- Burn or infection over site
- Excessive soft tissue thickness or inability to locate landmarks

Equipment: Spinal or bone marrow needle, appropriately sized needle cartridge. Betadine and alcohol preps and a 5cc syringe. Securing device.

Technique:

1. Select site:
 - Tibia - anteromedial aspect of proximal tibial shaft, 1-3 cm below tibial tuberosity.
 - Tibia – Distal tibia (two finger breadths proximal to the medial malleolus.
 - Femur - Distal 1/3 femur, midline, approx. 3 cm above external condyle.
 - Greater tuberosity in the proximal humerus. (Humeral head)
2. If humeral head site is selected immobilize the extremity in a sling configuration to the abdomen.
2. Prep skin with Betadine and alcohol preps.
3. After penetration of the skin, the needle is directed at a slight 10-15 degree vertical angle (inferiorly for the tibia, superiorly for the femur) while gentle pressure is applied.
4. After bone marrow is entered, remove stylet and attach a 5 cc syringe. Aspirate bone marrow contents to confirm placement.
5. Flush with 0.9 NS and Lidocaine 40 mg (4 ml) over 2 minutes then connect to conventional IV set and infuse fluids and/or drugs per protocols. Pressure infusion may be required to flow fluids.
6. Observe site closely for extravasation of fluids.
7. Secure with tape, 4x4s, cotton, etc., as needed.
8. Document procedure and patients response.

PROCEDURE - AEROMEDICAL HELICOPTERS

1. Aeromedical helicopters are most useful in cutting down transport time to hospital due to traffic congestion, bad weather conditions or inaccessible areas the patient may be in.
2. Aeromedical helicopters may be grounded in some weather conditions such as heavy freezing rain, dense fog or high winds.
3. Before the aeromedical helicopter's arrival, EMT's should collect and be ready with a record of the patient care given so far.
4. The aeromedical helicopter will attempt to contact the primary responding fire department on agencies frequency.
5. If the patient has been extricated and has a secure airway, load and go situations should still be followed when the ETA of the aircraft is significantly greater than the transport time to the local facility. Direct transport to nearest hospital or establishing a rendezvous with the helicopter should be given consideration.
6. Landing site specs:
 - a. Ideal site 125' x 125', minimum 75' x 75'.
 - b. No loose debris which may be picked up by rotor wash.
 - c. Notify pilot of any overhead obstructions, especially power lines. Try to establish a landing site without wires close.
7. Safety restrictions:
 - d. Protect patient from dust, debris, etc. from rotor wash.
 - e. Keep doors shut on EMS vehicles when landing.
 - f. Keep all bystanders 150' from landing site.
 - g. No approach to the aircraft unless the pilot signals.
 - h. Doors of the helicopter are to be opened and closed only by the helicopter crew.
 - i. Always approach from front and with pilot's permission, keeping clear of the tail rotor.
 - j. Do not assist in loading or transporting unless the flight crew asks.

POLICY OF PHYSICIAN AT SCENE

1. With the exception that a physician, from time to time, may accompany the paramedic and/or squad as they perform their duties in the field, or otherwise be involved as a Good Samaritan, the following statement of policy is provided in order to clarify the role of the physician at the scene of an emergency. Obviously, a physician may be present at the scene under a variety of circumstances. For example, he/she may be:
 - A physician of undetermined training and background who happens upon the scene and then acts in the capacity of a Good Samaritan.
 - An industrial physician who is present on an industrial site injury or illness.
 - A physician who is present in his office and has requested emergency medical services (EMS).
2. In the case of the "physician as Good Samaritan", the medic/squad shall perform its duties in the usual manner under the direction of accepted protocols. Any participation by the Good Samaritan physician shall be courteously declined unless first approved by the ranking officer. In the event that the Good Samaritan physician assumes responsibility, they must continue at the scene, in transit, and until relieved by another physician in the emergency department to which the patient is delivered. **(The physician must understand this commitment as outlined).**
3. In the case of the "industrial physician", if the medic/squad is called on a life or limb threatening illness/injury where an industrial physician is in attendance, the physician may elect to take charge and supervise the management of the patient while present with the patient. Once the patient is loaded into the medic/squad this protocol takes precedence unless the physician accompanies the patient to the ED.
4. When called to the scene by a physician in his office, the medic/squad shall perform its duties in the usual manner. The physician in his office may elect to take charge and supervise the management of the patient while present with the patient. Once the patient is loaded into the medic/squad this protocol takes precedence unless the physician accompanies the patient to the ED.
5. An EMT-P, Advanced EMT-A, or EMT-A is protected by civil immunity when following the direction of a physician unless the actions of the EMT-A, Advanced EMT-A, or EMT-P can be characterized as willful and wanton misconduct.
6. A fully licensed physician who wishes to assume control of the emergency medical care of the patient must agree to the following:
 - a. Provide the EMT-A, Advanced EMT-A or EMT-P with satisfactory proof that he/she is a physician. The State Medical Board license card is preferred.
 - b. The physician shall attest to adequate medical training specific to the emergency medical condition of the patient.
 - c. Recognize the following:
 - The EMT-A, Advanced EMT-A or EMT-P can function only within the scope of his/her training and statutory authority.
 - Any orders given beyond the training and/or authority of the EMT-A, Advanced EMT-A or EMT-P or conflicting with his/her training or authority requires the physician to be responsible for assuring adequate supervision of the medical care provided during treatment and transport. This means the physician will accompany the patient to the hospital unless it is a multiple-casualty incident or disaster situation and he/she deems it necessary to stay at the scene. **The physician's signature is required on the report.**

POLICY AT THE SCENE OF AN ACCIDENTAL DEATH, SUICIDE OR HOMICIDE

1. It is essential that, at the scene of an accidental death, murder or suicide or death as a result of any suspicious or unusual manner, the medic/squad make every effort to preserve the evidence for the coroner and law enforcement.
2. At the scene of a death, which is as a result of murder, suicide, criminal or other violent or suspicious means, the body shall not be moved. The coroner has sole jurisdiction in such cases.
3. If, in the opinion of the medic/squad, life is present, then immediate resuscitation measures should be instituted. The patient may be moved to a hospital at the discretion of the person or persons in charge of the emergency medical service. The scene should be preserved in case the individual subsequently expires.
4. It is the medic/squad's duty to determine whether the individual is alive and needs emergency medical attention and removal to a hospital or whether the individual has expired and should not be moved. EKG strips are NOT necessary if rigor mortis or fixed lividity is found.
5. While the medic/squad may have the ultimate authority to move a body, they must answer to the coroner if bodies of persons who have expired at the scene are moved and explain the clinical and medical indications which led to their decision.

DEAD ON ARRIVAL / TERMINATION OF RESUSCITATION POLICY

"DOA" is that patient who, under no observation or the availability of history as to the onset of cessation of vital functions, is found to be unresponsive and in full cardio-pulmonary arrest. The patient may manifest such findings as dilated, non-reactive pupils; or the patient may manifest injuries incompatible with life (i.e., decapitated, or burned beyond recognition), with Cardiac arrest, secondary to massive blunt trauma without signs of exsanguinating hemorrhage (i.e. limb amputation), or show signs of decomposition or rigor mortis.

1. In the event that the information is available that the onset of cessation of vital functions occurred within a fifteen (15) minute period prior to examination, regardless of cause, or in the presence of any vital functions or pupillary response; or if any doubt exists, then full resuscitative measures are to be instituted on the scene without fail and continued enroute to the nearest emergency department.
2. The fifteen (15) minute period of cessation of vital functions as described in paragraph 2 above does not apply to children or infants. In pediatric cases, a period of thirty (30) minutes should be used.
3. Resuscitation efforts may be terminated according to the following guidelines:
 - a. Greater than 15 minute down time with no vital functions with asystole on monitor; or,
 - b. Adult cardiopulmonary arrest not associated with trauma, body temperature aberration, respiratory etiology, or drug overdose.
 - c. Adequate BLS has been provided for an adequate amount of time;
 - d. Standard ACLS in accordance with AHA guidelines has been carried out for at least 10 minutes;
 - e. No return of spontaneous circulation (spontaneous pulse rate of at least 60/minute for at least a 5 minute period); and end-tidal CO₂ < 20.
 - f. Absence of persistent, recurring or refractory ventricular fibrillation/tachycardia or any continuous neurological activity (e.g., spontaneous respirations, eye opening or motor response).

When these conditions have been met the medic-in-charge shall contact MCP and request termination of resuscitation. Documentation should be forwarded to MCP immediately after completion of the run, if possible, but must be received by the MCP within 48 hours of the run.

4. None of the above applies in the instances of near-drowning, hypothermia or overdose of any barbiturate drugs.
5. Efforts may be withheld if a valid State of Ohio "Do Not Resuscitate" Document is presented to the Responding Personnel and the following criteria are met:
 - a. **Inside a Healthcare Facility:**
 - The order must be signed by a physician.
 - A copy of the order must be attached to the EMS report.
 - b. **Outside a Healthcare Facility:**
 - A "Do Not Resuscitate" document must be presented to Responding Personnel on their Arrival. The document *must* be:
 - signed by the *patient* or their *legal guardian*;
 - signed by the *patient's physician*;
 - The document must be dated.
 - A copy of the order should be attached to the EMS report.

FOR MORE DETAILED INFORMATION ON THE "DO NOT RESUSCITATE" ORDER, SEE POLICY ON DO NOT RESUSCITATE.

POLICY ON DO NOT RESUSITATE ORDERS

All patients have specific needs and deserve special consideration from health care providers. These may include patients with cancer, AIDS, or other irreversible medical conditions, but also patients who have intelligently altered their consent for medical treatment. Many efforts have resulted in the development of “Do Not Resuscitate” (DNR) orders within the confines of the inpatient setting. Pre-hospital providers commonly encounter these types of patients. These encounters can sometimes be frustrating, and charged with emotion if there is not a consistent and rational approach by which to care for these patients and their families.

It is widely recognized that there are circumstances where life-prolonging therapy in the pre-hospital setting may not be appropriate. Adult patients should have the right to refuse pre-hospital treatment which they would deem unduly burdensome, and of minimal benefit.

This document is meant to provide a policy, recognized by healthcare professionals, as the accepted mechanism to limit pre-hospital treatment to legitimate DNR patients. It should allow EMS personnel to immediately and unequivocally identify patients which life-sustaining treatment should be withheld.

The State of Ohio currently recognizes two levels of “Do Not Resuscitate” orders. There is no expiration date for a DNR Comfort Care (DNRCC) order. A valid DNR Comfort Care plan is invoked by the physician’s signature on the order form. The physician must also print his name, address and date the order. The patient’s name and address must also be on the form. Other valid options of proof of a DNR Comfort Care order are:

- DNR Wallet Card
- Hospital type wristband
- Necklace
- Bracelet

DNR CC - Comfort Care

- **DNR Comfort Care** limits treatment to palliative measures (care provided to ease pain and enhance comfort) at all times, even before an actual respiratory or cardiac arrest has occurred. This will often be the option of choice for those whose have a diagnosed terminal illness.
- **DNR Comfort Care orders do not mean “Do Not Treat”** and should not restrict health care providers from administering other aspects of medical treatment. The following palliative and supportive therapeutic interventions may help to provide symptom control, patient care, and comfort measures and can be completed. **These include:**
 - Suctioning Airway
 - O2 Administration
 - CPAP
 - Position for Comfort
 - Splinting or immobilizing
 - Controlling Bleeding
 - Provide Pain Medication
 - IV Fluids
 - Emotional Support
 - Transport, as appropriate
 - Contacting other appropriate health care providers such as Hospice, home health or attending physician.

These WILL NOT include any of the following:

- Administration of chest compressions
- Insert artificial airway
- Administer resuscitative drugs
- Defibrillate or cardiovert
- Provide respiratory assistance (other than that listed above)
- Initiate resuscitative IV's
- Initiate cardiac monitoring

If any of the **WILL NOT** actions have been initiated prior to confirming that the DNR Comfort Care Protocol should be activated, they should be discontinued immediately. Respiratory assistance, IV medications, etc. that have been part of the patient's ongoing course of treatment for an underlying disease may be continued.

DNR-CC Arrest - DNR

DNR Comfort Care Arrest limits treatment only in the event of an actual respiratory or cardiac arrest. Many people may choose to forego resuscitation attempts once their heart has stopped but will want care providers to perform all possible interventions to prevent that from occurring. Those enrolled in this program will accept all medical treatments until respirations cease or the heart has stopped. Essentially this means that all resuscitative efforts will be initiated and performed until the patient suffers from cardiac or respiratory arrest. At that point all resuscitative efforts will be terminated.

The DNRCC-Comfort Care Arrest order *implies* withholding the following interventions:

- Administration of chest compressions
- Insert artificial airway
- Administer resuscitative drugs
- Defibrillate or cardiovert
- Provide respiratory assistance (other than that listed above)
- Initiate resuscitative IV's
- Initiate cardiac monitoring

It cannot be stressed strong enough that all care and/or steps taken are to be documented precisely and as accurately as possible. Copies of DNR orders used are to be attached to the incident report. Also document times of arrival, time of death, times notified of DNR, etc.

If a valid DNR Comfort Care order is provided and persons at the scene other than the patient (i.e. bystanders or family members) request commencement of resuscitation efforts, the physician order and the patient wishes embodied in the DNR Comfort Care order take precedence. If this occurs, care providers shall respect the DNR Comfort Care protocol and try to reinforce to family members the appropriateness of the decision.

If resuscitation is initiated prior to the production of a valid DNR Comfort Care order, all efforts shall be terminated. Contact shall be made with MCP and/or the Coroner. IV's, ET tubes, etc. shall remain in place unless authorized by MCP or Coroner to remove them. If a cardiac rhythm is restored on the initial effort, transportation of **DNR Comfort Care** patients should be completed without any further procedures or pharmacological measures; **Comfort Care Arrest** patients should, at that time, be transported with full medical support until arrest again occurs.

If a physician gives a verbal order for DNR Comfort Care either in person or over the phone, EMS must honor this order once the physician's identity is verified. Verification may include:

- Personal knowledge of the physician
- A book or list of physicians with identifying information
- A return phone call to verify the information provided

POLICY ON REFUSAL OF CARE / TRANSPORT DESTINATION

1. If neither EMS nor patient desire transport, document the reasons why you feel transport was not necessary and that the patient was in agreement. Have the patient sign beneath your description.
2. Patient desires transport but EMS feels it is unnecessary:
 - It is best to transport these people if possible. If you identify a habitual abuser of the EMS system, notify the EMS Coordinator.
3. EMS recommends transport but the patient refuses:
 - If the patient seems competent, there is little that can be done. Family and/or friends should be enlisted to help persuade the patient. The key information to be documented on the run sheet is that the patient was advised that transportation to the hospital was recommended and that the patient runs the risk of serious complications if not evaluated at the hospital. It is best to outline some of the possible diagnoses and complications. *Remember that hypoxia, hypotension, CHEMICAL ALTERATION, or other serious illness can render someone temporarily incompetent to make a decision.*
 - A Patient Refusal Form must be completed in its entirety and a Refusal Information/Instruction Sheet given to the refusing party.
4. Desire for transport to a specific hospital:
 - The Fire Departments functioning under this protocol will routinely transport patients to the **nearest available acute care hospital**.
5. Trauma center or aeromedical candidates:

If the patient's condition is serious enough to warrant transfer to a trauma center, it should be assumed that the patient is not able to make the complex decision of type and destination of transport and the judgment of the EMS should be followed.
6. The patient is determined to be suicidal or incompetent:

Medical control may be contacted and the physician may talk to the patient if desired. Family and/or friends should also be enlisted to help. If the patient is not willing to be transported, law enforcement should be called to help with the transport. **Under no circumstances should a person who is suicidal or determined to be incompetent be allowed to refuse care.** If the crew feels threatened in any way, law enforcement should be contacted.
7. In the rare event the nearest acute care hospital is on diversion, the following steps shall be taken:
 - Medical Director and EMS Coordinator shall be notified so that dialogue can be started with the hospital to resolve the diversion issue.
 - Each department shall transport non-critical patients to alternate hospitals.
 - **Unstable patients shall be transported to the closest appropriate facility regardless of diversion status.**

PRISONER TRANSPORT / PRISONER RESTRAINTS

Principles

- The safety of the patient, community and responding personnel is of paramount concern. Restraints are to be used only when necessary in situation where the patient is potentially violent and is exhibiting behavior that is dangerous to self or others.
- Pre-hospital personnel must consider that aggressive or violent behavior may be a symptom of medical conditions such as head trauma, alcohol, drug-related problems, metabolic disorders, stress, and psychiatric disorders.
- Medical intervention and patient destination shall be determined by EMS personnel. Authority for scene security shall be vested in Law Enforcement. The method of restraint used shall allow for adequate monitoring of vital signs and shall not restrict the ability to protect the patient's airway or compromise neurologic, respiratory or vascular status.

Policy

- Restraint equipment applied by pre-hospital personnel must allow for quick release. The application of any of the following forms of restraint shall not be used by EMS personnel:
 - Hard plastic ties.
 - Backboard or scoop stretcher used as a "sandwich" restraint.
 - Restraining a patient's hands and feet behind the patient (i.e.: "Hogtying").
 - Methods or other material applied in a manner that could cause vascular, respiratory or neurological compromise (i.e.: gauze bandage).
- Restraint devices requiring a key, requires that a key holding officer be present not only at the scene, but enroute to the hospital as well. A key holding officer may follow in a "chase" vehicle or ride in the medic with the prisoner.
- Restraint equipment applied by law enforcement must provide sufficient slack in the restraint device to allow the patient to straighten the abdomen and to take full tidal volume breaths.
- Patients shall not be restrained by a keyed device to the transporting cot.
- Patients shall not be transported in a prone position. Patients shall be continuously monitored to ensure adequacy of Airway, Breathing, Circulatory, and Neurologic Status.

Documentation

- Document the reasons restraints were used and which agency applied the restraint device.
- Document information and data regarding the monitoring of circulation to the restrained extremities and the monitoring of respiratory status while restrained.

Prisoner Transport

- Whenever a prisoner is transported, the patient will be restrained by all four extremities if possible. There should not be enough slack to allow the hands to reach any distance from the restraining point.
- Anytime a patient in custody is transported, a corrections officer or LE officer (not an on-duty firefighter commissioned as an officer) shall accompany the prisoner/patient in the transport vehicle or in a chase vehicle, at the discretion of the medic-in-charge and in consultation with LE personnel, until that patient is delivered to definitive care.

No firearms are permitted in the patient area. If the officer is armed, he/she will ride in the officer's seat of the vehicle and not in the patient care area.

OPERATION OF AUTOMATED EXTERNAL DEFIBRILLATOR

First Responder/Basic/AEMT

Indications

1. For unresponsive, pulseless patients who are not breathing.
2. Summon ALS.

Contraindications

3. Not for use in less than 8 years of age unless AED is so equipped. Then not for use in patients less than 1 year of age.

Operation

4. Turn on AED unit and continue CPR.
5. Attach device to patient via adhesive defibrillator pads and patient cable.
6. Analyze; if shock is advised then defibrillate one time.
7. CPR for approximately 2 minutes (5 cycles of compressions: breaths).
8. Check pulse, if no pulse push analyze on AED and repeat sequence.
9. If at any time shock not advised; check for pulse, refer to appropriate protocol based on findings.

SMOKE INHALATION INJURY / CYANIDE EXPOSURE

Closed space fire victims or known cyanide exposure (oral or by inhalation) with any of the following:

- Unconsciousness or altered mental status.
- Unexplained deterioration in clinical signs.

Fires involving plastics, upholstery, wool, asphalt, paper, carpeting, insulation, and synthetic rubber produce cyanide gas.

Procedures:

1. Decontaminate patient if chemical/toxic exposure is suspected prior to treatment and transport.
2. ABC's PROTECT AIRWAY, CONSIDER ENDOTRACHIAL INTUBATION
3. 100% oxygen
4. IV access with **Normal Saline** flowed at wide open rate to correct hypotension
5. Apply Cardiac Monitor

IF ANY OF THESE SYMPTOMS PERSIST AFTER DOING THE ABOVE

1. Altered LOC
2. Increased respiratory rate
3. Cyanosis
4. Cardiac dysrhythmia
5. For cardiac arrest thought due to cyanide

THEN PROCEED AS FOLLOWS:

6. Administer **SODIUM THIOSULFATE** 12.5 gm IVP or IO (or 1.65ml/kg up to 12.5 g) over 10 minutes for children.
7. Then continue supportive measures and treat other injuries.
8. Consider other inhaled toxins such as carbon monoxide.

EPINEPHRINE AUTO INJECTOR

Basic, AEMT, Paramedic

Indications

Patients who are prescribed an **EPINEPHRINE** auto-injector for the treatment of allergic reaction.

Cautions

This device is for use by those patients for whom they are prescribed. The Basic is only assisting the patient by administering their own medication (Epi-Pen) for them. If the patient's **EPINEPHRINE Auto-Injector** is empty, out of date or not with them, the Basic may utilize the **EPINEPHRINE Auto-Injector** carried on the Squad/Medic (if available). AEMT may administer Epinephrine via SQ or IM routes.

Procedure

1. Use body substance precautions.
2. Contact medical control for authorization prior to utilizing patients own EPI Pen, if possible.
3. Assure medication is prescribed for patient.
4. Check expiration date, if medication outdated, cloudy, or discolored, do not use. Use EPI pen from Squad/Medic if patient's medication is outdated, cloudy or discolored.
5. Remove cap and select an injection site (thigh or shoulder).
6. Push firmly against the site.
7. Hold the injector against the site for at least 10 seconds.
8. Properly discard injector.
9. Transport patient and monitor vital signs.
10. Summon ALS if patient displays serious signs or symptoms.

TASER PROTOCOL

All Levels

1. Arrive on scene. Assess scene for **safety**

Find Law Enforcement in-charge to discuss medical treatment/transport needs.

- Verify TASER has been detached
- Patient is cooperative or adequately restrained.

Perform routine general assessment of patient.

- Look for signs of secondary injury (i.e.: struggle, fall, etc.)
- Evaluate for signs of competency.

Document findings including location of probes or contact area

- (Law enforcement may take pictures)

Transport to Emergency Dept. (MHUC preferred) if patient:

- Request transport;
- Fails to exhibit signs of competency;
- Sustained probe attachment in head/face, genitals, female breast or vascular structure (e.g. wrist & Radial artery);
- Neurological deficits or abnormalities;
- Evidence of burn > 1st degree (more than a sunburn);
- Pregnancy; or
- if law enforcement requests medical transport.

Otherwise:

Remove the barbs/probes and return them to law enforcement.

Inspect skin at site for penetration, burn, bleeding, etc.

If skin is broken, cleanse & bandage.

Repeat the general assessment before leaving the scene.

Thoroughly document patient contact on PCR.

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

EMT, AEMT, PARAMEDIC

CPAP has been shown to rapidly improve gas exchange, decrease work of breathing, and reduce the need for intubation from acute respiratory distress other than pneumothorax, particularly pulmonary edema/CHF, COPD, and asthma conditions.

Indications

Any patient who is in respiratory distress with signs and symptoms consistent with asthma, COPD, pulmonary edema, CHF, or pneumonia **and** who is:

1. Awake and able to follow commands;
2. Is at least 12 years old and is able to fit the CPAP mask;
3. Has the ability to maintain an open airway;
4. **And** exhibits two or more of the following:
 - A respiratory rate greater than 25 breaths per minute;
 - SPO₂ of less than 94% at any time;
 - Use of accessory muscles during respirations.

Contraindications

1. Patient is in respiratory arrest/apneic.
2. Patient is suspected of having a pneumothorax or has suffered trauma to the face/chest (including surgery).
3. Patient has a tracheostomy.
4. Patient is actively vomiting or has upper GI bleeding.
5. Facial deformity that inhibits proper CPAP mask seal.

Procedure

1. **EXPLAIN THE PROCEDURE TO THE PATIENT.**
2. Ensure adequate oxygen supply to ventilation device.
3. Place the patient on continuous pulse oximetry.
4. Place the patient on cardiac monitor and record a rhythm strips with vital signs.
5. Place the delivery device over the mouth and nose.
6. Secure the mask with provided straps or other provided devices.
7. Use 5 cm H₂O of PEEP valve to start.
8. Check for air leaks.
9. Monitor and document the patient's respiratory response to treatment.
10. Gradually increase PEEP to a maximum of 10 cm H₂O.
11. Check and document vital signs every 5 minutes.
12. Administer appropriate medication as certified (continuous nebulized Albuterol for COPD/Asthma and repeated administration of nitroglycerin spray or tablets for CHF).
13. Continue to coach patient to keep mask in place and readjust as needed.
14. ***If excessive anxiety interferes with procedure Paramedic's may consider:***
MIDAZOLAM (Versed) 1-2 mg IVP, repeat prn to maximum of 10 mg total administration.
OR, KETAMINE 0.1-0.3 mg/kg IV, IO, IN
15. Contact medical control to advise them of CPAP initiation (so they can be appropriately prepared).
16. If respiratory status deteriorates, remove device and consider intermittent positive pressure ventilation via BVM or endotracheal intubation.

Removal Procedure

1. CPAP therapy needs to be continuous and should not be removed unless the patient cannot tolerate the mask, experiences respiratory arrest or begins to vomit.
2. Intermittent positive pressure ventilation with a Bag-Valve-Mask or endotracheal intubation (paramedic) should be considered if the patient is removed from CPAP therapy.

Special Notes

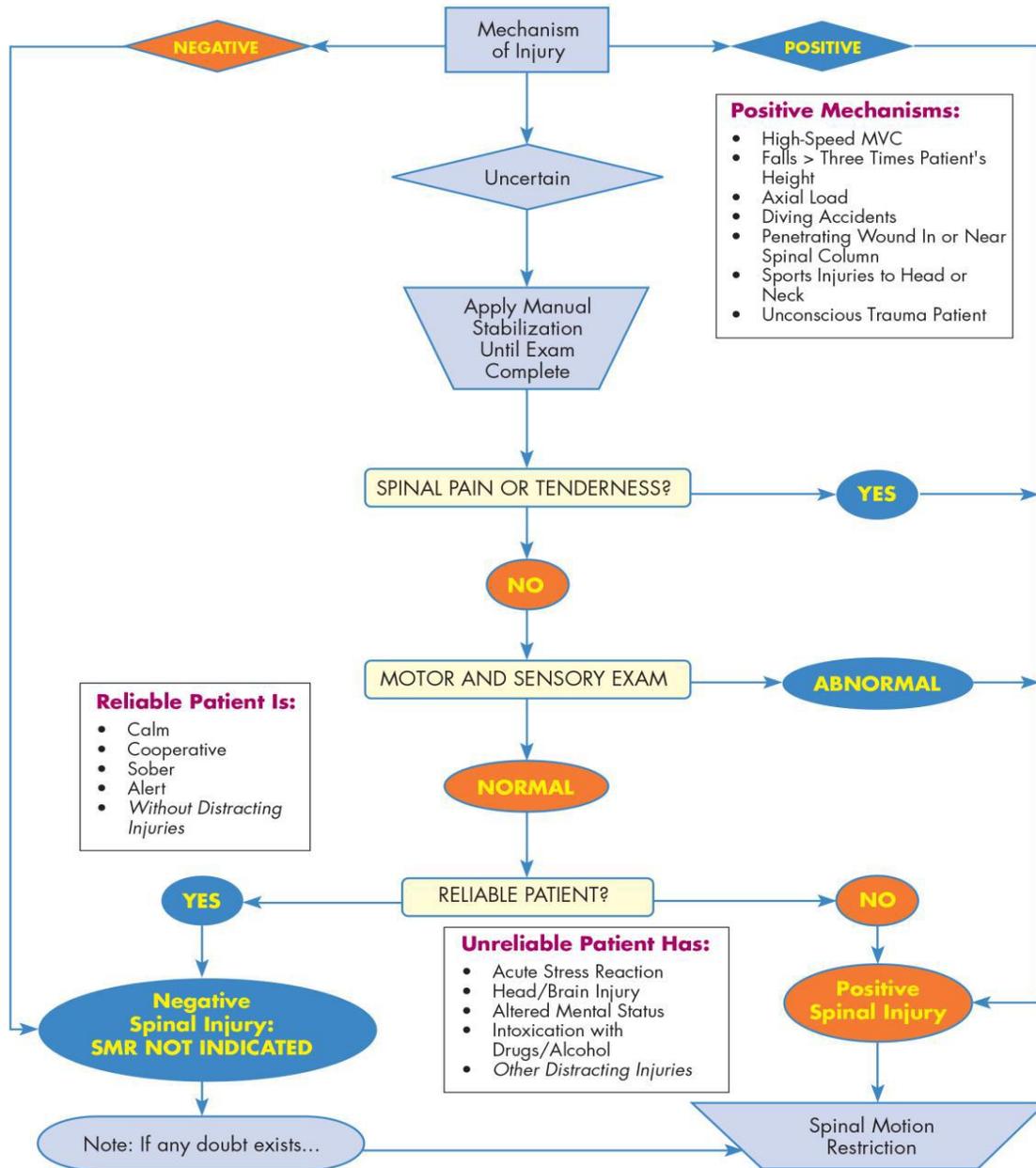
1. Do not remove CPAP until hospital therapy is ready to be placed on patient.
2. Watch patient for gastric distention, which can result in vomiting.
3. *Procedure may be performed on patient with Do Not Resuscitate Order.*
4. Due to changes in preload and afterload of the heart during CPAP therapy, a complete set of vital signs must be obtained every 5 minutes.

Spinal Motion Restriction (SMR) Protocol

Spinal Motion Restriction (SMR) includes taking steps to minimize head movement including the use of a cervical collar, padding, coaching, and positioning. Long Backboards, scoop stretchers, and other devices may be used for extrication purposes if needed, **but are not necessary for spinal motion restriction and should be removed as soon as practical and safe for the patient and crew and ideally prior to transport.**

Backboards and other devices are tools whose use may occasional be required for movement, restraint or extrication purposes. Their use may be considered in cases where the patient is non-compliant and unable to participate in the coaching or self-stabilization aspects of SMR.

Initial Assessment of Spinal Injury Clinical Criteria



(From International Trauma Life Support for Trauma Care Providers, 7th Edition)

QUALITY IMPROVEMENT PROCESS

Principles

1. To assure the highest possible quality of patient care, the Department shall establish a Quality Improvement Program in accordance with the requirements of this protocol.
2. The purpose of the program is:
 - to identify and correct deficiencies in training, procedures, competency of caregivers, or other areas of service delivery;
 - To evaluate new technologies and procedures;
 - To monitor new medications and new patient care procedures.
 - To monitor, evaluate and coordinate delivery of care and utilization of resources.
 - Complete annual reviews of the EMS protocol.
 - Review, provide and participate in continuing education program for EMS providers.

Internal Run Review

Each EMS incident report will be subject to the Internal Run Review Process. This includes calls where a patient was found and care was refused. Not included are false alarms or other calls where no patient was found. The department's EMS Coordinator (or other person designated by the Chief) will review each PCR on a daily basis.

Incidents will be reviewed for:

- Response time.
- Scene time.
- Documentation of dispatch/incident information.
- Documentation of patient demographic data.
- Documentation of medical history.
- Documentation of chief complaint.
- Documentation of physical exam.
- Documentation of complete vital signs with appropriate repetition.
- Documentation of treatment/medication/assessment with accurate times.
- Condition of patient during transport.
- Appropriate care delivered per protocol.

1. If instances of substandard care, documentation, or deviation from protocol are identified during the internal run review process, the EMS Coordinator and/or Medical Director shall meet with the Provider involved to discuss the findings. If the Provider and the EMS Coordinator and/or Medical Director are in agreement regarding the facts of the incident, they shall then attempt to agree upon a plan to remedy the situation and prevent recurrence.
2. If the provider involved does not agree regarding the facts, or if an agreement cannot be reached regarding remedial actions, then the matter will be submitted to the Chief and/or Medical Director for review.
3. If instances of outstanding patient care or customer service are identified during the run review process, the provider(s) involved will be recognized in an appropriate fashion by the department.

Quality Improvement Council

1. A Quality Improvement Council shall be established at the discretion of the Fire Chief.
2. The Quality Improvement Council will be convened monthly (if necessary) to review a representative sample of run reports and review sheets from each participating department. Runs will be selected for review as follows:
 - a. All runs involving critically ill or injured patients shall be submitted, including
 - Cardiopulmonary arrest
 - Unresponsive to pain
 - Patients requiring aero-medical transport
 - Multi-system trauma
 - Human Violence Trauma
 - Patient's requiring advanced airway management
3. If instances of substandard care, documentation, or deviation from protocol that have not been corrected during the local review process are identified by the Quality Improvement Council, the report shall be forwarded to the Medical Director for review.
4. The Quality Improvement Council shall review and consider all disputes arising from the Internal Run Review process. The council shall review all information submitted by the provider and the EMS Coordinator involved, render an opinion on each question submitted, and if necessary, formulate a plan to remedy the situation and prevent recurrence.
5. If either party is not satisfied with the findings of the Council, the matter will be forwarded to the Medical Director and/or Fire Chief and/or Administration and/or Human Resources for review and final disposition.
6. The Quality Improvement Council shall submit a copy of the minutes of each meeting to the Medical Director.

Medical Director

1. The Medical Director shall review all reports or appeals submitted to him by the Quality Improvement Committee, Providers or EMS Coordinators.
2. The Medical Director shall render a decision to the Fire Chief and prescribe what, if warranted, remedial actions are suggested.
3. The Medical Director shall, at their sole discretion, notify the Ohio Department of Public Safety, Division of EMS, of actions taken against any Provider under his jurisdiction or control.

Authorized Drug List

| EMT-B Medications | How Supplied |
|---|---------------------------------|
| Albuterol | Metered Inhaler 17G |
| Aspirin | Bottle 81mg/tablet |
| Epi Pen Jr. | Auto-inject 0.15mg/0.3ml |
| Epi Pen Sr. | Auto-inject 0.3mg/0.3ml |
| Oral glucose | Tube 40% |
| Naloxone (Narcan) | 5 ml vial (0.4 mg/ml) |
| Nitroglycerin | Metered spray 0.4mg/dose |
| Nitroglycerin | tablet 0.4 mg |
| Pontocaine (Tetracaine Ophthalmic Solution) | 0.50% |
| Sterile Water | Bottle 1000ml |
| AEMT Medications | How Supplied |
| Albuterol | Ampule 2.5mg/3ml |
| Dextrose 25% | Prefilled Syringe 2.5G/10 ml |
| Dextrose 50% | Prefilled Syringe 25G/50 ml |
| Diazepam | Ampule 10 mg/2ml |
| Diphenhydramine (Benadryl) | Vial 50mg/1 ml |
| Epinephrine 1:1,000 | Ampule 1mg/1 ml SQ or IM |
| Fentanyl Citrate | Vial 100 µg/2ml (50 mcg/ml) |
| Glucagon | Mix vial/syringe 1mg/1 ml |
| Ipratropium (Atrovent) | Ampule 0.02%/2.5ml |
| Midazolam (Versed) | 2 ml vial (1 mg/ml) |
| Midazolam (Versed) | 5 ml Vial (0.4mg/ml) |
| 0.9% Normal Saline | Bag/Bottle 50, 100, 250, 1000ml |
| Ringers Lactate IV Solution | 1000 ml |
| EMTP Medications | How Supplied |
| Adenosine (Adenocard) | Vial 6mg/2 ml |
| Atropine | Prefilled Syringe 1mg/10 ml |
| Diltiazem (Cardizem) | Vial 25 or 50mg |
| Dopamine (premix) | Premix Solution 400mg/500 ml |
| Dopamine | 200mg/5 ml vial |
| Epinephrine 1:10,000 | Prefilled Syringe 1mg/10 ml |
| Etomidate (Amidate) | Ampule 20mg/10 ml |
| Ketamine (Ketalar) | Vial 500 mg (100 mg/ml) |
| Lidocaine | Prefilled Syringe 100mg/ 5 ml |
| Lidocaine | Premix solution 2G/500 ml |
| Magnesium Sulfate | Vial 10 gm/20ml |
| Methylprednisolone(Solumedrol) | Vial 125mg/2 ml |
| Nitroglycerin | Premix solution 50mg/250 ml |
| Ondansetron (Zofran) | Vial 4mg/2ml |
| Sodium Bicarbonate | Prefilled Syringe 50meq/50 ml |
| Sodium Thiosulfate | Bottle 12.5G/50 ml |
| Succinylcholine | Vial 200mg/10 ml |
| Vecuronium (Norcuron) | Vial 10 mg |

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Drug Addendum

ADENOSINE

Class: Antidysrhythmic

Trade Name: Adenocard

Emergency Uses: Adenosine is used in PSVT (including that associated with Wolff-Parkinson White syndrome) refractory to common vagal maneuvers.

Adult Dose: 6mg IV push over 1-3 seconds and flush immediately with 20 ml of normal saline. If after 1-2 minutes the patient remains in PSVT, administer 12mg IV push over 1-3 seconds and flush immediately with 20 ml of normal saline. May repeat 12mg dose in 2-3 minutes if unsuccessful.

Pediatric Dose: 0.1mg/kg IV flush.

Contraindications/ Precautions: Adenosine is contraindicated in patients with second-or third-degree heart block, sick sinus syndrome, or those with known hypersensitivity to the drug. Adenosine typically causes arrhythmias at the time of cardioversion. These generally last a few seconds or less and may include PVCs, premature atrial contractions, sinus bradycardia, sinus tachycardia, and various degrees of AV block. In extreme cases, transient asystole may occur. If this occurs, appropriate therapy should be initiated. Adenosine should be used cautiously in patients with asthma.

Pharmacokinetics: Absorption: Rapid uptake by erythrocytes and vascular endothelial cells after IV administration; onset and peak effect within 20-30 seconds, half-life is 10 seconds.

Metabolism: Rapid uptake into cells; degraded by deamination to inosine, hypoxanthine, and adenosine monophosphate.

Elimination: Route of elimination is unknown.

Adverse/ Side Effects: Adenosine can cause facial flushing, headache, shortness of breath, dizziness, and nausea, among others. Because half-life is so brief, side effects are generally self-limited.

How Supplied: Vial 6mg/2ml

ALBUTEROL

Class: Sympathomimetic bronchodilator

Trade Name: Asmol (Aus), Proventil, Respolin (Aus), Ventolin.

Emergency Uses: To relieve bronchospasm in patients with reversible obstructive airway disease (asthma, chronic bronchitis, emphysema) and acute attacks of bronchospasm.

Adult Dose:

Basics/AEMTs- If pt presents with wheezing and has been prescribed an aerosol inhaler, assist with inhaler. If pt own inhaler is empty, out dated, or not present, establish on-line Medical Control for orders to use the Albuterol inhaler carried on Medic.

Paramedic- Administer Albuterol 2.5 mg by nebulizer over 10 minutes. Continuous administration may be used for transports of less than 30 minutes. Use with caution in any pt who has had repeated doses of bronchodilators within last hour. *Note: Consider adding Atrovent x1 to the first nebulizer treatment.*

Acute Pulmonary Edema- Consider Albuterol Nebulizer, 2.5 mg every five minutes x 2.

Pediatric Dose: Administer 2.5 mg Albuterol by nebulizer over 10 minutes. (Use with caution in any pt who has had repeated doses of bronchodilators within last hour.) For children with KNOWN asthma, add Atrovent .5mg in 3ml saline to each Albuterol treatment.

Contraindications/ Precautions: Never use for patients with a known hypersensitivity to the drug.

Adverse/ Side Effects: CNS: Tremors, anxiety, dizziness, seizures, headache, insomnia. GI: Nausea, dyspepsia. ENT: Pharyngitis, nasal congestion. CV: Palpitations, tachycardia, hypertension. Respiratory: Bronchospasm, cough, wheezing.

How Supplied: Albuterol inhaler- 17G
Ampule- 2.5mg/3ml

AMIODARONE

Class: Antidysrhythmic

Trade Name: Cordarone

Emergency Uses: Amiodarone is used in life threatening cardiac arrhythmias such as ventricular tachycardia and ventricular fibrillation.

Adult dose: VF / Pulseless VT 300 mg IV push, consider an additional 150 mg IV push in 3-5 minutes. Max cumulative dose 2.2 gm IV / 24 hours. Six or more consecutive

PVC's give 150 mg in 100 ml NS over 10 minutes.

Atrial fib / Atrial flutter – If found to be Atrial fib / Atrial flutter after a trial of Adenocard give Amiodarone 150 mg over 10 minutes. If patient converts follow with Amiodarone 150 mg in 250 ml NS at 100 ml per hour.

Pediatric Dose: Not Used

Contraindications / Precautions: Amiodarone is contraindicated in breast feeding parents in cardiogenic shock and those with severe sinus node dysfunction resulting in marked sinus bradycardia, second or third degree AV block, symptomatic bradycardia, or known hypersensitivity. Amiodarone should be used with caution in patients with latent or manifest heart failure because failure may be worsened by administration.

Adverse / Side Effects: Paramedics should monitor the patients ECG and be alert for hypotension, bradycardia, increased ventricular beats, prolonged PR interval, QRS complex, and QT interval changes. The patient should also be monitored for signs of pulmonary toxicity such as dyspnea and cough.

How Supplied: Ampule 150mg/3ml

ASPIRIN

Class: Analgesic; antipyretic; nonsteroidal anti-inflammatory drug; platelet inhibitor

Trade Name: Alka-Seltzer, A.S.A., Aspergum, Aspro (Aus), Astrin (Can), Bayer, Bext (Aus), Children's, Corhyphen (Can), Cosprin, Easprin, Ecotrin, Empirin, Entrophen (Can), Halfprin, Measurin, Novasen (Can), St Joseph Children's, Solprin (Aus), Supasa (Aus), Triaphen-10, Vincent's Powders (Aus), Winspirin Capules (Aus), ZORprin.

Emergency Uses: chest pain/suspected myocardial infarction

Adult Dose: Administer 4 baby aspirin P.O. (324mg).

Pediatric Dose: Not used

Contraindications/ Precautions: Aspirin is contraindicated in patients with known hypersensitivity to the drug. It is relatively contraindicated in patients with active ulcer disease and asthma. Aspirin can cause gastrointestinal upset and bleeding. Aspirin should be used with caution in patients who report allergies to the nonsteroidal anti-inflammatory class of drugs. Doses higher than recommended can actually interfere with possible benefits. Because of the possible association of aspirin usage with Reye's syndrome, do not give aspirin to children or teenagers with symptoms of varicella (chickenpox) or influenza-like illnesses before consulting a physician.

Pharmacokinetics: Absorption: 80-100% absorbed (depending on formulation), primarily in the stomach and upper small intestine; onset is 5-30 minutes; peak levels in 15 minutes to 2 hr; duration is 1-4 hr; half-life is 15-20 minutes.

Distribution: Widely distributed in most body tissues; crosses placenta.

Metabolism: Aspirin is hydrolyzed to salicylate in GI mucosal, plasma, and erythrocytes; salicylate is metabolized in liver.

Elimination: 50% of dose is eliminated in the urine in 2-4 hr. Excreted in breast milk.

Adverse/ Side Effects: Aspirin can cause heartburn, gastrointestinal bleeding, nausea, vomiting, wheezing, and prolonged bleeding.

How Supplied: Baby Aspirin, OTC, 81 mg/tablet

ATROPINE

Class: Anticholinergic

Trade Name: Atropine

Emergency Uses: To increase cardiac output in symptomatic bradycardia

Adult Dose: Symptomatic bradycardia administer Atropine 0.5-1mg IVP. Repeat in 3-5 minutes if not resolved to a maximum dose of 0.04 mg/kg.

In cases of organophosphate exposure (i.e. insecticides) and development of coma, ataxia, psychosis, dyspnea, convulsions, bradycardia or cyanosis, give atropine 2mg IVP. May repeat every 5 minutes until signs of flushing, dry mouth and dilated pupils appear.

Pediatric Dose: 0.02 mg/kg/dose (minimum dose 0.1mg) Route can be given IV, ET, IO

Contraindications/ Precautions: Use with caution in patients with signs and symptoms of acute myocardial ischemia or infarction. Atropine may actually worsen the bradycardia associated with second-degree Mobitz II and third-degree AV blocks.

Because atropine raises the intraocular pressure, use with caution in patients with glaucoma.

Pharmacokinetics:

Absorption: Atropine is well absorbed from all administration sites; peak effect is 20-60 min IM, 2-4 min IV; duration is 4 hr; half-life is 2-3 hr.

Distribution: Distributed in most body tissues; crosses blood brain barrier and placenta.

Metabolism: Metabolized in liver.

Elimination: 77-94% excreted in urine in 24 hr.

Adverse/ Side Effects: Atropine can cause blurred vision, dilated pupils, dry mouth, tachycardia, drowsiness, and confusion.

How Supplied:

Prefilled syringe 1mg/10 ml

Prefilled syringe 0.4mg/ml 20 ml

DIPHENHYDRAMINE

Class: Antihistamine, antiemetic

Trade Name: Benadryl

Emergency Uses: Allergic reaction and anaphylaxis.

Adult Dose: If age > 10 administer 25 mg IVP over 3 minutes or deep IM. May repeat once prn up to 50 mg total dose.

Pediatric Dose: 25 mg IV or IM. Give IV dose over 3 minutes. If less than 10 years of age give 1mg/kg IV or IM. Maximum dose 50 mg.

Contraindications/ Precautions: Pregnancy category: B. Administer with caution to clients with convulsive disorders and in respiratory disease. Excess dosage may cause hallucinations, convulsions, and death in infants and children. Use in geriatric patients may result in dizziness, excessive sedation, syncope, toxic confusional states, and Hypotension.

Pharmacokinetics: Absorption: Onset is 15-30 min; peak effect in 1-2 hours; duration is 4-6 hr;

Adverse/ Side Effects: Sedation ranging from mild drowsiness to deep sleep. Dizziness, incoordination, faintness, fatigue, confusion, restlessness, excitation, nervousness, tremor, seizures, headache, irritability, insomnia, euphoria, weakness, and disturbing dreams.

How Supplied: Vial 50 mg/1ml

DEXTROSE

Class: Carbohydrate

Trade Name: D50W, 50% Dextrose

Emergency Uses: To increase blood sugar levels in documented hypoglycemia.

Adult Dose: Obtain chemstrip. If below blood sugar < 60 mg/dl or there is any doubt as to patient status, administer 50 ml **50% Dextrose**.

Pediatric Dose: administer **25% Dextrose** 2 cc/kg IVP.

Contraindications/ Precautions: There are no major contraindications to the IV administration of dextrose 50% to a patient with documented or suspected hypoglycemia. Use with caution in patients with increasing intracranial pressure as the added glucose may worsen the cerebral edema.

Pharmacokinetics:

Absorption: Immediate blood levels; onset <1 min; peak effect and duration dependent upon degree of hypoglycemia.

Distribution: Widely distributed to all body tissues.

Metabolism: Dextrose (glucose) is metabolized to carbon dioxide and water with the release of energy.

Adverse/ Side Effects: Patients may complain of warmth, pain, or burning at the injection site. Dextrose 50% can cause tissue necrosis, phlebitis, sclerosis, or thrombosis at the injection site.

How Supplied: Dextrose 25%- Prefilled syringe 2.5 G/10ml
Dextrose 50%- Prefilled syringe 25 G/50ml

DIAZEPAM

- Class:** Anticonvulsant, Sedative, antianxiety (benzodiazepine)
- Trade Name:** Valium
- Emergency Uses:** Considered a secondary medication used to eradicate seizure activity especially status epilepticus, or when Midazolam is ineffective.
- Adult dose:** 0.1 - 0.2 mg/kg IV, IO, IM, R. (If administered IV or IO give slowly over 2-3 minutes) May repeat ½ initial dose in 5-10 minutes if seizure activity continues. Max total dose 30 mg.
- Pediatric dose:** 0.1 - 0.2 mg/kg
max dose infant is 5 mg(< 1 year old)
max dose child is 10 mg (age 1-8)

Contraindications: Hypersensitivity to the drug. Diazepam is contraindicated in shock, coma, acute alcohol intoxication, depressed vital signs, obstetrical patients, infants less than 30 days old. Use diazepam with caution in patients with mental psychosis, mental depression, myasthenia gravis, impaired hepatic or renal function, and individuals who are known to abuse drugs or addiction prone. Use diazepam with extreme caution in the elderly, the very ill, and patients with COPD.

Adverse/Side Effects:

- CNS: Drowsiness, fatigue, ataxia, confusion, paradoxical rage, dizziness, vertigo, amnesia, vivid dreams, headache, slurred speech, tremors.
- CV Hypotension, tachycardia, edema, cardiovascular collapse
- Eye Blurred vision, diplopia, nystagmus
- GI Nausea, constipation
- GU Incontinence, urinary retention, gynecomastia, menstrual irregularities
- Other Hiccups, coughing, throat and chest pain, laryngospasm, ovulation failure, pain, venous thrombosis, phlebitis at injury site, and hepatic dysfunction.

How supplied: Ampule 10 mg/2 ml

DILTIAZAM

Class: Calcium Channel Blocker

Trade name: Cardizem

Emergency Uses: To control rapid ventricular response associated with atrial fibrillation and flutter.

Adult Dose: 0.25-mg/kg bolus, typically in 20 ml over 2 minutes IVP or IV drip. May repeat at 0.35mg/kg in 15min. if needed.

Pediatric Dose: Rarely used.

Contraindications/Precautions: Hypotension, wide complex tachycardia, conduction system disturbances. Should not be used in patients receiving intravenous β -blockers. Observe pt. for hypotension.

Liquid form must be kept refrigerated or discarded 30 days after removal from refrigeration.

Side Effects: Nausea, vomiting, hypotension and dizziness.

DOPAMINE

Class: Sympathomimetic

Trade Name: Intropin,

Emergency Uses: To increase end-organ perfusion in cardiogenic shock and in hemodynamically significant hypotension (70-100 mmHg) not resulting from hypovolemia.

Adult Dose: If patient remains hypotensive after fluid bolus or rales are auscultated in the lungs, begin an infusion of Dopamine premix or mix 400mg/500ml normal saline at 5-20 ug/kg/min.

Pediatric Dose: Same as adult.

Contraindications/ Precautions: Dopamine should not be used as the sole agent in the management of hypovolemic shock unless fluid resuscitation is well under way. Dopamine should not be used in patients with known pheochromocytoma (a tumor of the adrenal gland). Dopamine increases the heart rate and can induce or worsen supraventricular and ventricular arrhythmias. Whenever the dosage of dopamine surpasses 20 ug/kg/min, its alpha effects predominate and its functions very much like norepinephrine. Dopamine, like the other catecholamines, should not be administered in the presence of tachyarrhythmias or ventricular fibrillation.

Pharmacokinetics:

Absorption: Onset is less than 5 minutes; duration is less than 10 minutes; half-life is 2 min.

Distribution: Widely distributed; does not cross blood-brain barrier. *Metabolism:* Inactive in the liver, kidney, and plasma.

Elimination: Excreted in urine.

Adverse/ Side Effects: Dopamine can cause nervousness, headache, dysrhythmias, palpitations, chest pain, dyspnea, nausea, and vomiting. Many of these side effects are dose related.

How Supplied: Vial 200mg/5ml, Premix solution 400mg/500ml

EPINEPHRINE

Class: Sympathetic agonist

Trade Name: Adrenalin, Epinephrine

Emergency Uses: To restore cardiac rhythm in cardiac arrest. For treatment of allergic reactions.

Adult Dose:

Cardiac arrest- 1 mg 1:10,000 IV every 3-5 min until circulation restored Administer EPINEPHRINE 1 mg (10 cc, 1:10,000) IVP, repeat q 3 – 5 minutes. ETT dose is 2 – 2.5 times (2-2.5 mg) the IV dose utilizing Epinephrine 1:1000 concentration followed by 3ml saline flush.

Allergic reactions- Basic/AEMT dose- If pt has history of allergic reactions, exhibits hives, itching, or airway edema and has a prescribed Auto-inject epinephrine pen, Basic and AEMT EMT's may assist with its administration. If pt's pen is empty, out dated, or not present establish on line medical control for orders to use the Epi pen from the Squad/Medic.

AEMT/Paramedic- 0.3-0.5 mg 1:1000 IM.

Paramedic- With glottic obstruction, give epinephrine 1:1000 sublingually. For severe cases such as anaphylactic reaction, bronchospasm, severe shock or signs and symptoms proceed as follows: Solu-Medrol 125 mg (adult dose). Administer Epi 0.3-0.5 mg IM. Administer Albuterol 2.5 mg by nebulizer. For shock or circulatory collapse give IV boluses of normal saline and Epi 3-5 cc's of 1-10,000 solution IVP.

Pediatric Dose: Cardiac arrest- 0.01 mg/kg 1:10,000 IV/IO. If not effective after initial IV dose, subsequent doses should be administered at 0.1mg/kg 1:1000 IVP. If given via ET epinephrine should always be administered at 0.1 mg/kg 1:1000. All drugs administered ET should be followed with 1-2 ml of saline to help distribute the drug into the lower airways.

Anaphylaxis- Paramedic- Epinephrine 1:1000 0.01 mg/kg, not to exceed 0.3 mg total dose.

Contraindications/ Precautions: Epinephrine 1:10,000 is contraindicated in patients who do not require extensive cardiopulmonary resuscitative efforts. With simple allergic reactions and asthma, the 1:1000 dilution should be used and is administered subcutaneously. Epinephrine, like all catecholamines, should be protected from light. It can be deactivated by alkaline solutions such as sodium bicarbonate. Thus, it is essential that the IV line be adequately flushed between administrations of epinephrine and sodium bicarbonate.

Pharmacokinetics: Absorption: Onset is less than 2 minutes IV, less than 1 minute ET; peak effect in less than 5 min IV/ET, 20 min SC; duration is 5-10 min IV/ET, 20-30 min SC.

Distribution: Widely distributed; does not cross blood- brain barrier; crosses placenta.

Metabolism: Metabolized in tissue and liver by MAO and COMT.

Elimination: Small amount excreted unchanged in urine; excreted in breast milk.

Adverse/ Side Effects: CNS: Nervousness, restlessness, sleeplessness, fear, anxiety, tremors, severe headache, cerebrovascular accident, weakness, dizziness, syncope. CV: Precordial pain, palpitations, hypertension, MI, tachydysrhythmia including V-fib. GI: Nausea, vomiting. Skin: Pallor, sweating, tissue necrosis with repeated injections.

How Supplied: Epinephrine: 1:1000 Ampule 1mg/1ml

Epinephrine: Auto injector pen preload auto injector pen 0.3mg/0.3ml Epinephrine: Auto injector pen Jr.

preloaded auto injector pen 0.15mg/0.3ml Epinephrine: 1:1000 Multidose vial 30mg/30ml Epinephrine:

1:10,000 prefilled syringe 1mg/10ml

ETOMIDATE

Class: Hypnotic

Trade Name: Amidate

Emergency Uses: To induce sedation for endotracheal intubation.

Note: 1 Be prepared to follow with Mivacron if clonic responses occur.
2 Be prepared to use bvm and have suction ready during administration of Etomidate, in case of respiratory failure.
3 Cricoid pressure should be applied at the same time etomidate is administered, to minimize aspiration.

Adult dose: 0.1-0.5mg/kg IV over 15-30 seconds.

Pediatric dose: Children older than 10 yr same as an adult. Etomidate is not to be used in children under 10

Contraindications/ Precautions:

Hypersensitivity to the drug, use with caution in hypotension, severe asthma, or severe cardiovascular disease.

Pharmacokinetics:

Absorption: onset in 10-20 seconds, peak effect within 1 min, duration 3-5 min, half-life is 30-74 min.
Metabolism: Rapidly metabolized in the liver with inactive metabolites. Elimination: Excreted mainly through urine.

Adverse/side effects:

CNS: myoclonic skeletal muscle movements, tonic movements, may cause seizures, or lockjaw.
Respiratory: apnea, hyperventilation, or hypoventilation, laryngospasm. CV: hypertension or hypotension, tachycardia or bradycardia, dysrhythmias.
GI: nausea, vomiting. Miscellaneous: eye movements (common), hiccups, or snoring.

How Supplied:

Ampule 20mg/10ml

Hypnotic – A class of drugs often used as sedatives.

FENTANYL CITRATE

Class: Narcotic analgesic

Trade Name: Sublimaze

Emergency Uses: Pain management

Adult Dose: Trauma: 50-100 µg initial dose, 50 µg q 10 minutes for continued pain management.

General Pain: 50-100 µg initial dose, 50 µg q 10 minutes or continuing pain relief.
If no IV or IO is available, **FENTANYL CITRATE** may be administered IM or IN at the same dosage.

Pediatric Dose: Trauma & General Pain: Ages 1-12: 2.0µg/kg.
Age > 12: Use Adult dose. Repeat initial dose q 10 minutes until desired effect is reached.

Contraindications/Precautions: Hypersensitivity to the drug.

Pharmacokinetics: The pharmacokinetics of fentanyl can be described as a three-compartment model, with a distribution time of 1.7 minutes, redistribution of 13 minutes and a terminal elimination half-life of 219 minutes. The volume of distribution for fentanyl is 4 L/kg.

Adverse/Side Effects: The most common serious adverse reactions reported to occur with fentanyl are respiratory depression, apnea, rigidity and bradycardia

How Supplied: 100 µg vial

GLUCAGON

Class: Hormone

Trade Name: GlucaGen

Emergency Uses: To increase blood glucose levels in hypoglycemia (blood sugar < 60 mg/dl) without IV access.

Also given in CVA/ Unconscious, Unknown Etiology if unable to establish an IV.

Adult Dose: Administer Glucagon 1mg SC or IM if unable to establish an IV.

Pediatric Dose: Administer Glucagon 0.5 mg IM.

Contraindications/ Precautions: Glucagon is contraindicated in patients with a hypersensitivity to glucagon or protein compounds. Safe use during pregnancy (category B) and in nursing women not established. Glucagon is only effective if there are glycogen stores in the liver. Use with caution in patients with a history of cardiovascular or renal disease.

Pharmacokinetics:

Absorption: Onset 5-20 min; peak effects in 30 min; duration is 1-1.5 hr; half-life is 3-10 min.

Metabolism: Metabolized in liver, plasma, and kidneys.

Elimination: Eliminated in urine.

Adverse/ Side Effects: CNS: Dizziness, headache. CV: Hypotension. GI: Nausea and vomiting. Other: Hypersensitivity reactions, hyperglycemia, hypokalemia.

How Supplied: Mix Vial/Syringe 1mg/1ml

GLUCOSE (ORAL)

Name: Instant Glucose

Emergency Uses: If patient is conscious with symptoms of hypoglycemia (blood sugar <60 mg/dl), administer one tube of Oral glucose.

Adult Dose: One tube.

Pediatric Dose: Same as an adult

Contraindications/ Precautions: Unconscious patient unable to swallow on their own.

Pharmacokinetics: Absorption starts instantly, bringing relief in a few minutes.

How Supplied: Tube 40%

IPRATROPIUM BROMIDE

Class: Parasympatholytic bronchodilator

Trade Name: Atrovent

Emergency Uses: To relieve bronchospasm in patients with reversible obstructive airway disease (asthma, chronic bronchitis, emphysema) and acute attacks of bronchospasm.

Adult Dose: Consider adding Atrovent x 1 to first Albuterol treatment.
0.5mg/2.5ml

Premixed

Pediatric Dose: Children with KNOWN asthma, add Atrovent premix 0.5mg/2.5ml to each Albuterol treatment.

Contraindications/ Precautions: Ipratropium is contraindicated in patients with hypersensitivity to atropine or its derivatives. It should not be used as the primary treatment for acute episodes of bronchospasm. Cautious use in pregnancy and nursing mothers.

Pharmacokinetics:

Absorption: 10% of inhaled dose reaches lower airway; approximately 0.5% of dose is systemically absorbed; peak effect in 1.5-2 hr; duration is 4-6 hr; half-life is 1.5-2 hr.

Elimination: 48% of dose excreted in feces; less than 5% excreted in urine.

Adverse/ Side Effects: Eye: Blurred vision (especially if sprayed into eye), difficulty in accommodation, acute eye pain, worsening of narrow-angle glaucoma. GI: Bitter taste, dry oropharyngeal membranes. With higher doses: Nausea, constipation. Respiratory: Cough, hoarseness, exacerbation of symptoms, drying of bronchial secretions, mucosal ulcers, epistaxis, nasal dryness. Other: Rash, hives, urinary retention, headache.

How Supplied: Inhalation 0.02% 2.5ml

KETAMINE

Class: Non-barbiturate anesthetic

Trade name: Ketalar

Emergency uses: Sedation. Rapid Sequence Induction technique, Agitated Patient, Excited Delirium

Adult Dose: **For pain:** 0.1-0.3 mg/kg **slow** IV. (May repeat one time in 10 minutes)
 For induction: 1-2 mg/kg IV, IO, IN.
 For agitated patient & Excited Delirium Syndrome: 2 mg/kg IV, or 4mg/kg IM.

Pediatric Dose: 0.1-0.3 mg/kg IV, IO over 1 minute in children > 2 years old. (May repeat x 1 in 10 minutes)

Contraindications: Those whom a significant elevation of blood pressure would constitute a serious hazard. Known hypersensitivity. Age < 2 years old.

Precautions: Resuscitative equipment should be ready for use. IV dose should be administered over 1 minute. More rapid administration may result in respiratory depression or apnea and enhanced pressor response. Withhold in the chronic alcoholic and the acutely alcohol-intoxicated patient.

Adverse Reactions:

- **Cardiovascular:** BP and pulse rate are frequently elevated following administration. Hypotension and bradycardia have been observed. Arrhythmia has also occurred.
- **Gastrointestinal:** Nausea and vomiting, increased salivation.
- **Neurological:** Enhanced skeletal muscle tone may be manifested by tonic and clonic movements sometimes resembling seizures.
- **Respiratory:** Although respiratory is frequently stimulated, severe depression of the respirations or apnea may occur following rapid IV administration of high doses. Laryngospasms and other forms of airway obstruction have occurred.

Medical considerations: Monitor vital signs frequently. Use with caution with elderly and pediatric patients and use the low end dosing range. With higher doses there is a reported condition known as **emergence phenomena** that is improved with the use of benzodiazepines.

How supplied: Vial 500 mg / 5 ml

LIDOCAINE

Class: Antidysrhythmic

Trade Name: Xylocaine, Xylocard

Emergency Uses: To convert ventricular dysrhythmias (ventricular fibrillation, ventricular tachycardia) in cardiac arrest to sinus rhythm.

Adult Dose: For sequential runs of 6 or more PVC's (V-Tach), Lidocaine 1-1.5 mg/kg IV push over 2 minutes or via ET tube if no IV present and patient is intubated. After first bolus if V-Tach not converted, then rebolus with 0.5-1.5 mg/kg every 5-10 minutes until ectopy resolved to a maximum of 3 mg/kg. Once ectopy resolved, maintain as follows:

- a. After Lidocaine, 1 mg/kg. Lidocaine drip, 2 mg/min.
- b. After Lidocaine, 1-2 mg/kg. Lidocaine drip, 3 mg/min.
- c. After Lidocaine, 2-3 mg/kg. Lidocaine drip, 4 mg/min.

Wide complex tachycardia administer Lidocaine bolus of 1-1.5 mg/kg IVP. If pt converts hang a drip at 2 mg/min.

Ventricular Fibrillation/Pulseless VT 1.5 mg/kg IVP. Repeat in 3-5 minutes at 1.5 mg/kg, to a maximum dose of 3 mg/kg. If rhythm converts, hang a drip based on the formula shown above for PVC's.

Pediatric Dose: Lidocaine 1 mg/kg up to 3 mg/kg. IV, ET, IO. Following conversion hang Lidocaine drip at 20-50 mcg/kg/min.

Contraindications/ Precautions: Lidocaine is contraindicated in patients with a history of hypersensitivity to amide type local anesthetics, supraventricular dysrhythmias, Stokes Adams syndrome, untreated sinus bradycardia, severe degrees of sinoatrial, atrioventricular, and intraventricular heart block. Use with caution in patients with liver or renal disease, CHF, marked hypoxia, respiratory depression, hypovolemia, shock; myasthenia gravis; debilitated patients, the elderly; family history of malignant hyperthermia (fulminant hypermetabolism).

Pharmacokinetics: *Absorption:* Onset in under 3 minutes; peak effects in 5-7 min; duration is 10-20 minutes; half-life is 1.5-2 hours.

Adverse/ Side Effects: CNS: Drowsiness, dizziness, light-headedness, restlessness, confusion, disorientation, irritability, apprehension, euphoria, numbness of the lips or tongue, chest heaviness, difficulty speaking, difficulty breathing or swallowing, muscular twitching, tremors, psychosis. CV: (with high doses): Hypotension, bradycardia, conduction disorders including heart block, cardiovascular collapse, and cardiac arrest. Ears: decreased hearing. Eye: Blurred or double vision, impaired color perception. Other: Anorexia, nausea, vomiting, excessive perspiration, soreness at IM site.

How Supplied: Lidocaine prefilled syringe 100 mg/5ml
Premixed 2 gms/500 ml bag.

MAGNESIUM SULFATE

Class: Electrolyte

Trade Name: Magnesium

Emergency Uses: To reverse refractory ventricular fibrillation and pulseless ventricular tachycardia. To reverse torsades de pointes.
To manage seizures caused by eclampsia.

Adult Dose: PVCs, V-fib/Pulseless V-tach 1-2 gm. diluted to 50 cc's IVP over 10-20 minutes. Seizure during pregnancy (eclampsia), if seizing, consider 6 grams over 10-20 minutes.

Pediatric Dose: Not used

Contraindications/ Precautions: Magnesium is contraindicated in patients with myocardial damage, heart block, shock, persistent hypertension, hypocalcemia. Use with caution in patients with impaired renal function, digitalized patients, concomitant use of other CNS depressants or neuromuscular blocking agents.

Pharmacokinetics: Absorption: Onset is immediate IV, one hour IM; duration is 30 min.
Distribution: Crosses placenta; distributed into breast milk.
Elimination: Eliminated in kidneys.

Adverse/ Side Effects: CNS: sedation, confusion, depressed reflexes or no reflexes, muscle weakness, *flaccid paralysis*. CV: Hypotension, depressed cardiac function, complete heart block, circulatory collapse. Respiratory: Respiratory paralysis. Other: Flushing, sweating, extreme thirst, hypothermia, respiratory paralysis, hypocalcemia.

How Supplied: Vial 1 G/2 ml
Vial 10 G/20 ml

METHYLPREDNISOLONE

Class: Steroid

Trade Name: Solu-Medrol, A-Methapred

Emergency Uses: To reduce the inflammation caused by severe anaphylaxis and asthma/COPD.

Adult Dose: 125 mg IVP.

Pediatric Dose: Not used

Contraindications/ Precautions: There are no major contraindications to using methylprednisolone in the management of acute anaphylaxis.

Pharmacokinetics: Onset: Slow, 12-24 hr. Duration: Long up to one week

Adverse/ Side Effects: CNS: Euphoria, headache, insomnia, confusion, psychosis, vertigo. CV: CHF, edema, hypertension. GI: Nausea, vomiting, peptic ulcer, abdominal distention. Musculoskeletal: Muscle weakness, delayed wound healing, muscle wasting, osteoporosis, aseptic necrosis of bone, spontaneous fractures. Endocrine: Fluid retention, Cushingoid features, growth suppression in children, carbohydrate intolerance, hyperglycemia. Other: Cataracts, Leukocytosis, hypokalemia, malaise, hiccups.

How Supplied: Vial 125mg/ 2ml

MIDAZOLAM

Class: Sedative, Anticonvulsant

Trade Name: Versed, Hypnovel

Emergency Uses:

To induce sedation and amnesia prior to cardioversion and other painful procedures.

Adult Dose: 1-2.5 mg slow IV, IO
IM Dose .07-.08 mg/kg (usual dose 5mg).
5 mg/1cc Intranasal w/ nasal atomizer.

Pediatric Dose: 0.05-0.2 mg/kg IV, IO, IN

Contraindications/ Precautions:

Pt. intolerant of benzodiazepines, acute angle glaucoma, shock, coma, and acute alcohol intoxication. Use with caution in pt. with COPD, chronic renal failure, CHF, and in the elderly. Be prepared to ventilate pt. immediately due to possible respiratory depression.

Pharmacokinetics:

Absorption: onset 3-5 minutes IV, 15 minutes IM. Duration less than 2 hours IV, 1-6 hours IM, half-life is 1-4 hours.

Distribution: crosses blood brain barrier and placenta.

Metabolism: metabolized in liver.

Elimination: excreted in urine.

Adverse/ Side Effects:

CNS: retrograde amnesia, headache, euphoria, confusion, drowsiness, excessive sedation.

Cardiovascular: hypotension

Eye: blurred vision, *diplopia*, *nystagmus*, pinpoint pupils.

GI: nausea, vomiting.

Respiratory: coughing, laryngospasm, respiratory arrest.

Skin: hives, edema, burning, pain, induration at injection site, tachypnea.

Other: hiccups, chills, weakness.

How supplied: 2mg/2ml vial
5 mg/ml vial

Diplopia- Double vision.

Nystagmus- Involuntary, rhythmic movements of the eyes side to side, up and down, around, or mixed.

NALOXONE

Class: Narcotic antagonist

Trade Name: Narcan

Emergency Uses: To reverse the effects of narcotic analgesics; to manage coma of unknown origin.

Adult Dose: 2 mg SLOW IV push or IN. May repeat in same dose in 5-10 minutes if partial response is noted.

Pediatric Dose: Administer 0.1 mg/kg SLOW IV push. May repeat prn. May administer IM, IO or IN if unable to initiate IV.

Contraindications/ Precautions: Naloxone should not be administered to a patient with a history of hypersensitivity to the drug. Naloxone should be administered cautiously to patients who are known or suspected to be physically dependent on narcotics. Abrupt and complete reversal by naloxone can cause withdrawal-type effects. This includes newborn infants of mothers with known or suspected narcotic dependence.

Pharmacokinetics:

Absorption: Onset and peak effects in less than 2 minutes IV, 2-10 minutes IM/ET; duration is 20-120; half-life is 60-90 minutes.

Distribution: Crosses placenta.

Metabolism: Metabolized in liver.

Elimination: Excreted in urine.

Adverse/ Side Effects: Side effects associated with naloxone are rare. However, hypotension, hypertension, ventricular arrhythmias, nausea, and vomiting have been reported

How Supplied: Vial 0.4 mg/ml

NITROGLYCERIN

Class: Nitrate.

Trade Name: Anginine (Aus), Deponit, GTN-Pohl (AUS), Minitran, Nitradisc (AUS), Nitro-Bid, Nitrocap, Nitrocine, Nitrodisc, Nitro-Dur, Nitrogard, Nitroglyn, Nitroject, Nitrol, Nitrolate (AUS), Nitrolingual, Nitrong, Nitrostat, Transderm-Nitro (AUS), Tridil.

Emergency Uses: To increase coronary artery perfusion and relieve chest pain in angina and acute myocardial infarction; to reduce preload in acute pulmonary edema.

In the case of elevated blood pressure due to increased intracranial pressure, do not decrease blood pressure without online doctor's orders.

Adult Dose: 0.4 mg SL, may repeat two more times every 5 min if BP is not reduced and pt remains symptomatic. If pt is still symptomatic then a nitroglycerin infusion (50mg in 250cc 0.9% normal saline) may be initiated (when available and practical). Begin infusion rate at 5ug/min and titrate in 5-10 ug increments every 10 min until BP decreases, and pain is relieved and the pt becomes less symptomatic. Keep systolic BP > 100mmHg. If systolic BP drops below 90mmHg, decrease the infusion in 5-10 ug increments until systolic BP is greater than 100mmHg.

Pediatric Dose: Not used.

Contraindications/ Precautions: Nitroglycerin is contraindicated in patients with hypersensitivity, idiosyncrasy, or tolerance to nitrates; patients taking sildenafil (Viagra); severe anemia; head trauma, increased ICP; glaucoma (sustained release forms). Do not administer to patients in shock.

Pharmacokinetics: Absorption: Onset is 1-3 min SL; 1-2 min IV; peak effect in 5-10 min. Duration is 20-30 min SL; 3-5 min IV; half-life is 1-4 min.

Distribution: Widely distributed; not known if distributed to breast milk.

Metabolism: Extensively metabolized in liver.

Elimination: Inactive metabolites excreted in urine.

Adverse/ Side Effects: CNS: Headache, apprehension, blurred vision, weakness, vertigo, dizziness, and faintness. CV: Postural Hypotension, palpitations, tachycardia (sometimes with paradoxical bradycardia), increase in angina, syncope, and circulatory collapse. GI: Nausea, vomiting, involuntary passing of urine or feces, abdominal pain, dry mouth. Skin: Cutaneous vasodilatation with flushing, rash, exfoliative dermatitis, contact dermatitis with transdermal patch; topical allergic reactions with ointment: pruritic eczematous eruptions, anaphylactoid reaction characterized by oral mucosal and conjunctival edema. Other: Muscle twitching, pallor, perspiration, cold sweat; local sensation in oral cavity at point of dissolution of sublingual forms.

How Supplied: Spray- 0.4mg/dose
50 mg/250 ml premixed bottle
Pill- 0.4 mg/pill

0.9% SODIUM CHLORIDE

Class: Isotonic crystalloid solution.

Trade Name: Normal saline

Emergency Uses: Heat-related problems, freshwater drowning, hypovolemia, diabetic ketoacidosis, and keep IV open.

Adult Dose: The specific situation being treated dictates the rate at which normal saline is administered.

Pediatric Dose: The specific situation being treated dictates the rate at which normal saline is administered. When establishing IV use a Buretrol with minidrip tubing except in trauma patients. In children under 8 years of age when IV access cannot be obtained in two attempts or less than 90 seconds, and patient is unconscious and unstable, intraosseous infusion is indicated.

Contraindications/ Precautions: Use with caution in patients with congestive heart failure because circulatory overload can be easily induced.

Adverse/ Side Effects: Rare in therapeutic dosages.

How Supplied: IV bag 1000ml
IV bag/bottle 250ml
IV bag 100 ml
IV bag 50 ml
IV solution for irrigation-bottle 1000ml

ONDANSETRON

Trade Name: Zofran

Emergency Uses: As an anti-emetic (IV, IM, IO, p.o.)

Adult Dose: 4 mg, may repeat in 10 to 20 minutes to 8 mg max. dose.

Pediatric Dose: 0.1 mg/kg up to 4 mg.

Contraindications/Precautions: Ondansetron is contraindicated in patients with a known history of hypersensitivity to the drug. When given through an IV, ondansetron should not be given over less than 30 seconds.

Pharmacokinetics: It is broken down by the hepatic cytochrome P450 system and it has little effect on the metabolism of other drugs broken down by this system.

Adverse/Side Effects: Ondansetron is a well-tolerated drug with few side effects. Constipation, dizziness and headache are the most commonly reported side effects associated with its use. There have been no significant drug interactions reported with this drug's use. It is broken down by the hepatic cytochrome P450 system and it has little effect on the metabolism of other drugs broken down by this system.

How supplied: 4 mg/2ml vial

OXYGEN

Class: Gas

Trade Name: Oxygen

Emergency Uses: To manage any situation in which hypoxia is suspected.

Adult Dose: 100% if patient is hypoxic.

Pediatric Dose: Same as an adult.

Contraindications/ Precautions: There are no contraindications to oxygen. Use with caution in patients with COPD who may have hypoxic drive. If these patients suffer respiratory depression from the enriched oxygen, simply perform positive pressure ventilation as needed. Never withhold oxygen from a hypoxic patient, regardless of the history or diagnosis. In a prolonged transport of a neonate, high concentrations of oxygen may damage the infant’s eyes (retrolental fibroplasias). This is rarely a prehospital concern, but is a consideration.

Pharmacokinetics:

Absorption: Onset is immediate; peak effect is within 1 min; duration is less than 2 min.

Adverse/ Side Effects: Respiratory: Dried mucous membranes, irritation of upper respiratory tract.

How Supplied: Tanks (H, M)

| | <u>Flow Rate</u> | <u>Concentration</u> |
|--------------------|------------------|----------------------|
| Nasal cannula | 1-6 Lpm | 24-44% |
| Nonrebreather | 6-10 Lpm | 60-90% |
| BVM with reservoir | 10-15 Lpm | 40-90% |

RINGERS LACTATE

Class: Crystalloid IV Solution, electrolyte

Trade name: LR, Lactated Ringers

Use: Crystalloid solution for restoring depleted fluid volumes. Used in the absence of 0.9 Sodium Chloride IV solution, LR shall be used as a fluid and electrolyte replenisher for correction of extracellular volume and electrolyte depletion.

Contraindications: Kidney failure, congestive heart failure, hypoproteinemia.

Adverse Effects: Sodium excess and fluid overload which may lead to pulmonary and peripheral edema.

How supplied: IV bag 1000 ml

SODIUM BICARBONATE (NaHCO₃)

Class: Electrolyte

Trade Name: Sodium bicarbonate

Emergency Uses: To alkalinize the urine to enhance excretion of drug overdose (tricyclic antidepressants, barbiturates); to correct severe acidosis refractory to hyperventilation; known hyperkalemia.

Adult Dose: 1 mEq/kg IV, may repeat at half dose every 10 minutes.

Crush injuries prior to extrication Add Sodium Bicarbonate 1 amp(50 mEq) to one liter of IV solution. Begin maintenance infusion of 1500 cc/hr, then administer one (1) to one and one-half (1-1/2) liter bolus just prior to extrication.

Pediatric Dose: Same as adult. Can be given IO.

Contraindications/ Precautions: There are no absolute contraindications to using sodium bicarbonate in the above situations. When administered in large quantities, it can cause a metabolic alkalosis. Always calculate the dose based on the pt weight.

Pharmacokinetics: Absorption: Immediate absorption if given IV; onset is less than 15 min, duration is 1-2 hr.

Elimination: Excreted in urine within 3-4 hr.

Adverse/ Side Effects: Sodium bicarbonate may inhibit oxygen release secondary to a shift in oxyhemoglobin saturation. It also may produce a paradoxical acidosis that can depress cerebral and cardiac function. Sodium bicarbonate may cause extracellular alkalosis, which may reduce the concentration of ionized calcium, decrease plasma potassium, induce a left shift on the oxyhemoglobin dissociation curve, and induce malignant arrhythmias. Severe tissue damage if extravasated.

How Supplied: Preload syringe 50 mEq/50ml.
Preload syringe 12.5 mEq/12.5 ml.

SODIUM THIOSULFATE

Class: Cyanide Antidote

Indication: Acute cyanide poisoning. Closed space fire victims or known cyanide exposure (oral or by inhalation) with any of the following:

- Unconsciousness or altered mental status.
- Unexplained deterioration in clinical signs.

Adult dose: 12.5 gm. slow IVP, IO (or 0.4 g/kg up to 12.5 g) over 10 minutes.

Pediatric dose: 1.65 ml/kg slow IVP, IO over 10 minutes

Contraindications: Pregnancy – Use only when clearly indicated and when potential risks outweigh the possible risks to the fetus.

Adverse reactions: Epidermal cyanosis, Cyanotic mucus membranes, nausea / Vomitting, Shock, Coma, Hypotension from rapid infusion.

SUCCYNLCHOLINE

Class: Neuromuscular blocking agent (depolarizing).

Trade Name: Anectine

Emergency Uses: To achieve paralysis to facilitate endotracheal intubation in the conscious patient.

Adult Dose: 1.5 mg/kg IVP

Pediatric Dose: 1 mg/kg IVP

Contraindications/Precautions: Patients with known hypersensitivity to the drug. Should not be administered unless persons who are skilled in endotracheal intubation are present. Endotracheal intubation equipment must be available. Oxygen equipment and emergency resuscitative drugs must be available.

Pharmacokinetics: Paralysis occurs within one (1) minute and lasts for approximately 8 minutes.

Adverse/Side Effects: Prolonged paralysis; hypotension, bradycardia.

How Supplied: 200 mg vial

TETRACAINE

Class: Topical ophthalmic anesthetic

Trade Name: Pontocaine

Description: Tetracaine is used for rapid, brief, superficial eye anesthesia. The agent inhibits conduction of nerve impulses from the sensory nerves.

Emergency use: Short-term relief from eye pain or irritation. Patient comfort prior to eye irrigation.

Adult Dose: 1-2 drops to affected eye

Pediatric Dose: Same as adult

Contraindications: Open injury to the eye. Known hypersensitivity to Tetracaine.

Adverse / Side effects: Burning or stinging sensation. Irritation.

How Supplied: 0.50%

VECURONIUM

Class: Nondepolarizing skeletal muscle relaxant.

Trade Name: Norcuron

Emergency Uses: Vecuronium is used to facilitate endotracheal intubation. Vecuronium is used to paralyze patients with muscle tone, spasms, or seizures in order to permit endotracheal intubation. Vecuronium does not have any effect on the level of consciousness, *cerebration*, anxiety, or pain perception. **Vecuronium is never first line drug.**

Adult Dose: After confirmation and securing ET tube, administer 0.1 mg/kg for continuing paralysis.

Pediatric Dose: Pediatric dose same as adult. (1 yr or older)

Contraindications/ Precautions: Patients with hypersensitivity to Vecuronium. Use with caution in pt with hepatic disease, impaired acid-base or fluid/electrolyte balance, severe obesity, adrenal or neuromuscular disease (*myasthenia gravis*), cardiovascular disease, old age, *edematous* states.

Pharmacokinetics: Absorption: Onset less than 1 min, peak effects in 3-5 min, duration is 25-40 min, half-life is 30-80 min.

Distribution: Well distributed to tissues and extracellular fluids, crosses placenta, distribution into breast milk unknown.

Metabolism: Rapid nonenzymatic degradation in the blood stream.

Elimination: 30-35% excreted in urine, 30-35% in bile.

Adverse/ Side Effects: CNS: Skeletal muscle weakness. Respiratory: Respiratory depression. Other: Malignant hyperthermia.

How supplied: 10mg powder form, mix 10cc of 0.9% Normal Saline in vial, shake well, redraw to administer.

Myasthenia gravis- A disease characterized by progressive fatigue and generalized weakness of the skeletal muscles, especially of the face, neck, arms, and legs caused by impaired transmission of nerve impulses following an autoimmune attack on acetylcholine receptors. Also called Gold flam disease.

Operational Emergency Medical Care For The Tactical Medic

Summary:

These Patient Care Guideline (PCGs) explain the policies, procedures and standing medical orders prescribed for Union County Tactical medical personnel for treating the ill and injured in The tactical setting in Union County and mutual aid communities.

Applicability:

These PCGs apply specifically to personnel operating under the Medical Director of Union County, Dr. David Applegate, and functioning as tactical paramedics for the Union County SWAT Team. Furthermore, these PCGs apply only in the active operational setting where danger is still present for medical personnel, other unit members or any subjects or civilian victims.

Interim Changes:

Interim changes to these plans are not official unless they are authenticated by the Medical Director of Union County. Users will destroy interim changes on their expiration (or revision) date unless sooner superseded or rescinded. These PCGs shall remain effective until changed by the appropriate Medical Authority.

Intent:

It is the intent of these PCGs to give the Union County Tactical medical personnel written guidelines to manage a wide variety of common medical, trauma and psychiatric emergencies under their special circumstances. Personnel must always make thorough situational and patient assessments and specific treatment plans based on those case-by-case findings.

When transferring a patient to another health care provider, whether in the prehospital environment to an ambulance crew or agency, or to a receiving emergency department, Union County Tactical medical personnel releasing the patient should provide the receiving health care provider with complete patient information to include:

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- History of Present Illness or Episode
- Overview of Patient Assessment
- Past Medical History Treatment Rendered by Personnel
- Any Other Pertinent Information

Transfer of care should only be made to a healthcare provider, or a healthcare team, whose level of training is equivalent to or greater than that of the personnel transferring the care, i.e. Paramedic, Nurse, or Physician.

In the operational setting, Union County Tactical medical personnel may, due to direct threat conditions and in the interests of personal or unit member safety choose to exercise specialized medical and extraction techniques that are outside the guidelines of the Union County Medical Services Protocol. These techniques and treatment modalities require specialized training in the discipline of operational emergency medicine.

Basic Management Plan for Care Under Hostile Fire

1. Take cover.
2. Direct or expect casualty to remain engaged as a combatant if condition allows.
3. Direct casualty to move to cover and apply self-aid if able.
4. Advanced airway management is best deferred until the Tactical Field Care phase.
5. Stop all life threatening external hemorrhage if tactically feasible:
 - Direct casualty to control hemorrhage through self-aid if able.
 - Use a TCCC-recommended tourniquet for hemorrhage that is anatomically amenable to tourniquet application.
 - Apply tourniquet proximal to the bleeding site, over the uniform, tighten until blood flow ceases, and move the casualty to cover.
6. Wounds with no obvious associated life threatening hemorrhage, use direct pressure with dressings as situations dictate.

No suspect or otherwise unknown subject shall have care initiated by the Union County Tactical Medical personnel until a primary and secondary search of their person is performed by law enforcement personnel and are deemed safe and non-combative for treatment.

Basic Management Plan for Tactical Field Care

1. All casualties with an altered mental status should be disarmed immediately.
2. Massive Hemorrhage- Hemorrhage Control
 - a. Assess for unrecognized hemorrhage and control all sources of bleeding. If not already done, use a TCCC-recommended tourniquet to control all life threatening external hemorrhage that is anatomically amenable to tourniquet application or for any traumatic amputation.
3. For amputation, apply directly to the limb, 2-3 inches above the amputation when possible.
4. If the first tourniquet fails to stop hemorrhage consider:
 - Tightening the tourniquet.
 - Applying a second tourniquet proximal to the first.
5. Expose all tourniquets and mark application sites with the time of application with indelible marker.
6. For compressible hemorrhage not amenable to tourniquet application, i.e. high femoral, high axillary, neck bleeds; gauze packing should be applied to the wound with a minimum of 5 minutes of direct pressure to the wound site. Consider the use of Hemostatic agents.
7. Follow all tourniquets and wound packing with pressure dressings as the tactical situation and time allow.
8. Pressure dressings to be applied directly to the wound site at near tourniquet pressure.

Airway Management

- a. Unconscious without airway obstruction:
 - Reposition casualty or casualties' airway- employ chin lift or jaw thrust maneuvers
 - Nasopharyngeal airway
 - Place casualty in recovery position
- b. Casualty with airway obstruction or impending airway obstruction
 - Chin lift or jaw thrust maneuver
 - Nasopharyngeal airway
 - Allow casualty to assume any position that best protects the airway, to include sitting upright
 - Place unconscious casualty in the recovery position
- c. If all previous measures are unsuccessful or the tactical situation allows consider:
 - 1) Endotracheal intubation
 - 2) Nasotracheal intubation
 - 3) Needle cricothyroidotomy
 - 4) Surgical cricothyroidotomy
 - 5) Alternative rescue airway device

Respiration

- a. In a casualty with progressive respiratory distress and known or suspected torso trauma, consider tension pneumothorax and decompress the injured side of the chest with a 14 gauge, 3.25 inch needle/catheter unit inserted either in the second or third intercostal space at the mid-clavicular line, or the fourth or fifth intercostal space at the mid axillary line. Ensure the needle entry into the chest is not medial to the nipple line and not aimed toward the heart for the mid-clavicular insertion.
- b. All open and/or sucking chest wounds should be treated with the immediate application of an occlusive material to the defect and securing it in place, ensuring a good seal on all edges of the dressing.
- c. All penetrating wounds occurring in the torso, anterior or posterior, between the waist and the clavicles will be considered a risk for sucking chest wound and should receive an occlusive dressing.
- d. After application of the occlusive dressing, monitor the casualty for the potential development of a subsequent tension pneumothorax.

Circulation- Fluid Resuscitation

- a. Intravenous access
 - With blood loss establish IV access with no smaller than an 18 gauge needle/catheter unit
 - If fluid resuscitation is required and IV access is unobtainable, use the IO route
- b. No casualty will receive fluid resuscitation until all active bleeding is stopped.
 - If bleeding is uncontrollable and perfusion is compromised, administer IV fluids only to maintain a radial pulse.
- c. Assess for hemorrhagic shock; altered mental status (in the absence of head injury) and weak or absent peripheral pulses are the best field indicators of shock.
 - If no signs of shock are present:
 - No IV fluids necessary
 - PO fluids permissible if conscious and able to swallow (exercise caution with PO fluids if casualty may require surgical evaluation)
 - Signs of shock are present:
 - Normal saline 200 mL bolus until return of radial pulse

Hypothermia

- a. Minimize casualty's exposure to the elements
 - Insulate casualty from direct contact with the ground
 - Keep protective gear on the casualty when feasible
 - Replace wet clothing with dry if possible
 - Supply wind and moisture protection

Handling

- a. Minimize excessive movement or exposure of injuries
 - Splint to immobilize and protect both hard and soft tissue injuries
 - Reassess all injuries, tourniquets and dressings every 5 minutes or after every time the casualty is moved.