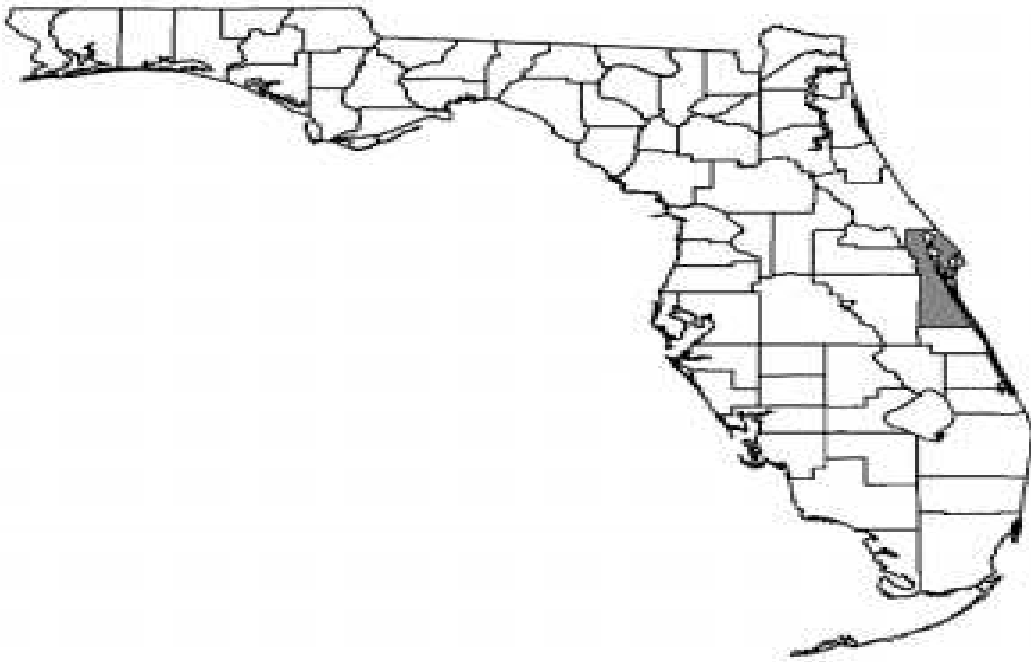


# **Space Coast Regional Emergency Medical Services**



## **STANDING ORDERS**

## Introduction

This document is the Emergency Medical Services Protocol for Paramedics and Emergency Medical Technicians working in prehospital settings in Brevard County.

It is a collaborative document shared by all EMS provider agencies within the county. It includes shared Standing Medical Orders (Standing Orders) of each of all of the Medical Directors in the County.

These standing orders are instructions for patient medical care. The intent of this protocol and the included standing orders is to serve as a standard among all EMS provider agencies to improve continuity of patient care.

## Purpose and Rationale

This Protocol is a *guideline* for patient care. It gives authorization to provide approved treatments under the license of each Medical Director. It will guide patient care for common conditions and serve as a framework for discretionary decision making for uncommon conditions.

Treatment may need to be modified based on assessment. Any modification by pre-hospital providers should be guided by the most current Department of Transportation (DOT) EMT or EMT-P curricula, American Heart Association (AHA), Advanced Cardiac Life Support (ACLS), Pediatric Advanced Life Support (PALS), Basic Trauma Life Support (BTLS), Prehospital Trauma Life Support (PHTLS), and Basic Life Support (BLS) curricula. Any deviation from the protocol must be within the provider's scope of practice and must be justified by the provider. Providers should, when possible, contact the Emergency Department physician to resolve any questions about patient care.

# Approval


These Protocols are approved by the EMS Medical Directors of Brevard County and are effective as of June 1, 2010:



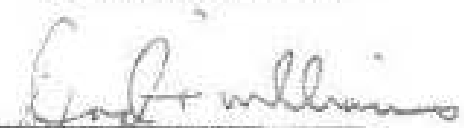
Dr. Skip Bostler



Dr. John McPherson



Dr. LeeAnn Martin-Lee



Dr. David Williams

## Document Structure

Areas are alphabetically arranged by medical condition. Appendices are provided for reference. Each condition contains 5 areas with an optional (as needed) area, “Notes”, as follows:

***Rationale:*** Brief overview of the subject

***Assessment Checklist:*** Suggests potential conditions, which should be evaluated.

***Level I:*** Basic Life Support Care: This section outlines the approved care for First Responders, Emergency Medical Technicians, and Paramedics.

***Level II:*** Advanced Life Support Care: This section outlines the approved care for Paramedics.

***Level III:*** Physician Orders: This section outlines care that must be approved by direct Physician Contact. Physicians include the Medical Directors and Emergency Department Physicians.

***Note:*** Additional comments, cautions, and information.

## **Document Maintenance**

These protocols were approved by the EMS Medical Directors in Brevard County and are effective as of June 1, 2010. Updates or revisions are recorded in the Appendix. This document is maintained by the EMS Subcommittee, as assigned by the Space Coast Fire Chiefs Association and is reviewed biennially. The next review date is June of 2012.

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# **Adult Cardiac Care**

# Standard Cardiac Arrest Procedures

## *Rationale:*

It is essential for victims of cardiac arrest to receive rapid care. The rescuer must anticipate cervical injury, assess the scene for hazards, and note the patient's environment.

## Assessment Checklist

- Myocardial infarction
- Hemodynamically significant dysrhythmia
- Cardiac Tamponade
- Exsanguination
- Angina pectoris
- Syncope

### *Level I:*

- Note patient's environment.
- Wear appropriate Personal Protective Equipment (PPE).
- Perform primary assessment and emergency treatment.
- Assess for Death Scene Criteria
- Determine pulselessness and apnea.
- Perform CPR with appropriate airway device.
- AED as indicated.
- Perform a secondary assessment.
- Check a blood glucose level.

### *Level II:*

- Determine cardiac rhythm and follow treatments in the appropriate protocol.
- Establish an airway.
- Establish IV/IO.
- Administer 1 mEq/kg sodium bicarbonate IV and calcium chloride 1 gm IV in all arrested dialysis patients if available.
- Administer 2 mg Narcan if indicated and repeat as needed.
- Administer 25 gm D50W (if glucose is < 60 mg / dl).
- Establish second IV.
- Transport or terminate code per protocol.

### *Note:*

*Comply with Do Not Resuscitate (DNR) orders per departmental procedures.*

# Acute Myocardial Infarction

## ***Rationale:***

Patients with acute myocardial infarction are racing against time to stop the evolving infarction. Treatment is directed to rapidly identifying the infarction, providing increased oxygenation, early notification to the Emergency department physician, and rapid transport.

## **Assessment Checklist**

- Dysrhythmia
- Pulmonary embolism
- Pneumonia
- Dissecting aortic aneurysm
- Costochondritis
- Pericarditis
- Chronic Obstructive Pulmonary Disease

## **Level 1:**

- Administer oxygen by appropriate device.
- Place the hypotensive patient in Trendelenburg position.
- An EMT may assist a patient with self administration of prescribed nitroglycerin after ruling out the use of Viagra within 24 hours and Viagra like products within 48 hours.

## **Level II:**

- Administer baby aspirin (81mg) x 4 PO (contraindicated if known hypersensitivity or hemophylia).
- Blood draw if time permits.
- Obtain 12-lead ECG (consider right side 12 lead).
- After ruling out the use of Viagra within 24 hours and 48 hours for Viagra like medications , administer 0.4 mg nitroglycerin SL 3 to 5 minutes (SBP > 100 mm/Hg).
- Administer anti-dysrhythmia medications as necessary.
- Administer morphine sulfate 2 mg IV PRN. Repeat at 5 minute intervals to a total of 10mg for the normotensive patient.
- Issue a STEMI Alert and give early report to the Emergency Department.
- Administer Lopressor 5 mg IVP, repeat dose once if indicated (if available, HR > 60, and SBP > 120 mm/Hg).

## **Level III:**

- None

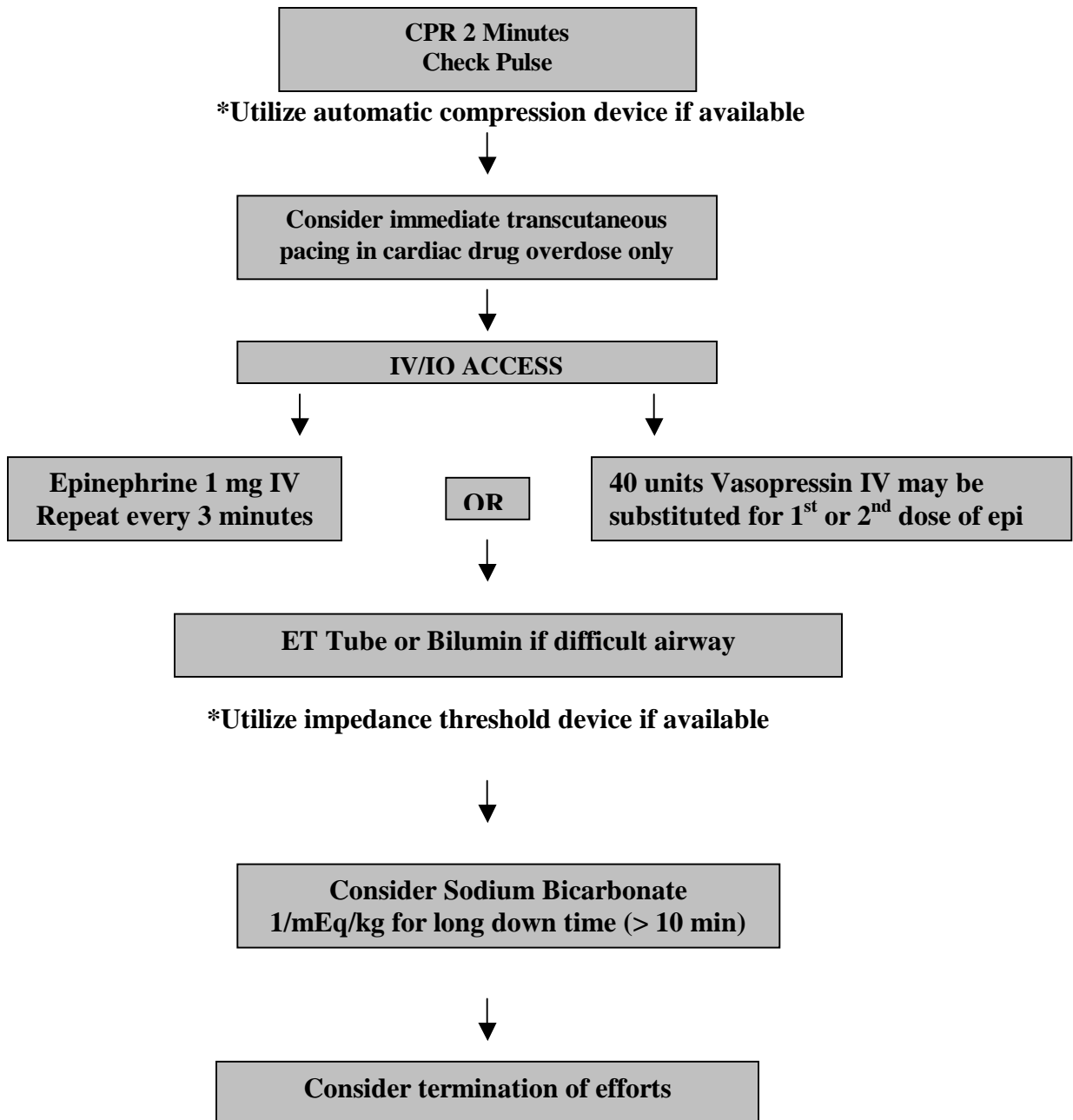
# Asystole

## ***Rationale:***

Many victims of cardiac arrest will present with an asystole rhythm by the time rescuers arrive. Consider possible causes of asystole and confirm asystole in two contiguous leads.

## **Assessment Checklist**

- Cardiac arrest with asystole
- Cardiac arrest with fine ventricular fibrillation
- Pericardial Tamponade
- Pulseless electrical activity



# Atrial Fibrillation/Atrial Flutter Rapid Ventricular Rate

## ***Rationale:***

Atrial fibrillation/Atrial flutter is the most common cardiac arrhythmia requiring emergent/urgent treatment. Many patients live with A-fib/A-flutter on anti-coagulation therapy to diminish the risk of thromboembolic Cerebral Vascular Accident and on various antiarrhythmic medications as well. A-fib/A-flutter can produce a rapid ventricular rate, which may need to be treated in the pre-hospital setting. New onset A-fib/A-flutter (less than 48 hrs) may be associated with chest pain/acute MI. Long-standing A-fib/A-flutter should be treated with anticoagulation therapy to prevent thromboembolic CVAs. Hemodynamically unstable A-fib/A-flutter with RVR > 150/min should be treated with electrical cardioversion. Minor onset complaints with A-fib RVR such as palpitation and weakness may be treated with Cardizem or supportive care. Suspect long-standing A-fib/A-flutter if the patient is on digoxin therapy. Cardizem should not be used in patients with A-fib/A-flutter RVR and hypotensive/CHF. Consider electrical cardioversion in these patients.

## **Assessment Checklist**

- Cardiac ischemia
- Hypoxia
- Hypotension
- Congestive Heart Failure

### **Level I:**

- Assess patient's temperature.
- Administer oxygen by appropriate device.
- Place patient in upright position.
- Cardiac monitor.

### **Level II:**

- IV established.
- Pulse oximetry.
- Cardizem 0.25 mg/kg IV bolus to a maximum of 25 mg.
- Cardioversion Atrial Fib 200 joules escalating to 300 joules then 360 joules\* as needed, if the patient is hypotensive, has severe chest pain (AMI), or severe dyspnea.
- Cardioversion Atrial Flutter 50 to 100 joules escalating to 200 joules, 300 joules then 360 joules\* as needed, if the patient is hypotensive, has severe chest pain (AMI), or severe dyspnea.
- Versed 1-2 mg IV or Valium 2-5 mg IV or Etomidate 5-10 mg IV prior to electrical cardioversion if time allows.

### **Level III:**

- None

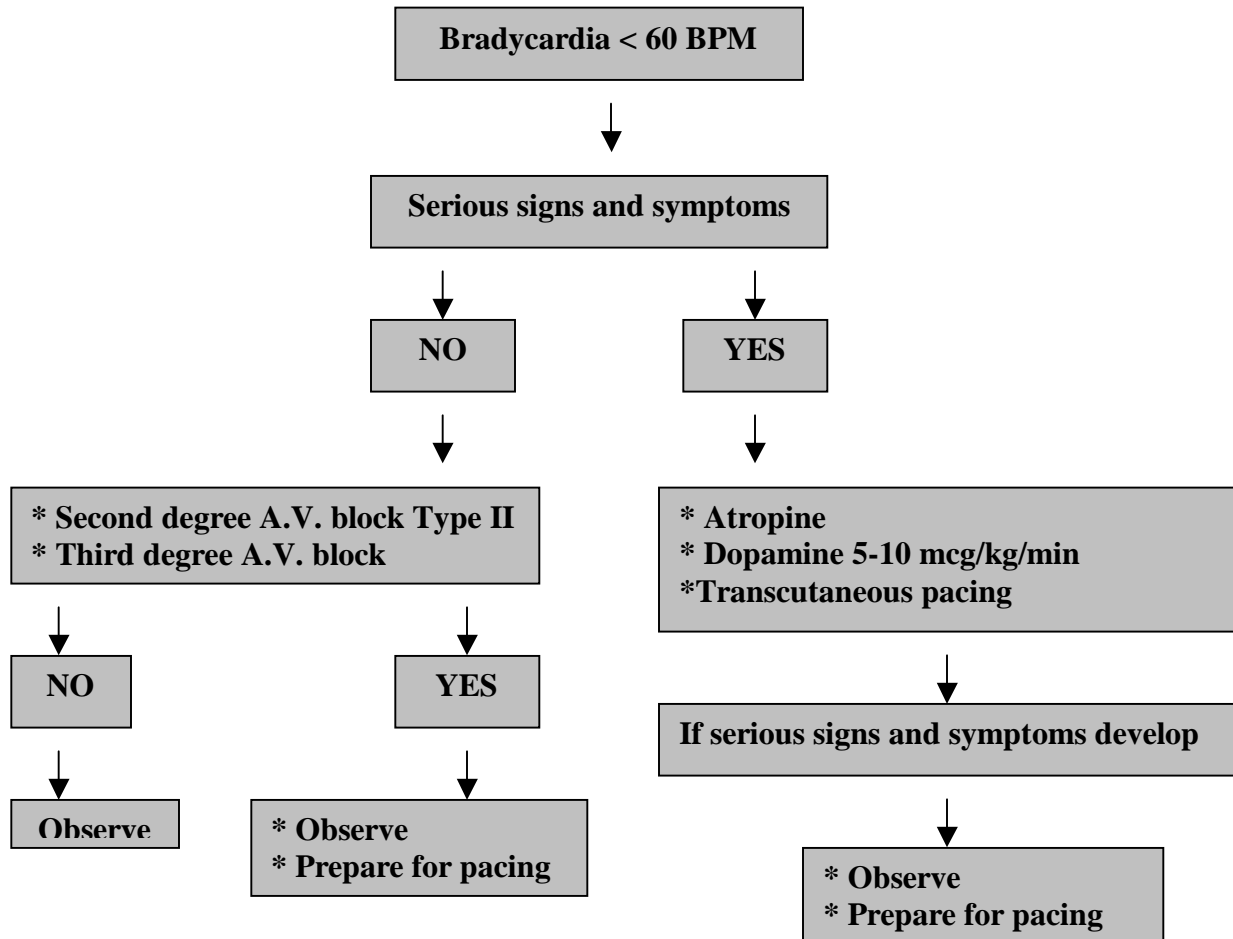
*\*Follow manufacturers recommendations*

*\*Reference AHA procedures page for manufacturers recommended Joules setting*

# Bradycardia

## Rationale:

Some patients are normally bradycardic. Bradycardia is treated only if the patient is medically unstable. Signs and symptoms of instability include ongoing chest pain, shortness of breath, acute altered level of consciousness, SBP < 90 mm/Hg, and/or pulmonary edema.



## Notes:

*Do not delay transcutaneous pacing while waiting for IV access or for atropine to take effect. Repeat 0.5 mg doses of atropine at 3 to 5 minute intervals to a maximum of 3 mg ( 6 mg ET ) for the hemodynamically symptomatic patient. Consider shorter intervals in severe clinical conditions. Atropine has been shown to be ineffective in patients who have undergone cardiac transplantation as well as patients presenting with Type II second degree and third degree A.V. blocks.*

*Administer 5 to 10 mg Valium IV or Versed 1 to 2 mg IV for sedation as time permits. Be prepared to assist the patient with breathing. Use pacing only for heart rate control in the patient with AMI.*

# Cardiogenic Shock

## ***Rationale:***

Cardiogenic shock is a severe life threatening condition that requires rapid intervention. If lung sounds are clear, consider a fluid challenge before using medications to correct symptomatic hypotension.

## **Assessment Checklist**

- Myocardial infarction
- Syncope
- Consider other causes of shock
- Pulmonary edema
- Cardiac arrhythmias
- Angina pectoris

## **Level I:**

- Administer oxygen by appropriate device.
- Assess signs of shock and cardiac events.
- Place the patient in Trendelenburg position if hypotensive and lung sounds clear.

## **Level II:**

- Establish IV.
- Obtain 12 lead ECG.
- If lung sounds are clear, consider a fluid challenge (250 to 500 ml) for symptomatic hypotension.
- Consider second IV for dysrhythmia control.
- Administer dopamine by IV infusion at 5 to 20 mcg/kg/min for hypotension not corrected by fluid challenge.

# Chest Pain

## ***Rationale:***

Many patients complain of “chest pain”. Age and patient reports may be poor predictors of significant illness. **When in doubt, treat the patient as if the pain is cardiac in nature. If the patient is hemodynamically unstable, has ST depressions or T wave inversions but no ST elevations the patient may have an acute coronary syndrome (ACS) receiving immediate attention by the emergency department. This should be called a Cardiac Alert, replacing Chest Pain Red to the emergency department.**

## **Assessment Checklist**

- Myocardial infarction
- Significant dysrhythmia
- Pulmonary embolism
- Pneumonia
- Dissecting aortic aneurysm
- Costochondritis
- Pericarditis
- Chronic Obstructive Pulmonary Disease

## **Level I:**

- Administer oxygen by appropriate device.
- Evaluate cardiac risk factors, quality of the pain, and signs of cardiac related origin.
- Inquire about the (male or female) patient’s use of Viagra in the last 24 hours and 48 hours for other Viagra like medications (NTG is contraindicated).
- Place the hypotensive patient in Trendelenburg position.
- An EMT may assist a patient with self-administration of prescribed nitroglycerin after ruling out the use of Viagra within 24 hours and 48 hours for other Viagra like medications.

## **Level II:**

- Administer baby aspirin (81 mg) x 4 PO (contraindicated if known hypersensitivity or hemophilia).
- Establish IV.
- Obtain 12-lead ECG (consider right-side 12- lead).
- After ruling out the use of Viagra within 24 hours or Viagra like medications within 48 hours administer 0.4 mg nitroglycerin SL 3 to 5 minutes PRN, keeping SBP > 100mm/Hg.
- Treat with appropriate dysrhythmia protocol.
- Administer morphine sulfate 2 mg IV PRN (if available). Repeat at 5-minute intervals to a total of 10 mg.
- Issue cardiac Alert and give report to the Emergency Department for patients with ACS.

## **Level III:**

- None

***Note: If ST elevation in 2 or more contiguous leads issue STEMI Alert to dispatch and transmit 12lead ECG to nearest receiving facility and transport to hospital of patient’s choice.***



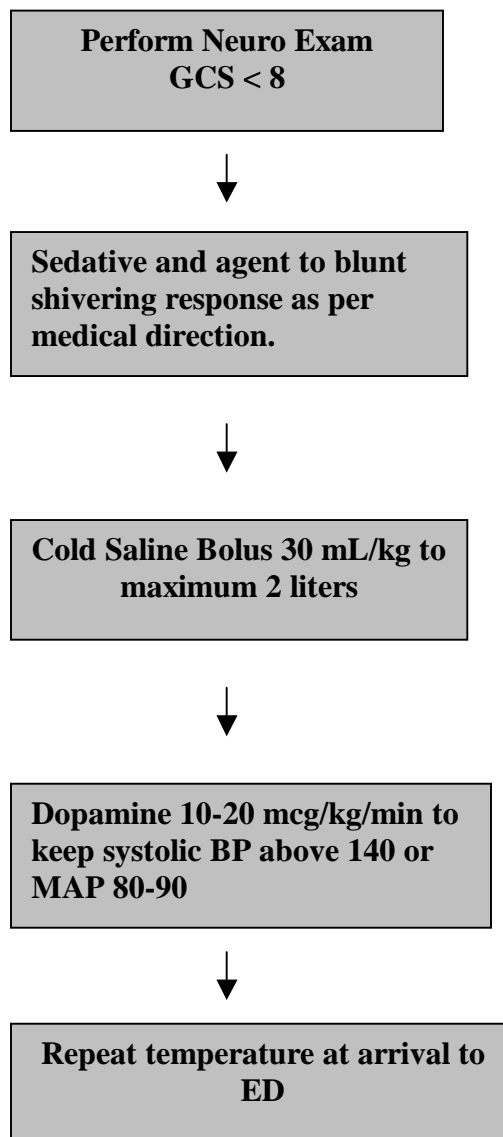
# Mild Induced Hypothermia

## ***Rationale:***

Early and fast induced mild hypothermia 34-32 degrees C, (93.2 – 89.6 degrees F), has recently been shown to improve survival rates and neurological outcomes in cardiac arrest patients and is now becoming the standard of care in EMS. Non-traumatic adult cardiac arrest patients with VF, VT, asystole, or PEA as the presenting rhythm should receive induced hypothermia as per protocol once return of spontaneous circulation is established (ROSC).

## ***Criteria:***

- ROSC after cardiac arrest not related to trauma or hemorrhage.
- Age greater than 16.
- If female, without obviously gravid uterus.
- Initial temperature > 34C.
- Patient has an ET Tube or approved airway placed and remains comatose (no purposeful response to pain).



# Pulmonary Edema / Congestive Heart Failure

## ***Rationale:***

Most cases of CHF and pulmonary edema will respond to pre-hospital care. This will convert an acute crisis to a controlled illness. Rule out respiratory infection.

## **Assessment Checklist**

- Chronic Obstructive Pulmonary Disease
- Congestive Heart Failure
- Pneumonia

## **Level I:**

- Assess patient's temperature.
- Administer oxygen by appropriate device.
- Place patient in upright position.

## **Level II:**

- Establish IV.
- Obtain 12-lead ECG (consider right-side 12-lead).
- Consider C-PAP.
- Morphine 2 mg to 4 mg IV if patient not tolerating C-PAP well.
- Administer 0.4 mg nitroglycerin SL every 3 min (if SBP > 100 mm/Hg).
- Lasix 40 mg IV if patient is not taking lasix and not improving with Nitro.
- Lasix two times the usual daily dose if patient takes Lasix / Bumex (Note: maximum dose of Lasix 80 mg) (40 mg Lasix equals 1 mg Bumex). Lasix is contraindicated in patients with history of respiratory infections.
- Patients with bronchial spasms – wheezing should be treated with bronchodilators (cardiac asthma).

## **Level III:**

- None

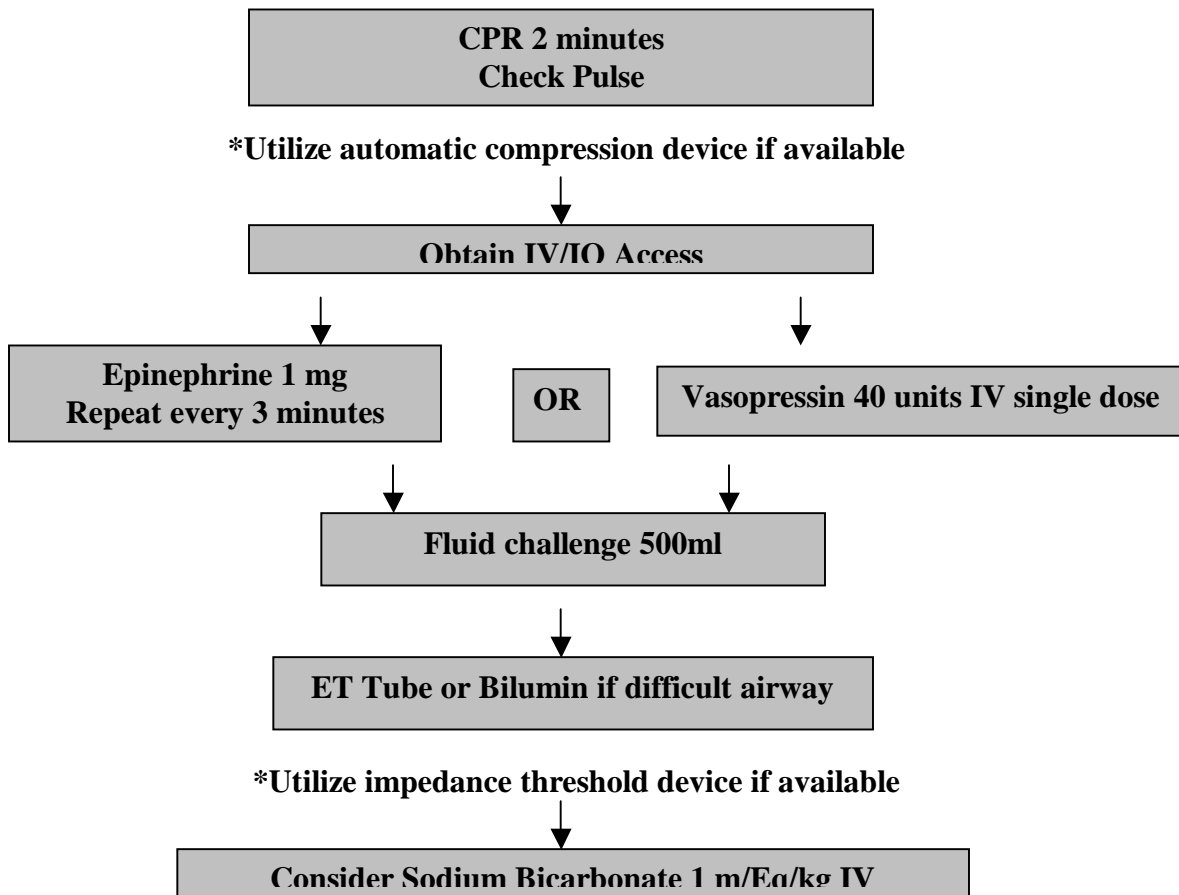
# Pulseless Electrical Activity

## *Rationale:*

Pulseless electrical activity (PEA) describes any electrical cardiac activity that is not pulse producing. PEA may be the result of an underlying treatable condition. A very common cause of transient PEA is post defibrillation IVR. Do not treat pulseless ventricular tachycardia with this protocol.

## Assessment Checklist

- AMI
- Hypovolemia
- Hypoxia
- Hyperkalemia
- Hypothermia
- Acidosis
- Tension pneumothorax
- Pulmonary embolism
- Overdose (including calcium channel blockers, beta blockers, Tricyclic anti-depressants, and Digoxin)
- Cardiac tamponade



## *Note:*

- *Treat tension pneumothorax with needle decompression.*

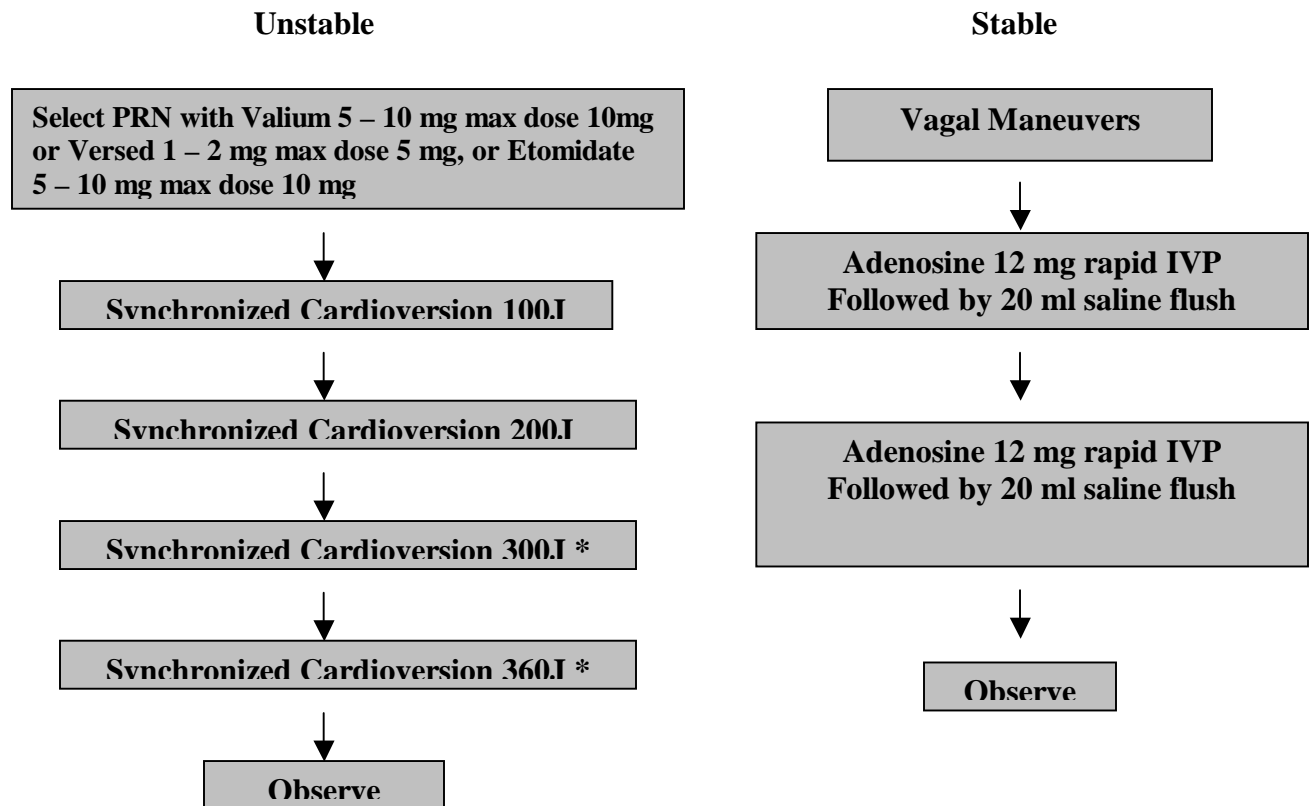
# Supraventricular Tachycardia (non-Atrial Fibrillation)

## Rationale:

Supraventricular tachycardia (SVT) describes several conditions. Determining the underlying rhythm and cause may be essential for care. Suspect hypovolemia or cardiogenic shock as causes of hypotension. Rapid intervention is required in the unstable patient. Unstable is defined as any of the following: *severe chest pain, dyspnea, hypotension, acute CHF, or acute myocardial infarction.*

## Assessment Checklist

- Dysrhythmia
- Myocardial infarction



## Note:

- *Adenosine may be harmful when used if WPW or other accessory pathway tachyarrhythmias are present. Transport and observe these patients.*
- *Adenosine is ineffective for slowing the rate of Atrial fibrillation/flutter other than momentarily but this slowed rate may allow for the definitive diagnosis of Atrial fibrillation/flutter as opposed to PSVT.*

*\*If defibrillator allows for higher energy delivery*

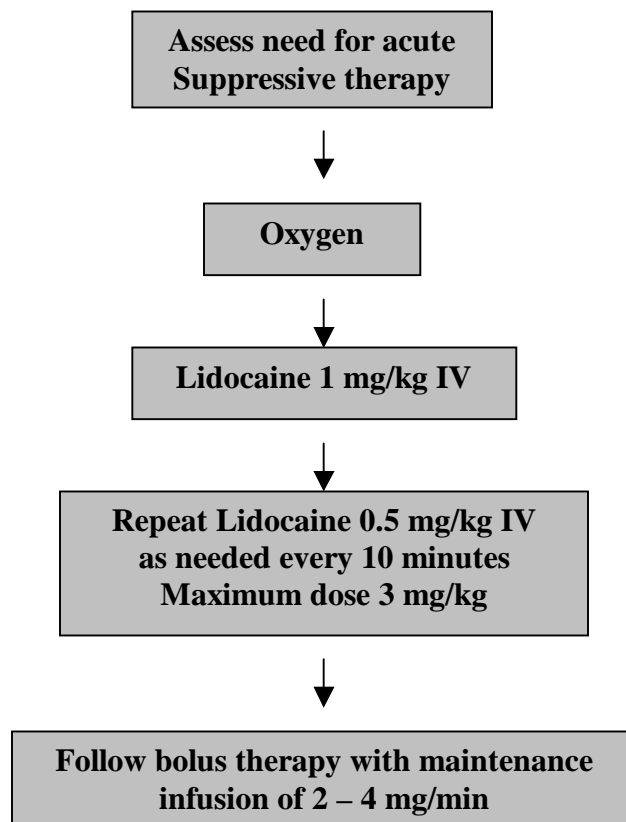
# Ventricular Ectopy

## ***Rationale:***

Ventricular ectopy is common. It is important to identify the cause especially when faced with bradycardia. Ventricular ectopy is treated if the patient has chest pain, or if there are more than 6 ectopics/min, or if there are multifocal ectopic beats.

## **Assessment Checklist**

- Myocardial infarction
- Dysrhythmia
- Medication toxicity
- Hypoxemia
- Hypovolemia



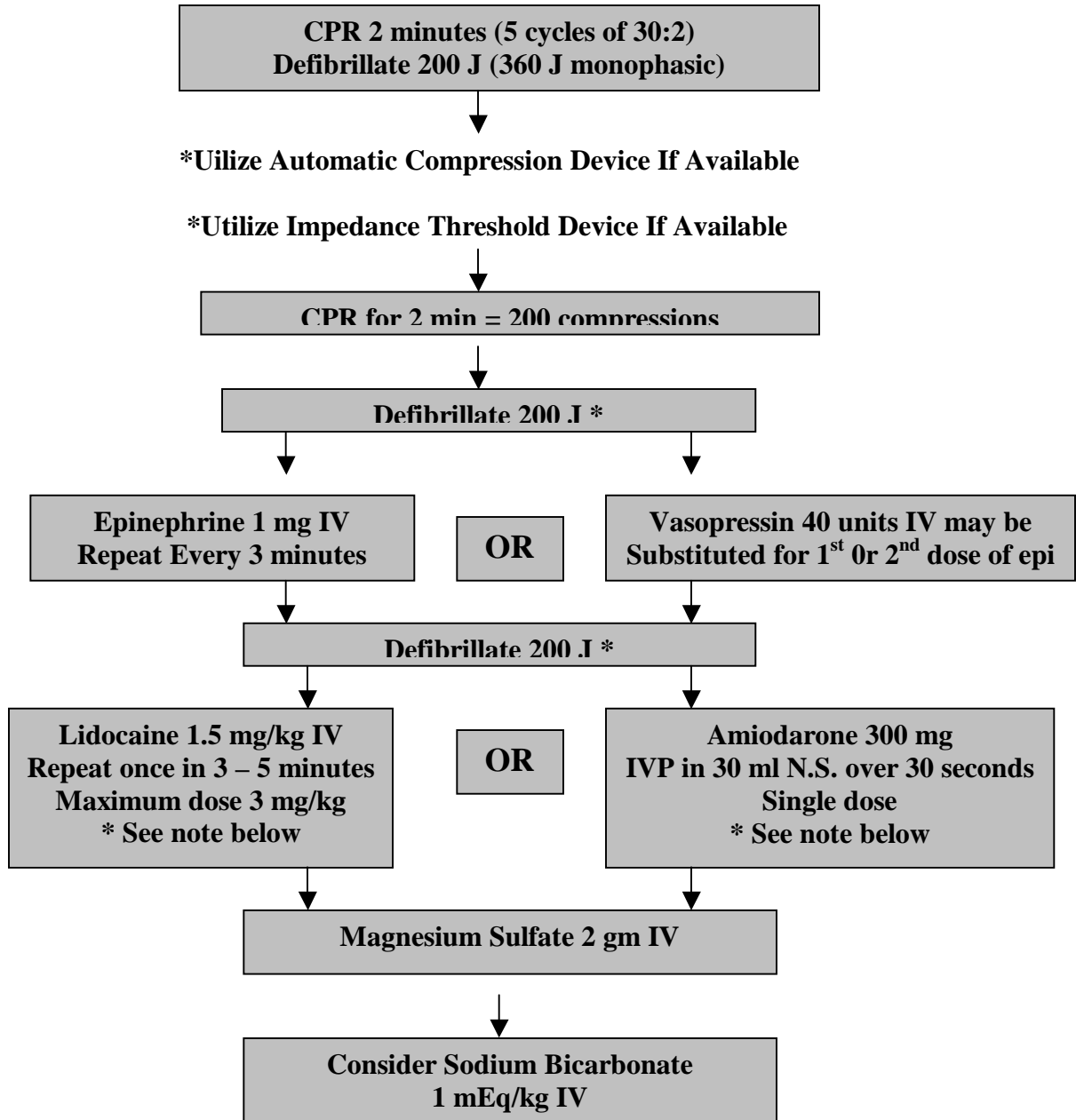
## ***Note:***

- *Treat a bradycardia rate first if the patient is hemodynamically unstable.*
- *PVC's in an otherwise slow heart rate represent ventricular escape beats, and if eliminated with Lidocaine, may lead to asystole.*

# Ventricular Fibrillation & Pulseless Ventricular Tachycardia

## Rationale:

Ventricular fibrillation and pulseless ventricular tachycardia require immediate treatment. Attempt to also identify the cause of dysrhythmia and correct it. Chest compressions and rapid defibrillation are a priority. The affect of medication therapy on survival rates is unproven and should not delay good chest compressions and defibrillation. If witnessed cardiac arrest and an AED is available do not delay immediate defibrillation.



*\*Follow manufacturers recommendations*

*\*Reference AHA procedures page for manufacturers recommended Joules setting*

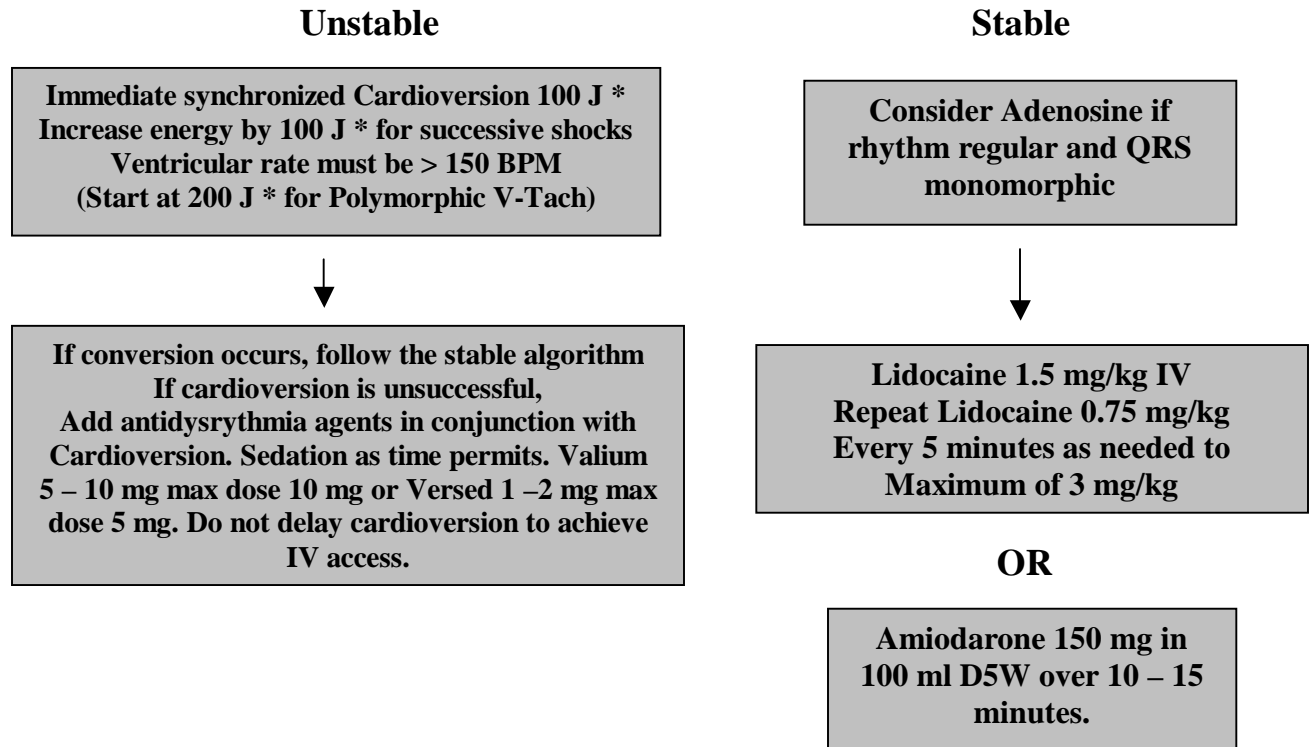
## Note:

- *If converted with Lidocaine, establish drip.*
- *If converted with Amiodarone and VF / Pulseless VT recurs, consider bolus of Amiodarone at 150 mg.*

# Ventricular Tachycardia

## Rationale:

This life threatening condition is uncommon but responds well to emergency cardiac treatment. Rapid intervention is required in the unstable patient. Unstable is defined as any of the following: *requires more than one antidysrhythmic to convert, chest pain, dyspnea, decreased level of consciousness, hypotension, pulmonary congestion, CHF, or acute myocardial infarction.*



*\*Follow manufacturers recommendations*

*\* Reference AHA procedures page for manufacturers recommended Joules setting*

## Note:

- *If converted with Lidocaine, establish drip.*

# **Adult Medical Care**



# Standard Medical Care Procedures

## ***Rationale:***

The majority of requests for Emergency Medical Services are nonemergent illness or injuries. The paramedic may consider many of these incidents *routine*. The citizens who request our service will not feel these are *routine*. Remember many patients **are not** good medical historians and may not be able to tell you exactly what is wrong. Good listening skills are essential in the patient interview. ***Expect the unexpected.***

Basic Life Support procedures include a primary survey which includes assessment of immediate life threatening conditions, mental status, vital signs (including palpable body temperature), and maintenance of a patent airway.

Advanced Life Support procedures include establishing an IV, intubation, administering medications, and monitoring the ECG when indicated.

Good patient care includes exercising social skills (a good bedside manner). Personnel are expected to exercise tact with patients, to focus their attention on the patient, and to walk quickly (but not run) when responding to incidents. Many patients (and peers) interpret a relaxed, slow approach to them as a noncaring attitude.

## **General Adult Care**

### ***Level I:***

- Assess the scene for hazards.
- Note the patient's environment.
- Wear appropriate Personal Protective Equipment (PPE).
- Provide BLS support (including cervical stabilization as needed).
- Perform a primary survey and provide emergency treatment.
- Perform a secondary survey, treat, and transport.
- Administer oxygen by appropriate device.
- Monitor oxygen saturation if indicated.

### ***Level II:***

- Check a glucose reading if indicated.
- Provide ALS support (ECG, IV, Advance airway, including Capnography if indicated).
- Administer medication therapy as needed.

# Abdominal Pain/GI Bleed

## ***Rationale:***

A differential diagnosis of abdominal pain can be complex. Prolonged evaluation in the field is not appropriate. Suspect a severe underlying problem. Prompt and gentle transport is required.

## **Assessment Checklist**

- Abdominal aneurysm
- Ectopic pregnancy in a female of child bearing age
- Trauma
- Internal hemorrhage (ulcers, etc)
- Peritonitis
- Referred cardiac pain
- Acute appendicitis

## **Adult Care**

### ***Level I:***

- Examine for distended abdomen, bowel sounds, referred pain.
- Examine for hemorrhage (unexplained tachycardia, emesis, blood stools, and rigidity).
- Test for orthostatic hypotension.
- Administer oxygen by appropriate device.
- Use Trendelenburg position if patient is hypotensive.
- Assess history of gastrointestinal problems.

### ***Level II:***

- Establish an IV, large bore if hemorrhage is suspected.
- Obtain 12-lead ECG *if cardiac etiology suspected.*
- Evaluate the need for advanced airway.
- NS fluid bolus 250mL if hypotensive
- Administer fluid with caution and establish second IV if aortic aneurysm is suspected.
- Aggressive fluid resuscitation if GI bleeding and hypotensive
- If actively vomiting, Zofran 4mg/IV/IO/IM or Oral Dissolving Troche (ODT) 4mg. Max dose of 4mg.

### ***Level III:***

- None

# Agitated Patients

## ***Rationale:***

Patients with agitated delirium are very difficult to manage: High risk patients with risk management concerns can often lead to injury of EMS personnel if patients are not managed properly. Signs and symptoms include anxiety, agitation, confusion, affect change hallucinations, delusional thoughts, bizarre behavior, combative/violent, and expression of suicidal/homicidal thoughts.

## **Assessment Checklist**

- See Altered Mental Status Assessment Checklist
- Hypoxia
- Alcohol Intoxication
- Medication Effect/Overdose
- Withdrawal Symptoms
- Depression
- Bipolar (manic depressive)
- Schizophrenia anxiety disorders

### **Level I:**

- Evaluate need for law enforcement
- Remove patient from stressful environment
- Administer oxygen by appropriate device
- Verbal techniques (reassurance, calm, establish rapport).
- Contact Poison Control at 1-800-282-3171 or 1-800-222-1222 if indicated
- Patients who must be restrained should not be placed prone on the stretcher, and a person must be dedicated to monitor the patient's airway

### **Level II:**

- Ketamine 2 mg/kg IM. Maximum per dose 200 mg or 2 mL. May repeat times one if uncontrolled combative agitated delirium persists.
- Consider Versed – 4 mg IM. May repeat times one in 15 minutes if uncontrolled combative agitated delirium persists.
- **DO NOT ATTEMPT IV** in the combative patient with uncontrolled agitated delirium.
- Consider Versed – 2mg IV for patient restrained with conventional methods and IV access has been established without difficulty.

### **Level III:**

- Call medical control if uncontrolled combative agitated delirium persists

# Airway Management

## ***Rationale:***

Endotracheal intubation is the preferred method to stabilize an airway. Secure a patent airway in all patients with a decreased level of consciousness.

## **Assessment Checklist**

- Hyperventilation
- Airway obstruction
- Cervical trauma
- Airway trauma
- Pulmonary edema
- Overdose
- Anaphylaxis
- Epiglottitis

## **Adult Care**

### ***Level I:***

- Assess respiratory effort for rate and quality.
- Open airway (use jaw thrust if suspect cervical injury).
- Place appropriate airway device (oral, nasal, bilumin tube, or subglottic device).
- Monitor oxygen saturation.
- Administer oxygen by appropriate device.
- Suction airway if indicated.

### ***Level II:***

- Establish IV.
- Monitor ECG.
- Administer a nebulizer treatment if indicated.
- Perform Rapid Sequential Induction (RSI) of anesthesia for intubation if indicated (if available) .
- Intubate if indicated, oral or nasal.
- Use a bilumin tube or subglottic device if standard endotracheal intubation is unsuccessful after two attempts.
- Use Magill forceps to remove a foreign body.
- Perform a cricothyrotomy if all other measures are unsuccessful.
- Use ET CO<sub>2</sub> and one other airway confirmation device.

### ***Level III***

- None

# Allergic Reactions

## *Rationale:*

This condition is more common than the serious anaphylactic reaction. Allergic reactions may be treated prior to rapid transport.

## Assessment Checklist

- Cardiac dysrhythmia
- Upper airway obstruction
- Lower airway constriction
- Rash, Hives, Edema, Itching
- Hypotension < 90 systolic

## Adult Care

### *Level I*

- Apply the anaphylaxis protocol if respiratory obstruction or hypotension is present.
- Administer oxygen by appropriate device.
- Place the patient in a sitting position if not hypotensive.
- Attempt to determine the source of the allergic reaction.
- Poison Control #1-800-222-1222 or 1-800-282-3171.

### *Level II:*

- Establish IV/IO.
- Monitor ECG.
- Evaluate the need for advanced airway.
- Administer Benadryl 0.5 mg/kg IV or IM (max 50mg).
- Administer Albuterol as indicated.
- Observe for the development of anaphylaxis and dysrhythmia

### *Level III:*

- None

# Altered Mental Status

## ***Rationale:***

Assessment of the patient's mental status is a component of the primary survey. An altered mental status could be caused by a variety of reasons and should be noted using GCS and AVPU.

## **Assessment Checklist**

- Seizure
- Hypovolemia
- Hypoxia
- Hypoglycemia or hyperglycemia
- Trauma
- Overdose
- CVA or TIA
- Dysrhythmia
- Delirium Tremens
- Emotional disorder or pseudosynocopal episode

## **Adult Care**

### ***Level I:***

- Evaluate need for law enforcement.
- Administer oxygen by appropriate device.
- Contact Poison Control at 1-800-282-3171 or 1-800-222-1222 if indicated.
- Patients who must be restrained should be placed SUPINE on the stretcher, and a person must be dedicated to monitor the patient's airway.

### ***Level II:***

- Check a blood glucose level.
- Establish IV.
- Monitor ECG.
- Obtain 12 lead ECG
- Evaluate the need for advanced airway.
- If glucose level is <60 mg/dl, follow Hypoglycemia Protocol.
- Administer Narcan 2 mg IV in increments of 0.5mg , or Nasal Atomized if no IV access as needed for respiratory depression.
- Repeat as needed.

### ***Level III:***

- None

# Anaphylaxis

## ***Rationale:***

Anaphylaxis is rare and life threatening. It may be mistaken for cardiac arrest by the time the EMS provider arrives. Anaphylaxis carries a high mortality rate and may become resistant to management if treatment is delayed. Exercise caution to avoid confusing anaphylaxis and an allergic reaction.

## **Assessment Checklist**

- Dysrhythmia
- Hypoxia
- Hypotension
- Airway obstruction secondary to edema

## **Adult Care**

### ***Level I:***

- Assess oxygen saturation.
- Assess for airway edema, stridor, and wheezing.
- Administer oxygen by appropriate device.
- Assist with administration of Epi-Pen if available.

### ***Level II:***

- Establish IV.
- Monitor ECG.
- Evaluate the need for advanced airway.
- Administer albuterol via nebulizer mask 2.5 mg for mild distress.
- Administer epinephrine 1:1,000 0.3 ml SQ for moderate respiratory compromise.
- Administer a fluid challenge 250-500mL NS if patient is hypotensive.
- Administer epinephrine 0.1 mg 1:10,000 IV, repeat as needed to a maximum of 0.5 mg for extreme respiratory compromise (complete or almost complete airway obstruction), or profound hypotension.
- Administer Benadryl 0.5 mg/kg IV or IM (50 mg max).
- Administer Solu-medrol 125 mg IVP (if available).
- See cardiogenic shock protocol.

### ***Level III:***

- Additional Epinephrine IV as ordered.

# Asthma

## ***Rationale:***

Asthma is a common disease that may rapidly become life threatening. Most asthma patients treat themselves, but occasionally require EMS intervention. Asthmatic patients usually wait until their self-treatments fail before making an EMS request. This increases their chance of presenting in acute distress or status asthmaticus. Rapid recognition and prompt treatment is ***crucial***.

## **Assessment Checklist**

- Allergic reaction
- Congestive heart failure
- Foreign body obstruction
- Exposure to respiratory irritants
- Pneumonia

## **Adult Care**

### ***Level I:***

- Assess oxygen saturation.
- Assess for airway edema, stridor, and wheezing.
- Administer oxygen by appropriate device.

### ***Level II:***

- Establish IV.
- Monitor ECG.
- Evaluate the need for advanced airway.
- Administer Albuterol 2.5 mg and Atrovent 0.5 mg (if available) combined in a nebulizer. This may be administered (as needed) before vascular access.
- Albuterol may be repeated as needed.
- Atrovent is a single dose only.
- Consider 0.1mg 1:10,000 Epinephrine IVP for extreme respiratory compromise.
- Administer Solu-Medrol 125 mg IVP (if available).
- Apply CPAP if patient's respiratory status is not improving.

### ***Level III:***

- Additional Epinephrine as ordered.



# Carbon Monoxide Inhalation

## *Rationale:*

Carbon monoxide poses a threat to the patient and the rescuer. Use caution in assessing the CO inhalation patient. Normal diagnostic methods such as SaO<sub>2</sub> and capillary refill may display false positives. This exposure interferes with oxygen exchange on the cellular level. Always consider this exposure in any kind of airway burn or smoke inhalation.

## Assessment Checklist

- Hypoxia of unknown cause
- CNS disorder

## Adult Care

### *Level I:*

- Remove patient from source of exposure. Take precautions against toxic environment.
- Assess for signs including vomiting, altered mental status, seizure, flushing, cyanosis, or cherry red skin (late sign).
- Assess for symptoms including headache and tinnitus
- Administer 100% oxygen by appropriate device
- Keep patient quiet to minimize oxygen demand

### *Level II:*

- Establish IV
- Monitor ECG
- Evaluate the need for advanced airway
- Draw blood. Cover blood tubes with a cold pack
- If wheezing, administer Albuterol 2.5 mg via nebulizer. This may be repeated as needed.
- Transport to the closest emergency department

### *Level III:*

- None

**NOTE: If smoke inhalation suspected consider use of Cyano Kit**

# **Cerebrovascular Event**

## **(Stroke / TIA)**

### ***Rationale:***

Rapid identification of possible stroke victims is essential. “Time is brain tissue” applies to the stroke victim in the same way “time is muscle” applies to AMI patients. Rapid identification and transportation of the stroke victim is crucial. Notifying the emergency department of a “Stroke Alert” may speed patient treatment upon arrival to the hospital.

### **Assessment Checklist**

- Hypoglycemia / Hyperglycemia
- Chemical exposures
- Head injuries
- CNS disorders

### **Adult Care**

#### ***Level I:***

- Monitor oxygen saturation.
- Provide oxygen by nasal cannula only if SaO<sub>2</sub> < 95% or chest pain, shortness of breath or tachypnea
- Perform focused history and physical assessment including neurological assessment.
- Establish onset of signs / symptoms.
- Do not delay transport for detailed secondary assessment.
- If stroke is suspected, advise transport unit and / or ED of “Stroke Alert.”
- Complete Cincinnati Stroke check list.
- Elevate head of bed 30°.

#### ***Level II:***

- Check a blood glucose level.
- Establish IV.
- Monitor ECG.
- Evaluate the need for advanced airway.
- If glucose check shows <60mg/dl administer D50 25 Gm IV.
- Transport to state approved stroke center.

#### ***Level III:***

- None

# Childbirth Emergencies

## ***Rationale:***

Childbirth is a normal process. Abnormal presentations may require rapid intervention. Most serious hazards of delivery are treatable through prompt intervention.

## **Assessment Checklist**

Be aware for the following complications: shock, abnormal presentation – breech, limb, or prolapsed cord, placenta previa, abruptio placenta, spontaneous abortion (miscarriage), uterine rupture, and fetal distress related to drug or alcohol abuse.

## **Adult Care**

### ***Level I:***

#### ***Mother***

- Administer oxygen by appropriate device.
- Be prepared to manage shock.
- Identify gravida, para, contraction timing and duration, prenatal care or lack of it, past or known complications, medication or drug use, and last menstrual period.
- If the patient is hypotensive, consider placing the patient on her left side.
- Deliver the baby as indicated (crowning present).
- Manage complications as needed.
- Administer uterine massage after delivery. Put baby to breast.

#### ***Baby***

- Suction and maintain a patent airway.
- Administer oxygen by appropriate device.
- Dry and keep the baby warm.
- Perform APGAR scoring at one minute and five minute intervals post delivery.
- Observe the airway for meconium and fluids

### ***Level II:***

- Glucose reading if APGAR < 9
- Meconium suctioning if indicated.
- Establish IV at T.K.O. rate. Fluid challenge if hypotension not corrected by BLS treatment
- Monitor ECG.
- Evaluate the need for advanced airway.

### ***Level III:***

- Contact Medical Control for any unusual complication and presentations.

# Chronic Obstructive Pulmonary Disease

## *Rationale:*

Patients frequently present with C.O.P.D. Proper management may shorten the patient's hospital stay and distress. Treatment is directed at increasing oxygen delivery without decompensating the patient's respiratory drive.

## Assessment Checklist

- Pulmonary edema
- Pneumonia
- Pneumothorax
- Status Asthmaticus

## Adult Care

### *Level I:*

- Assess respiratory status and effort.
- Administer oxygen by appropriate device.
- Interview patient regarding history of respiratory infection, productive cough, ventilator use, and hospitalizations.
- Place the patient in a position of comfort

### *Level II:*

- Establish IV.
- Monitor ECG.
- Evaluate the need for advanced airway.
- Administer Albuterol 2.5 mg and Atrovent 0.5 mg (if available) combined in a nebulizer. You may administer nebulized drugs prior to vascular access.
- Repeat Albuterol as needed.
- Atrovent is a single dose only.
- Administer Solu-Medrol 125 mg IVP (if available).
- Apply CPAP if the patient is not improving with Albuterol and oxygen.

### *Level III:*

- None

# Diabetic Emergencies (Hyperglycemia)

## *Rationale:*

The hyperglycemia patient may suffer from severe dehydration and hyperosmolar coma. Hyperglycemic emergencies have a slow onset of symptoms. The hypoglycemic and hyperglycemic patient may both suffer a decreased level of consciousness. Both conditions may be life threatening.

## Assessment Checklist

- Sepsis
- Hypoglycemia
- Cerebrovascular event
- CNS disorder

## Adult Care

### *Level I:*

- Assess for Kussmaul respirations.
- Administer oxygen by appropriate device.
- Inquire of the conscious patient about polyuria, polydipsia, and polyphagia.

### *Level II:*

- Check a blood glucose level.
- Establish IV.
- Monitor ECG.
- Evaluate the need for advanced airway.
- IV Normal Saline rapid infusion if patient is dehydrated (250 ml. bolus followed by 1 liter/hour drip).

### *Level III:*

- None

# Diabetic Emergencies (Hypoglycemia)

## *Rationale:*

Acute hypoglycemia (or insulin shock) may very quickly cause brain damage and must be rapidly treated. Patients who are treated for insulin shock frequently recover consciousness rapidly and refuse transportation. Do not delay treatment because of this possibility. Hypoglycemic emergencies have a rapid onset.

Corrective measures for hypoglycemia are highly successful. The patient's mental condition may deteriorate and seizure activity or coma may develop. Some patients become agitated, develop psychotic behavior or cerebrovascular event like symptoms such as hemiplegia, paresthesia or cranial nerve palsy. Always suspect hypoglycemia in any patient with an unexplained altered mental status.

## Assessment Checklist

- Overdose and substance abuse, including alcohol
- CNS disorder
- Hypothermia
- Cerebrovascular event
- Sepsis

## Adult Care

### *Level I:*

- Assess for last insulin injection and food intake.
- Administer oxygen by appropriate device.
- Assist administering oral glucose, gel or paste if conscious.

### *Level II:*

- Check a blood glucose level.
- Establish IV.
- Monitor ECG.
- Administer D50 25 Gm IV if glucose is < 60 mg / dl. May repeat if glucose continues to be < 60 mg / dl and patient is symptomatic.
- If unable to establish IV and glucose < 60 mg / dl, administer Glucagon 1 mg IM or SQ( if available).

### *Level III*

- None.

# Environmental Cold Emergencies

## *Rationale:*

Cold related emergencies are possible. These situations often involve water. The wide range of temperatures between day and night can cause problems for the unprepared. Use of alcohol and various drugs can affect how a patient reacts to cold. The elderly and young are also particularly susceptible to hypothermia.

## Assessment Checklist

- Overdose and substance abuse, including alcohol
- Hyperglycemia / hypoglycemia
- Head trauma
- CNS disorder
- Cerebrovascular event

## Adult Care

### *Level I:*

- Assess for shivering, lethargy, muscle stiffness, mental status changes, discoloration of skin, and numbness.
- Remove wet clothing and protect patient against heat loss and wind chill.
- Place patient in horizontal position avoiding rough movement and excess activity.
- Completely dry patient and cover with insulated blankets.
- Administer oxygen by appropriate device.

### *Level II:*

- Establish IV.
- Monitor ECG.
- Evaluate the need for advanced airway.
- Warm IV fluids with hot packs.

### *Level III:*

- None.

# Environmental Heat Emergencies

## ***Rationale:***

Cooling the patient suffering a heat emergency protects the body and CNS from possible permanent damage. Careful evaluation and a good history of the event are essential. Be aware that some people are more sensitive to heat than others, with the elderly and pediatric patient being the most. When evaluating these patients, assess the patient's environmental conditions.

## **Assessment Checklist**

- Heat cramps, heat exhaustion, heat stroke
- Hyperglycemia / hypoglycemia
- Head trauma
- CNS disorder
- Cerebrovascular event
- Malignant hypothermia

## **Adult Care**

### ***Level I:***

- Move patient to cool environment and remove clothing.
- Place the heat exhaustion patient in a supine position with feet elevated.
- Place the heat stroke patient in semi-reclining position (with head elevated 15-30 degrees if normotensive).
- Sponge with cool water or cover with a wet sheet and fan the patient.
- Apply cold packs to lateral chest wall, groin, axilla, carotid arteries, temples and behind knees if rapid cooling is required.
- Administer oxygen by appropriate device.

### ***Level II:***

- Establish IV.
- Monitor ECG.
- Evaluate the need for advanced airway.
- If systolic BP < 90 mm Hg, administer fluid boluses in increments of 250 ml, to titrate systolic BP of > 90 mm Hg.

### ***Level III:***

- None



# Hypertensive Emergencies

## *Rationale:*

Hypertensive emergencies not treated can lead to other severe conditions including myocardial infarction, pulmonary edema, and inter-cranial hemorrhage. Aggressive treatment may worsen these conditions; as a result, aggressive treatment should be initiated only in the Emergency Department. Prehospital treatment is directed to the underlying cause and symptoms, i.e. chest pain or shortness of breath. **Hypertensive emergencies occur when systolic pressure >220 mm / Hg and / or a diastolic pressure >120 mm / Hg with signs and symptoms of neurological compromise.**

## Assessment Checklist

- Emotional stress
- Cerebrovascular event
- Pain
- Drug overdose
- Myocardial infarction or angina

## Adult Care

### *Level I:*

- Perform focused history and physical assessment including neurological assessment.
- Administer oxygen by appropriate device.
- Attempt to reduce patient anxiety.

### *Level II:*

- Establish IV.
- Obtain 12-lead ECG.
- Evaluate the need for advanced airway.
- See Chest Pain protocol.
- If neurological changes see Cerebrovascular protocol.

### *Level III:*

- None.

# Overdose

## ***Rationale:***

Not all cases of poisoning or overdose are life threatening when the Fire Rescue Team arrives. Use calm management and be prepared for a violent interaction with the patient. Take protective measures and use law enforcement to assist as needed.

## **Assessment Checklist**

- Seizure
- Hypoxia
- Hypoglycemia or hyperglycemia
- CVA or TIA
- Dysrhythmia
- Delirium Tremens
- Emotional disorder or pseudosyncopal episode

## **Adult Care**

### ***Level I:***

- Secure all possible sources of the overdose and transport them to the hospital with the patient.
- Remain particularly alert to early signs of airway compromise and hypoglycemia.
- Administer oxygen by appropriate device.
- Monitor for rapid changes in condition and behavior.
- Patients who must be restrained should be placed SUPINE on the stretcher, and a person must be dedicated to monitor the patient's airway.
- Contact Poison Control at 1-800-282-3171 or 1-800-222-1222.

### ***Level II:***

- Check a blood glucose level.
- Establish IV.
- Monitor ECG.
- If glucose is  $< 60$  mg / dl, follow Hypoglycemia Protocol.
- If unresponsive and / or respirations are compromised, administer Narcan 2 mg IV in increments of 0.5mg.
- May repeat as needed for Methadone or Darvocet overdose. If moderately obtunded, incremental doses of 0.5 mg may be prudent since immediate narcotic withdrawal syndromes may be precipitated. Some agents such as Propoxyphene/ Darvon may require higher doses of Narcan (up to 10 mg) to reverse narcotic effects.
- If IV access is not available and patient meets above criteria, administer Narcan 2mg via nasal atomizer.

### ***Level III:***

- None

# Pain Management

## ***Rationale:***

Pain management is an important part of patient care. Some patients, either by a medical condition or traumatic injury, require pre-hospital management of their pain to improve a medical condition and/or decrease anxiety. This protocol should be used with discretion or receiving physician direction.

## **Assessment Checklist**

- Various causes of acute pain

## **Adult Care**

### ***Level I:***

- Immobilize, elevate, and apply ice to injured areas.
- Place the patient in a position of comfort.
- Administer oxygen by appropriate device.
- Evaluate the possible use of other medication and/or alcohol during the interview.

### ***Level II:***

- Establish IV.
- Monitor ECG.
- Administer morphine sulfate 5 mg IV or IM for burns that meet trauma alert criteria and *or* for isolated long bone fractures. May repeat 5 mg one time.

### ***Level III:***

- Morphine, Toradol (if available) as directed by medical control.

### ***Note:***

For Inter-facility transports only: May follow the orders of the transferring physician by administering prescribed medications given to you by the hospital during transport, i.e., Demerol and/or Toradol. To obtain hospital medications (1) follow the hospital sign out protocol, (2) acquire a copy of the physician orders pertaining to the administration of the drugs and (3) document on the patient care report all medications and the amount administered.

# Poisoning

## ***Rationale:***

Poisonings by substances other than medications can present with a variety of symptoms. Sometimes the victim will present with a different chief complaint and be unaware of being poisoned. The rescuer must perform a careful and complete interview. **Poisonings may include pesticides, petroleum, and cleaning solvents, either by ingestion, inhalation, or absorbed.**

**The rescuer must be alert to the possible need to manage the scene and the patient as a hazardous materials exposure and to prevent contamination of the rescuers and the apparatus.**

## **Assessment Checklist**

- Seizure
- Hypoxia
- Hypoglycemia or hyperglycemia
- CVA or TIA
- Dysrhythmia
- Delirium Tremens
- Emotional disorder or pseudosyncopal episode

## **Adult Care**

### ***Level I:***

- Remove the victim from the source (rescuer should wear appropriate PPE).
- Decontaminate the victim as needed.
- Assess for SLUDGEM syndrome.
- Administer oxygen by appropriate device.
- Suction if indicated.
- Do not use a helicopter to transport any hazardous materials exposure patient.
- Contact Poison Control at 1-800-282-3171 or 1-800-222-1222.

### ***Level II:***

- Establish an IV of normal saline at a T.K.O. rate.
- For the organophosphate or carbamate poisoning victim, administer Atropine 2 mg at 5 min. intervals until symptoms are controlled.

### ***Level III:***

- Haz-Mat Protocols as ordered by Medical Control.

# Seizure Disorder

## ***Rationale:***

Termination of seizures protects patients from hypoxia that can cause brain injury. Frequently the rescue team never witnesses the seizure activity. This makes careful information gathering and observation important.

## **Assessment Checklist**

- Drug ingestion or alcohol withdrawal
- Cerebrovascular event
- Hypoglycemia
- Febrile illness
- Eclamptic pregnancy
- Trauma

## **Adult Care**

### ***Level I:***

- Passively protect the patient from self-injury.
- Administer oxygen by appropriate device.
- If the patient was not protected from injury during the activity, immobilize the patient's spine.

### ***Level II:***

- Check a blood glucose level.
- Establish IV.
- Monitor ECG.
- If blood sugar is < 60 mg / dl, follow Hypoglycemia Protocol.
- If actively seizing, consider nasal Versed 1-2mg (maximum dose 5mg.) while attempting IV access, administer Valium IV in 5 mg increments. Maximum dose 10 mg.
- Consider RSI for airway maintenance in status epileptics.

### ***Level III:***

- Additional Valium.
- If seizure is eclampsia related then administer magnesium sulfate 2 Gm IV (Use caution to dilute before administration)

# Sickle Cell Anemia

## ***Rationale:***

Sickle Cell Anemia interferes with the normal delivery of oxygen at the cellular level and may require emergency intervention.

## **Assessment Checklist**

- History of Sickle Cell Anemia
- Priapism
- Acute myocardial infarction / angina
- Unexplained pain

## **Adult Care**

### ***Level I:***

- Assess the patient for large muscle mass pain, chest pain, and severe dyspnea.
- Administer oxygen by appropriate device.
- Keep patient as quiet as possible to minimize oxygen demand.

### ***Level II:***

- Establish IV.
- Obtain 12-lead ECG.
- Administer a fluid bolus of 250 ml and continue IV at a TKO rate.
- Administer Albuterol 2.5 mg by nebulizer for the wheezing patient. Repeat as needed.
- Refer to the Chest Pain Protocol for any symptoms, chief complaint, or 12-lead ECG evaluation that suggests AMI.

### ***Level III:***

- Contact Medical Control for pain management.

# Syncope

## ***Rationale:***

Patient presentation with sign, symptoms, or history of unexplained and brief (seconds) loss of consciousness which does not appear to be related to overdose, CVA or other causes which might be treated under a specific protocol. Unexplained syncope may be the first clue of a serious underlying condition, especially in instances of pulmonary embolism and dysrhythmias. Syncope could be caused by a variety of reasons and should be assessed using GCS and AVPU.

## **Assessment Checklist**

- Dysrhythmias
- GI Bleed
- Eptopic Pregnancy
- Hypoglycemia or hyperglycemia
- Trauma (if associated or questionable fall with syncope)
- Hypotension
- Overdose
- CVA or TIA
- Delerium Tremens
- Emotional disorder

## **Adult Care**

### ***Level I:***

- Spinal immobilization if associated or questionable fall with syncope
- Administer oxygen by appropriate device.
- Vital Signs – Orthostatic BP
- Place Patient in Trendelenberg position
- If patient is pregnant place in left lateral recumbent position

### ***Level II:***

- Check a blood glucose level.
- Consider IV Normal Saline KVO or Saline Lock
- Monitor and obtain 12 Lead ECG

### ***Level III:***

None

**NOTE:** If patient presents or has S/S of blood glucose < 60, cardiac issues, stroke, seizures, hypotension, nausea/vomiting, diarrhea or altered mental status. Go to appropriate protocol.

# Vomiting

## ***Rationale:***

By disrupting the stimulus to vomit, and reducing nausea, we can make the patient more comfortable during transport. As well, we can reduce the chance of aspiration due to excessive vomiting, and increase the effectiveness of pain management medications administered pre-hospital.

## **Assessment Checklist**

- Vomiting caused by chemotherapy, narcotic pain medication, infectious disease, chest pain or other etiologies.
- Be sure to treat the primary signs/symptoms such as chest pain, hypotension, dyspnea, etc., prior to treating emesis.

## **Adult Care**

### ***Level I:***

- Place the patient in a position of comfort.
- Administer oxygen by appropriate device.

### ***Level II:***

- Establish IV.
- Monitor ECG.
- Administer Ondansetron (Zofran) 4mg IV, may repeat x 1 dose in 2-5 minutes, if needed.

### ***Level III:***

- None



# **Adult Trauma Care**

# Standard Trauma Care Procedures

## *Rationale:*

Traumatic Injuries require prompt care and handling. Always suspect cervical injury. Note the mechanism of injury and other conditions that may affect patient care. **Remember the Golden Hour.**

## General Adult Trauma Care

### *Level 1*

- Give a size up of the scene and consider early notification of the need for air transport or additional help.
- Assess the scene for hazards and mechanisms of injuries.
- Wear appropriate Personal Protective Equipment (PPE).
- Provide Basic Life Support (including cervical immobilization).
- Perform a primary survey and provide emergency treatment.
- Administer oxygen by appropriate device.
- Perform a secondary survey enroute.
- Inflate MAST for immobilizing lower extremity fractures (i.e. bilateral femur and /or pelvis) if available.
- Monitor oxygen saturation if indicated.
- Initiate transport according to Trauma Transport Protocols, preferably within 10 minutes of extrication.

### *Level 2*

- Provide ALS support (ECG, IV, Advanced Airway).
- Initiate 2 large bore IV lines of normal saline if indicated. Use blood tubing if available.
- Control bleeding with tourniquet if indicated and available.

### *Level 3*

- None

# Animal Bites and Stings

## ***Rationale:***

Treatment will depend on several factors including, the type of animal involved, size of bite, number of bites, whether or not envenomation occurred, possible patient sensitivity, and type of bite. The rescuer should note evidence of any allergic reaction. Refer to the anaphylaxis protocol as needed. Gather as much information on the animal as possible.

## **Assessment Checklist**

- Animal bites
- Snake bites
- Jellyfish stings
- Insect bites or stings
- Dyspnea
- Edema in airway
- Muscle spasms or seizure
- Hypotension or shock

## **Adult Care**

### ***Level 1***

- Irrigate and cleanse wound.
- Assess degree of bite / sting marks, outline edematous, erythematous, and ecchymotic areas with a pen, noting the time.
- Administer oxygen by appropriate device.
- Immobilize and elevate any extremities bitten by a snake.
- Keep patient supine and calm.
- Remove stingers if present, taking care to avoid compressing the site.
- Identify animal if possible. For marine stings, use vinegar to flush site if available. Saline if not available. Exception- Portuguese man--war stings should have ice applied to help reduce swelling and pain.

### ***Level 2***

- Establish IV.
- Monitor ECG.
- Treat specific signs and symptoms as needed by applicable protocol

### ***Level 3***

- None

# Burns

## *Rationale:*

Burn management requires aggressive care for inhalation injuries or large area burns (> 15% of BSA). Prolonged treatment in the field is not justified.

## Assessment Checklist

- Thermal burns
- Chemical Burns
- Electrical burns
- Airway burns
- CO exposure

## Adult Care

### *Level 1*

- Extinguish active burning and move the victim to safe area.
- Suction airway as needed.
- Monitor oxygen saturation.
- Administer oxygen by appropriate device. 100% FM nonrebreather if CO toxicity suspected.
- Cover with burn sheets and irrigate the skin with copious sterile fluids unless BSA > 15%.
- Take precautions to control hypothermia for victims of extensive burns.
- Avoid the use of water on dry chemical burns, until the chemical is brushed off.
- Flush chemical burns with copious amounts of water for a minimum of 15 minutes.

### *Level 2*

- Establish IV.
- If burns are > 15% (2<sup>nd</sup> or 3<sup>rd</sup> degree) BSA begin fluid resuscitation at rate of 500ml per hour. If transport times are greater than two hours use the Parkland Formula.
- Monitor ECG.
- Evaluate the need for advanced airway.
- For hypovolemia, follow the Traumatic Shock Protocol.
- Administer 5mg morphine sulfate IV or IM for isolated burns that meet Trauma Alert. May repeat times one if needed. Criteria (2<sup>nd</sup> or 3<sup>rd</sup> degree > 15% BSA).

### *Level 3*

- None

# Chest Injury

## *Rationale:*

Trauma to the chest is deceptive. Any chest wall injury associated with breathing difficulty should be considered serious. Chest injury patients may deteriorate rapidly. Multiple physical exams are advised.

## **Assessment Checklist**

- Occult hemorrhage and Shock
- Flail chest
- Tension pneumothorax
- Hemothorax
- Sucking chest wounds
- Pericardial tamponade
- Myocardial contusion

## **Adult Care**

### *Level 1*

- Monitor oxygen saturation.
- Administer oxygen by appropriate device.
- Seal sucking chest wounds on three sides.
- Stabilize flail segments utilizing bulky dressings.

### *Level 2*

- Establish two IV lines.
- Monitor ECG.
- Evaluate the need for advanced airway.
- Perform a pleural decompression as needed.

### *Level 3*

- None

# Dive Injuries / Barotrauma

## *Rationale:*

Barotrauma is caused by changes in atmospheric pressure. It is most commonly associated with the use of SCUBA (Self-Contained Underwater Breathing Apparatus). SCUBA emergencies can occur at any depth. A patient who takes a breath of compressed air 15 feet or deeper underwater may be a victim of barotrauma.

## **Assessment Checklist**

- Decompression sickness (“Bends”)
- Air embolism
- Pneumothorax
- Pneumomediastinum
- Subcutaneous emphysema
- Air squeeze (unequal pressures in a body cavity area such as the ear drum or sinuses).

## **Adult Care**

### *Level 1*

- Administer 100% oxygen using NRB.
- Place the patient in a supine/left lateral Trendelenburg position if possible.
- Have the legal authority in charge (police, Florida Fish and Wildlife, U.S. Coast Guard, etc.) secure all of the victim’s dive gear.
- Note time of the event, rate of descent and ascent, depth of dive, and other information reported by the patient or dive partners.

### *Level 2*

- Establish IV.
- Monitor ECG.
- Perform pleural decompression as needed.
- Transport to the closest emergency department.

### *Level 3*

- None

# Fractures

## *Rationale:*

Proper handling of open fractures reduces the risk of infection. Long bone fractures should be treated as major trauma. Be alert to the mechanisms of injury to assist recognition of fractures.

## **Assessment Checklist**

- Closed fracture
- Open fracture
- Dislocation
- Shock
- Embolism
- Hemorrhage

## **Adult Care**

### *Level 1*

- Administer oxygen by appropriate device.
- Assess distal pulses.
- Align and immobilize. Make only one attempt at this if vascular compromise exists.
- Immobilize joint fractures in position found. Exception to this rule will be fracture or dislocation of the knee that has diminished or absent distal pulses.
- Irrigate open fractures thoroughly with saline then cover with dressing.
- Apply a traction splint to mid shaft femur fractures.
- Apply a cold pack or ice to the site.
- Inflate MAST for immobilizing lower extremity fractures (i.e. bilateral femur and/or pelvis), if available.

### *Level 2*

- Establish IV for major fractures.
- Administer 5mg morphine sulfate IV or IM. May repeat dosage times one.

### *Level 3*

- None

# Head Injuries

## *Rationale:*

Significant head injuries may be masked. Maintain a high index of suspicion for head injury in patient with altered mental status.

## **Assessment Checklist**

- Altered or obtundant mental status
- Internal bleed or hematoma
- Inappropriate affect (abnormal behavior)
- Skull fracture (open or closed)
- Respiratory compromise or abnormal respiratory patterns
- Related cervical, facial, eye, and airway injuries

## **Adult Care**

### *Level 1*

- Administer oxygen by appropriate device.
- Elevate the head of the backboard 15-30 degrees if SBP > 90mm Hg.
- Evaluate need for law enforcement / restraints.
- Patients who must be restrained should be placed SUPINE on the stretcher, and a person must be dedicated to monitor the patient's airway.

### *Level 2*

- Establish IV. Keep SPB .> 90.
- Monitor ECG.
- Evaluate the need for advanced airway. Keep oxygen saturation > 90%.
- Check blood glucose; if blood glucose level is < 60 mg / dl, follow Hypoglycemia Protocol.

### *Level 3*

- Administer Haldol (if available) 5 mg IM or IV as ordered.



# Ophthalmic Injuries

## ***Rationale:***

Eye injuries have a high potential for permanent impairment. Injuries to the eye may also cause a related injury to the central nervous system. Psychological support is essential especially when the eyes are covered. Always consider cervical spine injuries with any eye injury.

## **Assessment Checklist**

- Impaled object
- Bleeding or loss of aqueous / vitreous humor
- Deformity of the orbital socket
- Visible objects in eye
- Chemical, thermal, or bright-light (such as welding) burns to the eye

## **Adult Care**

### ***Level 1***

- Quickly assess gross visual acuity.
- If the eye is chemically burned, thoroughly irrigate the affected eye(s) as soon as possible with normal saline.
- If the eye is penetrated, do NOT remove impaled object.
- Protect injury by applying eye shield and bandage over eye(s) avoiding pressure on the eye itself.
- Cover other eye to reduce eye movement in the unaffected eye.
- Keep patient from bending or straining.
- If eye or orbit receives blunt trauma and blood is noted in anterior chamber (hyphema), transport with head elevated at least 60 degrees if patient has no cervical spine injuries.
- Dim interior lights during transport.

### ***Level 2***

- Apply Tetracaine (if available) 2 drops to the affected eye for pain control. If Tetracaine is administered patient MUST seek further medical attention.

### ***Level 3***

- None

# Traumatic Shock

## *Rationale:*

The patient's "Golden Hour" begins at the time of injury. This concept should guide rapid recognition, treatment, and transportation to a trauma center.

## Assessment Checklist

- Hemorrhage (including occult)
- Orthostatic hypotension
- Neurogenic shock
- Adult Care level Direct Pressure, Elevation, Pressure Points, Tourniquet (only as a last resort).
- Related trauma
- Ulcers or other internal bleeding

## Adult Care

### *Level 1*

- Control bleeding if possible through Direct Pressure, Elevation, Pressure Points, and Tourniquet (only as last resort).
- Administer oxygen by appropriate device.
- Monitor oxygen saturation.
- Vital signs every 5 minutes.
- If the patient is hypotensive, place in Trendelenburg position.

### *Level 2*

- Evaluate the need for advanced airway.
- Initiate 2 large bore IV's of normal saline pressure infused with blood tubing if available. Do not delay transport to establish IV lines.
- Repeat 250 ml boluses up to 2 liters as indicated to maintain a systolic BP > 90 mm / Hg.
- Monitor ECG.

### *Level 3*

- Administer a dopamine infusion if fluid boluses fail to maintain adequate pressure

## **Less – Than Lethal Weapons (Pepper Spray & Tear Gas)**

### ***Rationale:***

As Police agencies look for alternate methods of controlling and placing people into their custody they have begun using “Less – Than Lethal” weapons to do so. It is only a matter of time before EMS Providers are asked to respond to such situations. This protocol will deal with the three (3) most common types of Less – Than Lethal weapons that are currently in use by Law enforcement personnel.

### **Pepper Spray & Tear Gas**

#### ***Level 1***

- Ensure *no* cross contamination occurs to Rescuer or equipment.
- Ensure good ABC’s.
- Assess for any underlying medical problems that can cause patient to become irrational and follow appropriate protocol if needed.
- Look for and treat any secondary trauma.
- Flush eyes and face to get rid of gross contaminants (especially important with foam based sprays).
- Having patient place their face in front of an air conditioner, or fan vent on high will speed recovery time as long as no underlying trauma would prevent this.
- Use of recovery wipes and neutralizing solutions are allowed as long as you follow manufacturer’s directions. These will cut recovery time down.

#### ***Level 2***

- None

#### ***Level 3***

- None

# **Less – Than Lethal Weapons**

## **(Taser & Bean Bag Related Injuries)**

### **Taser – Related Injuries**

#### ***Level 1***

- Ensure that the scene is safe and has been cleared by law enforcement.
- Assess for adequate ABC's.
- Consider oxygen administration and oxygen saturation levels.
- Assess for any secondary trauma.
- Assess for underlying medical conditions that may have caused patient to act irrational.
- Check blood glucose if Medical Director approved.
- If probes have not been removed prior to EMS arrival *do not* remove. Bandage in place as you would with any impaled object. There may be some redness around the area of the probe from a very mild burn.
- If law enforcement has removed probes ensure that they are treated as a biohazard.
- Have officer eject cartridge from taser for transport if probes are still in place.
- These patients are to be transported per protocol to the nearest appropriate receiving facility.
- These patients are considered incompetent to sign refusal for transport.

#### ***Level 2***

- Establish IV access.
- Monitor ECG.
- If patient has seizure activity go directly to protocol for seizure disorder.
- If patient has chest pain or any arrhythmia's go directly to the appropriate protocol.
- Check blood glucose and monitor.

#### ***Level 3***

- None

#### ***Note***

The probes used by Tasers are straightened #8 fishing hooks. They are designed to penetrate only ¼ inch. The taser can also be used at close range as a stun gun. If this is the case the same protocol still applies.

### **Bean – Bag Injuries**

***Refer to Standard Trauma Care Protocol***

# **Pediatric Cardiac Care**

# Standard Cardiac Arrest Procedures

## *Rationale:*

Cardiac arrest in children is often secondary to a respiratory component. It is essential these patients receive rapid, decisive care in the pre-hospital setting. Primary treatment includes intubation and epinephrine administration. The patient's environment may provide clues as to the underlying cause.

## **Pediatric Care**

### *Level I*

- Note the patient's environment.
- Wear appropriate Personal Protective Equipment (PPE).
- Perform a primary assessment and emergency treatment.
- Assess for Death Scene Criteria.
- Determine pulselessness and apnea.
- Perform CPR with appropriate airway device.
- AED as indicated (age > 1 years old).
- Perform a secondary assessment.

### *Level II*

- Check a blood glucose level.
- Determine cardiac rhythm and follow treatments in the appropriate protocol.
- Establish an ALS airway if needed with ET tube (1 attempt only) or King Airway (>12kg or 25lbs).
- Confirm airway placement with capnography and 2 other documented methods.
- Establish vascular access by IV or IO.

# Asystole

**CPR 2 minutes  
Check Pulse**

**Resume CPR immediately**

**Give epinephrine**

- IV/IO: 0.01 mg/kg  
(1:10,000: 0.1 mL/kg)
- If Endotracheal tube: 0.1 mg/kg  
(1:1000: 0.1 mL/kg)

**Repeat every 3 to 5 min.**

**CPR for 2 min. (intubate)**

**Check rhythm  
Shockable rhythm?**

**If no pulse and Asystole**

**Repeat epinephrine**

- IV/IO: 0.01 mg/kg  
(1:10,000: 0.1 mL/kg)
- Endotracheal tube: 0.1 mg/kg  
(1:1000: 0.1 mL/kg)

**Repeat as necessary**

**Note:**

Identify and treat 6 H's and 5T's.

- Hypoxia
- Hydrogen Ion (Acidosis)
- Hypo/Hyperkalemia
- Hypovolemia
- Hypothermia
- Hypo/Hyperglycemia
- Toxins, Tablets
- Tension Pneumothorax
- Tamponade, cardiac
- Trauma
- Thrombosis-pulmonary, coronary

# Bradycardia

*Less than 6 months: < 80 BPM*

*Older than 6 months: < 60 BPM*

## Severe Cardio-respiratory Compromise

Poor Perfusion  
Respiratory Difficulty

**No**

**Yes**

Observe  
Support ABC's  
Transport

Perform chest compressions if, after oxygenation and ventilation,  
Heart Rate < 80 BPM in an infant  
Heart Rate < 60 BPM in a child

**Epinephrine**  
IV / IO 0.01 mg / kg 1:10,000  
or ET 0.1mg/kg 1:1000

May repeat every 3 – 5 minutes

**Atropine**  
IV / IO / ET 0.02 mg / kg  
Minimum dose of 0.1 mg  
Maximum dose of 0.5 mg for a child and 1.0 mg for and adolescent  
May repeat same dose once

Consider Transcutaneous Pacing if other treatments are ineffective

### *Note:*

Atropine should not be used on infants less than 30 days of age.

Consider transcutaneous pacing if highly suspicious of beta blocker or calcium channel blocker.



# Pulseless Electrical Activity

**CPR 2 minutes  
Check Pulse**

**Resume CPR immediately**

**Give epinephrine**

- IV/IO: 0.01 mg/kg  
(1:10,000: 0.1 mL/kg)
- Endotracheal tube: 0.1 mg/kg  
(1:1000: 0.1 mL/kg)

**Repeat every 3 to 5 min.**

**CPR for 2 min. (intubate)**

**Check rhythm  
Shockable rhythm?**

**If no pulse and Asystole**

**Repeat epinephrine**

- IV/IO: 0.01 mg/kg  
(1:10,000: 0.1 mL/kg)
- Endotracheal tube: 0.1 mg/kg  
(1:1000: 0.1 mL/kg)

**Repeat as necessary**

**Note:**

Identify and treat 6 H's and 5T's.

- Hypoxia
- Hydrogen Ion (Acidosis)
- Hypo/Hyperkalemia
- Hypovolemia
- Hypothermia
- Hypo/Hyperglycemia
- Toxins, Tablets
- Tension Pneumothorax
- Tamponade, cardiac
- Trauma
- Thrombosis-pulmonary, coronary

# Supraventricular Tachycardia

## Rationale:

Supraventricular tachycardia in the pediatric patient is uncommon. Pediatric tachycardias are generally related to pain, fever, or shock and usually originates in the sinus area. Treat the tachycardia pediatric patient aggressively if the tachycardia is other than a sinus origin or the patient is unstable.

## SVT rates rule-of-thumb:

Infant rate > 220 bpm

Child rate > 180 bpm

## Normal heart rates in children

Age	Heart rate range	Mean
Neonatal to 3 mo	85-205	140
3 mo to 2 yr	100-190	130
2 yr to 10 yr	60-140	80
>10 yr	60-100	75

### Stable

Oxygen  
ECG Monitoring  
IV Access

Adenosine  
0.1 mg / kg (max of 6 mg)  
Followed by a NS bolus 20ml

Adenosine  
0.2 mg / kg (max of 12 mg)  
Followed by a NS bolus 20ml

Call for further orders

### Unstable

Oxygen  
ECG Monitoring  
IV Access

Sedate  
Versed  
• IV/IO/IM/Nasal 0.05 mg / kg

Synchronized  
Cardioversion  
0.5 J / kg  
1 J / kg  
2 J / kg  
4 J / kg

## Note:

Do not delay cardioversion for IV Access

## Ventricular Ectopy

*Note: PVC's in children are rare and are often non-cardiac related. Direct physician contact should be made before administration of medications.*

Lidocaine 1 mg / kg IV

Repeat Lidocaine 0.5 mg / kg IV  
as needed every 10 minutes to a  
maximum dose 3 mg / kg

Follow bolus therapy with  
maintenance infusion of  
20-50 mcg / kg / min

*Note:*

300 mg of Lidocaine into 250 ml of normal saline yields 1 micro-drop / kg / minute = 20 mcg / kg / min

# Ventricular Fibrillation / Pulseless Ventricular Tachycardia

## CPR

**Give 1 Shock**

- Manual: 2 J/kg
- AED: > 1 year of age

Use pediatric system if available for 1 to 8 years of age

**Resume CPR immediately**

### Give 5 cycles of CPR

**Check rhythm**  
Shockable Rhythm?

**Continue CPR while defibrillator is charging**

**Give 1 Shock**

- Manual: 4 J/kg
- AED > 1 year of age

**Epinephrine**  
IV / IO 0.01 mg / kg 1:10,000  
Or ET 0.1 mg/kg 1:000  
Repeat Every 3-5 minutes

### Give 5 cycles of CPR

**Lidocaine 1 mg / kg IV/IO**  
Repeat Lidocaine 1 mg / kg every 3-5 min. to a maximum dose 3 mg/kg

**OR**

**Amiodarone**  
5 mg / kg IV/IO in 30 ml N.S. over 30 seconds  
Single Dose max 300 mg

**Check rhythm**  
Shockable Rhythm?

# Ventricular Tachycardia (Pulse Producing)

## Unstable

**Sedate**  
Versed  
• IV/IO/IM/Nasal 0.05 mg / kg

**Ventricular Rate > 150  
Immediate Synchronized  
Cardioversion**  
0.5 J / kg  
1 J / kg  
2 J / kg  
4 J / kg

**If conversion occurs,  
administer Lidocaine 1 mg / kg  
and hang a Lidocaine drip.**

**If cardioversion is unsuccessful  
utilize pharmacological agents  
under the stable category along  
with cardioversion**

## Stable

**Consider Adenosine if  
rhythm regular and QRS  
monomorphic**

**Lidocaine  
1 mg / kg IV**

**OR**

**Amiodarone  
5 mg / kg in D5W  
given over 20  
minutes max dose  
300mg**

**Repeat Lidocaine  
0.5 mg / kg IV  
Every 10 minutes to a  
maximum of 3 mg / kg**

**If conversion  
maintenance infusion  
20 – 50 mcg / kg / min  
300 mg into 250 ml  
1 micro-drop / kg / min  
Equals  
20 mcg / kg / min**

**Note:**

**Do not delay cardioversion for IV Access**

# **Pediatric Medical Care**

# Standard Medical Care Procedures

## ***Rationale:***

Pediatric emergencies make up a small percentage of our call volume. Children very seldom suffer a life threatening medical emergency, but when it does occur, they generally deteriorate quickly. Calm action and speech will help decrease the child's and family's anxiety.

## **General Pediatric Care**

### ***Level I:***

- Assess the scene for hazards or abuse. 1-800-96 ABUSE
- Note the patient's environment.
- Wear appropriate protective equipment (PPE).
- Provide standard BLS support (including cervical stabilization as needed).
- Perform a primary survey and provide emergency treatment.
- Perform a secondary survey, treat, and transport.
- Administer oxygen by appropriate device.
- Monitor oxygen saturation if indicated.

### ***Level II:***

- Check a glucose reading when indicated
- Provide ALS support (ECG, IV, Advanced airway).
- Establish an ALS airway if needed with ET tube (1 attempt only) or medical director approved dual lumen airway device (>12kg or 25lbs.)
- Confirm airway placement with capnography and 2 other documented methods
- Administer medication therapy as needed.

# Abdominal Pain

## ***Rationale:***

A differential diagnosis of abdominal pain can be complex. Prolonged evaluation in the field is not appropriate. Suspect a severe underlying problem. Prompt and gentle transport is required.

## **Assessment Checklist**

- Trauma
- Acute appendicitis
- Peritonitis
- Constipation
- Viral or bacterial infection
- Internal hemorrhage
- Poisoning
- Overdose
- Child Abuse

## **Pediatric Care**

### ***Level I:***

- Examine for distended abdomen, bowel sounds, referred pain.
- Examine for hemorrhage (unexplained tachycardia, emesis, bloody stools, or rigidity).
- Examine for palpable increased body temperature and diaphoresis indicating illness.
- Test for orthostatic hypotension.
- Administer oxygen by appropriate device.
- Use Trendelenburg position if patient is hypotensive.

### ***Level II:***

- Establish IV
- Evaluate the need for advanced airway with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.
- If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg)
- Confirm airway placement with capnography and 2 other documented methods.
- Provide the shock patient a fluid challenge of 20 ml/kg. Repeat as indicated.
- If actively vomiting, Zofran 0.15 mg/kg IV for 6 months or older or Oral Dissolving Troche (ODT) 4mg for 4 years and above. Max dose 4mg.

### ***Level III:***

- None



# Airway Management

## ***Rationale:***

Many pediatric emergencies are related to airway compromise. Maintenance of the airway takes an even greater importance than in the adult patient. Cardiac arrest in the pediatric patient is usually secondary to airway compromise. Avoid endotracheal intubation in the patient with croup or epiglottitis unless the patient has respiratory arrest. Maintain the infant or small child's airway with manual techniques such as chin lift / jaw thrust.

## **Assessment Checklist**

- Asthma
- Trauma
- Cervical spine injury
- Foreign object obstruction or aspiration
- Hyperventilation
- Croup
- Epiglottitis
- Pneumonia
- Viral or bacterial infection
- Drowning
- Hypothermia

## **Pediatric Care**

### ***Level I:***

- Assess respiratory effort for rate and quality.
- Assess gag reflex.
- Open airway (use jaw thrust if suspect cervical injury).
- Place appropriate airway device (oral or nasal).
- Monitor oxygen saturation.
- Administer oxygen by appropriate device.
- Suction airway if indicated.

### ***Level II:***

- Assess respiratory effort for rate and quality.
- Assess gag reflex.
- Establish an ALS airway if needed with ET tube (1 attempt only) or King Airway (>12kg or 25lbs).
- RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.
- If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg)
- Confirm airway placement with capnography and 2 other documented methods.

### ***Level III:***

- None

# Allergic Reactions

## ***Rationale:***

This is more common than the more serious anaphylactic reaction. This patient responds well to prehospital treatment. Early recognition and treatment are important to prevent more severe problems.

## **Assessment Checklist**

- Respiratory Arrest
- Airway obstruction
- Bronchospasm
- Rash, Hives, Edema, Itching

## **Pediatric Care**

### ***Level I:***

- Administer oxygen by appropriate device.
- Attempt to determine the source of the allergic reaction.
- Poison Control # 1-800-222-1222 or 1-800-282-3171

### ***Level II:***

- Establish IV/IO
- Monitor ECG.
- Evaluate the need for advanced airway with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.
- If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg)
- Confirm airway placement with capnography and 2 other documented methods.
- Administer Benadryl 0.5 mg / kg IV. Repeat the dose once in 5 minutes (total maximum dose of 50 mg).
- Observe for the development of anaphylaxis and dysrhythmia.
- Consider Albuterol treatment PRN.

### ***Level III:***

- None

# Altered Mental Status

## *Rationale:*

It is uncommon to encounter pediatric patients with an altered mental status. It is important to attempt to determine the cause.

## Assessment Checklist

- Trauma
- Overdose
- Hypoglycemia
- Past medical history - Medical or Psychological
- Seizures (postictal)

## Pediatric Care

### *Level I:*

- Evaluate the need for law enforcement assistance.
- Administer oxygen by appropriate device.
- Contact Poison Control at 1-800-282-3171 if indicated.
- Patients who must be restrained should be placed SUPINE on the stretcher, and a person must be dedicated to monitor the patient's airway.

### *Level II:*

- Check a blood glucose level
- Establish IV/IO
- Monitor ECG.
- Evaluate the need for advanced airway with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.
- If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg)
- Confirm airway placement with capnography and 2 other documented methods
- If glucose < 60 mg / dl, follow Hypoglycemia Protocol.
- Administer Narcan 0.1 mg / kg, or nasal atomized in no IV access >12 years, as needed for respiratory depression. Repeat as needed.

### *Level III:*

- None

# Anaphylaxis

## *Rationale:*

Anaphylaxis may be mistaken for cardiac arrest by the rescuer who does not witness its onset. It has a high mortality rate. It can become resistant to medical management especially if treatment is delayed. The rescuer must distinguish anaphylaxis from the related but less severe allergic reaction.

## Assessment Checklist

- Airway obstruction
- Shock / Poor perfusion
- Hives / Edema
- Bronchospasm

## Pediatric Care

### *Level I:*

- Assess oxygen saturation.
- Assess for airway edema, stridor, and wheezing.
- Administer oxygen by appropriate device.
- Administer pediatric Epi-Pen if available.

### *Level II:*

- Establish IV/IO.
- Monitor ECG.
- Evaluate the need for advanced airway with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.
- If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg)
- Confirm airway placement with capnography and 2 other documented methods.
- Administer the hypotensive patient a fluid bolus of 20 ml / kg. Repeat as needed.
- Administer albuterol 2.5 mg by nebulizer mask for mild respiratory compromise.
- Administer epinephrine 0.01 mg / kg of 1:1,000 SQ for moderate respiratory compromise in the normotensive patient.
- Administer epinephrine 0.01 mg / kg of 1:10,000 IV/IO for severe anaphylaxis.
- Administer Benadryl 0.5 mg / kg IV. Repeat the dose once after 5 minutes as needed (total maximum of 50 mg).

### *Level III:*

- None

# Asthma / Bronchitis

## ***Rationale:***

Asthma or Bronchitis emergencies can present with little distress at first onset but can deteriorate quickly. Watch them closely and treat the problem aggressively as needed. *Cyanosis is a late indicator of hypoxia in children.*

## **Assessment Checklist**

- Airway obstruction
- Asthma
- Bronchitis
- Epiglottitis
- Status asthmaticus
- Anaphylaxis
- Overdose
- Pneumonia

## **Pediatric Care**

### ***Level I:***

- Assess oxygen saturation.
- Assess for airway edema, stridor, and wheezing.
- Administer oxygen by appropriate device.

### ***Level II:***

- Establish IV/IO.
- Monitor ECG.
- Evaluate the need for advanced airway with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.
- If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg)
- Confirm airway placement with capnography and 2 other documented methods.
- Administer Albuterol 2.5 mg by nebulizer. This may be administered (as needed) before vascular access and repeated as needed.
- Administer epinephrine 0.01 mg / kg of 1:1,000 SQ for severe asthma not improving with Albuterol.

### ***Level III:***

- None

# Carbon Monoxide Inhalation

## *Rationale:*

Carbon monoxide can pose a serious threat to the rescuer as well as the patient. Use caution in assessing the CO patient. Some normal diagnostic methods such as SaO<sub>2</sub> and capillary refill may give false positives. This exposure interferes with oxygen exchange on the cellular level. Always consider it in any airway burn.

## Assessment Checklist

- Hypoxia of unknown cause
- Smoke inhalation
- Poisoning
- Overdose
- Burns

## Pediatric Care

### *Level I:*

- Remove the patient from source of exposure. Take precautions against a possible toxic environment.
- Assess for signs including vomiting, altered mental status, seizure, flushing, cyanosis, or cherry red skin (late sign).
- Assess for symptoms including headache and tinnitus.
- Administer 100% oxygen by appropriate device.
- Keep patient calm to minimize oxygen demand.

### *Level II:*

- Establish vascular access.
- Monitor ECG.
- Evaluate the need for advanced airway.
- Draw blood. Cover blood tubes with a cold pack.
- Administer Albuterol 2.5 mg by nebulizer for the wheezing patient. Repeat as needed.
- Transport to the closest emergency department.

### *Level III:*

- None

# Croup / Epiglottitis

## *Rationale:*

This is a potentially disastrous emergency. Avoid unnecessary treatment and handling of the patient unless severe respiratory compromise has occurred. **Rapid and gentle transport is indicated.**

## Assessment Checklist

- Viral infection
- Pneumonia
- Bronchitis
- Asthma
- Foreign body airway obstruction

## Pediatric Care

### *Level I:*

- Assess airway from a distance if possible.
- Administer oxygen by appropriate device. Have parent hold the oxygen near the child.
- Keep patient calm.
- Assess oxygen saturation.

### *Level II:*

- Administer a saline mist treatment (if available) for mild croup.
- Refrain from intubation unless the patient is in respiratory arrest.
- Refrain from IV or IO therapy unless the patient is in respiratory arrest.
- Consider cricothyrotomy (or needle cricothyrotomy if less than 10 years of age) if unable to intubate.

### *Level III:*

- None

# Diabetic Emergencies (Hyperglycemia)

## ***Rationale:***

Hyperglycemic patients may present with an altered mental status. The patient's increased blood glucose may cause severe diuresis. This can cause dehydration and hyperosmolar coma. Hyperglycemic emergencies usually onset over several days.

## **Assessment Checklist**

- History of diabetes
- Hypoglycemia
- Dehydration
- Hypotension
- Coma
- Psychosis

## **Pediatric Care**

### ***Level I:***

- Assess for Kussmaul respirations.
- Administer oxygen by appropriate device.

### ***Level II:***

- Check a blood glucose level.
- Establish IV/IO.
- Monitor ECG.
- Evaluate the need for advanced airway with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.
- If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg)
- Confirm airway placement with capnography and 2 other documented methods.
- Administer normal saline 20 ml / kg IV rapid infusion for dehydration as needed.
- Repeat the infusion for the shock patient.
- Continue with an infusion of 20 ml / kg / hour.

### ***Level III:***

- None



# Diabetic Emergencies (Hypoglycemia)

## *Rationale:*

The hypoglycemic patient suddenly develops a hyper-adrenal state as the body attempts to raise glucose levels. The patient may very quickly suffer brain damage. The patient's mental condition deteriorates and seizure activity or coma may develop. Some patients become agitated, develop psychotic behavior or CVA like symptoms such as hemiplegia, paresthesia or cranial nerve palsies. Always suspect hypoglycemia in mentally obtunded patient. An imbalance of insulin may precipitate hypoglycemia in the insulin dependent diabetic. Insulin abuse can also cause hypoglycemia.

## Assessment Checklist

- History of diabetes (particularly with insulin use)
- Dehydration
- Hypotension
- Coma
- Psychosis
- Drug ingestion
- Assess for trauma

## Pediatric Care

### *Level I:*

- Assess for last insulin injection and food intake.
- Administer oxygen by appropriate device.
- Administer oral glucose if the patient is conscious and able to maintain airway.

### *Level II:*

- Check a blood glucose level
- Establish IV.
- Monitor ECG.
- Administer D25W 2 – 4 ml / kg IV (< 34 kg) if glucose < 60 mg / dl.
- Administer D50W 25 GM IV (> 34 kg) if glucose < 60 mg / dl.
- If unable to establish IV and glucose < 60 mg / dl, administer Glucagon 0.5 mg IM or SQ (< 20 kg) or administer Glucagon 1.0 mg IM or SQ (> 20 kg).

### *Level III:*

- None

# Environmental Cold Emergencies

## ***Rationale:***

Cold related emergencies are possible even in Florida. These situations usually involve water immersion. The wide range of temperatures between day and night can cause problems for the unprepared. The use of alcohol and various drugs can also effect how a patient reacts to cold. Drowning patients should be managed for hypothermia.

## **Assessment Checklist**

- Frostbite
- Coma
- Cardiac Arrest
- Drowning

## **Pediatric Care**

### ***Level I:***

- Asses for shivering, lethargy, muscle stiffness, mental status changes, discoloration of the skin, and numbness.
- Remove wet clothing and protect patient against continued heat loss and wind chill.
- Place patient in a horizontal position avoiding rough movement and excess activity.
- Completely dry patient and cover with insulated blankets.
- Administer oxygen by appropriate device.
- NPO

### ***Level II:***

- Establish IV/IO.
- Monitor ECG.
- Evaluate the need for advance airway with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.
- If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg)
- Confirm airway placement with capnography and 2 other documented methods.
- Warm the IV fluid with hot packs.

### ***Level III:***

- None

## Environmental Heat Emergencies

### *Rationale:*

Cooling the heat emergency patient helps protect the body and CNS from permanent damage. A good history of the event is essential. Some people, especially the elderly and pediatric patients, are more sensitive to heat than others. Assess the patient's environment in the primary survey.

### Assessment Checklist

- Heat stroke
- Heat exhaustion
- Heat cramps
- Hyperglycemia / hypoglycemia
- Seizures

### Pediatric Care

#### *Level I:*

- Move patient to cool environment and remove clothing.
- Place the heat exhaustion patient in a supine position with feet elevated.
- Place the heat stroke patient in semi-reclining position (with head elevated 15-30 degrees if normotensive).
- Sponge with cool water or cover with a wet sheet and fan the patient.
- Apply cold packs to the lateral chest wall, groin, axilla, carotid arteries, temples and behind knees if rapid cooling is required.
- Administer oxygen by appropriate device.

#### *Level II:*

- Establish IV/IO
- Monitor ECG.
- Evaluate the need for advanced airway with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.
- If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg)
- Confirm airway placement with capnography and 2 other documented methods.
- Administer fluid boluses of 20 ml / kg titrate as needed to maintain adequate blood pressure.

#### *Level III:*

- None

# Overdose

## ***Rationale:***

Children who take unprescribed medication may not take large quantities due to its unpleasant taste. Any pediatric patient who has a potential overdose should receive prompt Emergency Department evaluation. Suspect overdose in any patient who has a decreased level of consciousness. Consider the possibility that siblings or playmates have also taken medication and will not admit it. **Call Poison Control.**

## **Assessment Checklist**

- Poisoning
- Hyperglycemia / hypoglycemia
- Seizures

## **Pediatric Care**

### ***Level I:***

- 
- Secure all possible sources of the overdose and transport them to the hospital with the patient.
- Administer oxygen by appropriate device.
- Monitor for rapid changes in condition and behavior.
- Patients who must be restrained should be placed SUPINE on the stretcher, and a person must be dedicated to monitor the patient's airway.
- Contact Poison Control 1-800-222-1222 or 1-800-282-3171

### ***Level II:***

- Check a blood glucose level.
- Establish IV/IO
- Monitor ECG.
- Obtain 12 lead ECG if high suspicion for Tricyclic antidepressant overdose.
- Evaluate the need for advanced airway with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.
- If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg)
- Confirm airway placement with capnography and 2 other documented methods.
- If glucose < 60 mg / dl, follow Hypoglycemia Protocol.
- Administer Narcan 0.1 mg / kg, if no IV access and >12years nasal atomizer, as needed for respiratory depression. Repeat as needed.

### ***Level III:***

- None

# Poisoning

## ***Rationale:***

The poisoning victim may present with an unrelated complaint and not be aware of the poisoning. The rescuer must suspect poisoning. Poisonings may include pesticides, petroleum, and cleaning solvents. They may occur by ingestion, inhalation, or absorption.

## **Assessment Checklist**

- Overdose
- Hyperglycemia / hypoglycemia
- Respiratory arrest
- Hypotension
- Dysrhythmia

## **Pediatric Care**

### ***Level I:***

- Remove the victim from the source (rescuers should wear S.C.B.A. if required).
- Decontaminate the victim as needed.
- Assess for SLUDGEM syndrome.
- Administer oxygen by appropriate device.
- Suction if indicated.
- Do not use a helicopter to transport any hazardous materials exposure patient.
- Contact Poison Control at 1-800-222-1222 or 1-800-282-3171

### ***Level II:***

- Establish IV/IO
- Monitor ECG.
- Evaluate the need for advanced airway with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.
- If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg)
- Confirm airway placement with capnography and 2 other documented methods.
- For the organophosphate or carbamate poisoning victim, administer atropine 0.05 mg / kg (0.1 mg is the minimum dose) IV / ET / IO. Repeat atropine at 5 minute intervals.
- Contact Poison Control at 1-800-222-1222 or 1-800-282-3171.

### ***Level III:***

- Perform Hazardous Materials protocols if approved by Medical Control.

# Seizure Disorder

## *Rationale:*

Most pediatric seizures are febrile and can be corrected by cooling the patient. Careful history taking and observation are important to determining the cause and appropriate emergency department treatment.

## Assessment Checklist

- Febrile illness
- Overdose
- Poisoning
- Hypoglycemia

## Pediatric Care

### *Level I:*

- Passively protect the patient from self-injury.
- Cool the febrile patient and remove excess clothing.
- Administer oxygen by appropriate device.
- If the patient was not protected from injury during the activity, immobilize the patient's spine.

### *Level II:*

- Check a blood glucose level
- Establish IV/IO
- Monitor ECG
- If blood sugar is < 60mg/dl, follow Hypoglycemia Protocol
- Administer Versed 0.05 mg / kg IV/IO, maximum single dose of 1mg may repeat one time (maximum combined dose of 2mg), IM or intranasal if no IV/IO access is available 0.1mg/kg, repeat one time if seizures continue, max dose 2mg (if available).
- Evaluate the need for advanced airway with RSI if indicated including Etomidate IV 0.15 – 0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1 –2 mg/kg
- Confirm airway placement with capography and 2 other documented methods

### *Level III:*

- Additional Versed

# Sickle Cell Anemia

## *Rationale:*

Sickle Cell Anemia crisis interferes with the normal delivery of oxygen at the cellular level and may be an emergency.

## Assessment Checklist

- History of Sickle Cell Anemia
- Priapism
- Acute myocardial infarction / angina
- Unexplained pain

## Pediatric Care

### *Level I:*

- Assess the patient for large muscle mass pain, chest pain, and severe dyspnea.
- Administer oxygen by appropriate device.
- Keep patient as quiet as possible to minimize oxygen demand.

### *Level II:*

- Establish IV/IO
- Monitor ECG.
- Draw blood.
- Administer a fluid bolus of 20 ml / kg and continue the IV at a TKO rate.
- Administer Albuterol 2.5 mg by nebulizer for the wheezing patient. Repeat as needed.
- Refer to the Chest Pain Protocol for any symptoms, chief complaint, or 12-lead ECG evaluation that suggests AMI.

### *Level III:*

- Contact Medical Control for pain management.

# Vomiting

## *Rationale:*

By disrupting the stimulus to vomit, and reducing nausea, we can make the patient more comfortable during transport. As well, we can reduce the chance of aspiration due to excessive vomiting, and increase the effectiveness of pain management medications administered pre-hospital.

## Assessment Checklist

- Vomiting caused by chemotherapy, narcotic pain medication, infectious disease, chest pain or other etiologies.
- Be sure to treat the primary signs/symptoms such as chest pain, hypotension, dyspnea, etc., prior to treating emesis.

## Pediatric Care

### *Level I:*

- Place the patient in a position of comfort.
- Administer oxygen by appropriate device.

### *Level II:*

- Establish IV.
- Monitor ECG.
- Administer Ondansetron (Zofran) 0.15 mg/kg max dose 4 mg IV/IO/IM, 4 mg ODT (4 years and above).

### *Level III:*

- None



# **Pediatric Trauma Care**

# Standard Trauma Care Procedures

## *Rationale:*

Traumatic injuries require prompt care and transportation. Always suspect cervical injury. Note the mechanism of injury and any other condition that may affect patient care. Any chest, abdominal and all head injuries that result in a change or loss of consciousness should receive an emergency department evaluation. Remember the Golden Hour-ideally scene time should remain under 10 minutes.

## Pediatric Care

### *Level I*

- Give a size up of the scene and consider early notification of the need for air transport or additional help.
- Assess the scene for hazards and mechanisms of injury.
- Wear appropriate Personal Protective Equipment (PPE).
- Provide Basic Life Support (including cervical immobilization).
- Perform a primary survey and provide emergency treatment.
- Administer oxygen by appropriate device.
- Perform a secondary survey enroute to the hospital.
- Inflate MAST for immobilizing lower extremity fractures (i.e. bilateral femur and/or pelvis) if available.
- Monitor oxygen saturation if indicated.
- Initiate transport according to Trauma Transport Protocols, preferably within 10 minutes of extrication.

### *Level II*

- Provide ALS support (ECG, IV, Advanced airway).
- Establish an ALS airway if needed with ET tube (1 attempt only) or King Airway (>12kg or 25lbs).
- Confirm airway placement with capnography and 2 other documented methods.
- Initiate 2 large-bore IV lines of normal saline if indicated and time available.

# Animal Bites and Stings

## ***Rationale:***

Treatment of this injury will depend on the type of animal. Other factors may include site of bite, number of bites, possible envenomation, patient sensitivity, and time of bite. Allergic reaction is an important consideration to be evaluated. Refer to the anaphylaxis protocol as needed. Gather as much information on the animal as possible.

## **Assessment Checklist**

- Snake bite – poisonous or nonpoisonous
- Insect sting
- Jellyfish sting
- Dog or other animal bite
- Allergic reaction
- Anaphylactic shock
- Hypotension or shock

## **Pediatric Care**

### ***Level I***

- Irrigate and cleanse wound.
- Assess degree of bite / sting marks, outline edematous, erythematous, and ecchymotic areas with a pen, noting the time.
- Administer oxygen by appropriate device.
- Immobilize and elevate any extremities bitten by a snake.
- Keep patient supine and calm.
- Remove stingers if present, taking care to avoid compressing the site.
- Identify animal if possible.
- For marine stings, use vinegar to flush site. Exception, only Portuguese man-of-war stings should only be flushed with fresh water or saline
- Do NOT apply ice or cold packs to snake bites or marine stings. Exception, only Portuguese man-of-war stings should have ice applied to help reduce swelling and pain

### ***Level II***

- Establish vascular access if indicated.
- Monitor ECG.
- Evaluate the need for advanced airway with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.
- If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg)
- Confirm airway placement with capnography and 2 other documented methods.

### ***Level III***

- None

# Burns

## *Rationale:*

Major (or inhalation) burns require aggressive care. Prolonged treatment in the field is not justified.

## Assessment Checklist

- Thermal burns
- Chemical burns
- Electrical burns
- Airway burns

## Pediatric Care

### *Level I*

- Extinguish active burning and move the victim to safe area.
- Suction airway as needed.
- Assess oxygen saturation.
- Administer oxygen by appropriate device.
- Cover with burn sheets and irrigate the skin with copious sterile fluids unless BSA > 10%.
- Take precautions to control hypothermia for victims of extensive burns.
- Avoid the use of water on dry chemical burns, until the chemical is brushed off.

### *Level II*

- Establish IV/IO.
- Burns exceeding 10% (2<sup>nd</sup> or 3<sup>rd</sup> degree) BSA begin fluid resuscitation: < 5 yrs. at 150 ml per hour, 5 to 15 yrs. at 250 ml per hour for the first two hours. If transport time is longer than two hour use the Parkland Formula.
- Monitor ECG.
- Evaluate the need for advanced airway (preferably ET tube considering potential for sub-glottic swelling) with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.
- If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg)
- Confirm airway placement with capnography and 2 other documented methods.
- Flush chemical burns with copious amounts of water for 15 minutes.
- Morphine IV/IO 0.1 mg/kg (max dose 5 mg) for burns exceeding 10% (2<sup>nd</sup> or 3<sup>rd</sup> degree) BSA.

### *Level III*

- Administer pain medications as ordered.

# Chest Injury

## ***Rationale:***

Thoracic trauma can be deceptive. Any thoracic trauma with associated dyspnea should be considered serious. Chest injury patients may deteriorate rapidly. Frequent assessments are advised.

## **Assessment Checklist**

- Respiratory arrest
- Rib Fracture
- Flail chest
- Tension pneumothorax
- Hemothorax
- Open pneumothorax (sucking chest wound)
- Rapid respiratory decompensation
- Occult hemorrhage
- Exsanguination
- Related cervical or head injury
- Pericardial tamponade
- Subcutaneous emphysema
- Cardiac Contusion

## **Pediatric Care**

### ***Level I***

- Monitor oxygen saturation.
- Administer oxygen by appropriate device.
- Seal sucking chest wounds on three sides.
- Stabilize flail segments utilizing bulky dressings.

### ***Level II***

- Establish IV/IO.
- Monitor ECG.
- Evaluate the need for advanced airway with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.
- If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg)
- Confirm airway placement with capnography and 2 other documented methods.
- Perform a pleural decompression as needed.

### ***Level III***

- None

# Fractures

## ***Rationale:***

Treat small bone fractures as simple injuries. Long bone fractures or multiple small bone fractures should be treated as major trauma. Evaluate the mechanisms of injury to guide assessment of possible child abuse.

## **Assessment Checklist**

- Closed fracture
- Open fracture
- Related head or spine injury
- Child abuse
- Internal injury or hemorrhage
- Seizure activity related to a fall

## **Pediatric Care**

### ***Level I***

- Administer oxygen by appropriate device.
- Assess distal pulses.
- Align and immobilize. Make only 1 attempt at this if vascular compromise exists.
- Immobilize joint fractures in position found. Exception to this rule will be fracture or dislocation of the knee that has diminished or absent distal pulses.
- Irrigate open fractures thoroughly with saline then cover with dressing.
- Apply a traction splint to femur fractures.
- Apply a cold pack or ice to the site.
- Inflate MAST for immobilizing lower extremity fractures (i.e. bilateral femur and/or pelvis), (if available).

### ***Level II***

- Establish IV/IO access if indicated
- Morphine IV/IO 0.1 mg/kg (max 5mg).

### ***Level III***

- Administer pain medications as ordered.

# Head Injuries

## ***Rationale:***

Significant head injury may be difficult to assess. It is best to treat for a head injury if at all suspected. Evaluate the patient for a possible trauma alert based on related injuries. If patient is hypotensive, look for injuries elsewhere.

## **Assessment Checklist**

- Altered or obtunded mental status
- Internal bleed or hematoma
- Inappropriate affect (abnormal behavior)
- Skull fracture (open or closed)
- Respiratory compromise or abnormal respiratory patterns
- Related cervical, facial, eye, and airway injuries

## **Pediatric Care**

### ***Level I***

- Administer oxygen by appropriate device.
- Elevate the head of the backboard 15-30 degrees if normotensive.
- Evaluate need for law enforcement / restraints.
- Patients who must be restrained should be placed SUPINE on the stretcher, and a person must dedicated to monitor the patient's airway.
- Check blood glucose.

### ***Level II***

- Establish IV/IO.
- Monitor ECG.
- Evaluate the need for advanced airway with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.
- If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg)
- Confirm airway placement with capnography and 2 other documented methods.
- If glucose < 60 mg / dl, follow Hypoglycemia Protocol.

### ***Level III***

- None

# Ophthalmic Injuries

## ***Rationale:***

Eye injuries must be treated very seriously due to the potential for permanent impairment and the proximity to the central nervous system. Psychological support is essential especially when the eyes are to be covered. Always consider cervical spine injury related to an eye injury.

## **Assessment Checklist**

- Impaled object
- Bleeding or loss of aqueous / vitreous humor
- Deformity of the orbital socket
- Visible objects in eye
- Chemical, thermal, or bright-light (such as welding) burns to the eye

## **Pediatric Care**

### ***Level I***

- Quickly assess gross visual acuity.
- If the eye is chemically burned, thoroughly irrigate affected eye(s) as soon as possible with normal saline.
- If the eye is penetrated, do NOT remove impaled object.
- Protect injury by applying eye shield and bandage over eye(s) avoiding pressure on the eye itself.
- Cover other eye to reduce eye movement in the unaffected eye.
- Keep patient from bending or straining.
- If eye or orbit receives blunt trauma and blood is noted in anterior chamber (hyphema), transport with head elevated at least 60 degrees, only if no cervical spine injury.
- Dim interior lights during transport.

### ***Level II***

- Administer 2 gtts Tetracaine (if available) per affected eye. If administered, patient MUST seek further medical treatment.

### ***Level III***

- None



# Traumatic Shock

## *Rationale:*

The patient's "**Golden Hour**" begins at the time of injury. This concept should guide rapid recognition, treatment, and transportation to a trauma center.

## **Assessment Checklist**

- Hemorrhage (including occult)
- Orthostatic hypotension
- Neurogenic shock
- Anaphylactic shock
- Related trauma
- Ulcers or other internal bleeding

## **Pediatric Care**

### *Level I*

- Administer oxygen by appropriate device.
- Monitor oxygen saturation.
- Monitor vital signs every 5 minutes.
- If the patient is hypotensive, place in Trendelenburg position.
- Control the bleeding with direct pressure, elevation.

### *Level II*

- Establish IV/IO. Do not delay transport to establish IV lines.
- Monitor ECG.
- Evaluate the need for advance airway with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.
- If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg)
- Confirm airway placement with capnography and 2 other documented methods.
- If the patient is hypotensive, administer a fluid bolus of normal saline 20 ml / kg.
- Repeat the saline bolus if signs of shock or hypotension persist.

### *Level III*

- Administer Dopamine 5-20 mcg / kg / min for neurogenic shock after volume replacement. Titrate dopamine to maintain a systolic BP > 90 mm / Hg.

# **Community Health Care Service**

# Blood Pressure Screening

## *Rational:*

Many agencies offer blood pressure screening to our community. Blood pressure checks assist citizens to identify hypertension or to monitoring their medical conditions and the efficacy of their medications.

## Assessment Checklist

- This patient may have no medical problem
- Headache
- CVA
- Hypertension
- Hypertensive crisis
- Communicable disease such as flu, cold, or tuberculosis

## *Level I:*

- Have customer sign in per departmental policy.
- Assess the patient's blood pressure.
- If the pressure is acutely abnormal, continue to appropriate protocol.
- Obtain a refusal for treatment/transport if patient is acutely hypertensive with signs/symptoms or BP above 220/120 and patient is unwilling to be transported to a medical facility.

## *Level II:*

- None

## *Level III:*

- None

# Influenza and Pneumococcal Disease Vaccination (Flu and Pneumonia Vaccination)

## *Rational:*

Influenza and pneumococcal infections are seasonal infections that may be epidemic. Annual vaccinations can reduce the incidence of infection and is prophylactic wellness care. EMS providers may be directed to administer vaccinations as a public service.

## **Checklist**

- High risk group
- Recent illness or fever
- Past pneumonia vaccination (any customer who has received a pneumonia vaccination in the past must contact their current physician for re-vaccination.)

## *Level I:*

- Have the customer read vaccination information sheet and sign consent form (see appendices).
- Assess vital signs including temperature. (A temperature above 99.0 precludes vaccination).
- Verify the patient is over 18 years old, is not pregnant, has no recent flu-like illness, is not allergic to eggs or egg products and has not had another pneumonia vaccination within the last year.

## *Level II:*

- Prep patient for an intramuscular injection.
- Administer 0.5 ml of influenza vaccine in the arm.
- Administer 0.5 ml of pneumococcal vaccine in the opposite arm.
- Have the patient remain for 20 minutes and observe for any allergic reaction.
- If an allergic reaction occurs then continue to the allergic reaction protocol.

## *Level III:*

- Past Pneumonia vaccination consults with physician.

# **Administrative Policies**

# Baker Act

A psychiatric patient may be involuntarily hospitalized by law enforcement under authority of the Baker Act. The Baker act applies to persons who may suffer from neglect without care or treatment or if the patient presents an imminent threat of bodily harm to himself or another. This removes the patient's right to refuse treatment. A provider who questions the patient's ability to make informed refusal should summon law enforcement to implement the Baker Act. A physician may also initiate a Baker Act hospitalization.

All persons treated under the Baker Act will be transported to the nearest appropriate facility.

- A. Law enforcement will search the patient when the medical situation permits.
- B. Restraints will be used only when the patient is likely to harm himself or others. The restraints should secure all extremities, the torso and the pelvic region. Continue restraining the patient throughout the transport.
- C. Ambulatory psychiatric patients shall be escorted by at least two personnel, one on each side of the patient. Each provider should keep one hand in contact with the patient. A provider should sit within arm's reach during transport.
- D. Law enforcement will provide a completed Baker Act form, (HRS-MH Form 3052A) to the EMS provider. The original form will be taken by the provider and be left with the patient at the receiving facility. The crew shall inspect this form before initiating transport. Do not transport the patient if the form is not completed with the name of receiving facility, patients name, time and date, criteria checked off, observations, and a signature.
- E. A patient may voluntarily sign a Baker Act Form 40 as a self committal to a mental facility. Once this form is signed, the patient gives up legal rights and can be involuntarily transported.
- F. Voluntary patients should have prior authorization for transport from the receiving facility. Notify law enforcement immediately of any patients who are a threat to themselves or others. Detain, if you can do so safely without using force, the patient under the authority of Florida Statute 401.445. Do not use force to detain any patient.
- G. Nonemergency substance abuse patients should have prior authorization for transport from the receiving facility.
- H. Intoxicated patients may be involuntarily transported under the authority of the Marchman Act. Law enforcement personnel must authorize treatment and transportation. The intoxicated patient who refuses to be transported will be the responsibility of law enforcement.
- I. Any patient requiring medical treatment shall be taken to the nearest receiving facility.

# Critical Care Transports

Coastal Health Systems of Brevard Inc. will provide Interfacility transportation for Critical Care patients. A critical care transport team, trained and capable of transporting patients, will be available 24 hours per day for both adult and pediatric patients.

1. CHSB medics will understand the critical care environment to include patient types and technology involved.
2. CHSB medics will understand his or her role with critical care transports. To include both medical and legal issues.
3. CHSB medics will understand the equipment used by CHSB for critical care transports.
4. CHSB medics will have the organizational skills necessary for transporting the critical care patient.
  - A. Formulating a transport plan.
  - B. Implementing the transport plan.
  - C. Evaluating the transport plan.

Formulating the transport plan: The transport plan begins with understanding Intensive care and develops with the patient's caregivers. CHSB medics use a modular approach to airway and circulation monitoring and management, medication administration, and general ICU monitoring skills. Focus on the patient first, and then the technology. Don't become technologically blinded, but allow technology to assist in meeting the patient's needs.

1. Know what type of intensive care unit to which you are inroute and gather appropriate equipment.
  - A. Cardiac surgical and medical
  - B. General surgical and medical
  - C. Neurological
  - D. Orthopedics
  - E. Pediatric
  - F. Burns
2. Prepare for transport
  - A. Assemble all equipment necessary for transport.
  - B. Have backup equipment ready.
  - C. Insure protocols and written orders are in place.
  - D. Obtain the telephone numbers of the receiving physician and facility.
  - E. Familiarize yourself with the patient's drainage systems (chest tubes, Foley catheters, nasogastric tubes and surgical drains.
  - F. Double check infusion sites to assure patency (mediports and central lines).
  - G. Obtain the patient's records and review them with the RN to fully understand the patient's needs.
3. Patient care enroute
  - A. Provide care and monitor patient based on protocol and patient class.
  - B. Insure crew members have the competencies to meet the patient's specific needs.
  - C. Monitor patient care equipment to insure it is working properly.
  - D. Establish radio and or cellular phone contacts as needed.
  - E. Document patient care needs , responses to treatments, and changes in condition.
4. Deliver the patient on arrival at the receiving hospital.
  - A. Deliver the report and records with the patient.
  - B. Evaluate the transport.
5. Work with facility staff if they are required to accompany patient during transport.
  - A. An RN will assume all patient care and responsibility.
  - B. Respiratory Therapist will assume all patient airway care and responsibility.
  - C. Physicians will assume all patient care and responsibility.
  - D. The paramedic will assume patient care for cardiac arrest or other acute conditions.

## Death Scene

1. Control of death scenes is the responsibility of law enforcement. As a general rule, law enforcement officers voluntarily defer to the EMS provider for resuscitation decisions. Ultimate responsibility for control of death scenes rests with law enforcement. If a law enforcement officer denies you access to the scene, he is acting within the law and assuming responsibility.
2. This protocol is to assist the field EMS provider in making resuscitation decisions. It applies to patients of all ages including victims of SIDS. It cannot address all possible contingencies. The provider should, when in doubt, attempt resuscitation. All resuscitation will follow Brevard Regional EMS Protocol unless the Medical Director or his designated emergency room physician gives orders otherwise.
3. Terminally ill patients present ethical and legal questions when making resuscitation decisions. Frequently, surviving family members will direct that resuscitation should not be attempted. The questions associated with the "Death with Dignity" issue are important, emotional, and beyond the ability of an EMS system to address.
  - A. The State of Florida's "Do Not Resuscitate Order" (DNRO) form will be honored as long as the form is either an original or the form is a copy on yellow paper. The form must be complete and signed. If there is doubt of the authenticity of the form or the form is not a State of Florida DNRO form, resuscitation will be performed on the patient unless another section of this protocol applies.
  - B. If a patient does not have a DNRO, but is terminally ill, decrepit, and in the end-stage of the disease process, contact medical control for orders to cease resuscitation.
4. Unquestionable Death Criteria:
  - A. The patient is PULSELESS, APNEIC, UNRESPONSIVE, AND UNRESPONSIVE PUPILS.
  - B. In addition to the above, the patient should meet one of the following criteria:
    - 1 The patient has lividity (discoloration of dependent parts of the body)
    - 2 The patient has clear signs of body decay or visible decomposition with odor
    - 3 The patient has rigor mortis (rigidity)
    - 4 The patient has an open cranium with exposed brain matter
    - 5 The patient is decapitated or has a severed trunk
  - C. Asystole must be confirmed in at least two contiguous leads for severe blunt traumatic injury.
5. Asystole Protocol:

The intent of the Brevard Regional EMS Protocol is to provide to the employees and visitors of Brevard County the most progressive and beneficial pre-hospital emergency care. Brevard Regional EMS Agencies adopts the following protocol to allow "death with dignity" and to decrease the emotional trauma on family members. The patient must present and remain in asystole during resuscitation for this protocol to apply providers will:

  - A. Comply with Cardiac Arrest Protocol;
  - B. *Consider* termination of resuscitation for refractory asystolic patients after the second dose of epinephrine or single dose of vasopressin has been administered. Secure endotracheal tubes and IVs in place.



## ***Death Scene Cont.***

### 6. Control of Death Scenes:

When the Law Enforcement or EMS Provider has determined the scene is a possible crime scene:

- A. Avoid disturbing the patient's position and the scene as much as possible. Observe the position of anything relevant to the body (such as sheets, weapons, etc.) and the position of the body. Make notes (for law enforcement) about these and about anything disturbed as soon as possible.
- B. TOUCH NOTHING:
  - 1 Do not use the telephone.
  - 2 Do not touch the medication (or other) containers.
  - 3 Do not turn off anything (except obvious hazards).
  - 4 Do not move anything.
  - 5 Do not replace anything you moved to access the patient.
  - 6 Try to not leave anything on scene (such as electrode wrappers or needles).
  - 7 Exit the scene and do not reenter and prohibit civilians from entering the scene, even if it's their own home.
- C. If law enforcement is not present, notify them.
- D. Notify your supervisor if law enforcement has not arrived within 15 minutes of notification.
- E. Do not leave the scene until law enforcement assumes control.

# Destination Decisions

## Definitions:

### State Approved Trauma Center (SATC, Level 1 or 2):

Those hospitals having the facilities and personnel appropriate for the care of the major trauma patient.

### Basic Treatment Facility (BTF):

A hospital's emergency department that is capable of providing care to most emergency patients, excluding major trauma.

### Patient Choice:

The hospital chosen independently by the patient. This definition specifically excludes a decision derived by paramedic prompting or recommendation.

## Patient Classifications & Destination Decision:

1. Class 1/Red Unstable
  - A. Medical- To closest appropriate hospital.
  - B. Trauma- Refer to Trauma Transport Protocols
2. Class 2/Yellow Stable, but at risk of deterioration
  - A. Medical
    1. Hospital of patient's choice within zone., unless paramedic decides such a transport would be detrimental to patient's clinical condition, then transport to closest appropriate hospital.
    2. Unassigned: Closest hospital
  - B. Trauma- Refer to Trauma Transport Protocols
3. Class 3/Green Stable
  - A. Medical- Hospital of patient's choice within the County including Sebastian Medical Center (system status allowing)
  - B. Trauma- Refer to Trauma Transport Protocols
4. Class 4/Black Meets Death Scene Criteria. Notify Law Enforcement & Do NOT Transport.

## Use of Helicopter Ambulance Service:

1. Patients should be transported by ground ambulance except when:
  - A. Patients meet the criteria for air transport under the Trauma Transport Protocol.
  - B. Road conditions will cause delays for patients requiring rapid transport.
  - C. There are multiple victims of a serious nature requiring rapid transport.
2. Helicopters will **NOT** be used for adult cardiac arrest patients unless initial resuscitation measures have been successful and rapid transport by ground is not available.

## **EMT IV (Intravenous)**

- Pursuant to the rules of the Florida Department of Health Chapter 64E-2.008, Florida Administrative Code, an Emergency Medical Technician (EMT) who has successfully completed training equivalent to the 1999 U.S.D.O.T. EMT-Intermediate National Standard Curriculum related to intravenous (IV) therapy shall be allowed to initiate a non-medicated peripheral IV.
- An EMT shall only be allowed to initiate a non-medicated IV under the direct supervision of a Florida certified Paramedic (of the same licensed agency) who has directed EMT to do so.
- All IV's initiated by an EMT shall follow the guidelines established in the Double Lumen Catheter Protocol as outlined in the Procedures Manual of the Brevard County EMS Standing Orders.
- No EMT shall be permitted to initiate an intraosseous infusion or access a patient's external jugular vein.

## **Incapacitation Patients**

Florida Statute 401.445 provides authority for EMS Providers to examine and treat patients who are incapacitated and cannot make decisions for themselves.

Patients are incapacitated if they are unable to make informed consent for treatment due to intoxication by drugs or alcohol or by their medical emergency (such as decreased mental status).

The provider has a legal ability to treat a patient experiencing a medical emergency. Make every attempt to get consent from the patient. If the patient is incapacitated, he may be treated and transported without his consent.

Request law enforcement to restrain any patient who requires it. Unreasonable force shall not be used.

A patient who has been treated as an incapacitated patient must be transported until a physician determines that he is no longer incapacitated.



## **Interfacility Transfer**

A patient transported to the closest hospital or Trauma Center may be transferred to another hospital if the patient or physician requests it or if the closest hospital is on diversion. Each hospital agrees to transfer (regardless of financial status) any competent patient who requests it. Transfers will be arranged between physicians. Emergency and attending physicians are authorized to arrange transfers.

Paramedics will prior to accepting a patient for transfer, receive a summary of the patient's condition, transfer documents (summary, lab work, x-rays, etc.) current treatment, treatment orders, possible complications, and pertinent medical information. A paramedic who is asked to transfer a patient with special needs that exceed his scope of practice will not make the transfer without being accompanied in the unit by an appropriately trained provider (RN, RT, MD, etc.).

Patients who receive emergency transfers must have at least one IV in place prior to transfer. Orders for IV composition and rate should be provided.

## **Multiple Agency Coordination**

1. Transport of the patient should begin as soon as possible
2. Always work together cooperatively in the best interest of the patient
3. Disagreements in patient care shall be resolved by medical control

## **On-Line Medical Control**

The on-duty emergency department physicians serve as the 24 hour on-line (by radio or phone) medical control authority

The paramedic may contact medical control for consultation as desired but must contact medical control for authorization for level III orders, any deviation from protocol, when a patient refusal may endanger the patient or provider, when bystander physicians or other providers try to participate in patient care, and any situation where there is conflict between providers, hospitals, or other health care agencies.



## **Patient Refusal or Non Transport**

1. Any patient refusing needed treatments and/or transportation require the completion of a Patient Refusal form. Patients who refuse part of the treatment recommended (for example, a patient may allow transport but refuse to have an IV) must also sign the Patient Refusal form.
2. The provider will communicate directly with the patient to establish his intent and inform the patient or guardian of:
  - A. Their condition
  - B. The potential risks of refusal
  - C. Their assumption of all risks by refusal
3. The refusal form must include the patient's chief complaint, vital signs, consequences of the refusal, and paramedic assessments. The patient's signature should be witnessed by family members, law enforcement bystanders, or other crew members.
4. Complete the signature lines, for patients who refuse to sign, with "patient refuses to sign", followed by your signature and have family members, law enforcement bystanders, or other crew members witness and sign the refusal.

## **Physician On-Scene**

Non-EMS System physicians may assume patient care, if they:

1. Are at the scene,
2. AND identify them self (and show proof) as a Florida licensed M.D. or D.O.,
3. AND agree to assume care of the patient,
4. AND if transporting, agree to accompany the patient to the receiving facility OR declare the patient dead,
5. AND sign the Physician's Section of the EMS Report.

# Respiratory Protection

The Center for Disease Control's (CDC) and the Occupational Safety and Health Administration (OSHA) recommend employees wear particulate respirators in circumstances where providers will occupy the same space with (such as in a closed vehicle during transport) or perform procedures on individuals with suspected or confirmed infectious mycobacterium tuberculosis (TB) disease. Respirators should meet or exceed standards of the National Institute for Occupational Safety and Health (NIOSH) for high efficiency particulate air (HEPA) respirators.

## ***Procedure:***

The following procedure complies with OSHA regulations.

1. Assignment of responsibility:
  - A. Each agency will delegate an Infection Control Officer who will be responsible for maintaining infection control procedures, program training of personnel, testing for disease, providing personal protective equipment, and investigating employee exposure. This individual will be appointed by the agency's medical director and the State EMS office and will have expertise in issues relevant to infection control including infectious diseases and occupational health.
  - B. The Infection Control Officer will provide the health care worker a yearly respiratory protection program based on current information from OSHA, CDC, and NIOSH.
2. Standard operating procedures (SOPs):
  - A. The Infection Control Officer will update procedures as new standards may be published. The respiratory infection program will be modified to comply with new guidelines.
  - B. **IMPORTANT SOP:** *A patient with suspected or confirmed TB should be transported in the rear of an ambulance with the patient wearing a surgical mask over the mouth and nose (if possible) and the vent fan on (negative air pressure). Ambulance personnel should wear respiratory protection when transporting such patients. (CDC MMWR Vol.43 / RR-13, page 51)*
3. Training program:

The respiratory protection program shall insure employees are informed of:

  - 1 methods of TB transmission.
  - 2 signs and symptoms of TB.
  - 3 Diagnosing employee exposure, i.e. positive skin test results, TB infection indicators, and the presence (if contacted) and treatment of the disease.
  - 4 procedures that may protect the employee from exposure.
  - 5 use of personal protective equipment, negative air pressure, etc.
  - 6 Respirator training, i.e. fit testing, use of, and how to recognize a malfunctioning respirator.
4. Respirator inspection, cleaning, disinfection and storage:
  - A. All surfaces exposed to potentially infectious materials shall be wiped clean with a detergent and appropriately disinfected immediately after patient care. Instrument and equipment cleaning shall be done in an area separate from treatment areas. Every transport unit will be decontaminated at the end of each shift.
  - B. Personal protective equipment shall be used when cleaning. This equipment, disposable cleaning materials, and the respirator, shall be disposed of in red biohazard bags.
  - C. One HEPA respirator for each provider will be stored on each transport unit.

## ***Respiratory Protection Cont.***

- D. Three forms of disinfecting agents may be used by each agency:
  - 1 Glutaraldehyde-based solutions may be used for sterilization or high level disinfection. All items must be thoroughly cleaned and rinsed following use. *Avoid skin contact and vapors.*
  - 2 Sodium Hypochlorite (household bleach) in a 1:100 solution (1/4 cup to one gallon of water) may be used for intermediate level disinfection on non-critical surfaces and equipment. *Irritating to skin and eyes.*
  - 3 Phenolics (0.5 ounce to one gallon of water) may be used for intermediate level disinfection. After cleaning, spray on surfaces and let stand for 10 minutes before wiping off. *Avoid skin or mucus membrane contact.*
  
- E. Exposure to liquid chemical disinfectants:
  - 1. Decontaminate the area with copious, tepid water for a minimum of 5 minutes. Wash the area with soap and water.
  - 2. Follow the appropriate protocol for chemical exposures.
  
- 5. Fit testing:
  - A. Fit testing requires testing the seal to insure a respirator fits the provider's face with a leakage of <10%. A proper fit can usually be attained by using respirators in at three sizes.
  
  - B. Face-seal leakage compromises the ability of particulate respirators to protect employees from airborne materials. Air-borne contaminants will take the path of least resistance into the respirator, bypassing the filter if it seals poorly. A proper seal between the respirator the face is essential. Face-seal leakage can result from various factors:
    - 1. Incorrect face piece size or shape
    - 2. Incorrect or defective face piece sealing-lip
    - 3. Beard growth
    - 4. Perspiration or facial oils that can cause face piece slippage
    - 5. Failure to use all the head straps
    - 6. Incorrect positioning of the face piece on the face
    - 7. Incorrect head strap tension or position
    - 8. Improper respirator maintenance
    - 9. Respirator damage.
  
  - C. Fit testing is the responsibility of the Infection Control Officer and must be done before the provider may make patient contact. The proper fit is confirmed by applying negative pressure in the respirator with no leakage into it.
  
  - D. Reuse of a disposable respirator is permitted only if the respirator maintains its structural and functional integrity, the interior of the respirator is not contaminated, and the initial user is the sole occupant of the respirator.

## **Response to Violent or Potentially Violent Scenes**

1. Units dispatched to scenes where persons are potentially violent will stage. They will remain there until advised that law enforcement has secured the scene.
2. Units who are requested to stage by law enforcement will respond to a staging area in the Non-emergency mode. Units will change their response to the emergency mode after the scene is secured.
3. Units arriving in the staging area will avoid travel in corridors that can be observed from the scene.
4. The company officer or senior paramedic must evaluate the safety of the scene and withdraw if necessary until the scene is secured.
5. Providers who are present during acts of violence or the threat of violence will leave the scene and request Law Enforcement. Use clear text to describe the situation.

# Transport Destination (non-ALS )

## For Patients in Long Term Nursing Facilities & Skilled Nursing Facilities

1. After a completed patient assessment, if it is determined that the patient is stable, the Solo-Paramedic or Lieutenant may elect to:
  - Transport in a Brevard County Fire Rescue unit
  - Release to **Coastal Health System**
2. If the patient is to be transported by Coastal Health Systems, Brevard County Fire Rescue or the ALS first response agency personnel may remain on scene until arrival of the Coastal ambulance. A unit may clear an incident if Coastal's response time to the scene will be extended or in the event that the unit must respond to another incident. In either case, the Solo-Paramedic or Lieutenant must determine and document that the patient's condition is stable at the time of release. In these situations, the hospital copy of the report will be left with the patient or relative and given to the Coastal ambulance upon their arrival.
  - If a patient consents to alternative means of transportation, every effort will be made to ensure that this transportation can be initiated while the Brevard County Fire-Rescue unit is on the scene
3. Use the following guide to determine which patient may be transferred to Coastal Health Systems or may use another form of transportation:

**BCFR must Transport (unless patient refuses) Patient's complaining of or presenting with the following signs/symptoms:**

- Chest Pain
- Cardiac Event
- Shortness of Breath
- Respiratory Event
- AMS (Non dementia)
- TIA or Stroke
- Glucose < 60mg/dL
- Potassium > 6 mEq/L
- Hemoglobin (<9 g/dL)
- Seizure
- Hypotension or Hypertension
- Bradycardia or Tachycardia
- Unstable Trauma
- Dialysis (Emergent)
- Abdominal Pain
- Fever, Possible sepsis

**BCFR must transport any patient (unless patient refuses) exhibiting a medical condition manifesting itself by acute symptoms of sufficient severity (including severe pain) such that the absence of immediate medical attention could reasonably be expected to result in: (1) placing the health of the individual (or, with respect to a pregnant woman, the health of the woman or her unborn child) in serious jeopardy; (2) serious impairment to bodily functions, or (3) serious dysfunction of any bodily organ or part, or (4) with respect to a pregnant woman who is having contractions -- that there is inadequate time to effect a safe transfer to care to Coastal Health Service before delivery, or that the transfer may pose a threat to the health or safety of the woman or her unborn child.**

***Transport Destination (non-ALS) Cont.***

**Transfer of Care to Coastal Health Services may occur if the following complaints or values are present:**

- Abnormal Lab Values (except for potassium > 6 mEq/L)
- No Chest pain
- No Cardiac Event
- No Shortness of Breath
- No Respiratory Event
- Hx of Dementia (but not exhibiting signs of agitation, acute distress or trauma)
- No AMS
- No Signs of TIA or Stroke
- No seizures
- No Signs of Hypo- or Hyperglycemia
- Glucose > 60mg/dL
- Hemoglobin (>9 g/dL)
- No Neurological Event
- Stable Vitals
- Direct Admit (Non-Urgent Transport)
- Follow up care management in the ED
- Lab work request

**NOTE: It is imperative that a complete patient assessment is well documented to support the decision to release a patient to either an ambulance or alternate means of transportation.**

## **Treatment and Transport of Minors**

1. Units responding to a scene involving minors will notify a parent if the patient's condition allows the time.
2. Transport minors (under the age of eighteen) with injuries to the appropriate facility.
3. EMS personnel do not need parental consent for treatment or transportation of a minor.
4. Some minors such as those who are married may be emancipated. Emancipated minors are treated as adults for consent purposes.
5. Law enforcement may take a child into protective custody. The officer should then sign the Patient Refusal form.



## Unit Cancellations

1. Brevard Region Transport units may accept cancellations from other agencies or units, **only under the following circumstances:**
  - A. The other unit is known to be manned by paramedic personnel, or
  - B. The other unit is manned by EMTs AND
    - 1 The nature of the call is trauma AND,
    - 2 The patient voluntarily signs the refusal form that indicates paralysis and death as the risk of their refusal, AND,
    - 3 The patient has no obvious injury AND,
    - 4 The patient's mental status and vital signs are stable are within normal limits.
2. BLS units may not cancel ALS units responding to medical calls unless the call is a false alarm.
3. First Response BLS units will, when they first arrive, transmit to the responding ALS units an evaluation of the scene and potential injuries. The ALS unit will, if the evaluation indicates a non emergency call, downgrade their response from emergency to a less dangerous mode of driving. The ALS unit will continue directly to the scene and evaluate all patients.
4. Extenuating circumstances may include patient refusals, multiple calls or rescue squads responding outside their primary response area. The first response BLS unit should transmit their evaluation to the squad via the radio, such as "The patient refuses treatment and transportation." The Rescue squad may, in extenuating circumstances, cancel in order to remain in service or to respond to another incident.

# Drug Manual

This manual contains basic pharmacological information on the medications listed throughout this Protocol Manual. The dosages listed in this section are the recommendations of the manufacturers or the textbooks from which the information was gathered. When administering a medication, follow the recommended dose schedule as specified in the Protocol under which you are currently treating.

## **Adenosine (Adenocard)**

### **Therapeutic Effects:**

- Converts PSVT to slower rate by slowing conduction through the A-V node, also works when PSVT is caused by W-P-W.

### **Indications:**

- Paroxysmal Supraventricular Tachycardia

### **Contraindications:**

- 2nd and 3rd degree heart blocks
- Sick Sinus Syndrome.
- Known hypersensitivity to Adenocard
- WPW or accessory pathway cardiac condition conduction abnormalities

### **Adverse Reactions:**

- Facial Flushing
- Nausea

### **Administration and Dosage:**

- **Adults:**
  - 6 mg very rapid IVP, followed without delay by a very rapid 20 ml saline bolus.
  - A second dose of 12 mg very rapid IVP, followed without delay by a very rapid 20 ml saline bolus may be given. Can repeat 12 mg dose once.
- **Pediatric:**
  - 0.1 mg / kg (max 6mg) very rapid IVP, followed without delay by a very rapid 5-10 ml saline bolus.
  - Second dose of 0.2 mg / kg (max 12mg) very rapid IVP, followed without delay by a very rapid 20ml saline bolus.

### **NOTE:**

**Adenosine should be given in the port closest to the IV site. The syringe with the saline bolus should already be in the next most distal port.**

# **Albuterol**

## **(Proventil, Proventil Syrup, Ventolin)**

### **Therapeutic Effects:**

- Relaxes bronchial smooth muscle by acting on beta adrenergic receptors.

### **Indications:**

- Bronchospasms, in patients with reversible obstructive airway disease.

### **Contraindications:**

- Use cautiously in patients with cardiovascular disorders, including coronary insufficiency and hypertension.
- Also use caution in patients with hyperthyroidism or diabetes mellitus.
- Warn patient about the possibility of paradoxical bronchospasm. If this occurs, the drug should be discontinued immediately.

### **Adverse Reactions:**

- CNS: Tremor, nervousness, dizziness, insomnia, headache
- CV: Tachycardia, palpitations, hypertension
- EENT: Drying and irritation of nose and throat (with inhaled form)
- GI: Heartburn, nausea, vomiting
- Other: Muscle cramping

### **Precautions:**

- Propranolol and other beta-blockers block the bronchodilating effect of albuterol. Monitor patient carefully.

### **Administration and Dosage:**

- AEROSOL - Adults and pediatric: 2.5 mg in 3.0 ml of premix as individual protocol dictates.

### **NOTES:**

**Albuterol can be combined with Atrovent in the nebulizer. This may be administered (as needed) before vascular access.**

# Amiodarone (Cordarone)

## Therapeutic Effects:

- Suppresses ventricular dysrhythmia

## Indications:

- Recurrent or persistent ventricular fibrillation
- Recurrent or persistent hemodynamically unstable ventricular tachycardia

## Contraindications:

- Known hypersensitivity to Amiodarone
- Marked sinus bradycardia
- 2<sup>nd</sup> or 3<sup>rd</sup> degree AV block unless functional pacemaker is available
- Cardiogenic shock

## Precautions:

- Rapid rate of infusion may lead to AV block, profound hypotension and bradycardia.
- Do not use in PVC IV tubing.
- Drug is motion sensitive and may foam if agitated.

## Adverse Reactions:

- Hypotension
- ARDS (chronic use)
- Arrhythmias
- Electrolyte disturbances
- Pulmonary fibrosis (chronic use)

## Administration and Dosage:

- **Adults**
  - VF/Pulseless VT: 300 mg in 30 ml normal saline IV push over 30 seconds. IV push rates under 30 seconds may lead to irreversible brady-asystole.
  - VT (stable): 150 mg in 100 mL D5W over 10-15 minutes
  - A repeat dose of 150 mg over 30 seconds may be given for recurrent VF/Pulseless VT.
- **Pediatrics:**
  - VF/Pulseless VT: 5 mg/kg in 30 mL normal saline IV push over 30 seconds. Single dose only.
  - VT (stable): 5mg/kg in D5W given over 20-60 minutes

# Aspirin

## Therapeutic Effects:

- Inhibits platelet aggregation and thereby reduces thrombus formation.

## Indications:

- Acute chest pain related to myocardial ischemia

## Contraindications:

- Hypersensitivity to Aspirin
- Current GI Bleeding
- Multi-system Trauma
- Pregnancy
- Pt who has taken Aspirin within 4 hours

## Adverse Reactions:

- Dyspepcia
- Rash
- Anaphylaxis

## Administration and Dosage:

- **Adult:**
  - 81mg x4 chewable tablets

# Atropine

## Therapeutic Effects:

- Atropine sulfate is a parasympatholytic drug that enhances both sinus node automaticity and atrioventricular (AV) conduction via direct vagolytic action.

## Indications:

- Symptomatic bradycardia
- Bradycardic PEA
- Pediatric RSI
- Organophosphate exposure, Nerve Agent exposure

## Contraindications:

- Atrial fibrillation
- Atrial flutter
- Glaucoma
- Use with caution in the presence of myocardial ischemia / infarction

## Adverse Reactions:

- Ventricular irritability, Tachycardia, Hypertension, Hypotension, Angina
- Atrial or ventricular fibrillation, Paradoxical bradycardia
- Thickening of bronchial mucus
- Increased intra-ocular pressure

## Administration and Dosage:

- **Adults:**
  - For pulse producing symptomatic bradycardia, atropine is given 0.5 mg IV every 3 - 5 minutes to a maximum of 3 mg.
  - Maximum dosage is 3 mg.
  - For Organophosphate or Nerve Agent exposure, >10 yrs. 2 mg via Auto Injector pen (green) x 1 for mild symptoms, x 2 pens for moderate symptoms, x 3 pens for severe symptoms.
- **Pediatric:**
  - Atropine dosage is given 0.02 mg/kg IV/IO/ET. May repeat once up to a maximum total dose of 0.04 mg / kg.
  - For Organophosphate or Nerve Agent exposure, 4 to 10 yrs. 1 mg via Auto Injector pen (dark red) x 1 for mild symptoms, x 2 pens for moderate symptoms, x 3 pens for severe symptoms.
  - For Organophosphate or Nerve Agent exposure, 6months to 4 yrs. 0.5 mg via Auto Injector pen (blue) x 1 for mild symptoms, x 2 pens for moderate symptoms, x 3 pens for severe symptoms.
  - Atropine is given 0.02 mg/kg IV/IO for rapid sequence intubation of patients under 5 years of age.

## NOTE:

Never administer less than 0.1 mg of Atropine for any patient. Neonates and most children under 1 month of age would receive < 0.1mg of Atropine and therefore should not receive Atropine. Studies show that ET administration of medications is generally ineffective in both adults and children but still remains in the most recent PALS and ACLS manual

# Atrovent

## Therapeutic Effects:

- Bronchodilation, works synergistically with Albuterol

## Indications:

- Bronchospasms including asthma, and COPD

## Contraindications:

- Known hypersensitivity to medication or soybeans / peanuts

## Adverse Reactions:

- Drying of mucous membranes
- Decreased GI motility
- Exacerbation of narrow angle glaucoma

## Administration and Dosage:

- 0.5 mg nebulized single dose only.
- May be mixed with Albuterol.
- May administer one inhaled metered dose if the patient has an atrovent inhaler and has not recently self-medicated.



# Calcium Chloride

## Therapeutic Effects:

- Increases myocardial contractile function.

## Indications:

- Should only be used during resuscitation in the treatment of acute hyperkalemia (dialysis patients), hypocalcemia, or calcium channel blocker toxicity.

## Contraindications:

- If the heart is beating, rapid administration of calcium can produce slowing of the cardiac rate.
- Calcium must be used cautiously in the digitalized patient because it increases ventricular irritability and may precipitate digitalis toxicity.
- In the presence of sodium bicarbonate, calcium salts will precipitate as carbonates. As a result, these drugs cannot be administered together.
- Calcium may produce vasospasm in coronary and cerebral arteries

## Adverse Reactions:

- May increase or decrease systemic vascular resistance.
- The high level of calcium in the blood inducted by the administration of calcium salts may induce reperfusion injury and may adversely affect the neurologic outcome of the patient.

## Administration and Dosage:

- A 10 ml pre-filled syringe or ampule of 10% solution of calcium chloride contains 1 gram Calcium Chloride (100 mg = 1 ml).
- **Adult**
  - 10ml = 1gram
- **Pediatric**
  - 0.2 ml/kg = 20mg/kg

# Dextrose

## Therapeutic Effects:

- Will restore circulating blood sugar level to normal in states of hypoglycemia. Acts transiently as an osmotic diuretic.

## Indications:

- To treat coma caused by hypoglycemia.
- To treat symptomatic hypoglycemia or if glucose < 60 mg/dl on glucometer.

## Contraindications:

- Intracranial hemorrhage

## Adverse Reactions:

- May precipitate severe neurologic symptoms in alcoholics.
- Will cause tissue necrosis if it infiltrates; therefore, it should only be given through a good, rapidly flowing IV line.

## How Supplied:

- Pre-filled syringes and vials containing 50 ml of 50% dextrose = 25G of dextrose (D50W).
- For pediatrics dextrose is supplied in D25W or D50 should be diluted following the directions below.

## Administration and Dosage:

- If possible, draw blood for serum glucose determinations before administering the dextrose.
- **Adults:**
  - 50 ml of 50% dextrose (25G) IVP. May repeat once if necessary.
- **Pediatrics:**
  - (D25W can be made by emptying 25mL from the D50 pre-filled syringe and mixing in 25mL of NaCl)
  - Administer D25W 2-4 ml/kg IV (<34 kg) if glucose <mg/dl
  - Administer D50W 25gm IV (>34kg if glucose <60mh/dl)

# Diazepam (Valium)

## Therapeutic Effects:

- Through its depressant action on the CNS, it can terminate some seizures, and it has a calming effect on anxiety.

## Indications:

- To treat status epilepticus.
- In selected circumstances, to relieve severe emotional distress.
- Given as a sedative prior to cardioversion or pacing in conscious patients.

## Contraindications:

- Should only be used for pregnant women experiencing seizures and not for other distresses because of the possible toxic effect it may have on the fetus.
- Should not be given to patients who have taken alcohol or other sedative drugs.
- Should not be given to patients with respiratory depression from any source.
- Should not be given to patients with hypotension.

## Adverse Reactions:

- Possible hypotension
- Confusion, stupor.
- In some patients, especially the elderly, the very ill, and those with pulmonary disease, may cause respiratory arrest and / or cardiac arrest.

## How Supplied:

- Pre-filled syringes and ampules of 2 ml and in vials of 10 ml, in a concentration of 5 mg / ml

## Administration and Dosage:

- **Adult:**
  - For seizure activity administer 5mg IV increments, maximum dose 10 mg.
  - For severe anxiety that must be treated in the field, after consultation with medical control, administer intramuscularly at 2-5 mg IM.
  - For sedation prior to cardioversion or pacing administer 5-10 mg IV.
- **Pediatric:**
  - Broselow Tape dosage may be used or 0.1 mg / kg IV / IO

## **Diltiazem (Cardizem)**

### **Therapeutic Effects:**

- Slows heart rate in tachyarrhythmia by blocking the slow calcium channels in the myocardium.

### **Indications:**

- Symptomatic A-Fib or A-Flutter with a rapid ventricular rate (150)

### **Contraindications:**

- Known hypersensitivity
- Administration of IV beta-blockers within 30 minutes
- Systolic blood pressure less than 90 mm / Hg
- WPW or accessory pathway cardiac conduction abnormalities
- Heart block and sick sinus syndrome
- Ventricular Tachycardia

### **Adverse Reactions:**

- Hypotension
- Heart blocks

### **Administration and Dosage:**

- 0.25 mg / kg IV slow IV push over 2 minutes up to a max. dose of 25 mg

# Diphenhydramine (Benadryl)

## Therapeutic Effects:

- Blocks histamine effects in allergic reactions.
- Sedative
- Reverses untoward effects of some phenothiazine tranquilizers.
- Inhibits motion sickness (antiemetic).

## Indications:

- As an adjunct to epinephrine in the treatment of anaphylactic shock and severe allergic reactions.
- To treat extrapyramidal reactions caused by some antipsychotic medications.

## Contraindications:

- Narrow angle (acute) glaucoma
- Prostate enlargement
- Ulcer disease with symptoms of obstruction

## Adverse Reactions:

- Drowsiness, confusion
- Blurring of vision
- Difficulty in urination (especially older men)
- Dry mouth
- Wheezing; thickening of bronchial secretions

## How Supplied:

- In vials of 10 or 30 ml containing 10 mg/ml
- In vials of 10 ml containing 50 mg/ml
- In ampules of 1 ml containing 50 mg/ml
- In prefilled syringes containing 50 mg in 1 ml

## Administration and Dosage:

- For most purposes, diphenhydramine can be given by intramuscular injection.
- **Adults:**
  - 0.5mg/kg IV/IM, Maximum dose 50 mg
- **Pediatric:**
  - 0.5 mg/kg IV/IM, Maximum dose 50 mg

# Dopamine

## Therapeutic Effects:

- Stimulates the release of norepinephrine and increases myocardial work without significantly increasing coronary blood flow in a compensatory manner.

## Indications:

- Hemodynamically significant hypotension in the absence of hypovolemia

## Contraindications:

- Dopamine will increase heart rate and may induce or exacerbate supraventricular and ventricular dysrhythmias and myocardial ischemia..

## Adverse Reactions:

- Nausea and vomiting
- Exacerbated myocardial ischemic

## Administration and Dosage:

- **Adults:**
  - Is available for intravenous use only. The contents of 2 ampules (200 mg / ampule) should be mixed in 250 ml of NS. This yields a concentration of 1,600 mcg / ml. The initial rate of infusion is 5 mcg / kg / min (maximum rate is 20mcg/kg/min). This rate may be increased until blood pressure, urine output, and other parameters of organ perfusion improve. The lowest infusion rate that results in satisfactory hemodynamic performance should be used to minimize side effects. Monitoring central hemodynamics is essential for proper use of Dopamine in patients who have ischemic heart disease or congestive heart failure and should be instituted prior to or as soon as possible after the initiation of treatment.
  - ROSC after Cardiac Arrest: 10-20 mcg/kg/min to keep SBP >140 or MAP 80-90.
  - Cardiogenic Shock: 5-20 mcg/kg/min for hypotension not corrected by fluid challenge.
  - Can be administered with physicians orders for Traumatic Shock.
  - Symptomatic Bradycardia: 5-20 mcg/kg/min
- **Pediatrics:**
  - Only with physicians orders. Administer dopamine 5-20 mcg/kg/min for Neurogenic Shock after volume replacement. Titrate dopamine to maintain a SBP >90.
- **Street rule:**
  - Take patient's weight in pounds, drop last digit and subtract one. Starting the infusion at this drip rate administers 5 mcg/kg/min.

# Epinephrine

## Therapeutic Effects:

- Increased systemic vascular resistance
- Increased arterial blood pressure
- Increased heart rate
- Increased coronary and cerebral blood flow
- Increased myocardial contraction
- Increased myocardial oxygen requirements
- Increase automaticity
- Decrease bronchospasm

## Indications:

- Cardiopulmonary arrest, severe asthma, anaphylactic reactions, and allergic reactions

## Contraindications:

- Allergy to sulfites
- Minor allergic reactions (urticaria)
- In patients with coronary artery disease, angina, or palpitations

## Precautions:

- In patients who are receiving digitalis, Epinephrine can induce or exacerbate ventricular ectopy.
- Can produce hypertension in patients who are not receiving CPR

## Administration and Dosage:

- **Adult:**
  - Given IVP/IO/ET every 3-5 min.
  - SQ dose is 0.3 - 0.5 mg of 1:1,000 concentration
  - Anaphylaxis:
    - 1:1,000 0.3 mg SQ for moderate respiratory compromise
    - 1:1,000 0.3 mg SQ if no IV available. Repeat as needed to a maximum of 0.5 mg for extreme respiratory compromise (complete or almost complete airway obstruction) or profound hypotension
  - Asthma
    - Consider 1:10,000 0.1mg IVP for extreme respiratory compromise
    - Additional Epinephrine doses IV only with physician orders. Epinephrine is 1:1,000 0.1 mg SQ for extreme respiratory compromise.
  - Cardiopulmonary Arrest
    - 1:10,000 1mg IV. Repeat as needed every 5 minutes
- **Pediatrics:**
  - Initial dose in the pulseless patient is 0.01 mg / kg 1:10,000 IV/IO
  - For true anaphylaxis, 0.01 mg / kg (1:10,000) IV / IO
  - Asthma 1:1,000 SQ 0.01 mg/kg for severe asthma not improving with Albuterol
  - Additional Epinephrine as needed per online medical control.

# Etomidate

## Therapeutic Effects:

- Etomidate is a hypnotic drug without analgesic activity. Intravenous injection of Etomidate produces hypnosis characterized by a rapid onset of action, usually within one minute. Duration of hypnosis is dose dependent but relatively brief, usually three to five minutes when an average dose of 0.3 mg / kg is used.

## Indications:

- Etomidate is indicated by intravenous injection for sedation.
- May be used as a sedative for cardioversion.
- It is especially helpful as a sedative for RSI intubation in the hemodynamically unstable patient in that it has minimal cardiovascular effects.

## Contraindications:

- Etomidate is contraindicated in patients who have shown hypersensitivity to it.

## Precautions:

- Do not administer unless solution is clear and container is undamaged. Etomidate should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus. Use is not recommended in obstetrics.

## Adverse Reactions:

- The most frequent adverse reaction is skeletal muscle movements. Most movements are bilateral. Hyperventilation, hypoventilation, and apnea of short duration (5 to 90 seconds) with spontaneous recovery can occur. Hypertension, hypotension, tachycardia, bradycardia, and other arrhythmias have occasionally been observed.

## Overdosage:

- Overdose may occur from too rapid or repeated injections. A drop in blood pressure may follow too rapid injection.

## Administration and Dosage:

- **Adult**
  - Initial dose is 0.3 mg/kg injected over a period of 30 to 60 seconds. Max dosage 20 mg
  - For sedation prior to cardioversion: 5-10mg IV
- **Pediatric**
  - Initial dose is 0.15-0.3 mg/kg injected over a period of 30 to 60 seconds.



# **Furosemide (Lasix)**

## **Therapeutic Effects:**

- Acts as a potent, rapidly acting diuretic that inhibits re-absorption of sodium and chloride in the ascending loop of Henle.

## **Indications:**

- Indicated for the emergency treatment of pulmonary congestion associated with left ventricular dysfunction.

## **Contraindications:**

- In patients with acute myocardial infarction and other disease states associated with abnormal left ventricular compliance, diuretics must be used cautiously since small changes in volume may induce large changes in left ventricular pressure. This may reduce cardiac coronary perfusion. Because the effects of diuretics on preload are synergistic with those of morphine and nitrates, combination therapy should be used with caution.

## **Adverse Reactions:**

- Dehydration and hypotension can result.
- Hyperosmolarity and metabolic alkalosis can occur
- Furosemide is a sulfonamide derivative and may induce allergic reactions in patients with sensitivity to sulfonamide

## **Administration and Dosage:**

- **Adults:**
  - Lasix 40 mg IV if patient is not taking lasix and not improving with Nitro.
  - Lasix two times the usual daily dose if patient takes Lasix/Bumex (40 mg Lasix equals 1 mg Bumex).
  - It should be injected slowly over a period of at least 1 to 2 minutes

## **NOTE:**

**Not to be given to febrile patient with signs and symptoms such as rales and shortness of breath may also be present with pneumonia. Maximum dose of Lasix 80 mg.**

# Glucagon

## Therapeutic Effects:

- Raises blood glucose levels by promoting catalytic depolymerization of hepatic glycogen to glucose.

## Indications:

- Obduntation from insulin-shock when an IV cannot be initiated in order to give dextrose.

## Contraindications:

- Unstable diabetics usually do not respond to glucagon. Give Dextrose IV instead
- It is vital to arouse the patient from coma as quickly as possible and to give additional carbohydrates orally to prevent secondary Hypoglycemic reactions
- For IV drip infusion, glucagon is compatible with Dextrose solution, but forms a precipitate in Chloride solutions
- Has a positive inotropic and chronotropic reaction on the heart. May be used to treat overdose of beta-adrenergic blockers.

## Administration and Dosage:

- **Adults:**
  - 1 mg SQ or IM, may repeat within 25 min, if necessary. When patient responds, give additional carbohydrates as soon as possible.
- **Pediatrics:**
  - 0.5 mg SQ or IM for patients < 20 kg
  - 1 mg SQ or IM for patients > 20 kg

# Ketamine

## (Ketamine Hydrochloride, Ketalar)

### Therapeutic Effects:

- Ketamine is a rapid-acting, general anesthetic producing an anesthetic state characterized by profound analgesia, normal pharyngeallaryngeal reflexes, normal or slightly enhanced skeletal muscle tone, and cardiovascular and respiratory stimulation.

### Indications:

- Severely agitated patient that poses an immediate threat to himself/herself or others and usual chemical or physical restraints may not be appropriate or safely used.

### Contraindications:

- Combative patient with agitated delirium commonly will be tachycardic and hypertensive. However, it should be noted that Ketamine is a relative contraindication in patients with any condition in which a significant elevation of blood pressure would be hazardous such as:
  - severe cardiovascular disease,
  - heart failure,
  - severe or poorly controlled hypertension,
  - recent myocardial infarction,
  - history of stroke,
  - cerebral trauma,
  - intracerebral mass or hemorrhage.
- The benefit of administering Ketamine to the combative patient with agitated delirium generally outweighs the risks.
- Also contraindicated for hypersensitivity to the drug.

### Adverse Reactions:

- Psychological manifestations varying in severity between pleasant dream-like states, vivid imagery, hallucinations, nightmares or illusions. Although delirium has been reported.
- Diplopia,
- Nystagmus,
- Blood pressure and pulse rate elevations,
- Local pain,
- Exanthema at the injection site.

### Precautions:

- Use with caution in the chronic alcoholic and the acutely alcohol intoxicated patient.
- The intravenous dose should be administered over a period of 60 seconds.
- Resuscitative equipment should be ready for use.
- Although respiratory depression is not a common concern with low dose Ketamine administered IM, as with other sedatives, resuscitative equipment should be ready for use.

### Administration and Dosage:

Supplied in 10 mL vial containing 50 mg/mL.

Dosage: 2 mg/kg IM. Maximum per dose 200 mg or 2 mL. May repeat times one if uncontrollable agitation persists

**DO NOT** attempt to place an IV in a severely combative patient.

# Lidocaine

## Therapeutic Effects:

- Suppresses ventricular dysrhythmia
- Suppresses ventricular ectopy after acute myocardial infarction

## Indications:

- Suppression of ventricular ectopy, including ventricular tachycardia and ventricular fibrillation, as well as premature ventricular complexes in critically ill patients, especially those with acute ischemic heart disease.
- It can be given to the head injured patient that will receive RSI.

## Contraindications:

- Known allergy to Lidocaine
- Bradycardia with PVC's

## Precautions:

- Known or suspected Lidocaine toxicity
- Patients with recent cocaine abuse
- 70 years of age and older
- Hepatic dysfunction

## Adverse Reactions:

- Clinical indicators of Lidocaine toxicity include drowsiness, disorientation, decreased hearing ability, paresthesia, and muscle twitching.
- Some patients may become very agitated.
- More serious toxic effects include focal and grand mal seizures.

## Administration and Dosage:

- **Adults:**
  - For VF / VT: 1-1.5 mg / kg IV repeat in 3-5 minutes to total dose of 3 mg / kg
  - For VT: 1.5mg/kg IV. Repeat 0.75mg/kg every 5 minutes as needed to maximum of 3 mg/kg.
  - For PVC treatment: 1 mg / kg IV, repeat at 0.5 mg / kg to total dose of 3 mg / kg. Follow bolus therapy with maintenance infusion of 2-4mg/min. (OTE: PVC's in an otherwise slow heart rate represent ventricular escape beats, and if eliminated with Lidocaine, may lead to asystole.)
  - Lidocaine drips should be initiated after treating these potentially lethal arrhythmias at 2 to 4 mg / min.
- **Pediatrics:**
  - 1mg/kg IV. Repeat Lidocaine 1mg/kg IV as needed every 3-5 minutes to a maximum dose 3mg/kg. Follow bolus therapy with maintenance infusion of 20-50mcg/kg/min

## NOTES:

300 mg of Lidocaine into 250ml of NS yields 1 micro-drop/kg/minute = 20mcg/kg/min

# Magnesium Sulfate

## Therapeutic Effects:

- Magnesium, the second most plentiful cation of the intracellular fluids, has been linked to three important effects on heart cells.
  - First - magnesium increases the stability of cardiac cells.
  - Second - magnesium is directly related to the metabolism of potassium ions in the cardiac cells.
  - Third - magnesium can act as a functional calcium channel blocking agent. Magnesium is also a skeletal muscle and CNS depressant.

## Indications:

- Ventricular fibrillation and tachycardia refractory to Lidocaine and Amiodarone
- Torsades de Pointes
- Eclampsia and pre-eclampsia

## Contraindications:

- Should not be administered parenterally in patients with heart block.

## Precautions:

- Magnesium may cause respiratory depression through its CNS depressant effects.
- Magnesium can cause fetal harm when administered to pregnant women except in the cases of a toxic mother.
- Use caution if administering with other CNS depressant medications due to the additive effects they may have with magnesium.
- Use caution in patients with renal impairment as magnesium is excreted primarily with the kidneys.

## How Supplied:

- Magnesium Sulfate must be diluted before it is administered if it is in the concentration is in a 50% solution (1g/2 ml) to a 20% solution. A simple way to do this is to add 3 ml of saline for every 1g administered. For example, the first dose given in V-Fib is 2g. Draw up 6ml of saline, then add the contents of 2 vials, which will be 2 g/4 ml. There should be a total of 10 ml in the syringe containing 2g of Magnesium Sulfate.

## Administration and Dosage:

- For cardiac arrest with VF/VT refractory to Lidocaine and Amiodarone 2g given very slow IVP (over 2-3 minutes).
- For Eclamptic seizures: 2 g IV diluted in 20 ml NS given over 20-30 minutes (rapid infusion can lead to cardiac arrest) with physician order only

# Metoprolol (Lopressor)

## Therapeutic Effects:

- In the setting of a myocardial infarction it blocks Beta 1 receptors on the myocardium slowing the heart rate and decreasing myocardial oxygen demand.

## Indications:

- Myocardial infarction evidenced by ECG changes indicated by ST segment elevations in 2 contiguous leads with heart rate greater than 60 BPM and systolic blood pressure greater than 120.

## Contraindications:

- Active Bronchospasm / wheezing
- Systolic blood pressure < 120 mmHg
- Concurrent calcium channel blocker use (not to be used IV within 30 minutes of each other)

## Precautions:

- Use cautiously in patients with history of congestive heart failure and asthma.

## Adverse Reactions:

- Bronchospasm
- Hypotension
- Bradycardia
- Heart block

## Administration and Dosage:

- **Adults:**
  - 5 mg IVP.
  - Repeat dose once if indicated (HR >60 and SBP >120)

# Midazolam (Versed)

## Therapeutic Effects:

- Versed is a water-soluble, short acting, benzodiazepine central nervous system depressant. The CNS effects are dependent on the dose administered, the route of administration, and the presence or absence of other premedication. Onset time of sedation effects after IM administration is 15 minutes, with peak sedation occurring 30-60 minutes following injection. Sedation after IV injection is achieved within 3 to 5 minutes. 40-82% of patients have no recollection of procedures during sedation, depending on route of administration and other medications given.

## Indications:

- An agent for conscious sedation during RSI.
- IV for induction of general anesthesia, before administration of other anesthetic agents – seizure control.
- With the use of narcotic pre-medication, induction of anesthesia can be attained within a relatively narrow dose range and in a short time period – agitated delirium.
- When used IV, Versed is associated with a high incidence of partial or complete impairment of recollection for the next several hours.

## Contraindications:

- Patients with known hypersensitivity and acute narrow angle glaucoma should not receive Versed.
- May be used in open angle glaucoma if receiving appropriate therapy.

## Precautions:

- Continuously monitor patient's respiratory status and have resuscitative equipment immediately available.
- Patients with chronic renal failure and patients with congestive heart failure eliminate Midazolam more slowly. Therefore, a reduced initial dosage is recommended.
- There is a potential hazard to the fetus when used in the pregnant patient.

## Administration and Dosage:

- **Adult:**
  - 1-2 mg IV. May be repeated as needed to maintain sedation to a maximum total dose of 15 mg.
  - If ROSC occurs with patients that receive cold fluids, administer Versed for sedation 2-5mg IV if the patient is not hypotensive
  - If actively seizing, consider IM/Nasal Versed 1-2mg (maximum dose 5mg.) while attempting IV access.
  - If agitated delirium consider IM/Nasal Versed 1 to 2 mg(maximum dose 5 mg) while attempting IV access.
- **Pediatrics:**
  - 0.05 mg/kg IV/IO, maximum single dose of 1mg may repeat one time (maximum combined dose of 2mg).
  - 0.1mg/kg IM/Nasal versed for seizure activities and repeat once for recurrent seizures.

# Morphine

## Therapeutic Effects:

- Increases venous capacitance and systemic vascular resistance, relieving pulmonary congestion. In doing so, it reduces intramyocardial wall tension, which decreases myocardial oxygen requirements.

## Indications:

- Is the drug of choice for the treatment of pain and anxiety associated with acute myocardial infarction.

## Contraindications:

- It is a respiratory depressant and can produce excessive narcosis.
- Should not be given to patients who are volume depleted or with patients who are dependent on medications for the maintenance of blood pressure.

## Adverse Reactions:

- Narcosis
- Hypotension
- Inappropriate heart rate response
- Respiratory depression or arrest

## Administration and Dosage:

- **Adults**
  - IV in small incremental doses of 2-5 mg every 5 to 30 min, to a total dose of 10 mg until the desired effect is achieved.
  - Administer Morphine 5mg IV or IM for burns that meet trauma alert criteria and for isolated long bone fractures. May repeat 5mg one time.
  - CP or AMI: 2mg IV PRN. Repeat at 5 minute intervals to a total of 10mg for the normotensive patient.
  - CHF: 2 mg to 4 mg IV if patient not tolerating C-PAP well.
  - Morphine's effects may be acutely reversed with Narcan
- **Pediatrics**
  - Burns: Morphine IV/IO 0.1 mg/kg (max dose 5 mg) for burns exceeding 10% (2nd or 3rd degree) BSA.
  - Fractures: Morphine IV/IO 0.1 mg/kg (max 5mg).
  - May only be administered with physicians orders



# Naloxone (Narcan)

## Therapeutic Effects:

- Narcan is the specific antidote for narcotic agents. Reverses the actions of all narcotic drugs, including Heroin, Morphine, Methadone, Codeine, Lomotil, Demerol, Dilaudid, Darvon, Paregoric and Percodan. Naloxone is effective in counteracting the effects of overdose from any of these agents. Naloxone will reverse stupor, coma, respiratory depression, etc., WHEN THESE ARE DUE TO NARCOTIC OVERDOSE. It is not effective in reversing coma from other causes.

## Indications:

- Used for the treatment of narcotic overdose. Coma or altered level of consciousness suspected to be due to narcotic overdose or of an unknown cause.

## Contraindications:

- None

## Adverse Reactions:

- Too rapid administration may precipitate projectile vomiting and ventricular dysrhythmia.
- Administration to people who are physically dependent on narcotics may cause an acute withdrawal syndrome. For this reason, Naloxone should be given very slowly, using improvement of respiratory status as an end point.
- In general, the duration of action of Naloxone is shorter than that of the narcosis it is used to counteract. Thus, the patient who has been successfully roused with Naloxone may fall back into stupor or comas as the Naloxone wears off. These patients must therefore be watched closely and the dose of Naloxone should be repeated as necessary.

## How Supplied:

- In concentrations of 0.4 mg/ml and 1 mg/ml

## Administration and Dosage:

- **Adults:**
  - In the field given by slow intravenous injection or nasal atomized.
  - If unresponsive and / or respirations are compromised, administer Narcan 2 mg IV in increments of 0.5mg.
  - OD: May repeat as needed for Methadone or Darvocet overdose. If moderately obtunded, incremental doses of 0.5 mg may be prudent since immediate narcotic withdrawal syndromes may be precipitated. Some agents such as Propoxyphene/ Darvon may require higher doses of Narcan (up to 10 mg) to reverse narcotic effects.
  - AMS: Administer Narcan 2 mg IV in increments of 0.5mg , or Nasal Atomized if no IV access as needed for respiratory depression.
  - Administer this solution very slowly IV while monitoring the rate and depth of the patient's respirations. As soon as there is improvement in the respirations, stop giving the drug.
  - It is preferable that the patient NOT wake up fully in the field, as these patients may be violent when brought abruptly out of coma. USE RESPIRATIONS AS A GUIDE.
  - Cardiac Arrest: 2mg if indicated.
  - Repeat as needed.
- **Pediatrics:**
  - 0.1mg/kg or nasal atomized if no IV access >12 years, as needed for respiratory depression.
  - Repeat as needed

# Nitroglycerin (Nitrostat)

## Therapeutic Effects:

- Relaxes smooth muscle and the effects on the cardiovascular system are chiefly due to relaxation of vascular smooth muscle (hence vasodilation). Nitroglycerin provides relief of pain in angina, probably by dilating coronary arteries and thereby increasing blood flow through them as well as by decreasing myocardial oxygen demand. Through its vasodilating action on peripheral vessels, Nitroglycerin promotes pooling of the blood in the systemic circulation and decreases the resistance against which the heart has to pump (the after load). These effects may be useful in treating congestive heart failure.

## Indications:

- To relieve the pain of Angina
- To treat selected cases of pulmonary edema due to left heart failure with diastolic blood pressure greater than 100 mm / hg.
- To help reduce blood pressure in hypertensive crisis.

## Contraindications:

- Increased intracranial pressure
- Glaucoma
- Hypotension
- Use of Viagra and Viagra like medications.

## Adverse Reactions:

- Transient, throbbing headache (if headache does not occur, suspect that the nitroglycerin is outdated and no longer potent).
- Hypotension
- Dizziness, weakness

## How Supplied:

- Many forms, including ointment, tablets, sustained release capsules. For use in the field, a spray of 0.4 mg strength is preferred.

## Administration and Dosage:

- Given sublingual (under the tongue).
- The patient should be semi sitting or recumbent.
- Administer 0.4 mg (one metered dose) sublingual.
- Repeat every 3-5 minutes PRN, keeping SBP > 100.
- Caution with inferior myocardial infarction. Fluid should be given as a bolus of at least 500ml. Nitroglycerin can be given after systolic blood pressure greater than 120.

# Oxygen

## Therapeutic Effects:

- Elevates arterial oxygen tension and increases arterial oxygen content, thereby improving tissue oxygenation.

## Indications:

- Acute chest pain that may be due to cardiac ischemia
- Suspected hypoxemia of any cause
- Cardiopulmonary arrest

## Adverse Reactions:

- Oxygen toxicity may occur after prolonged ventilatory support with a high oxygen concentration; however, even
- 100% oxygen is not hazardous to the patient's lungs during the brief time required for clinical resuscitation. **IT SHOULD NEVER BE WITHHELD OR DILUTED DURING RESUSCITATION** because of the mistaken belief that it will be harmful.

## Administration and Dosage:

- Can be delivered by mask or nasal cannula for patients with adequate spontaneous breathing.
- For patients who are not breathing spontaneously or whose ventilation is inadequate, oxygen can be delivered by positive - pressure ventilation devices (e.g. BVM, demand valve).
- Oxygen can be adequately delivered by volume-regulated ventilators even during resuscitation of intubated patients.

## **Pralidoxime Chloride (2 Pam Chloride)**

### **Therapeutic Effects:**

- Mark I kits contain two (2) medications, Atropine 2mg and Pralidoxime Chloride 600mg and are used for the treatment of persons recognized, and for treatment of nerve agents or insecticide intoxications. Pralidoxime Chloride should be used in conjunction as an adjunct to Atropine in the treatment of poisoning by nerve agents having anticholinesterase activities. Pralidoxime relieves muscarinic signs and symptoms, salivation, bronchospasms, etc...

### **Indications:**

- Used in conjunction with Auto Injection of Atropine for signs and symptoms of nerve agents and insecticide intoxication.

### **Contraindications:**

- Known hypersensitivity to Pralidoxime Chloride.

### **Adverse Reactions:**

- Minor to moderate pain at injection site, may cause blurred vision, dizziness, headache, hyperventilation, nausea, tachycardia, increases in blood pressure, hyperventilation, and muscle weakness.

### **Administration and Dosage:**

- Always administer Atropine first then one Auto Injector of Pralidoxime Chloride 600 mg. intramuscular (minor exposure). After monitoring patient for 10 – 15 minutes if no patient improvement administer another Mark I kit (moderate exposure). For severe exposures a total of three (3) Mark I kits can be administered for a total of 1800 mg of Pralidoxime Chloride.

# Sodium Bicarbonate

## Therapeutic Effects:

- Sodium Bicarbonate reacts with hydrogen ions to form water and carbon dioxide to buffer metabolic acidosis. Administration of Sodium Bicarbonate does not facilitate ventricular defibrillation or survival in cardiac arrest.

## Indications:

- Should be used ONLY after application of more definitive and substantiated interventions, such as prompt defibrillation, effective chest compression, endotracheal intubation and hyperventilation with 100% oxygen, and the use of first and second line cardiac medications. These interventions will usually take approximately 10 min., thereafter, Sodium Bicarbonate therapy can be considered in specific clinical circumstances, such as documented preexisting metabolic acidosis with or without hyperkalemia. Sodium Bicarbonate is also indicated in tricyclic antidepressant overdoses under physician orders.

## Contraindications:

- Congestive heart failure
- Known respiratory or metabolic alkalosis
- Liver cirrhosis
- Renal impairment

## Adverse Reactions:

- Acid rebound
- Hypercalcemia
- Metabolic alkalosis
- Renal dysfunction

## Administration and Dosage:

- 1 mEq/kg for cardiac arrest with prolonged downtime (>10 min and intubate)
- Should be administered to all arrested dialysis patients.
- Tricyclic Overdose: with physicians orders.

# Solu-Medrol

## Therapeutic Effects:

- Decreases the body's inflammatory response as well as suppresses the body's immune system.

## Indications:

- Used in the treatment of severe asthma, or COPD.

## Contraindications:

- Do not administer to patients with a known hypersensitivity to adrenocorticoid preparations. Do not administer to patients with renal disease, diabetes, hypertension, seizures, or CHF.

## Adverse Reactions:

- Depression, euphoria, headaches, restlessness, CHF, hypertension, nausea, vomiting

## Administration and Dosage:

- A single dose of 125mg slow IVP. Solu-Medrol for EMS use will be stored in the "powder" form and mixed on site when ready to use. It will most likely be stored and mixed in an action type vial.

# Succinylcholine (Anectine)

## Therapeutic Effects:

- Anectine is an ultra short-acting depolarizing-type, skeletal muscle relaxant for IV administration. Succinylcholine combines with the cholinergic receptors of the motor end plate to produce depolarization, which may be observed as fasciculation. Subsequent neuromuscular transmission is inhibited so long as adequate concentration of succinylcholine remains at the receptor site. Onset of flaccid paralysis is rapid (less than 1 minute after IV administration), and with single administration, lasts approximately 4 to 6 minutes. The paralysis following administration of succinylcholine is selective, initially involving consecutively the levator muscles of the face, muscles of the glottis and finally the intercostals, the diaphragm, and all other skeletal muscles.

## Indications:

- Anectine is indicated to facilitate endotracheal intubation and to provide skeletal muscle relaxation during mechanical ventilation.

## Contraindications:

- Succinylcholine is contraindicated for persons with genetically determined disorders of plasma pseudocholinesterase, personal or family history of malignant hyperthermia, myopathies associated with elevated creatine phosphokinase (CPK) values, known hypersensitivity to the drug, acute narrow angle glaucoma, and penetrating eye injuries.

## Precautions:

- May cause malignant hyperthermia. Low levels or abnormal variants of pseudocholinesterase may be associated with prolonged respiratory depression or apnea following the use of succinylcholine. Low levels of pseudocholinesterase may occur in patients with the following conditions: burns, severe liver disease or cirrhosis, cancer, severe anemia, pregnancy, malnutrition, severe dehydration, collagen disease, myxedema, and abnormal body temperature. Also, exposure to neurotoxic insecticides, anti-malarial or anti-cancer drugs, monoamine oxidase inhibitors, contraceptive pills, pancuronium, chlorpromazine, echothiophate iodide, or neostigmine may result in low levels of pseudocholinesterase. Anectine should be used with caution, if at all, in patients with glaucoma. The drug should be used with caution in patients with fractures or muscle spasm because the initial fasciculation may cause additional trauma. Anectine may increase intragastric pressure, which could result in regurgitation and possible aspiration of gastric contents.

## Adverse Reactions:

- Cardiac arrest, malignant hyperthermia, arrhythmias, bradycardia, tachycardia, hypertension, hypotension, hyperkalemia, prolonged respiratory depression or apnea, increased intra ocular pressure, muscle fasciculation, rhabdomyolysis with possible myoglobinuria acute renal failure, excessive salivation, and rash.

## Administration and Dosage:

- **Adult:**
  - 1.5 mg/kg IVP
- **Pediatric:**
  - 1 to 2 mg / kg IVP
- **DO NOT GIVE REPEAT DOSES OF ANECTINE**

# **Tetracaine Hydrochloride Ophthalmic Solution 0.5%**

## **Therapeutic Effects:**

- Topical anesthetic stabilizes the neuronal membrane and prevents the initiation and transmission of nerve impulses thereby effecting local anesthesia. The onset of anesthesia usually begins within 30 seconds and lasts a relatively short period of time.

## **Indications:**

- For procedures in which a rapid and short acting topical ophthalmic anesthetic is indicated.

## **Contraindications:**

- Should not be used in patients with a known hypersensitivity.

## **Precautions:**

- Patient should be advised not to touch or rub their eye. This can cause corneal damage and allow the anesthetic properties to be worn off quickly.

## **Adverse Reactions:**

- May cause a burning or stinging sensation and conjunctival redness.

## **Administration and Dosage:**

- 2 gtts topically applied to each effected eye. Unused portion should be discarded.



# Vasopressin

## Therapeutic Effects:

- Vasopressin acts by direct stimulation of smooth muscle V<sub>1</sub> receptors. The stimulation of the V<sub>1</sub> receptors causes intense peripheral vasoconstriction with less constriction on coronary and renal vessels. It also causes vasodilation of the cerebral vasculature. Vasopressin has a 10 – 20 minute half-life; therefore, only one dose is required during cardiac arrest.

## Indications:

- Can be used instead of epinephrine for the treatment of patients in VF / pulseless VT refractory to defibrillation.

## Contraindications:

- Only true contraindication during VF / pulseless VT is hypersensitivity to Vasopressin

## Adverse Reactions:

- Has been shown to cause fewer side effects than epinephrine

## Administration and Dosage:

- **Adult:**
  - 40 U IV. Single dose only; do not repeat. (Can be substituted for 1<sup>st</sup> or 2<sup>nd</sup> dose of Epi.)
- **Pediatric:**
  - Not recommended for pediatric patients.

# Zofran

## Therapeutic Effects:

- A selective agonist of a specific type of serotonin receptor located in the CNS at the area postrema (chemoreceptor trigger zone) and in the peripheral nervous system.

## Indications:

- Prevention of nausea/vomiting

## Contraindications:

- Hypersensitivity to Zofran

## Adverse Reactions:

- Severe adverse reactions include syncope and visual disturbance

## Administration and Dosage:

- **Adult:**
  - 4mg IV/IO/IM. Max dose 4mg.
  - 4mg ODT
- **Pediatrics:**
  - 0.15mg/kg IV/IO/IM for 6 months or older. Max dose 4mg
  - 4mg ODT (4years and above)

# Procedures Manual

The following procedures are taken out of the context of patient care. Each procedure is very specific. You may have to blend several when you treat a patient. You are expected to have the judgement and familiarity with protocol to select appropriate “sets” of procedures for each patient. For example, after the intubation procedure, we do not instruct you to continue ventilating the apneic patient or to provide emergency transportation.

The purpose of this document is to provide a brief review of standard procedures used to treat patients and is not to be a training document. The Medical Directors know you are familiar with the skills and have not explained everything in minute detail. For example IV cannulation directs the provider to “cannulate the vein” without explaining the detailed steps of the procedure. If you have questions in these areas please refer to your instructor, ALS text, or to your medical director. It is not practical, and likely not of interest to you, to include details of every procedure here.

Your assistance in identifying parts that are not clear or changes in accepted medical procedures is appreciated. Please direct any corrections to your agency administrator or medical director who will forward them to the EMS Protocol group. Thank you.

# Auto Injector

## *Procedure:*

1. Insure the auto-injector is correct medication for patient.
2. Check expiration date and for cloudiness or discoloration.
3. Remove auto-injector safety cap.
4. Select appropriate injection site in the lateral thigh or upper lateral buttocks.
5. Hold Auto Injector using thumb and forefinger (like a pencil).
6. Push auto-injector firmly against the skin until the injector activates, do not use a “stabbing” or “jabbing” motion.
7. Hold it in place until medication is fully injected (at least 10 seconds).
8. Record the time.
9. Dispose of the injector in the biohazard container.
10. Reassess the patient.

# Automatic External Defibrillation

## *Procedure:*

1. Completely dry the chest area of the wet patient.
2. Be sure patient is pulseless.
3. Turn on A.E.D. and connect electrodes.
4. Push the analyze button and do not touch patient during the analysis.
5. If shock is advised then insure all rescuers are clear of the patient and press the shock button.
6. Provide Basic Life Support to the point where ventilation is completed.
7. Continue with chest compressions and follow the prompts of the A.E.D. to repeat shocks.
8. Connect cardiac monitor to the patient.
9. Continue appropriate treatment protocols.

# Autopulse Automated Circumferential CPR Device

The American Heart Association recognizes that consistent and uninterrupted compressions that maintain coronary perfusion pressures (CPP) during resuscitation efforts is one of the primary keys to surviving the event. The Autopulse Circumferential CPR Device has been proven effective in the pre-hospital clinical setting in providing consistent compressions that maintain a high CPP. Because of the emphasis placed upon providing effective compressions during CPR the Autopulse should be deployed as soon as possible during the resuscitation effort.

## *Procedure:*

1. Determine viability and potential of resuscitation.
2. Position patient in location so as to allow proper placement of the Autopulse
3. Perform manual CPR while setting up Autopulse
4. Position Autopulse board under patient using marks on board as guideline
5. Secure the velcro strap on the compression band over patient's chest
6. Turn Autopulse unit on
7. Push adjust button – Lifeband will automatically adjust to the size of the patient
8. Push the start button – Autopulse will begin providing compressions at exactly the the prescribed rate of 100/min

## *Precautions/Contraindications:*

The Autopulse **SHOULD NOT** be used on pediatric or trauma patients

The Autopulse should be deployed with caution on any patient with suspected atraumatic hemorrhage

Compressions **SHOULD NOT** be interrupted unless absolutely necessary

# Blood Draw Procedure

## *Procedure*

1. Obtain venous access using appropriate procedures
2. Prior to the administration of fluids or medications attach department approved devices for the evacuation of blood.
3. Evacuate a maximum of 10cc-12cc of blood.
4. Place blood in the blood tubes in the following order
5. Red Top
6. Purple Top
7. Blue Top (wrapped in cold pack)  
Note: Gently invert each blood tube once to allow for proper mixing of anti-coagulants.
8. Blood tubes must be properly labeled for hospital use:
9. Patients Name (last name first)
10. DOB
11. Date/time blood draw
12. Paramedic that had drawn the bloods initials
13. Blood specimen must be placed into a properly labeled bag.
14. Blood must be provided to patient care provider at local hospital.

# Capnography

## ***Purpose:***

Today, tracheal tube positioning and confirmation is accomplished using nonphysical examination techniques including the use of esophageal detector devices, qualitative end tidal CO<sub>2</sub> indicators and capnographic or capnometric devices. The American Heart Association (AHA) recommends “secondary confirmation of proper tracheal tube placement for patients with a perfusing rhythm by capnography or exhaled CO<sub>2</sub> detection immediately after intubation and during transport (Class II A).”

Capnography remains a non-invasive method of monitoring the level of carbon dioxide in exhaled breath (EtCO<sub>2</sub>) to assess a patient’s ventilatory status. A true capnograph produces an EtCO<sub>2</sub> value as well as a waveform or capnogram. Capnographs are useful for monitoring ventilator status, warning of airway leaks, and ventilator circuit disconnections, and ensuring proper endotracheal tube placement. Capnography may also be used to assist clinicians in diagnosing and treating another medical conditions including the efficacy of cardiac arrest efforts and in predicting outcome.

## ***Indications:***

Capnography can rapidly identify a variety of subtle pathological disturbances of metabolic, cerebral vascular, and respiratory systems making it truly the *ventilation vital sign*. Capnography is useful in the following circumstances:

- 1) To verify and provide evidence of the correct placement of the endotracheal tube. This is especially helpful in a noisy environment.
- 2) To assure continual tracheal intubation placement during transport and transfer of the patient to the emergency department staff.
- 3) To detect malignant hyperthermia in an intubated overdose patient ingesting hypermetabolic agents such as cocaine, amphetamines, or ecstasy.
- 4) To assess the effectiveness of Cardiopulmonary Resuscitation (CPR).
- 5) Monitor to provide adequate ventilation in the sedated intubated patient.
- 6) Monitor ventilation of the intubated patient suffering from a closed head injury.

## ***Procedures:***

The procedures contained within this protocol identify a cursory application of the device and do not purport to redefine or supplement the manufacture’s recommendations and/or technical applications. Each clinician must review and fully understand the manufacturer’s handbook before applying the device in actually patient care situations:

### **A. Capnography use for Sudden Cardiac Arrest:**

- 1) Open the CO<sub>2</sub> tubing connector door and connect the appropriate CO<sub>2</sub> filterline tubing by turning the tubing clockwise. The tubing should be attached to the unit first and then to the patient.
- 2) Press the “on” button and adjust the contrast if necessary.
- 3) Verify that the ETCO<sub>2</sub> monitor display is on.
- 4) The CO<sub>2</sub> waveform will display in channel 2 or 3.
- 5) After auscultation and adequate chest rise, confirm ET tube placement using customary methods including the tube check device. Once confirmed place the manufacture’s ET tube adaptor in place and deliver 3-6 ventilations. Levels of CO<sub>2</sub> in the sample gas. (Capnography may be used with the Combi-tube.)
- 6) CO<sub>2</sub> will not be detected if the esophagus has been intubated.



- 7) Confirmation of ET tube placement by Capnography is to be supplemented with pulmonary auscultation by stethoscope and the CO2 indicator on the BVM.
- 8) Once Capnography has been started it is to remain in place until the patient is on the ED bed. This will provide continuous monitoring of the endotracheal tube during any patient movements, loading, transport and unloading.
- 9) Initial CO2 levels in the cardiac arrest patient may be very low due to a decrease in metabolism and circulation. If CO2 levels do not increase during CPR, reassess for effective chest compressions, proper ventilation rate and appropriate time intervals of epinephrine administration.
- 10) A sudden drop in End tidal CO2 levels during cardiac arrest could be caused by a dislodged or kinked endotracheal tube, tension pneumothorax, inadequate chest compressions or inadequate ventilations.
- 11) In the event the patient has return of systemic circulation (ROSC) apply pulse oximetry.
- 12) At the completion of the call a "Code Summary" report should be attached to the patient care report for archival and quality assurance purposes.

**B. Capnography use for intubated Medical and Trauma patients:**

- 1) Follow the same procedures for device connection and tube confirmation listed in 2.A. "Capnography used for Sudden Cardiac Arrest."
- 2) Use in combination with pulse oximetry to confirm appropriate ventilation and oxygenation.
- 3) The capnography can alert the clinician to critical changes in the medical/trauma patient's condition. These would include:
  - a) A rapid decrease in END tidal CO2 values could indicate the onset of cardiac arrest, sudden hypotension, pulmonary embolus, kinking or dislodgement of the ET tube, tension pneumothorax, or inadequate ventilation.
  - b) An increase in CO2 production could indicate an overdose of hallucinogenic amphetamines such as ecstasy or other hypermetabolic agents such as cocaine. These drugs may lead to increase in muscle metabolism, which causes an increase in CO2 production and ultimately leading to a rise in body temperature – malignant hyperthermia.
  - c) Tiring accessory respiratory muscles, changes in level of consciousness or sedation secondary to overdose or therapeutic treatment will result in respiratory depression/hypoventilation ultimately leading to an increase in CO2 levels.
  - d) Can provide the clinician some indication if the current treatment is effective by showing if CO2 values are remaining in or returning to normal ranges.
  - e) A decrease in CO2 readings can provide some indication of low cardiac output (CHF), hypovolemia or pulmonary embolism because the delivery of CO2 to the alveoli and measured on the capnograph depends on adequate blood flow through the pulmonary vasculature.
- 5) For the intubated head trauma patient that shows signs of severe increase in intracranial pressure, appropriate hyperventilation can be achieved through capnography with a goal of 25-30 mmHg (asymmetrical pupils, GCS dropping more than 5 points, extensor or flexor posturing).

**A. When CO2 is not detected, three factors must be quickly evaluated by the field clinician for possible causes:**

- 1) Loss of airway due to apnea or due to improper placement of the endotracheal tube.
- 2) Loss of circulatory function as a result of cardiac arrest, exsanguination and/or massive pulmonary embolism.
- 3) Equipment malfunction, extubation of the endotracheal tube or tube obstruction.

**B. Factors Affecting Accuracy:**

- 1) Moisture and secretions entering and clogging the breathing circuit can interrupt monitoring and can cause inaccurate measurements.
- 2) The CO2 sensors are cross sensitive to anesthetic gases.

- 3) The added weight of the adapter on the endotracheal tube can cause kinking and extended extubation.
- 4) Sidestream capnographs are not accurate in neonatal and pediatric patients because they compete with the patient's tidal volume.
- 5) Mainstream capnographs cannot accommodate non-intubated patients.

**C. Three Common Causes Affecting CO<sub>2</sub> Excretion:**

- 1) Decreased metabolic rate (sedation, hypothermia, and death) = decreased CO<sub>2</sub> blood levels = decreased ET CO<sub>2</sub> readings.
- 2) Increased metabolic rate (exercise, fever, shivering, sympathomimetic drugs) = increased CO<sub>2</sub> blood levels = increased ET CO<sub>2</sub> readings.
- 3) Decreased blood flow (inadequate chest compressions, shock, hypovolemia, tension pneumothorax, pulmonary embolism, cardiac arrest) = decreased CO<sub>2</sub> delivery to the lungs = decreased ET CO<sub>2</sub> readings.

# Child Birth

## ***Procedure:***

1. Use sterile technique.
2. Guide and control the birth, but do not retard or hurry delivery.
3. Check the neck for a circumferential umbilical cord as soon as the head delivers.
4. Suction the mouth and then the nose with a bulb syringe.
5. Suction again after delivery.
6. Stimulate the neonate by drying it and provide supplemental oxygen
7. Keep the neonate warm (98 degrees).
8. Perform an APGAR assessment.
9. If the APGAR < 7, begin neonatal resuscitation.
10. If the APGAR is 7-10, dry completely, wrap in sterile or clean blanket, and place on mother to conserve heat.
11. Clamp the cord in two places approximately 4-6 inches from the infant.
12. Cut the cord between the two clamps.
13. If the mother has excessive postpartum bleeding, gently massage the lower abdomen.
14. Do not delay transport for or attempt to deliver placenta.
15. If placenta delivers spontaneously, take it to the hospital.

## ***Complications:***

### Prolapsed Cord Presentation:

1. Place the mother in Trendelenburg position.
2. Insert your gloved hand to apply counter-pressure against the head to allow blood flow through cord.
3. Elevate the mother's buttocks to alleviate pressure on the cord.
4. Provide emergency transportation to the nearest appropriate facility.

### Breach Presentation:

1. If the presenting part of the fetus is not the head, place the patient in the Trendelenburg position.
2. Support presenting parts as they deliver, and coach the mother through a controlled delivery.
3. Provide emergency transportation to the nearest appropriate facility.

### Circumferential (around the neck) Umbilical Cord:

1. Try to slip the cord gently over the head.
2. If you are unable to slip the cord over the head, clamp it 2 inches apart then cut.
3. Provide emergency transportation to the nearest appropriate facility.

## **Combitube (Dual Lumen Airway Device)**

### ***Procedure:***

1. Hyperoxygenate the patient with 100% oxygen.
2. Prepare the combitube by lubricating distal end.
3. Maintain neck in a neutral position.
4. Perform a jaw lift and insert the combitube until the printed marks are aligned with the teeth.
5. Use caution if facial trauma has caused sharp, broken teeth or dentures.
6. **DO NOT FORCE THE COMBITUBE.** If it does not advance easily, redirect it or withdraw and reinsert.
7. Inflate line 1, (to the pharyngeal balloon) with 100ml.
8. Inflate line 2, (to the distal cuff) with approximately 15ml.
9. Ventilate through the longer blue (esophageal) tube and auscultate.
10. Confirm ventilation by the presence of breath sounds and chest rise and the absence of abdominal air sounds.
11. Continue ventilating if pulmonary breath sounds are present. (The second tube may be used for gastric suction.)
12. Ventilate through the second (clear) tube if pulmonary breath sounds are absent and reauscultate.
13. Confirm ventilation by the presence of breath sounds, chest rise, and the absence of abdominal sounds.
14. Continue ventilating with oxygen by a positive pressure oxygen device or bag valve device.
15. Monitor respiration.

The patient may be intubated with the Combitube in the esophagus. Deflate line 1 and move the tube to the left of the patient's mouth and intubate. Reinflate line 1 and ventilate if necessary.

## **Continuous Positive Airway Pressure (C-PAP)**

### ***Procedure:***

1. Apply C-PAP mask to face with head strap firmly in place to secure a good seal
2. Attach C-PAP device to oxygen canister
3. Turn oxygen on to appropriate level
4. C-PAP device will be fixed at 7.5 cm of water oxygen pressure
5. The C-PAP device needs to be opened up for oxygen flow to the mask
6. Reassess patient for mask seal, SAO<sub>2</sub> saturations, and improvement or deterioration.
7. If patient's hypoxemia improves and respiratory rate decreases then mask C-PAP is likely to be successful
8. If hypoxia persists or worsens and respiratory rate increases then oral tracheal intubation may be required.
9. Patients initially may not be comfortable with mask C-PAP but with assurance generally will allow a trial of C-PAP.

# EZ-IO Insertion

## *Indication*

The EZ-IO product system is approved for patients weighing 40 kg and greater using the EZ-IO AD and for patients weighing between 3 and 39 kg using the EZ-IO PD. It is indicated whenever fluid or pharmacological therapy is critical in the cardiac arrest patient, but traditional vascular access techniques are not possible or require too much time to achieve a successful insertion.

## *Equipment*

- EZ-IO™ driver
- EZ-IO™ needle set
- Alcohol or povidone-iodine swab
- Extension set or EZ-Connect
- 10 mL syringe
- Normal saline
- Tape or gauze

## *Procedure:*

1. Locate proper site for EZ-IO insertion.
  - a. **Adult tibial insertion:** The first landmark is the patella or knee cap. To locate it, feel the front surface of the leg just below the femur or thigh bone for a “floating” bony structure. The second landmark is approximately 2 finger widths below the patella. It is the tibial tuberosity, a round oval elevation or “bump” on the front surface of the tibia or lower leg. Now, 1 finger width medial (toward the inside) of the tibial tuberosity is the final landmark. This is the insertion site for the EZ-IO.
  - b. **Pediatric tibial insertion:** If the tibial tuberosity *CANNOT* be palpated, the insertion site is two finger widths below the patella and then medial along the flat aspect of the tibia. If the tibial tuberosity *CAN* be palpated, the insertion site is one finger width below the tuberosity and then medial along the flat aspect of the tibia.
2. Clean the insertion site (use aseptic technique). Use providone-iodine swab and/or alcohol to clean the site prior to powering the EZ-IO into position.
3. Prepare the EZ-IO driver and needle set:
  - a. Open the EZ-IO case.
  - b. Remove the driver and one EZ-IO cartridge.
  - c. Open the EZ-IO cartridge and attach the needle set to the driver (you should feel a “snap” as the small magnet connects).
  - d. Remove the needle set from the cartridge.
  - e. Remove the safety cap from the needle set. One way to remove the cap from the needle set (with the needle facing you) is to grasp the cap tightly and rotate clockwise to loosen and remove. Attempting to “pull” the cap off may remove the entire needle set from the driver – rotating counterclockwise will cause the catheter and stylet to separate.
4. Begin insertion of the EZ-IO Needle Set
  - a. Holding the EZ-IO driver in one hand, stabilize the leg near the insertion site with the opposite hand. Make sure your hands and fingers are a safe distance from the path of insertion.

- b. Position the driver at the insertion site with the needle at a 90 degree angle to the surface of the bone. Power the needle set through the skin at the insertion site until you feel the needle set tip encounter the bone itself.
  - c. At this point if there is any doubt that the needle set is not long enough, verify that you can see the 5 mm marking on the catheter itself (this is the mark closest to the flange). If this mark is not visible, you should abandon the procedure as the needle set may not be long enough to penetrate the IO space.
5. Continue to insert the EZ-IO.
  - a. Apply firm and steady pressure on the driver and power through the cortex (hard, outer surface) of the bone, ensuring the driver is maintained at a 90 degree angle at all times.
  - b. Stop when the needle flange touches the skin or a sudden decrease in resistance is felt. This indicates entry into the bone marrow cavity (intramedullary space).
6. Remove driver from the needle set.
  - a. While supporting the needle set in one hand, gently pull straight up on the driver and lift away.
  - b. Return the driver to its case.
7. Remove the stylet from the catheter. While grasping the hub firmly with one hand, rotate the stylet counter clockwise (unscrew the stylet from the catheter). Pull the stylet out of the catheter and consider placing it into the empty cartridge, now called the stylet shuttle. The stylet shuttle must then be placed in an FDA–approved biohazard container as soon as possible. Do not replace or attempt to “recap” the stylet.
8. Confirm proper EZ-IO catheter tip position. Proper placement of the IO catheter tip can be confirmed through any of the following:
  - a. The IO catheter stands straight up at a 90–degree angle and is firmly seated in the tibial bone.
  - b. Blood at tip of the stylet (sometimes visible).
  - c. Aspiration of a small amount of bone marrow with a syringe. (Extravasation) underneath the skin.
9. Attach the primed EZ-Connect or any standard luer lock extension set to the EZ-IO hub and then SYRINGE FLUSH the IO space with 10 mL of normal saline. Prior to any drug or fluid administration be certain to flush the EZ-IO catheter with 10 mL of fluid. A rapid syringe flush will “clear the pathway” allowing for an acceptable infusion rate.
10. Initiate the infusion. A pressure infuser may be necessary to maintain adequate flow rates.
11. Notify ED staff of the EZ-IO insertion, since timely removal of trocar is important. The EZ-IO catheter may be secured in place with a standard dressing.

### ***Removal***

1. The EZ-IO® catheter should be removed within 24 hours.
2. Either grasp the hub directly or attach a sterile syringe. The syringe will serve as a larger handle for the catheter hub and is preferred. Support the patient’s extremity while rotating the catheter clockwise and gently pulling. Rotating the hub during removal reduces catheter to bone friction and will allow for an easier removal process. Once the catheter has been removed immediately place it in an approved biohazard sharps container.

**Note:** Removal of the extension or fluid administration set, without proper protection of the EZ-IO hub (in the form of a sterile cap, port or extension set), could cause bleeding or infection.

**Note:** Maintaining a 90 degree angle while rotating the catheter will insure proper removal without complications.

**Note:** Be certain that you DO NOT ROCK the catheter while removing. Rocking or bending the catheter with a syringe may cause the catheter to separate from the hub.

**Note:** If hub-catheter separation occurs use an appropriate hemostat to grasp and gently remove the catheter in the same manner as suggested above (rotating while gently pulling).



# Electrical Cardioversion

## *Procedure:*

1. Sedate the conscious patient if time allows.
2. Reconfirm the dysrhythmia and clinical signs.
3. Position pads or paddles on patient.
4. Enable the synchronizer.
5. Confirm marks on the ECG at the R waves indicating synchronizer mode.
6. Set the energy level.
7. Insure everyone is "ALL CLEAR," and cardiovert.
8. Reinterpret the rhythm and evaluate clinical signs.
9. Reset the synchronizer and repeat at a higher energy setting PRN.

## *Note:*

If delays in synchronization occur, and clinical conditions are critical, deliver an immediate unsynchronized shock. Infant paddles/pads are generally used for patients < 1 year of age or < 15 kg.

# Electrical Defibrillation

## *Procedure:*

1. Confirm the dysrhythmia and clinical signs.
2. Select energy level.
3. Temporarily stop CPR.
4. Position the pads or paddles on the patient.
5. Insure everyone is "ALL CLEAR," and defibrillate.
6. Reinterpret the rhythm and evaluate clinical signs.
7. Repeat at a higher energy setting as needed.

## *Note:*

Infant paddles/pads are generally used for patients < 1 year of age or < 15 kg.

# Endotracheal Intubation

## Direct Visual Intubation Adult Care

### *Procedure:*

1. Hyperoxygenate the apneic patient.
2. Do not interrupt ventilations for more than 30 seconds.
3. Use ITLS / PHTLS techniques for trauma patients.
4. Assemble and test the laryngoscope.
5. Attach a syringe to balloon cuff.
6. Test the cuff with appropriate amount of air.
7. Deflate it, leaving the syringe attached.
8. Insert the stylette (if you choose to use one) in the tube.
9. Prepare an agency approved securing device, CO<sub>2</sub> indicator, and a suction device.
10. Remove any foreign objects in the patient's airway.
11. Suction the airway PRN.
12. Grasp laryngoscope handle in left hand and engage the laryngoscope blade.
13. Grasp endotracheal tube in right hand.
14. Stop CPR for NO MORE than 30 seconds.
15. Insert the laryngoscope blade into the right side of the mouth without touching the teeth.
16. Sweep the tongue to the left and visualize the vocal cords.
17. Cricoid pressure may be applied during the insertion to minimize aspiration.
18. Insert the tube until the cuff passes the vocal cords.
19. Remove the laryngoscope blade.
20. Inflate the endotracheal cuff with appropriate amount of air.
21. Ventilate the patient with a bag valve device.
22. Rule out abdominal air sounds, auscultate for bilateral breath sounds, and observe chest rise.
23. If lung sounds are unequal, consider causes, deflate and reposition the tube, PRN.
24. If epigastric air sounds are present, extubate, hyperoxygenate, and reintubate with a new tube.
25. Secure the endotracheal tube with a securing device.
26. Resume CPR, PRN.
27. Observe and record any CO<sub>2</sub> readings including Capnography.
28. Observe and record the number on the tube in relation to the teeth.
29. Monitor the patient's respiratory status with available indicators.
30. If unable to establish endotracheal intubation after no more than two attempts utilize a bilumen or subglottic airway device
31. Consider cervical collar placement to assist in ET securing.

## **Direct Visual Intubation Pediatric Care**

### ***Procedure:***

1. Determine the correct tube size using either the Broselow Tape or physical signs.
2. Have the next size tube larger and smaller available. This is especially important in smaller children.
3. Avoid cricoid pressure.
4. Apply the adult intubation procedure.
5. All pediatric patients that are intubated should be cervically immobilized for tube security.

## **Direct Visual Intubation With Suspected Spinal Injury**

### ***Procedure:***

1. Initially ventilate the patient using the jaw lift method and an oral pharyngeal airway.
2. Intubation will proceed with a 2<sup>nd</sup> rescuer maintaining cervical alignment.

## Digital Intubation

### *Procedure:*

1. Insert a stylet into a lubricated ETT and form the tube into an “open J” form.
2. Kneel left of the patient’s head facing the feet.
3. Place a bite block or oropharyngeal airway between the patient’s molars to protect your fingers.
4. “Walk” your left index and middle finger down the midline of the tongue, while pulling forward.
5. Palpate the epiglottis with your middle finger. (It feels much like the lobe of the ear.)
6. Press anteriorly on the epiglottis.
7. Slip the tube into the mouth at the left corner.
8. Use your index finger to keep the tip against your middle finger (that is pressing the epiglottis).
9. You can feel the end of the tube or the cuff to know the position of the tip.
10. Guide the tube to the epiglottis using the middle and index fingers.
11. The epiglottis is in front and your fingers behind the tube.
12. Advance the tube through the cords.
13. Press anteriorly with both left fingers to prevent the tube slipping into the esophagus.
14. Confirm tube placement and secure it.

## Nasotracheal Intubation

### *Procedure:*

1. Spray neo-syneprine (if available) into patient's nasopharynx.
2. Spray Cetacaine (if available) into the patient's oropharynx and nasopharynx.
3. Lubricate the cuff and distal end of a 7.0 or 7.5 mm ETT with lidocaine gel (if available).
4. Insert the ETT with into the largest naris with the bevel placed against the septum.
5. If you feel resistance, withdraw slightly and rotate the ETT to avoid the turbinate.
6. Reinsert the tube gently. **DO NOT FORCE THE ETT.**
7. Apply cricoid pressure and displace the mandible anteriorly.
8. Advance the tube into the trachea during inhalation.
9. Watch the neck at the laryngeal prominence to evaluate placement of the tube.
10. Tenting of the skin on either side of the prominence indicates the tube is lodged in the pyriform fossa. Slightly withdraw and rotate the ETT to the midline.
11. Bulging and anterior displacement of the laryngeal prominence usually indicates that the ETT has been correctly placed.
12. The patient will normally cough, strain, or both.
13. Hold the hand or ear over the tube to detect airflow.
14. Inflate cuff and ventilate while auscultating for bilateral breath sounds.
15. Confirm tube placement and secure as listed above.

# End-Tidal CO<sub>2</sub> Detector

## *Procedure:*

1. Compare the initial color to the purple “CHECK” color on the product. The color should be the same or darker.
2. Do not use a detector if its color is lighter than the check color.
3. Firmly attach the detector between the inserted tube and the ventilating device.
4. Ventilate the patient 6 times. Results with less than 6 moderate ventilations will be erroneous.
5. Compare the indicated color to the chart.
6. If the indicated color is tan, ventilate six more times and monitor for changes.
7. If patient is in respiratory arrest and color indicator is purple, confirm correct intubation placement.



# External Pacing

## *Procedure:*

1. Switch the pacer off and set the energy level off or to the lowest possible setting.
2. Sedate the conscious patient PRN.
3. Set the mode to demand or fixed (asynchronous) rate.
4. Set the pacing rate (usually 70).
5. Attach the electrodes and cables.
6. Record the patient's initial rhythm.
7. Turn on the pacing switch and look for pacer spikes on the monitor.
8. Treat failure to pace by checking the patient's rate (it may be fast enough to inhibit pacing) and the equipment.
9. Increase the energy level until electrical capture (a QRS responds to a pacer spike) is observed.
10. Check for a right side pulse. The pacer may cause muscle twitches so left side pulses may be misleading.
11. Treat failure to capture by checking the patient's rhythm and incrementally increasing the pacer's energy.
12. Check for a pulse with each change.
13. Treat failure to capture (at maximum) by checking the patient, electrode placement, equipment and transporting
14. Use the lowest energy setting that will produce a pulse to minimize pain.
15. Observe and record the patient's paced BP.
16. Treat hypotension by increasing the paced rate to 80 PRN.
17. Treat hypotension at a paced rate of 80 by giving a fluid challenge and/or dopamine.
18. Record the paced ECG.
19. Transport and monitor the patient frequently.

# Handling Amputated Parts

## *Procedure:*

1. Gently remove gross contaminants by irrigating amputated parts with sterile saline or a moist, sterile sponge.
2. Do not attempt a thorough cleansing of the amputated part.
3. Place moistened, sterile 4 x 4s into a waterproof container.
4. Wrap the amputated part with moist 4 x 4s and place it into the waterproof container.
5. Place the sealed container into ice water or cold packs.
6. Transport the amputated part with the patient but out of the patient's sight.

## Infusaport (Central Catheter)

### *Procedure:*

1. Prepare infusion set.
2. Identify the Infusaport septum by palpating its outer perimeter.
3. Wear sterile gloves.
4. Observing aseptic technique, use iodine swab sticks to disinfect the skin in a circular fashion.
5. Attach a 10 ml syringe filled with 5 ml of saline and a non-coring 90 degree (Huber) needle.
6. Flush the needle to remove any air.
7. Insert the needle into the Infusaport septum at a perpendicular angle.
8. Confirm needle placement by aspirating blood.
9. Inject the contents of the syringe to flush the port and catheter.
10. Draw back 8-10 ml of blood and discard the syringe.
11. Draw needed blood samples with a new syringe.
12. Discard needle, and connect infusion set.
13. Use an additional iodine swab to again disinfect around the injection site and needle.
14. Apply a bulky sterile dressing to stabilize the needle and secure it with adhesive tape.
15. Loop the infusion tubing and secure it to the chest with another piece of tape.

# Interfacility Monitoring IV Pumps

## *Procedure:*

1. The flow-rate will be ordered by the physician.
2. Request the facility to document the pump is leaving with the patient.
3. Insure the pump will work on battery when unplugged.
4. If the battery will not run the pump, replace the pump before transporting.
5. Insure the medical facility staff has explained the use and trouble shooting of the pump.
6. Plug the pump into the vehicle AC outlet and with the engine running, turn on the inverter.
7. The "battery in use" light on the pump should go out.
8. A yellow light in the center of the outlet will indicate the power is working properly.
9. An inverter that does not work, normally has a circuit breaker in line or on the inverter that is off.
10. An audible alarm will sound if a problem occurs. The flow will cease until the problem is corrected.
11. The following are common problems and solutions:
  - Air in the line (indicated on the screen):
    - a. Place the pump on "hold" by pressing the HOLD/STOP/OFF button.
    - b. Close the IV line and open the IV pump and look for air in the line.
    - c. If the bubble is small, open the IV line and allow the bubble to move beyond the pump.
    - d. If the bubble is large, insert a syringe into a hub along the IV line. Open the IV line and draw the bubble into the syringe as it passes.
    - e. Close the pump door and press the START button.
    - f. When all else fails, use a Dial-a-Flo® IV line extension or manually adjust the drip rate.
  - Line occlusion (indicated on the screen):
    - a. This normally indicates a pinched IV line between the IV bag and the pump.
    - b. Straighten the IV line and remove the occlusion.
    - c. The patient's IV site may have become interrupted. Attempt to clear the line with a saline flush or insert a new catheter into another vein.
    - d. Press the START button to resume flow.
    - e. When all else fails, use a Dial-a-Flo® IV line extension or manually adjust the drip rate.
  - Low/dead battery (indicated on the screen):
    - a. Plug the pump's power cord into the vehicle outlet and turn on the inverter.
    - b. Get the patient to his/her destination and plug the cord into an AC outlet.
    - c. When all else fails, use a Dial-a-Flo® IV extension or manually adjust the drip rate.
12. Monitor and record the flow-rate of the IV pump on the EMS report.
13. Do not change the flow rate setting on the pump without a physician's order.
14. Document any problems with the pump.
15. If the patient becomes unstable or shows signs of overdose, request orders to change the infusion rate.
16. If the patient becomes unstable, Divert to the nearest appropriate facility.
17. Calculate, prior to transport, the drip rate equivalent to the flow rate on the pump. If the pump fails, you can quickly disconnect the pump and hang a normal bag drip.

## Interfacility Monitoring IV Pumps

***Procedure: (Continued Page 2 of 2)***

The following is a list of medications you may encounter being transferred with the patient via an IV pump.

diltiazem (cardizem)	15 mg/hour	dopamine (intropin)	5 µg/kg/minute
Dobutamine HCl (dobutrex)	20 µg/kg/minute	Lidocaine HCl	4 mg/minute
esmolol hydrochloride (brevibloc)	200 µg/kg/min	magnesium sulfate	3 ml/minute
heparin	1600 units/hr	norepinephrine bitartrate (levophed)	4 µg/min
eptifibatide (integrillin)	2 µg/kg/min	phenylephrine (neo-synephrine)	180 µg/min
Nitroglycerin (tridil)			

## Interfacility Monitoring of Non-Medications IVs

### *Setting up an IV:*

1. Prepare an IV solution with tubing.
2. Assist the provider performing the venipuncture by providing supplies such as dressing, tape, etc.

### *Monitoring of Non-Medications IVs:*

1. The EMT will be responsible for monitoring drip rates required to keep the vein from collapsing or clotting:
  - Microdrips should be set to 30 gtts/min.
  - Macrodrips should be set to 7-8 gtts/min.
  - Dial-A-Flo® extension sets are preset and should not be altered by the EMT.
  - IV pumps are preset and should not be altered by the EMT.
2. An EMT transporting a patient who has an IV complication will contact the emergency department, county EMS, or Coastal Communications.
3. Blood transfusion is an advanced life support outside the Paramedic scope of practice. Paramedics will transport patients receiving blood only when mandated by a physician and instruction is given prior to departure.
4. Potassium chloride (KCL) does not require cardiac monitoring for concentrations < 30 mEq/1000 ml IV bag (15 mEq/500 ml). Flow rates in excess of 30 mEq/hour or concentrations in excess of 30 mEq/1000 ml will require cardiac monitoring and will be considered ALS. All patients on KCL will be transported in an ALS ambulance.

## Intraosseous Infusion (IO)

### ***Procedure:***

1. Palpate the tibial tuberosity and move 2-3 finger widths below, on the medial surface. *Femur and humerus sites may be used with EZ IO.*
2. Prepare the area with antiseptic solution.
3. Use sterile technique.
4. Wrap the fingers and thumb around the knee to stabilize the proximal tibia.
5. Do not let any portion of your hand rest behind the insertion site.
6. Palpate the landmarks again to confirm insertion site.
7. Insert the needle through the skin over the flat anteromedial surface of the tibia.
8. Advance the needle through the bony cortex of the proximal tibia, directing the needle perpendicular (90 degrees) to the long axis of the bone or slightly caudal (toward the toes) to avoid the epiphyseal plate, using a gentle twisting or drilling motion.
9. Stop advancing the needle when you feel a sudden decrease in resistance.
10. Remove the stylet and attach a syringe filled with 3-5 ml of N.S.
11. Infuse a small amount of normal saline then aspirate.
12. Resistance or infiltration indicates improper placement and cannulation must be attempted in the other extremity.
13. If the test injection is successful, remove syringe, connect a three-way stopcock, and connect IV tubing.
14. Turn the needle guard clockwise until the flange contacts the skin.
15. Anchor the needle with tape, and leave the site visible to assess for infiltration.
16. Infuse fluid or medications under pressure.
17. Monitor the I.O. drip rate.

## **IV Saline Lock**

### ***Procedure:***

1. Flush a male IV adapter.
2. Attach the adapter to the catheter and flush the combination.
3. Initiate and secure an IV access.
4. Flush the lock with at least 3 ml of Sodium Chloride before and after administration of any medication.
5. The lock may be converted to a regular IV replacing the adapter with IV tubing or adding IV tubing with a needle.



# **King Airway (Dual Lumen Airway Device)**

## ***Procedure:***

1. Hold the KING LT(S)-D at the connector with dominant hand. With non-dominant hand, hold mouth open and apply chin lift, unless contraindicated by C-spine precautions or patient position. Using a lateral approach, introduce tip into corner of mouth.
2. Advance the tip behind the base of the tongue while rotating tube back to midline so that the blue orientation line faces the chin of the patient.
3. Without exerting excessive force, advance tube until base of connector is aligned with teeth or gums.
4. Inflate cuffs to 60 cm H<sub>2</sub>O or to “just seal” volume. Typical inflation volumes are as follows:  
  
KING LT-D: Size #2, 25-35 ml; Size #2.5, 30-40 ml; Size #3, 45-60 ml; Size #4, 60-80 ml; Size #5, 70-90 ml.  
  
KING LTS-D: Size #3, 40-55 ml; Size #4, 50-70 ml; Size #5, 60-80 ml.
5. Attach the breathing circuit/resuscitator bag to the KING LT(S)-D. While gently bagging the patient to assess ventilation, withdraw the KING LT(S)-D until ventilation is easy and free flowing (large tidal volume with minimal airway pressure).
6. If necessary, add additional volume to cuffs to maximize seal of the airway.
7. When utilizing the KING LTS-D's gastric access lumen: Lubricate gastric tube (up to an 18 Fr) prior to inserting into KLTS-D's gastric access lumen.

# Mechanical Ventilator

## *Procedure:*

1. Intubate patient.
2. Verify tube placement.
3. Attach the ventilator to an oxygen source.
4. Occlude the opening of the patient connector to insure the pop-off valve is working.
5. Set the ventilator to manufacturer's recommendations.
6. Attach the ventilator to the tube.
7. Auscultate for adequate breath sounds, and visualize for adequate chest rise. If inadequate, adjust tidal volume.

Use the trigger mechanism to hyperventilate or assist with spontaneous respiration,. Use caution when hyperventilating as this may cause gastric distention.

# Nasogastric Tube Insertion

## *Procedure:*

1. Contact Medical Control for physician orders, except cardiac arrest
2. This procedure is contraindicated with frontal head or facial trauma where the cribriform plate may be fractured.
3. Ready the proper size tube (adult 16 french/pediatric as per the Broselow Tape (6 - 16 french)), 60 ml syringe, water soluble lubricant, and tape.
4. Measure the tube from the stomach to the ear and then to the nose. (Note the mark on the tube.)
5. Lubricate the end of the tube with lidocaine gel.
6. It may also be advisable to spray the mouth and nose (of the conscious patient) with Cetacaine.
7. Insert the tube into the largest naris.
8. If resistance is felt, withdraw slightly and gently reinsert using a twisting motion to avoid the turbinate.
9. Do NOT FORCE the NG tube.
10. Advance until the mark noted above is at the naris opening.
11. The patient can assist by swallowing during insertion.
12. Verify tube placement by auscultating epigastric sounds while injecting 20-30ml's of air.
13. Tape the tube in place and note depth of tube on the run report.
14. Aspirate stomach contents and irrigate concomitantly, as ordered.

# Nasal Atomizers

## ***Purpose:***

For delivery of medications intranasally when IV access is not available.

## ***Medications to be used with Atomizer:***

- Narcan
- Versed

## ***Procedure:***

- Apply medication to atomizer devices.
- Place atomizer approx. 1.5 cm into nostril.
- Briskly compress syringe to administer ½ of the total volume as atomized spray.
- Remove and repeat in the other nostril, so that all of the medication has been administered.
- Continue to attempt IV access for additional drug delivery.

## ***Precautions:***

- Damage to mucosa either from trauma or chronic cocaine use will reduce effectiveness of drug delivery.
- Patients with active Upper Respiratory Infections that have large amounts of mucous secretions, a bloody nose, or severe hypotension are *contraindicated* for this route of medication administration.

# Nasopharyngeal Airway Insertion

## *Procedure:*

1. Examine the nasal passages for obstruction.
2. Size the airway against the patient's face (nostril to earlobe).
3. Lubricate the device.
4. Insert the tip into the nostril and advance it with a rotating motion until the flange rests against the nostril.
5. Ventilate the patient with either a pocket face mask or a bag valve mask device.

# Nebulizer

## *Procedure:*

1. Assemble a nebulizer, oxygen tubing, and mouthpiece (or face mask), mist chamber, and drug reservoir.
2. Add medicine to the reservoir and connect it with the mouthpiece or face mask.
3. Connect the oxygen supply and the set flow at 6-8 liters/minute.
4. Place the patient in a position of comfort and have the patient place the mouthpiece in their mouth.
5. Encourage the patient to breathe calmly, deeply and evenly until no more mist is formed in the nebulizer.
6. You may need to slowly increase the flow to the nebulizer to insure all medication is nebulized.
7. The treatment will be finished in 5 to 15 minutes.
8. Reassess respiratory status.
9. Discontinue the treatment if there is any adverse reaction such as light-headedness, a 20% increase in heart rate, extreme tremor, bronchospasm, or an increase in P.V.C.s.

# Needle Cricothyrotomy

## *Procedure:*

1. Identify the cricothyroid membrane, located anteriorly, between the thyroid cartilage and cricoid cartilage.
2. Clean the area well with Betadine solution or a providone-iodine swab stick.
3. Attach appropriate size IV catheter-over-the needle to a 6-12 ml syringe.
4. Insert IV catheter through the skin and cricothyroid membrane into the trachea.
5. Direct the needle at a 45-degree angle caudal (toward the feet) until a "pop" is felt.
6. Aspirate with the syringe. If air is easily returned, the needle is in the trachea.
7. Withdraw the needle while gently advancing the catheter downward into the position.
8. Attach the 15 mm adapter (from a 3.0 ET tube) to the needle hub.
9. Oxygenate the patient with 100% oxygen.
10. Secure the apparatus to the patient's neck.
11. Transport in emergency status as soon as possible. Adequate oxygenation can be maintained for 30-45 minutes. Ventilation cannot be adequately accomplished.

# Neonatal Resuscitation

## *Procedure:*

1. The APGAR score will be assessed at both 1 and 5 minutes after birth.
2. Resuscitate any infant with an APGAR < 7.
3. Clear the airway. Gently suction the mouth, then the nose with a bulb syringe.
4. If meconium is present, it should then be quickly aspirated by direct suctioning through an endotracheal tube.  
Suction pressure should not exceed 100 mmHg.
5. Suctioning is rapidly repeated until no more meconium is present.
6. If the endotracheal tube was used for meconium suctioning, reintubate with a new tube each time.
7. Do not ventilate the patient until all meconium is cleared.
8. The infant may then be ventilated with positive pressure.
9. Initiate breathing if the infant is apneic or the respiratory rate is slow and irregular.
10. Ventilate the infant with a bag valve mask using 100% oxygen at 40 breaths per minute with pressure applied to gently move the chest wall.
11. In an infant who has not yet taken a breath, over 40 cm H<sub>2</sub>O pressure may be necessary to expand the lungs. In mildly asphyxiated infants this may produce a prompt increase in heart rate and the onset of regular, respiration.
12. Intubate and assist respiration if the heart rate and respiration have not reached normal within 2 minutes.
13. Maintain body temperature.



# Oropharyngeal Airway Insertion

## Adult Care

### *Procedure:*

1. Measure the device against the patient's face (mouth to ear).
2. Open the mouth with a chin lift or cross finger technique.
3. Insert the airway upside-down and rotate the airway after it passes the tongue, or depress the tongue with a tongue depressor or laryngoscope blade and insert the airway with the device directed downward and follow the contour of the tongue.
4. Ventilate the patient.

## Pediatric Care

### *Procedure:*

1. Measure the device against the patient's face (mouth to ear).
2. Depress the tongue with a tongue depressor or laryngoscope blade.
3. Insert the airway with the device directed downward and follow the contour of the tongue.
4. Ventilate the patient.

# Peak Flow Meter

## *Procedure:*

1. Place a disposable mouthpiece on the meter.
2. Set the indicator to the bottom of the scale.
3. Have the patient hold the meter and inhale deeply.
4. Have the patient make a tight seal on the mouthpiece and blow out as hard and fast as possible.
5. Document the peak flow indicated on the meter.
6. Provide any appropriate medical treatment.
7. Repeat the process and document any change.

# Pediatric Resuscitation Tapes

## *Procedure:*

1. Place the patient in a supine position.
2. Remove tape from package and unfold.
3. Place tape (face up) next to patient.
4. Place end of tape at the top of the patient's head.
5. Place the edge of one hand on the end of the tape.
6. Run the edge of your free hand down the tape.
7. Stop when your free hand is even with the heel of the patient's foot.
8. If patient is longer than the tape, stop here and use child or adult protocols.
9. Verbalize the color block (or letter) and weight range at which your hand has stopped.
10. If patient falls at a border, go to the greater marker.

# Peripheral Venipuncture

## *Preparing the IV:*

1. Prepare an IV solution, IV tubing, an appropriate size catheter, constricting band, disinfectant swab, gauze, band aid, tape or veniguard (optional), and arm board.
2. Open IV envelope at the edge where it is notched.
3. Check the IV bag for cloudiness and squeeze it for leaks.
4. Read the name of the solution.
5. Open IV tubing and connect all pieces of tubing.
6. Close control valve below the drip chamber.
7. Insert IV tubing into the IV solution bag portal.
8. Squeeze the drip chamber until it is half full of solution.
9. Uncap distal end of tubing and prevent contamination of the cap.
10. Open the IV tubing valve to allow the solution to flow through until all air bubbles are out of the tube.
11. Close the tubing valve and recap the distal end of tube.

## *Inserting the IV:*

1. Use personal protective equipment including gloves and glasses (or face shield).
2. Carefully explain the procedure to the patient.
3. Locate a suitable venipuncture site.
4. Place the constricting band to halt venous return without obstructing arterial flow.
5. Palpate the veins for resilience and select a site.
6. Cleanse the site with increasing concentric circles.
7. Stabilize the vein distally with the rescuer's thumb.
8. Cannulate the vein.
9. Remove the needle and dispose it properly while compressing the vein proximal to the tip of the catheter to minimize bleeding.
10. Draw blood for the hospital.
11. Label the tubes appropriately.
12. Connect IV tubing to the catheter.
13. Remove the constricting band.
14. Open the IV clamp to assure free flow.
15. Set the IV drip rate for the medication or fluid use.

## *Securing the IV:*

1. Cover the insertion site.
2. Secure the IV catheter with a loop of tape or the veniguard.
3. Loop the tubing back and secure it with another piece of tape or strip from the veniguard package.
4. Do not cover IV portals.
5. Recheck IV drip rate to insure it is flowing at the correct rate.

## *Troubleshooting the IV (if the IV is not working well):*

1. Make sure the constricting band is off.
2. Check the IV insertion site for swelling and infiltration.
3. Check the IV tubing clamp to make sure it is open.
4. Check the drip chamber to insure it is half full.
5. Lower the IV bag below IV site and look for blood to return into the tubing.

# Pleural Decompression

## *Procedure:*

1. Assess the patient to insure the condition is a tension pneumothorax.
2. Continue to give the patient high-flow oxygen and ventilatory assistance.
3. Identify the second intercostal space midclavicular line.
4. Quickly prepare the area with a providone-iodine swabstick.
5. Make a one-way valve on a 14 gauge 2 1/2 inch IV catheter. **Do not delay the procedure for this step.**
6. Insert the catheter into the skin over the third rib and direct it just over the top of the rib into the interspace.
7. Insert the catheter to the hub or until air escapes.
8. Remove the needle and leave the catheter in place.
9. Secure the catheter.
10. Reassess lung sounds and patient's condition.

## **Pneumatic Anti-Shock Garment (PASG)**

### ***Procedure:***

1. Remove patient's clothing.
2. Assess and record distal pulses.
3. Assess respiratory status before, during and after inflation, and observe for respiratory distress.
4. To splint lower extremities, inflate the leg compartments.
5. To splint the pelvis, inflate the leg compartments first and the abdominal compartment next.
6. Reassess and record distal pulses.

# Pulse Oximetry

## *Procedure:*

1. The pulse oximeter is used by turning the unit on and applying the monitoring clip to the patient's finger.
2. False readings may result if patients have carbon monoxide inhalation, false fingernails or are hypotensive.
3. The paramedic should assess the clinical condition of the patient and correlate it with the pulse oximeter readings.

# Rapid Sequence Induction (RSI) for Intubation

## *Procedure:*

1. Prepare for intubation, suctioning, and emergency cricothyrotomy.
2. Maintain cervical stabilization of the trauma patient.
3. Connect the patient to the cardiac monitor and oximeter.
4. Oxygenate with high flow oxygen. Manual ventilation may cause gastric distention, vomiting and aspiration.
5. Administer Versed, Etomidate, Succinylcholine, and Atropine per drug manual.
6. Apply cricoid pressure.
7. Intubate the patient when the jaw becomes relaxed.
8. Stop intubation and ventilate by BVM if the intubation effort requires more than 30 seconds.
9. Ventilate patient by BVM until spontaneous respiration returns (usually 3 to 5 minutes) if unable to intubate.
10. Place bilumen or subglottic airway device if endotracheal intubation is unsuccessful and ventilation is inadequate.
11. Perform a cricothyrotomy if bilumen or subglottic airway device is unsuccessful and ventilation remains inadequate.
12. Treat bradycardia during intubation by temporarily halting intubation and hyperventilating the patient.
13. Apply the cervical collar and complete spinal precautions for transport as needed.
14. Perform spinal immobilization on all pediatric patients requiring intubation (for tube security).
15. If Etomidate was used for intubation Versed should be used for sedation.



# Res-Q-Pod Device

The Res-Q-Pod is a device designed to be inserted between the mask and the bag or between the ET tube and the bag. The concept of Res-Q-Pod is to decrease passive flow of air from the mouth through the trachea to the lungs. That occurs after a chest compression. By eliminating this passive refilling of the lungs, negative intrathoracic pressure develops improving filling of the heart with blood and therefore coronary perfusion pressure with each subsequent chest compression. The American Heart Association has rated this device as IA intervention, meaning probably helpful, benefits outweigh the risks. This device also has a flashing light once activated that reminds the EMT/paramedic to compress the bag only every six seconds (10/minute).

## *Procedure:*

1. Determine viability and potential of resuscitation.
2. Position the Res-Q-Pod between the mask and the bag.
3. Pull the adhesive off the red button at the top of the Res-Q-Pod and press the button to initiate the red light that times ventilations
4. Detach the Res-Q-Pod once return of spontaneous circulation has been clearly re-established.

## *Precautions/Contraindications:*

Compressions **SHOULD NOT** be interrupted unless absolutely necessary

# Spinal Immobilization

## Immobilization of the Supine/Prone Patient:

### *Procedure:*

1. Begin with manual immobilization of the head in a neutral, in-line position. Manual immobilization should be provided without interruption until complete patient immobilization is accomplished.
2. Contraindications to placement in an in-line position:
  - a) Neck muscle spasm that prohibits neutral alignment
  - b) Increased pain
  - c) Onset of or increase of a neurological deficit such as numbness, tingling, or loss of motor ability
  - d) Compromise of the airway or ventilation
  - e) If the patient's injuries are so severe that the head presents with such misalignment that it no longer appears to extend from the midline of the shoulders
3. Size and apply the appropriate cervical collar. To size the collar, measure the distance, using your fingers, between the bottom of the jaw to the top of the trapezius muscle or according to manufacturer's recommendations. In the rare instance an appropriately sized cervical collar is not available, maintain manual immobilization and complete the immobilization process without a cervical collar.
4. While maintaining manual stabilization with a cervical collar in place:
  - a) Position the backboard next to the patient so that the head of the backboard is approximately 1-2 feet above the patient's head.
  - b) Log roll the patient onto the backboard in a supine position.
  - c) Reposition patient, in order to center on backboard, by sliding patient in an upward motion (axial) on the board. Do not slide patient in a direct lateral position, as this may manipulate the spine.
5. Place cervical immobilization device in place.
6. Pad the space, as needed, between the back of the head and the backboard to prevent hyperextension of the cervical vertebrae.
7. Secure the patient's body to the board with straps.
  - a) Immobilize the upper torso to prevent upward sliding of patient's body during movement and transportation. This is accomplished by bringing straps over the shoulders and across the chest to make an X.
  - b) Additional straps must be placed to prevent side to side movement of the body on the board. This can be accomplished by placing straps across the iliac crests and mid-to-distal thigh or at the pelvis with groin loops.
  - c) Arms should be placed at the patient's side to prevent movement of the shoulder girdle.
  - d) Secure both feet together to prevent rotary movement of the legs.
  - e) Apply 1 or 2 inch tape directly across the forehead and secure the head while extending the tape under the backboard. DO NOT apply tape directly under the chin as this may create an airway obstruction. Tape may be placed across the surface of the semi rigid cervical collar.

## Immobilization of the Standing Patient

### *Procedure:*

1. Initiate manual immobilization of the head in a neutral in-line position. Approach the patient from the front to eliminate lateral movements.
2. Apply the appropriate cervical collar.
3. Position backboard behind standing patient.
4. Have rescuer holding manual stabilization of the head front the front of the patient pass off the stabilization to a second rescuer that will hold manual stabilization of the head from behind the patient, with arms on either side of the standing backboard. The third rescuer can hold the backboard in place during this switch.
5. Have two rescuers face the patient on either side of the backboard and grasp the board just under each of the patient's arms.
6. With one rescuer at each side of the backboard and the third holding the head, slowly lay the board down. A stop approximately half-way down will be needed to allow the rescuer holding the head to reposition hands.
7. When the patient is supine on the backboard, follow steps in previous section to secure patient to the backboard.

## Vest-type Extrication Device (KED)

### *Procedure:*

1. Initiate manual in-line stabilization of the head.
2. Apply appropriate cervical collar.
3. Insert device behind the patient. Try to limit movement while positioning the device.
4. Position the device so it fits securely under the axils of the patient. Open the side flaps and place them around the patient's torso. Make sure the device is centered on the patient.
5. Position, connect and adjust the torso straps. Leave the uppermost strap loose until the head is immobilized.
6. Position and fasten each groin loop. Adjust one side at a time to prevent excess movement of the patient.
7. Place the pad behind the patient's head, filling the void to prevent hyperextension.
8. Position the head flaps. Fasten the forehead strap and apply the chin strap over the cervical collar.

**Caution: The handles of the KED should not be used to lift, carry or move the patient.**

## Pediatric Immobilizer

### *Procedure:*

1. Begin with manual immobilization of the head in a neutral, in-line position, unless contraindicated. Manual immobilization should be provided without interruption until complete patient immobilization is accomplished.
2. Size and apply the appropriate cervical collar.
3. While maintaining manual stabilization with a cervical collar in place:
  - a) Position the Pediatric immobilizer next to the patient so that the head of the immobilizer is approximately 6-12 inches above the patient's head.
  - b) Log roll the patient onto the backboard in a supine position.
  - c) Reposition patient, in order to center on immobilizer, by sliding patient in an upward motion (axial) on the immobilizer. Do not slide patient in a direct lateral position, as this may manipulate the spine.
4. Pad the space, as needed, between the back of the head and the immobilizer to prevent hyperextension of the cervical vertebrae.
5. Secure the patient's body to the immobilizer with the attached straps.
  - a) Immobilize the upper torso to prevent upward sliding of patient's body during movement and transportation. This is accomplished by bringing straps over the shoulders and across the chest to make an X. The cross straps velcro into the strap that crosses the abdomen.
  - b) Apply the attached straps across the chest, abdomen and legs. Take care not to leave any space between the straps and the sides of the patient. If the patient is so small that there is a space left between straps and sides of patient, take up space with pads (eg. blanket, towel, etc.).
  - c) Arms should be placed at the patient's side to prevent movement of the shoulder girdle.
6. Place cervical immobilization device in place.
7. Adjust the head piece to snugly fit around the patient's head. Fasten the forehead strap and apply the chin strap over the cervical collar.

### *Note:*

If a pediatric immobilizer is not available, care should be taken to fill all voids between the patient and the straps with padding.

## **Surgical Cricothyrotomy (10 years or greater)**

### ***Procedure:***

1. Hyperextend the patient's neck (unless cervical spine injury is suspected).
2. Locate the cricothyroid membrane between the cricoid and thyroid cartilage.
3. Clean the area well with betadine solution or a providone-iodine swabstick.
4. Using a scalpel, make a vertical incision through the skin and expose the cricothyroid membrane.
5. Direct the scalpel posterior at a 90 degree angle to the cricothyroid membrane.
6. Make a horizontal incision through the cricothyroid membrane.
7. Careful hold the scalpel to limit the depth it can penetrate to prevent esophageal perforation.
8. Insert a hemostat or a needle cap through the opening to widen and maintain the pathway.
9. Do not remove the scalpel until another instrument is in the tract.
10. It is important to not aim the knife cephalad (toward the head), since injury to the vocal cords may occur.
11. Insert an appropriate sized endotracheal tube through the incision.
12. Insert the tube not more than 1-2 cm past the superior border of the cuff to avoid right mainstem intubation.
13. Ventilate the patient with a bag valve device at the highest available oxygen concentration.
14. Inflate the properly placed tube cuff with the appropriate amount of air.
15. Ensure proper tube placement.
16. Secure the tube.
17. Evaluate the neck for complications.

# Tourniquet

Use of a tourniquet is appropriate when upper or applying direct pressure to the site of bleeding cannot control lower extremity hemorrhage. A tourniquet will be applied to any life threatening extremity hemorrhage

## *Procedure:*

1. Utilize a Medical-Director approved tourniquet device designated for use in the management of hemorrhage
2. Use Personal Protective Equipment (PPE) appropriate for potential blood exposure
3. Visually inspect injured extremity and avoid placement of a tourniquet over joint, angulated or open fracture, stab or gun shot wound sites
4. Assess and document circulation, motor and sensation distal to injury site
5. Apply approved tourniquet device proximal to wound (usually 2-4 inches)
6. Tighten tourniquet incrementally to the least amount of pressure required to stop bleeding
7. Cover wound with an appropriate sterile dressing and/or bandage
8. Do not cover tourniquet (keep tourniquet visible)
9. Re-assess and document circulation, motor and sensation distal to tourniquet
10. Ensure receiving facility staffs are aware of tourniquet placement and time tourniquet placed
13. Document Estimated blood loss and time tourniquet applied

## Twelve Lead E.C.G. Monitor

### *Placement of Electrodes:*

1. RA - right arm, upper arm or upper chest near the shoulder
2. LA - left arm, upper arm or upper chest near the shoulder
3. RL - right leg or lower abdominal quadrant near the hip
4. LL - upper leg or lower abdominal quadrant near the hip
5. V1 - 4th intercostal space, immediately to the right of the sternum
6. V2 - 4th intercostal space, immediately to the left of the sternum
7. V4 - 5th intercostal space in the midclavicular line (Note: V4 must be placed prior to V3)
8. V3 - Placed between V2 and V4
9. V5 - 5th intercostal space in the anterior axillary line.
10. V6 - 5th intercostal space in the mid axillary line.

# **Hazardous Materials Exposure**



# Hazardous Materials Incident

## ***Rationale:***

This protocol describes the procedures used by the Special Response Team (SRT) when caring for chemically injured patients. The goal is to provide guidelines for the safest and best possible care for patients and rescuers.

## ***Responsibilities:***

SRT Members and EMS personnel will maintain a working knowledge of its content.

## ***Procedure:***

The team will set up controlled areas of relative exposure. The areas will be a hot zone (in which exposure may be expected), a warm zone (in which decontamination is begun), and a cold zone (in which patients and rescuers should be safe from additional exposure).

Patients who are in contact with a contaminant are in the hot zone and will be removed to the warm zone by rescuers who are protected by appropriate personal protective equipment. Treatment for victims will begin in the warm zone by properly protected hazardous materials operations level personnel. The Decontamination Team will initiate respiratory care as soon as decontamination has progressed to removal of the patient's Self Contained Breathing Apparatus (SCBA). The team will then send patients to the Treatment/ Transport Area for chemical exposure related problems or to the Medical Assessment Area for post-entry assessment and rehydration as needed.

Patients who pose a threat of contaminating others (secondary contamination) will be treated in the treatment area by properly protected hazardous materials personnel. Rescue units used to transport contaminated patients will be protected as much as possible against secondary contamination. Any removable equipment not required for patient care will be removed from the rescue unit before a patient is loaded. Patients requiring specialized medications will be treated by paramedics who have received approved training in Hazardous Materials Toxicology.

Patients who offer no risk of secondary contamination will be transported by a rescue unit to an appropriate facility. If the patient meets criteria found in section III of the TTP, the TTP will dictate where the patient will be transported.

# Hazardous Materials Treatment

## ***Rationale:***

Proper care of chemically exposed patients by the SRT may require treatments which are not in the EMS protocol. These treatments have been approved by the Medical Directors and may be used with approval of Medical Control at a receiving hospital. **All treatments are level III and require a physician's order.**

## ***Treatment:***

- Chemical exposure to the eyes, which require irrigation consider:
  - Pontocaine eye drops, 1-2 gtts. per eye
  
- Chemically induced asthma consider:
  - Ventolin (Proventil) 2.5mg/3ml (1 unit does) aerosol
  - Solu-Cortef, 100 - 500mg, IV over 30 seconds
  
- Chlorine Gas inhalation with dyspnea and associated respiratory irritation consider:
  - Sodium Bicarbonate aerosol breathing treatment, 3mEq 8.4%/2ml of NS nebulized at 6 LPM.
  
- Symptomatic Cyanide Poisoning consider:
  - Sodium Nitrite 3% solution, 300mg, given over 2.5 to 5 minutes, followed by
  - Sodium Thiosulfate 25% solution, 12.5gm, given over 2.5 to 5 minutes. Repeat ½ dose in 20 m'
    - Initiate O2 immediately while preparing for intravenous administration
    - Simultaneously with the oxygen, administer Amyl Nitrite Inhalant for 15 to 30 seconds q 2 or 3 minutes
    - Discontinue Amyl Nitrite and then inject adults with 300 mg (10 mL of a 3% solution) of sodium nitrite intravenously at the rate of 2.5 to 5 mL/minute. The recommended dose of sodium nitrite for children is 6 to 8 mL/square meter (approximately 0.2 mL/kg of body weight) but is not to exceed 10 mL.
    - Immediately thereafter, inject adults with 12.5 g (50 mL of a 25% solution) of sodium thiosulfate. The dosage for children is 7 g/square meter of body surface area, but dosage should not exceed 12.5 g. The same needle and vein may be used for both steps.
    - If the poison was taken by mouth, gastric lavage should be performed as soon as possible, but this should not delay the treatments outlined above.
  
- Hydrocarbon and Active Metal exposure consider:
  - Mineral oil topically
  - Epinephrine is contraindicated
  
- Hydrofluoric Acid exposure with muscle tetany, QT segment prolongation, or cardiac arrest consider:
  - Calcium Gluconate 10% gel, mixed 1gm Calcium Gluconate with 5oz Water-soluble lubricant, applied topically over Hydrofluoric (HF) Acid burns.
  - Calcium Gluconate 10% solution, 1 gm IV
  
- Symptomatic Hydrogen Sulfide poisoning consider:
  - Sodium Nitrite 3% solution, 300mg, given over 2.5 to 5 minutes
  
- Symptomatic Methemoglobinemia consider:
  - Methylene Blue 1% solution (10mg/ml) 1-2mg/kg, over 10 minutes

***Haz Mat Treatment Cont.***

- Symptomatic Organophosphate or Carbamate poisoning consider:  
Atropine Sulfate, 2mg. Repeat doses every 3-5 minutes.  
Consider Pralidoxime Chloride (2-PAM), 1gm, over 5-10 minutes. Repeat in 1 hour PRN.
- Phenol exposure consider:  
Polyethylene Glycol (GUNK) topically

# Atropine Sulfate

## CLASS:

ANS- Anti-Cholinergic, Parasympatholytic

## MECHANISM OF ACTION:

It is a competitive antagonist for muscarinic acetylcholine at post-synaptic receptor sites and in the CNS.

**HEART:** It has positive chronotropic effects particularly in the SA node, atrial and junctional tissues. Cardiac output increases due to increased heart rate. It increases cardiac muscular consumption of oxygen (MVO<sub>2</sub>). It has positive dromotropic effects through the entire conduction system except the purkinje fibers. Ventricular bradydysrhythmia may be stabilized as a result of an increased cardiac rate. **SYSTEMIC:** CNS stimulation particularly with toxic doses may precipitate psychosis, restlessness, excitation, confusion, hallucinations, delirium. It may also cause mydriasis as a result of paralysis of the ciliary muscle with resultant photophobia. It dries mucous membranes of respiratory system and relaxes smooth muscles of the airways. Decreased smooth muscle tone, decreased sphincter tone, decreased pancreatic enzyme secretion (insulin, glucagon) may all result from its use.

## INDICATIONS:

Cholinergic crisis due to organophosphate or carbamate poisonings.

## CONTRAINDICATIONS:

- Glaucoma-(relative)- due to increased intraocular pressure. The iris is crowded against the back of the anterior chamber and drainage of aqueous humor is inhibited. There may be absence of cholinergic effects, especially bronchorrhea.
- Organochlorine insecticides (aldrin, benzene hexachloride (BHC), HCH, hexachlor, hexachloran, chlordane, chlordecone, DDT, Kepone, chlorobenzilate, dicofol, Kelthane, dieldrin, dieldrite, dienochlor, pentac, endosulfan, endrin, hexadrin, heptachlor, hexachlorobenzene, lindane, gamma BHC or HCH, Kwell, mehtoxychlor, Marlate, mirex, terpene polychlorinates, strobane, toxaphene)
- Nitrophenolic and Nitrocresolic Herbicides (dinitrocresol, dinitrophenol, dessin, acrex, talan, dinocap, crotothane, karathane, dinopenton, dinoprop, dinosam, dinoseb, acricid, Hel-Fire, vertac CS (Tear gas) or CN (mace)

## DRUG INTERACTIONS:

Increased effect of other anticholinergic (antimuscarinic) agents.

Increased effect of sympathomimetic agents.

Concomitant use of Pralidoxime may potentiate antimuscarinic toxic effects.

## DOSAGE:

Moderately severe poisoning (hypersecretion and other end-organ manifestations without CNS depression)

- Adults & Children > 12 years: 2.0 – 4.0 mg q 15 min.  
Until pulmonary secretions are controlled, which may be accompanied by other signs of atropinization (flushing, dry mouth, dilated pupils, and tachycardia > 140/min)
- Severe poison: may need two or more times the dose

***Atropine Sulfate Cont.***

- Pediatric- 0.05 mg/kg every 3-5 minutes (minimum dose .1 mg)

**SUPPLIED:**

8mg/20ml vials (0.4mg/ml)

**ROUTES OF ADMINISTRATION:**

IV, ET, IO

**\*Notes :**

**Do not administer atropine or pralidoxime prophylactically**

**Do not administer in fungicide poisoning (not a cholinesterase inhibitor)**

# Calcium Gluconate

## CLASS:

Cation

## ACTIONS:

Supplies calcium to tissues, and the calcium binds with fluoride to make calcium fluoride

## INDICATIONS:

- Mild to moderate skin burns resulting from exposure to hydrofluoric acid
- Hydrofluoric Acid exposure with QT prolongation, tetany, or cardiac arrest

## CONTRAINDICATIONS:

- Hypercalcemia
- Ventricular fibrillation
- Digitalized patients

## CAUTION:

- Mild necrosis and abscess formation may occur with topical administration.
- Rapid IV administration may cause vasodilatation, decreased B/P, cardiac arrhythmias, syncope, and cardiac arrest.
- Use caution when administering to a pregnant woman.

## DRUG INTERACTIONS:

Do not administer to digitalized patients.

## DOSAGE:

### Topical:

- Mix 1 gram 10% calcium gluconate with 5 oz. water soluble lubricant (KY or Surgilube) and apply over painful areas. Cover with sterile dressings.

### Intravenous:

- Adult: 1 gram over 5 minutes (10% solution )
- Pediatric: 0.5 gram over 5 minutes (10% solution)

## SUPPLIED:

1 gram in 10ml's. Each gram includes 93 mg (4.65 mEq) calcium.

## ROUTES OF ADMINISTRATION:

Topically, IV

# Cyanokit Protocol

## ***Rationale:***

Cyanide poisoning may result from inhalation, ingestion, or dermal exposure to various cyanide-containing compounds, including smoke from closed-space fires. Sources of cyanide poisoning include hydrogen cyanide and its salts, cyanogenic plants, aliphatic nitriles, and prolonged exposure to sodium nitroprusside. The presence and extent of cyanide poisoning are often initially unknown. There is no widely available, rapid, confirmatory cyanide blood test. Treatment decisions must be made on the basis of clinical history and signs and symptoms of cyanide intoxication. If clinical suspicion of cyanide poisoning is high, Cyanokit should be administered without delay.

## ***Assessment Checklist***

- Evidence of trauma/burns- if so proceed to trauma protocol, use spinal immobilization as indicated
- Soot in nose/mouth/oropharynx
- Airway/breathing
- Circulation- BP/Perfusion
- LOC (Level of Consciousness) – GCS, pupil size/reactivity

## **Smoke Inhalation – Adult**

### ***Exposure Level I:***

#### ***(Mild – soot in nose/mouth/oropharynx)***

- Don appropriate PPE
- Remove patient from source of smoke/inhalation
- Administer 100% O<sub>2</sub> via non-rebreather
- Monitor pulse-oximetry
- Monitor ECG, if indicated
- Reassess frequently

### ***Exposure Level II:***

#### ***Moderate – soot in nose/mouth/oropharynx***

- ***confusion, disorientation, altered LOC***
- ***Hypotension***

- Administer 100% O<sub>2</sub>, ventilate with BVM if needed
- Intubate/PEEP as indicated
- Collect blood sample via closed vacutainer technique before starting IV (purple top tube). Transport blood sample with patient to receiving hospital.
- Initiate IV/NS @TKO
- Monitor ECG/Pulse oximetry if available (Note: pulse oximetry monitors may give false readings in patients exposed to CN/methemoglobin or CO).
- If hypotensive, consider fluid challenge and administer Cyanokit 5 gm IV pgb on scene or enroute (Contact Medical Control as needed)
- Treat other presenting symptoms
- Transport to appropriate facility

### ***Exposure Level III:***

#### ***Severe - soot in nose/mouth/oropharynx***

- ***Coma, respiratory/cardiac arrest***
- ***Hypotension***

- Administer 100% O<sub>2</sub> with BVM or intubate/PEEP, as indicated
- Collect blood sample via closed vacutainer technique before starting IV (purple top tube).
- Initiate IV/NS @TKO
- Administer Cyanokit 5g IV pgb and monitor for clinical response/and need for second 5 g dose (Contact Medical Control as indicated)
- If hypotensive, consider fluid challenge
- Monitor ECG/Pulse oximetry if available (Note: pulse oximetry monitors may give false readings in patients exposed to CN/methemoglobin or CO).

# Methylene Blue

## CLASS:

Antidote

## ACTIONS:

This compound has an oxidation/reduction action and a tissue staining property. It has two opposite actions on hemoglobin:

Low concentrations will reduce methemoglobin to hemoglobin.

High concentrations oxidize iron in the ferrous state (Fe<sup>2+</sup>) to ferric iron (Fe<sup>3+</sup>) that results in the formation of methemoglobin. Only iron in the ferrous state can bind with oxygen. *SRT will be using the low concentration.*

## INDICATIONS:

Chemically induced methemoglobinemia

## CONTRAINDICATIONS:

History of glucose-6-phosphate dehydrogenase (G6PD) deficiency

## DRUG INTERACTIONS:

- Be cautious when using in the treatment of antidote induced methemoglobinemia in cyanide poisoning. Too much methylene blue may cause cyanide to be re-released into the system.
- Rapid administration may produce increased methemoglobinemia.
- Observe for elevated B/P, nausea, and disorientation.

## DOSAGE:

- Adult: 1-2mg/kg over 5-10 minutes. Repeat hourly PRN.
- Pediatric: Same as adults

## SUPPLIED:

100 mg in 10 ml vials (10 mg/ml)

## ROUTES OF ADMINISTRATION:

IV only



# **Pralidoxime Chloride (Protopam Chloride, 2 Pam)**

## **CLASS:**

Cholinesterase reactivator

## **MECHANISM OF ACTION:**

Pralidoxime reactivates cholinesterase (mainly outside the CNS) inactivated by phosphorylation due to toxicity by an organophosphate or related compound. Destruction of accumulated acetylcholine can then proceed, allowing neuromuscular junctions to function normally. It also slows the "aging" of phosphorylated cholinesterase to a non-reactive form, and detoxifies certain organophosphates by direct chemical reaction. The drug's most critical effect is relieving respiratory muscle paralysis.

## **INDICATIONS:**

Antidote in poisoning due to organophosphate pesticides and chemicals with anticholinesterase activity.

## **CONTRAINDICATIONS:**

Known hypersensitivity

## **DRUG INTERACTIONS:**

- When atropine and pralidoxime are used together, the signs of atropinization may occur earlier than expected.
- Barbiturates are potentiated.
- It is not recommended in the treatment of carbamate poisonings.

## **DOSAGE:**

- Adults: Give 1 gram IV, over 5-10 minutes. Repeat dose after 1 hour if muscle weakness is not relieved.
- Pediatrics: Give 20-40 mg/kg to a maximum dose of 1 gram.
- Do not administer prophylactically

## **SUPPLIED:**

20 ml vial containing 1 gram of pralidoxime (powder) to be mixed with a 20ml vial of sterile-water

## **ROUTES OF ADMINISTRATION:**

IV, IO

# Sodium Bicarbonate Breathing Treatment

**CLASS:**

Alkaloid electrolyte

**ACTIONS:**

Relieves symptoms of chest burning, throat irritation, and dyspnea due to chlorine gas inhalation

**INDICATIONS:**

Symptomatic Chlorine Gas inhalation

**CONTRAINDICATIONS:**

None

**DRUG INTERACTIONS:**

Do not mix with other drugs as it inactivates catecholamines.

**DOSAGE:**

Mix 3 ml of 8.4% Sodium Bicarbonate with 2 ml NS. Give by nebulizer at 6 lpm.

**SUPPLIED:**

50 mEq in a 50 ml prepackaged syringe

**ROUTES OF ADMINISTRATION:**

Inhalation

# Sodium Nitrite

## CLASS:

Antidote

## ACTIONS:

Reacts with hemoglobin to form methemoglobin (oxidizes ferrous Fe ++ iron in normal hemoglobin to ferric FE +++ iron, or methemoglobin). The latter removes cyanide ions from various tissues and couples with them to become cyanmethemoglobin, which has relatively low toxicity. *Chemical Reaction:  $\text{NaNO}_2 + \text{Hemoglobin} = \text{Methemoglobin} + \text{Methemoglobin} = \text{Cyanmethemoglobin}$*  \* Sodium Nitrite may induce a dangerous methemoglobin level and may also cause hypotension.

## INDICATIONS:

- Cyanide Poisoning
- Hydrogen Sulfide Poisoning

## CONTRAINdicATIONS:

- Absence of symptoms
- History of glucose-6-phosphodehydrogenase (G6PD) deficiency

## DRUG INTERACTION:

Must be followed by Sodium Thiosulfate in cyanide poisoning to obtain maximum effect Methylene Blue may reverse excessive methemoglobinemia, but it should be used cautiously as it may release CN back into the system.

## DOSAGE:

- Adult: 300 mg over 2.5-5 min., repeat at 1/2 of initial dose in 20 minutes if symptoms persist;
- Pediatric: 0.2 ml/kg, not to exceed 300 mg, repeat at 1/2 of initial dose in 20 min. if symptoms persist;

## SUPPLIED:

300 mg in 10 ml vial.

## ROUTES OF ADMINISTRATION:

IV, IO

# Sodium Thiosulfate

## CLASS:

Antidote

## ACTIONS:

The function of Sodium Thiosulfate is to convert cyanmethemoglobin to thiocyanate, by the enzyme rhodanese. The thiocyanate is excreted by the kidneys. *Chemical reaction:  $Na_2S_2O_3 + \text{cyanmethemoglobin} + O_2 = HSCN$*

## INDICATIONS:

Cyanide poisoning

## CONTRAINDICATIONS:

- Absence of indications
- History of glucose-6-phosphodehydrogenase (G6PD) deficiency

## DRUG INTERACTIONS:

- Is to be given immediately after Sodium Nitrite in CN poisoning;
- Is not used in Hydrogen Sulfide poisoning;
- Methylene Blue may reverse excessive methemoglobinemia, but it should be used cautiously as it may release CN back into the system.

## DOSAGE:

- Adult: Give 12.5 gm over 2.5-5 min., repeat at 1/2 initial dose in 20 minutes if symptoms persist.
- Pediatric: Give 1.65 ml/kg, not to exceed 12.5 gm, repeat at 1/2 initial dose in 20 min. if symptoms persist.

## SUPPLIED:

12.5 gm in 50 ml vial

## ROUTES OF ADMINISTRATION:

IV, IO

# **Solu-Cortef**

## **(Hydrocortisone Sodium Succinate)**

### **CLASS:**

Steroidal anti-inflammatory

### **ACTIONS:**

This medicine is an anti-inflammatory adrenocortical steroid. It is a highly water-soluble sodium succinate ester of hydrocortisone permitting IV administration. It is particularly useful where high blood levels are required rapidly.

### **INDICATIONS:**

Chemically induced asthma

### **CONTRAINDICATIONS:**

- Known hypersensitivity
- Not to be administered prematurely because the benzyl alcohol contained in the solution may be associated with fatal "gaspings syndrome"
- Systemic fungal infections

### **CAUTION:**

Average and large doses may cause elevation of B/P, sodium and water retention, and increased excretion of potassium.

### **DOSAGE:**

- Adult- Give 100 to 500 mg over 30 seconds. The dose is determined by severity.
- Pediatric- The dose is determined by severity and not weight.

### **SUPPLIED:**

250 mg two compartment single dose vial;

The vial contains a compartment with powder and another with 2 ml bacteriostatic water. Directions on mixing the product are found with the vial.

### **ROUTES OF ADMINISTRATION:**

IV, IM

# **Trauma Transport Protocol**

# Trauma Transport Protocol

## I. DISPATCH CENTER PROCEDURE

A. Brevard County EMS uses enhanced 911 Computer Aided Dispatch (CAD). All 911 calls are answered in the jurisdictional law enforcement dispatch center, and then transferred. Requests for emergency medical services are directed to the Brevard County Fire Rescue Department Emergency Communications Center (hereafter referred to as Brevard). This center dispatches EMS transport units to all requests for emergency medical services within Brevard County. The enhanced 911 system provides the dispatcher the following information:

- Callers phone number
- Callers address
- Name of phone listing
- Community where call is being placed
- Emergency Services Number
- Victim(s) location
- Appropriate law enforcement agency
- Appropriate fire station response area
- Appropriate EMS station response area
- Appropriate extrication equipped agency

B. Brevard will determine the nature of the 911. The dispatcher will, using a topical question guide, ask the caller a series of questions to determine the extent and severity of injuries. The following are examples of situations and pertinent questions to be asked (from the Clawson protocols):

### 1. VEHICLE INCIDENT:

- a. How many and what type of vehicles are involved?
- b. How many people are injured?
- c. Is anyone trapped?
- d. Is fuel leaking?
- e. Is any fuel fire visible?

### 2. TRAUMATIC INJURY:

- a. Is the patient awake?
- b. Is the patient reporting chest pain?
- c. Is the patient reporting difficult breathing?
- d. Is any bleeding controlled?
- e. Is the patient trapped?
- f. Is there any amputation?

### 3. SHOOTING OR STABBING:

- a. Is the patient awake?
- b. Is the patient breathing?
- c. What is the type and location of wound?
- d. Is the assailant still on the scene?

### 4. FALL:

- a. Is the patient awake?
- b. Is the patient having problems breathing?
- c. Where is the patient experiencing pain?
- d. From what height did the patient fall?

- C. The Emergency Services Number (ESN) is used by Brevard to identify the geographic location of the caller. The ESN system identifies the first, second, and third response fire and medical units for those locations in the Brevard County service area. Brevard will dispatch units according to the location and proximity of the closest unit. Any available unit, which is closer to the incident than a dispatched unit, will notify Brevard and respond as instructed.
- D. Brevard may request other agencies to respond on a mutual aid basis if an ALS unit is not available. Mutual aid requests between agencies will be directed to Brevard by the Incident Commander. Other agencies that may be requested for assistance include the Coast Guard, Florida Marine Patrol, and law enforcement.
- E. The first (ALS or BLS) emergency services unit on the scene of an incident will use the Trauma Scorecard Methodology to evaluate trauma alert criteria. If the unit on scene issues a Trauma Alert, Brevard will document the time and notify the supervisor, other responding units, and the closest appropriate trauma center.

## II. ON SCENE PROCEDURE

- A. The arriving provider will evaluate the scene, Trauma Alert Criteria, the safety of the scene, the severity and number of patients, the need for extrication, and the need for additional help. A Trauma Alert will be issued if the patient meets the Trauma Scorecard Methodology Criteria.
- B. The paramedic providing patient care shall advise Brevard to which facility the patient will be transported, the criteria for which the alert was issued, and the mechanism(s) of injury.

## III. TRAUMA ALERT CRITERIA

- A. Adult Trauma (age 16 and older)
  - 1. Any **One** of the following:
    - The patient requires active airway assistance (other than supplemental O<sub>2</sub>).
    - The heart rate is greater than 120 bpm without radial pulse.
    - The systolic BP is less than 90mm/hg without a radial pulse.
    - Best motor response is less than or equal to 4 or the Glasgow coma scale is less or equal to 12.
    - There is 2<sup>nd</sup> or 3<sup>rd</sup> degree or burns greater to or equal 15% or more of the total body surface area.
    - There is amputation proximal to the wrist or ankle.
    - There is penetration injury to the head, neck, or torso excluding superficial wounds where the depth of the wound can be determined.
    - There are two or more long-bone fracture sites (i.e. forearm and lower leg).
    - There is paralysis, loss of sensation, or suspicion of spinal injury.
  - 2. Or any **Two Or More** of the following:
    - The respiratory rate is 30 or more.
    - Sustained heart rate is 120 beats per minute or more.
    - Best motor response is 5 or less on the Glasgow coma scale.
    - There is major de-gloving injury of a flap avulsion greater than 5”.
    - There is a gunshot wound (GSW) to an extremity.
    - There is one long-bone fracture from a MVC or a fall of 10 feet or greater.
    - The patient’s age is 55 or older.
    - The patient was ejected from a motor vehicle, including motorcycle, moped, ATV, or open body of a pick-up truck.
    - The patient caused steering wheel deformity by impact.



3. The EMT or paramedic can also issue a “Trauma Alert” if in his judgment, the trauma patient’s condition warrants it. This will be documented as required in section 64E-2, F.A.C.
- B. Pediatric Trauma Alert Criteria: A pediatric patient is any patient with a physical and anatomical characteristic of a person 15 years of age or younger.
1. A pediatric Trauma Alert shall be issued of and **One** of the following:
    - Airway: The patient requires intubation, or the patient’s breathing is assisted with manual jaw thrust, single or multiple suctioning, or through the use of other adjuncts to assist ventilatory efforts.
    - Consciousness: The patient presents with an altered mental status that includes drowsiness, lethargy, the inability to follow commands, unresponsiveness to voice, totally unresponsive, or there is the presence of paralysis; or the suspicion of a spinal cord injury or loss of sensation.
    - Circulation: The patient has a faint or non-palpable radial or femoral pulse, a systolic blood pressure of less than 50mmHg, or sustained tachycardia greater than 160 beats per minute.
    - Fracture: There is evidence of an open long bone (humerus, radius, ulna, femur, tibia or fibula) fracture. There are multiple fracture sites, or multiple dislocations (except for isolated wrist or ankle fractures or dislocations).
    - Skin: The patient has a major soft tissue disruption including major de-gloving injury, major flap avulsions, 2<sup>nd</sup> or 3<sup>rd</sup> degree burns to 10 percent or more of the total body surface area, amputation proximal to a wrist or ankle, or any penetrating injury to the head, neck or torso (excluding superficial wounds where the depth of the wound can be determined).
  2. A pediatric Trauma Alert shall be issued for and **Two Or More** of the following:
    - Consciousness: The patient exhibits symptoms of amnesia, or there was a loss of consciousness.
    - Circulation: The carotid or femoral pulse is palpable, but the radial or pedal pulses are not palpable or the systolic blood pressure is less than 90mmHg.
    - Fracture: The patient reveals signs or symptoms of a single closed long bone fracture. Long bone fractures do not include isolated wrist or ankle fractures.
    - Size: The pediatric trauma patient has a weight less than 11 kilograms or the body length is equivalent to this weight on a pediatric length and weight emergency tape.
  3. The EMT or paramedic can issue a “Trauma Alert” if in his judgment, the trauma patient’s condition warrants it. This will be documented as required in section 64-2, F.A.C.

#### **IV. TRANSPORTATION**

All Trauma Alert patients will be transported to the nearest State Approved Trauma Center (SATC) or State Approved Pediatric Trauma Referral Center (SAPTRC). Guidelines for transportation follow:

- A. Pediatric Trauma Alert patients should be transported to a SAPTRC
- B. Burn patients meeting the Trauma Alert Criteria should be transported to SATC with burn services.
- C. Trauma Alert patients will be transported to an Initial Receiving Facility as follows:
  - 1. Cardiac Arrest: Cardiac Arrest secondary to trauma will be transported to the nearest hospital.
  - 2. Lack of Patient Airway: A trauma patient without a patent airway will be transported to the nearest receiving facility.
  - 3. Mass Casualty Incidents patients will be transported as designated by the Incident Commander.
  - 4. Patients, who in the opinion of the transportation crew will not survive transport to a trauma center, may be transported to an initial receiving facility.
- D. Air Transportation Guidelines:
  - 1. Trauma meeting the Trauma Alert Criteria, **(and)**
  - 2. Located in an air transport zone, which is outside a 5 mile radius or greater than 12 (driving) minutes from a SATC, prolonged extrication, or severe traffic conditions.
- E. Ground Transportation will be used for the trauma alert patient when:
  - 1. Air transport is not available.
  - 2. Air transport is in excess of 30 minutes or their arrival takes longer than ground transport.
  - 3. The incident is located within a 5 mile radius or 12 driving minutes from the SATC.
  - 4. The patient has been exposed to hazardous materials.

#### **V. DESIGNATED FACILITIES**

Trauma Alert patients will be transported to the nearest appropriate trauma center. If that trauma center is unable to provide adequate trauma care, the patient will be transported to the next closest trauma center.

- A. Brevard County Fire-Rescue providers will transport adult "Trauma Alert" patients to:

Holmes Regional Medical Center  
1350 South Hickory Street  
Melbourne, Florida

Halifax Medical Center  
Clyde Morris Boulevard  
Daytona Beach, Florida

- B. Brevard County EMS providers will transport pediatric and burn "Trauma Alert" patients to Orlando Regional Medical Center located at 1414 South Kuhl Avenue in Orlando.

- C. Patients who **Do Not Meet** trauma alert criteria may be transported to the closest appropriate receiving facility:

Parrish Medical Center  
951 North Washington Avenue  
Titusville, Florida

Wuestoff Memorial Hospital  
110 Longwood Avenue  
Rockledge, Florida

Cape Canaveral Hospital  
701 West Cocoa Beach Causeway  
Cocoa Beach, Florida

Holmes Regional Medical Center  
1350 South Hickory Street  
Melbourne, Florida

Wuestoff Medical Center-Melbourne  
250 N. Wickham Road  
Melbourne, Florida

Palm Bay Community Hospital  
1425 Malabar Road North East  
Palm Bay, Florida

Sebastian Medical Center  
13695 US Highway One  
Sebastian, Florida

## **VI. DOCUMENTATION**

- A. Providers will complete an EMS report on all trauma patients including those who are pronounced dead on scene.
- B. The provider who transfers a patient to an air ambulance will complete the state approved abbreviated report and give it to the transport agency. Every attempt should be made to complete this form (abbreviated) prior to air transport; however, a verbal report will be acceptable. The on-scene unit will subsequently fax a copy of the complete EMS report to the receiving facility.
- C. The transport unit will submit or fax the completed report to the receiving facility.

## **VII. EMERGENCY TRAUMA INTER-HOSPITAL PROCEDURE**

Brevard County Fire-Rescue does not transport trauma patients between receiving facilities. Coastal Health Systems of Brevard, Inc. will provide any transport deemed necessary by the initial receiving Trauma Center to another Trauma Center for any higher levels of care necessary or unable to be performed at the initial receiving State Approved Trauma Center.

## **VIII. TRANSPORTATION DEVIATION**

Any deviation from this Trauma Transport Protocol must be documented in the EMS report.

# **START Triage Plan**

# S.T.A.R.T. Triage Plan

## Step 1:

The initial medical responder enters the incident area, identifies himself and directs all the victim who can walk to gather and remain at a patient staging area. This identifies victims who have sufficient respiratory, circulatory, mental, and motor function to walk. Most of these victims will be triaged green. Do not tag them now. Triage them separately later.

## Step 2:

Evaluate non-ambulatory victims where they present. Assess respiration. Is it normal, rapid or absent? If absent, reposition the airway to see if spontaneous respiration begins. If respiration is absent, tag black. Do not perform CPR. If the victim requires help in maintaining an open airway or has a respiration rate over 30 per minute, tag red. (Attempt to use non-EMS person to hold the airway). If respiration is normal (less than 30 per minute), go to next step.

## Step 3:

Assess the victim's perfusion by testing capillary or palpating a radial pulse. If the capillary refill is over 2 seconds or the radial pulse is absent but a carotid pulse is present, tag red. If the capillary refill is less than 2 seconds or if the radial pulse is present, go to the next step. Any life threatening bleeding should be controlled now and elevate the victims legs to begin shock treatment. (Again, attempt to use non-EMS person to maintain pressure or bleeding site).

## Step 4:

Assess victim's mental status. If the victim has not demonstrated he can follow simple commands, ask him to perform a simple task. If he cannot follow simple commands, tag red. If the victim can follow simple commands, tag yellow or green depending upon condition. The victim's injuries will determine the color.

# **Assessment and Scoring Tools**

## APGAR Scale

	<u>0 points</u>	<u>1 point</u>	<u>2 points</u>
Heart Rate	Absent	<100	>100
Respiratory Rate	Absent	Slow, irregular	Good, drying
Irritability	Flaccid	Some flexion	Active motion
Irritability	No response	Grimace	Cough or sneeze
Color	Blue or Pale	Pink with blue Extremities	Fully pink

## Glasgow Coma Scale

---

Eyes	<u>Opens Eyes Spontaneously</u>	4
	<u>Opens eyes to Verbal Stimuli</u>	3
	<u>Opens Eyes to Painful Stimuli</u>	2
	<u>Fails to Open Eyes</u>	1

---

Verbal Response	<u>Appropriate Conversation /</u>	5
	<u>Oriented to Month and Year</u>	
	<u>Confused and / or Disoriented</u>	4
	<u>Inappropriate Conversation / Answers</u>	3
	<u>Incomprehensible Sounds</u>	2
	<u>No Verbal Response</u>	1

---

Motor Response	<u>Follows Directions</u>	6
	<u>Removes Pain Source</u>	5
	<u>Withdraws From Pain Source</u>	4
	<u>Non-purposeful Flexion (Decorticate)</u>	3
	<u>Non-purposeful Extension (Decerebrate)</u>	2
	<u>No Motor Response</u>	1

---

Transfer total to Other Side (Trauma Score)



# Trauma Alert Criteria

## A. Adult Trauma (age 16 and older)

### 1. Any **One** of the following:

- The patient requires active airway assistance (other than supplemental O<sub>2</sub>).
- The heart rate is greater than 120 bpm without radial pulse.
- The systolic BP is less than 90mm/hg without a radial pulse.
- Best motor response is less than or equal to 4 or the Glasgow coma scale is less or equal to 12.
- There is 2<sup>nd</sup> or 3<sup>rd</sup> degree or burns greater to or equal 15% or more of the total body surface area.
- There is amputation proximal to the wrist or ankle.
- There is penetration injury to the head, neck, or torso excluding superficial wounds where the depth of the wound can be determined.
- There are two or more long-bone fracture sites (i.e. forearm and lower leg).
- There is paralysis, loss of sensation, or suspicion of spinal injury.

### 2. Or any **Two Or More** of the following:

- The respiratory rate is 30 or more.
- Sustained heart rate is 120 beats per minute or more.
- Best motor response is 5 or less on the Glasgow coma scale.
- There is major de-gloving injury of a flap avulsion greater than 5”.
- There is a gunshot wound (GSW) to an extremity.
- There is one long-bone fracture from a MVC or a fall of 10 feet or greater.
- The patient’s age is 55 or older.
- The patient was ejected from a motor vehicle, including motorcycle, moped, ATV, or open body of a pick-up truck.
- The patient caused steering wheel deformity by impact.

**B. Pediatric Trauma (Age < 16)**

1. Any **One** of the following:

- Active airway assistance required beyond administration of oxygen
- Any airway adjunct including manual jaw thrust, suctioning or others to assist ventilation
- Altered mental status
- Paralysis, loss of sensation, or suspected spinal cord injury
- Faint or nonpalpable carotid or femoral Pulse
- Systolic BP < 50
- Open long bone fracture, multiple fractures or multiple dislocation sites
- Major degloving or flap avulsions
- 2<sup>nd</sup> or 3<sup>rd</sup> degree burns on  $\geq$  10% of body
- Amputation proximal to wrist or ankle
- Penetrating injury to head, neck, or torso excluding superficial wounds where the depth of the wound can be determined

2. Or any **two or more** of the following:

- Suspected amnesia
- Systolic BP < 90
- Palpable carotid or femoral pulse but no radial or pedal pulse
- Suspected closed long –bone fracture
- Patient weighs  $\leq$  11kg, or body length is  $\leq$  33 inches

**Or judgment of EMT, paramedic, or other healthcare professional. (must be documented in the Patient care record).**

## Trauma Score

Respiratory Rate	<u>10 – 24 minute</u>	4
	<u>25 – 35 minute</u>	3
	<u>36 minute or greater</u>	2
	<u>1 – 9 minute</u>	1
	<u>None</u>	0
Respiratory Expansion	<u>Normal</u>	1
	<u>Retractive</u>	0
Systolic Pressure	<u>90 mm Hg or greater</u>	4
	<u>70 – 89 mm Hg</u>	3
	<u>50 – 69 mm Hg</u>	2
	<u>0 – 49 mm Hg</u>	1
	<u>No Pulse</u>	0
Capillary Refill	<u>Normal</u>	2
	<u>Delayed</u>	1
	<u>None</u>	0
Total GCS Score	<u>14 – 15 =</u>	5
	<u>11 – 13 =</u>	4
	<u>8 – 10 =</u>	3
	<u>5 – 7 =</u>	2
	<u>3 – 4 =</u>	1

Total Trauma Score =

## Pediatric Trauma Score

PARAMETER	+2	+1	-1
AIRWAY	No Respiratory Assistance Required	Requires Positioning Constant Observation	Requires Invasive Procedures
WEIGHT	> 20 kg	10 – 20 kg	< 10 kg
CNS	Fully Awake	History of Syncope or Repeated Vomiting	Coma or Seizures
CIRCULATION	Systolic B: > 90	Systolic BP 50 – 90	Systolic BP < 50
SKELETAL INJURIES	None	Closed Deformity	Open Fx. or Multiple Closed Fx.
SKIN	None	Minor Wounds Abrasions, Lacerations	Major Open Wounds Penetrating Wounds

**NOTE:**

Total possible score is +12; lowest possible score is -6. Children with a score lower than 8 generally have a poor outcome and should be transferred to a tertiary care facility.

Source – The Journal of Trauma. Volume 28, Number 4, pp. 425 – 429

## Infant / Child Vital Signs by Age

Age	Resp. Rate	Pulse	Systolic BP
Newborn	30 – 60	100 – 160	50 – 70 mm Hg
1 – 6 Weeks	30 – 60	100 – 160	70 – 95 mm Hg
6 Months	25 – 40	90 – 120	80 – 100 mm Hg
1 Year	20 – 30	90 – 120	80 – 100 mm Hg
3 Years	20 – 30	80 – 120	80 – 110 mm Hg
6 Years	18 – 25	70 – 110	80 – 110 mm Hg
10 Years	15 – 20	60 – 90	90 – 120 mm Hg

**BREVARD REGIONAL EMS SYSTEM****STROKE ALERT**

Date:	Time:	Time Alert Called:	
First Response Unit #:		Agency:	
Rescue Unit #:	Agency:	Incident #:	
Patient's Name:	Age:	Male _____	Female _____
Event Witness Name:		Contact Number:	
Next of Kin:		Contact Number:	
<b>SYMPTOMS</b>		<b>HISTORY</b>	
<input type="checkbox"/> Headache <input type="checkbox"/> Nausea / Vomiting <input type="checkbox"/> Neck Pain / Stiffness <input type="checkbox"/> Weakness / Numbness <input type="checkbox"/> Speech Difficulties <input type="checkbox"/> Visual Disturbances		<input type="checkbox"/> Cardiac Arrhythmia <input type="checkbox"/> Hypertension <input type="checkbox"/> Head trauma at onset <input type="checkbox"/> Seizure at onset <input type="checkbox"/> Bleeding Problems <input type="checkbox"/> Takes Coumadin / Aspirin / Plavix <input type="checkbox"/> History of Stroke/Hemorrhage	
<b>EVALUATION</b>			
<b>Vital Signs:</b>	<b>P:</b> _____	<b>R:</b> _____	<b>BP:</b> Lt _____ Rt _____
	<b>SpO2</b> _____	<b>%</b>	<b>Glucose</b> _____ <b>mg/dl</b>
<u>Unconscious patients:</u> Provide a central painful stimulus (sternal rub or pinch trapezius) to evaluate symmetry of grimace: pinch medical aspect (of each extremity) to evaluate symmetry of abduction.			
<b>CINCINNATI STROKES SCALE (FAST)</b>			
(CHECK IF ABNORMAL)			
<input type="checkbox"/> <b>F (face)</b>	<b>FACIAL DROOP:</b> Have patient smile or show teeth. (Look for asymmetry) <b>Normal:</b> Both sides of the face move equally or not at all <b>Abnormal:</b> One side of the patient's face droops		
<input type="checkbox"/> <b>A (arm)</b>	<b>MOTOR WEAKNESS:</b> Arm Drift (close eyes, extend arms, palms up) <b>Normal:</b> Remain extended equally, or drifts equally or does not move at all <b>Abnormal:</b> One arm drifts down when compared with the other		
<input type="checkbox"/> <b>S (speech)</b>	"You can't teach an old dog new tricks" (repeat phrase) <b>Normal:</b> Phrase is repeated clearly and correctly <b>Abnormal:</b> Words are slurred (dysarthria) or not expressed clearly		
<input type="checkbox"/> <b>T</b>	<b>TIME OF SYMPTOM ONSET:</b> _____ <b>TIME ELAPSED</b> _____		
<i>Destination: Onset less than 3 hours transport to facility capable of IV Thrombolytics within 3 hour window</i>			
<b>TREATMENT</b>			
<input type="checkbox"/> IV NaCl (2 sites preferred)	<input type="checkbox"/> Drug Therapy _____	<input type="checkbox"/> Other _____	
<b>Hospital Destination:</b> _____		<b>Contact: Person:</b> _____	
<b>Time:</b> _____		<b>Arrival:</b> _____	

WHITE – Hospital      YELLOW – Transport Agency      PINK – First Response Agency

# **Approved Abbreviation List**

## Do not use + or - signs when describing objective findings

### “A”

abd.	Abdomen
AAA	Abdominal Aortic Aneurysm
ASA	AcetylSalicylic Acid (aspirin)
AIDS	Acquired Immuno-Deficiency Syndrome
AMI	Acute Myocardial Infarction
ACLS	Advanced Cardiac Life Support
ALS	Advanced Life Support
$\overline{p}$	after
AMA	Against Medical Advice
AVPU	Alert, Verbal, Painful, Unresponsive
ATV	All Terrain Vehicle
AC	Antecubital
APGAR	Appearance, Pulse, Grimace, Pulse, and Respirations
Approx.	Approximately
$\approx$	Approximately equal to
APH	Arnold Palmer Hospital
ABG	Arterial Blood Gases
ASHD	Arteriosclerotic Heart Disease
STAT	At once, instantly
A-Fib	Atrial Fibrillation
AV	Atrioventricular node
A/F	Asian Female
A/M	Asian Male
PRN	As needed
@	At
AED	Automatic External Defibrillator

### “B”

BOW	Bag of Waters (amniotic fluid)
BVM	Bag Valve Mask
BLS	Basic Life Support
BTLS	Basic Trauma Life Support
$\overline{a}$	Before
BCP	Birth Control Pill
B/F	Black Female
B/M	Black Male
BP(B.P.)	Blood Pressure
BSA	Body Surface Area
bm	Bowel movement
BCFR	Brevard County Fire Rescue
BCPSD	Brevard County Public Safety Department
BCSO	Brevard County Sheriff's Office
B/L/S	Burns, Laceration, Swelling
per	By
po	By mouth

### “C”

CA or ca	Cancer
CCAFS	Cape Canaveral Air Force Station



CCFD	Cape Canaveral Fire Department
CCH	Cape Canaveral Hospital
cap	Capsule
Capt.	Captain
CO <sub>2</sub>	Carbon Dioxide
CO	Carbon Monoxide
CPR	Cardiopulmonary Resuscitation
CV	Cardiovascular
°C	Celsius (Centigrade)
cm	Centimeter
CNS	Central Nervous System
CSF	Cerebrospinal Fluid
CVA	Cerebrovascular Accident (Stroke)
C-collar	Cervical Collar
CID	Cervical Immobilization Device (any type)
C-#	Cervical Vertebrae
C-Sect	Cesarean Section
Δ	Change
C/C	Chief Complaint
COPD	Chronic Obstructive Pulmonary Disease
CBFD	Cocoa Beach Fire Department
CBPD	Cocoa Beach Police Department
CFD	Cocoa Fire Department
CPD	Cocoa Police Department
C/O	Complain Of
CBC	Complete Blood Count
CAD	Coronary Artery Disease
CCU	Coronary Care Unit
CC or cc	Cubic Centimeter

**“D”**

DOA	Dead on Arrival
↓	Decreased (NOT LOWER)
Defib	Defibrillation
DCAPP	Deformities, Contusions, Abrasions, Penetrations, Paradoxical motion
DTs	Delirium Tremens
D25W	Dextrose 25% in Water
D5W	Dextrose 5% in Water
D50W	Dextrose 50% in Water
Dx	Diagnosis
D&C	Dilatation and Curettage
D/C	Discontinue
DNRO	Do Not Resuscitate Order
gtts	Drops

**“E”**

ENT	Ears, Nose and Throat
EEG	Electroencephalogram
EKG/ECG	Electrocardiogram
ED	Emergency Department
EMS	Emergency Medical Services
EMT	Emergency Medical Technician
ER	Emergency Room
ETT	Endotracheal Tube
E-#	Engine #
epi	Epinephrine
EDC	Estimated Date of Confinement
ETA	Estimated Time of Arrival
ETOH	Ethyl Alcohol (drinking type)

= Equal to  
EENT Eyes, Ears, Nose and Throat  
QD Every day  
 $\overline{q}$  Every

**“F”**

°F Fahrenheit  
FBI Federal Bureau of Investigation  
F Female  
FUO Fever of Unknown Origin  
fib Fibrillation  
FW&GC Florida Fresh Water & Game Commission  
FHP Florida Highway Patrol  
FHA Florida Hospital Altamonte  
FHS Florida Hospital South (Orlando)  
FMP Florida Marine Patrol  
fl Fluid  
Fx Fracture  
QID Four times a day

**“G”**

GI Gastrointestinal  
GCS Glasgow Coma Scale  
GM or g Grams  
GSW Gun Shot Wound  
> Greater than

**“H”**

HL Heparin Lock  
H/F Hispanic Female  
H/M Hispanic Male  
HPI History of the Present Illness/injury  
HFF Holmes First Flight  
HRMC Holmes Regional Medical Center  
HIV Human Immunodeficiency Virus

**“I”**

↑ Increased (NOT UPPER)  
IFD Indian Fire Department  
IPD Indian Police Department  
IHBPD Indian Harbour Beach Police Department  
IHBVFD Indian Harbour Beach Volunteer Fire Department  
IRMH Indian River Memorial Hospital  
flu Influenza  
ICS Intercostal Space  
IM Intramuscular Injection  
IV Intravenous  
IVP Intravenous Push  
IO Intraosseous Infusion  
IUD Intra-Uterine Device

**“J”**

JVD Jugular Vein Distention

“K”

KED	Kendrick Extrication Device
KSC	Kennedy Space Center
KSCFR	Kennedy Space Center Fire Rescue
KSCP	Kennedy Space Center Patrol (Law Enforcement)
kg	kilogram
KVO	Keep Vein Open

“L”

L&D	Labor and Delivery
lac	Laceration
LMP	Last Menstrual Period
L	Left
LBBB	Left Bundle Branch Block
LLQ	Left Lower Quadrant
LUQ	Left Upper Quadrant
LVF	Left Ventricular Failure
<	Less than
LOC	Level of Consciousness <b><u>NOTE: NOT “LOSS OF CONSCIOUSNESS”</u></b>
Lt.	Lieutenant
L/M	Liters per Minute
L-#	Lumbar Vertebrae

“M”

M	Male
MCL1	Marriott’s Chest Lead (Modified Chest Lead 1)
M.D.	Medical Director
med	Medication
MBPD	Melbourne Beach Police Department
MBVFD	Melbourne Beach Volunteer Fire Department
MFD	Melbourne Fire Department
MPD	Melbourne Police Department
MIVFD	Merritt Island Volunteer Fire Department
m	Meter
Mic.VFD	Micco Volunteer Fire Department
μ or mcg	Microgram
MAL	Mid-axillary Line
MCL	Mid-clavicular Line
MSL	Mid-sternal Line
mEq	Milli-Equivalent
mg	Milligram
ml	Milliliter
mm	Millimeter
min	Minute
MS	Morphine Sulfate
MVA	Motor Vehicle Accident
MVC	Motor Vehicle Crash
MI	Myocardial Infarction

“N”

NC	Nasal Cannula
NG	Nasogastric
N/V	Nausea & Vomiting
N/V/D	Nausea & Vomiting & Diarrhea

neg	Negative
NTG	Nitroglycerine
NKA	No Known Allergies
NRB	Non-Re-breather Mask
NS	Normal Saline
NSR	Normal Sinus Rhythm
NPO	Nothing by Mouth

“O”

OB	Obstetrics
OR	Operating Room
ORMC	Orlando Regional Medical Center
oz	Ounce
OD	Overdose
O2	Oxygen

“P”

PBCH	Palm Bay Community Hospital
PBFR	Palm Bay Fire Rescue
PBPD	Palm Bay Police Department
PM	Paramedic
PAT	Paroxymal Atrial Tachycardia
PMC	Parrish Medical Center
PND	Paroxysmal Nocturnal Dyspnea
pt.	patient
PAFB	Patrick Air Force Base
PAFBFR	Patrick Air Force Base Fire Rescue
PAFBP	Patrick Air Force Base Patrol (Law Enforcement)
PMH	Past Medical History
PALS	Pediatric Advanced Life Support
PID	Pelvic Inflammatory Disease
PPE	Personal Protective Equipment
PCN	Penicillin
PDR	Physicians Desk Reference
PASG	Pneumatic AntiShock Garment
PMI	Point of Maximal Impulse
poss.	Possible
K+	Potassium
Preg.	Pregnant
PAC	Premature Atrial Contraction
PJC	Premature Junctional Contraction
Rx	Prescriptions
POV	Privately Owned Vehicle
PMS	Pulses, Motor, Sensations
SpO2	Pulse Oximetry
PERRLA	Pupils Equal Round Reactive to Light & Accommodating
PVC	Premature Ventricular Contraction
PTA	Prior To Arrival

“Q”

QA	Quality Assurance
QM	Quality Management

“R”

ROM	Range of Motion
RSI	Rapid Sequence Induction
RBC	Red Blood Cell
RN	Register Nurse
RSR	Regular Sinus Rhythm
Rpt	Reports
R-#	Rescue Unit #
ROS	Review of Systems
R	Right
RBBB	Right Bundle Branch Block
RLQ	Right Lower Quadrant
RFD	Rockledge Fire Department
RPD	Rockledge Police Department
R/O	Rule Out

“S”

SBFD	Satellite Beach Fire Department
SBPD	Satellite Beach Police Department
SRMC	Sebastian River Medical Center
SCBA	Self Contained Breathing Apparatus
SCUBA	Self Contained Underwater Breathing Apparatus
SOB	Shortness of Breath
SA	Sinoatrial Node
ZZZ	Sleeping
Na	Sodium
bicarb	Sodium Bicarbonate
NaCl	Sodium Chloride
Soln	Solution
SNT	Soft and Not Tender
SRT	Specialized Response Team
SQ	Subcutaneous injection
SL	Sublingually
SIDS	Sudden Infant Death Syndrome
SVT	Supraventricular Tachycardia
SBP	Systolic Blood Pressure

“T”

tab	Tablet
TIC	Tenderness, Instability, Crepitation
TID	Three times a day
X	Times
TFES	Titusville Fire and Emergency Services
TPD	Titusville Police Department
TCP	Transcutaneous Pacing
TIA	Transient Ischemic Attack
TKO	To Keep Vein Open
TB	Tuberculosis
BID	Twice a day

“U”

USCG	United States Coast Guard
U	Units of medication
URI	Upper Respiratory Infection
UTI	Urinary Tract Infection

“V”

VD	Venereal Disease
V-Fib	Ventricular Fibrillation
V-Tach	Ventricular Tachycardia
VS	Vital Signs

“W”

W/D	Warm & Dry
W/S	Watt/Seconds (Joules)
WBC	White Blood Cell
W/M	White Male
W/F	White Female
$\bar{c}$	With
$\bar{s}$	Without
WPW	Wolfe Parkinson White Syndrome
WMH	Wuesthoff Medical Center

“X”

“Y”

Y/O	Years Old
-----	-----------

“Z”

# **Updates and Revisions**

The following pages have been updated or revised as of **05-19-09** as approved by the EMS Subcommittee

Cardiac Arrest-General Procedures	Rationale-removed "In cases of non-traumatic cardiopulmonary arrest, including VT/VF/PEA/Asystole, induced hypothermia will be initiated. Level I-Bullet #6-incorporated Bullet #7 "Perform CPR with appropriate airway device," removed Bullet #8 "Unless the arrest is traumatic in nature, remove clothing except undergarments and place ice packs in the groin and axilla," added new Bullet #8 "Standard general cardiac arrest procedures, including CPR and the use of approved airway devices with CO2 detection device," moved "check blood glucose level" to Level II. Level II-Bullet #2-changed from "establish advanced airway" to "establish airway," added Bullet #3 "Confirm tube placement including capnography or other CO2 detection device," removed Bullet #4 "Cold fluids bolus 30ml/kg up to 2L NS for non-traumatic and non-hemorrhagic cardiac arrest," removed Bullet #9 "If ROSC occurs with patients that receive cold fluids, administer Versed for sedation 2-5mg IV if the patient is not hypotensive," removed Bullet #10 "Administer Dopamine 10-20 mcg/kg/min to keep SBP>140 or MAP>90." Notes-removed all bullets.
Mild Induced Hypothermia	Added protocol
Asystole	Removed notes section
Cardiogenic Shock	Removed Level III
Chest Pain	Rationale-added "If the patient is hemodynamically unstable, has ST compressions or T wave inversions but no ST elevations the patient may have an acute coronary syndrome (ACS) receiving immediate attention by the emergency department." Level I-Bullet 1-"Administer baby aspirin (81 mg) x4 PO (contraindicated if known hypersensitivity or hemophilia)" moved to Level II. Level II-Bullet #5-"Assess fibrinolytic candidacy and start checklist" removed, Bullet #7-added "Issue cardiac alert and give report to the Emergency Department for patients with ACS."
Acute Myocardial Infarction	Level I-Bullet 1-"Administer baby aspirin (81 mg) x4 PO (contraindicated if known hypersensitivity or hemophilia)" moved to Level II. Level II-Bullet #4-changed from "Draw blood and perform a rapid cardiac Troponin sero-assay (if available) to Bullet #2 as "blood draw if time permits," Bullet #6-changed morphine orders to include "for the normotensive patient," Bullet #7 from "Issue a cardiac alert" to "issue a STEMI alert," Bullet #9-"Assess fibrinolytic candidacy and start checklist" removed.
Atrial Fibrillation/Atrial Flutter Rapid Ventricular Rate	Added protocol
Pulmonary Edema/Congestive Heart Failure	Level II-Bullet #8 "anti-arrhythmic as indicated" removed, added Bullet #4-"Morphine 2mg to 4mg IV if patient not tolerating CPAP well," Bullet #7 and #8 combined and revised to read "Lasix two times the usual daily dose if patient takes Lasix / Bumex (Note: maximum dose of Lasix 80 mg) (40 mg Lasix equals 1 mg Bumex). Lasix is contraindicated in patients with history of respiratory infections," Bullet #8 added "Patients with bronchial spasms – wheezing should be treated with bronchodilators (cardiac asthma)."
Supraventricular Tachycardia (non-Atrial Fibrillation)	Rationale-definitions of unstable changed from "chest pain, dyspnea, decreased level of consciousness, hypotension, pulmonary congestion, CHF, or acute myocardial infarction" to "severe chest pain, dyspnea, hypotension, acute CHF, or acute myocardial infarction." Stable Cardizem protocol changed from "Cardizem (if available) 0.25 mg/kg repeated every minute until converted or maximum of 25 mg" to "Cardizem (if available) 0.25 mg / kg to a max of 25 mg if A-fib/flutter is seen." Notes-Bullets #1 changed from "If conversion occurs after cardioversion but PSVT recurs, repeated cardioversion is not indicated" to "If after chemical cardioversion PSVT recurs, repeated cardioversion is not indicated," Bullet #2-separated and modified from "Adenosine is ineffective for Atrial Fibrillation or flutter and maybe harmful when used if WPW or accessory pathway tachy arthymias are present.



	Transport and observe these patients and/or give Cardizem” to Bullet #2-“Adenosine may be harmful when used if WPW or other accessory pathway tachyarrhythmias are present. Transport and observe these patients” and Bullet #3-“Adenosine is ineffective for slowing the rate of Atrial fibrillation/flutter other than momentarily but this slowed rate may allow for the definitive diagnosis of Atrial fibrillation/flutter as opposed to TSVT.”

The following pages have been updated or revised as of **07-14-09** as approved by the EMS Subcommittee

General Adult Trauma Care	Level II-Bullet #3-added “Control bleeding with tourniquet if indicated and available.”
Burns	Level I-Bullet #4- changed to add “100% FM non-rebreather if CO toxicity suspected.”
Head Injuries	Level I-Bullet #5-moved “check a blood glucose level” to Level II. Level II- Bullet #-added “Keep SBP >90,” Bullet #3-added “keep oxygen saturation >90%,” removed Bullet #5-“Administer Narcan 2mg IV, or nasal atomized if no IV access is available, if indicated and repeat as needed.”
Ophthalmic Injuries	Level II-Bullet #1-removed “Do not repeat treatment.”
Tourniquet	Added protocol
Less-Than Lethal Weapons (Pepper Spray and Tear Gas)	Mechanism of action-removed
Less-Than Lethal Weapons (Taser & Bean Bag Related Injuries)	Level I-Bullet #6-moved “blood glucose monitoring” to Level II
Trauma Transport Protocol	Added Protocol

The following pages have been updated or revised as of **08-18-09** as approved by the EMS Subcommittee

Abdominal Pain	Changed to Abdominal Pain/GI Bleed, Level II-Bullet #2-changed from “obtain 12-lead ECG” to “Obtain 12-lead ECG if cardiac etiology suspected,” Bullet 4-changed from “fluid challenge of 250 ml: repeat as necessary” to “NS fluid bolus 250mL if hypotensive,” added Bullet #6 “Aggressive fluid resuscitation if GI bleeding and hypotensive.”
Airway Management	Level I-Bullet #3 added “subglottic device.” Level II-Bullet #4 added “(if available)” to RSI if indicated, Bullet #6-added “or subglottic device” removed “on scene and one enroute by a second rescuer.”
Allergic Reactions	Assessment Checklist-Bullet #5-removed “Hypertension >200 systolic,” Bullet #6-changed to Bullet #5 and changed from “hypotension <80 systolic” to “Hypotension <90 systolic.” Level II-Bullet #4-added “(max 50mg)”
Altered Mental Status	Level I-Bullet #4-moved “check a blood glucose level” to Level II Bullet #1, Level II-Bullet #6 added “in increments of 0.5mg,” Level III-Bullet #1 changed from “administer Haldol 5mg as ordered” to “Administer Ativan as per Medical Direction.
Anaphylaxis	Level I-Bullet #4 changed from “administer an Epi-Pen if available” to “assist with administration of Epi-Pen if available.” Level II-Bullet #6 removed “prepare for rapid hypotension as the patient decompensates,” following bullets moved up, Bullet #6 changed from “Administer a fluid challenge” to “Administer a fluid challenge 250-500mL NS if patient is hypotensive,” Bullet #8-changed from “Administer Benadryl 50mg IV or IM” to “Administer Benadryl 0.5mg/kg IV or IM (50mg max),” Bullet #9-added “Administer Solu-medrol 125mg IVP (if available).” Level III-Bullet #1-changed from Epinephrine drip or additional

	Epinephrine as ordered” to “Additional Epinephrine IV as ordered.”
Asthma	Level II-Bullet #9-changed from “Administer Solu-medrol 125mg IVP (if available) or Terubutaline 0.25mg SQ (if available) to “Administer Solu-medrol 125mg IVP (if available),” Bullet #10-added “Apply CPAP if patient’s respiratory status is not improving.” Level III-Bullet #1- changed from “Epinephrine drip or additional Epinephrine doses IV as ordered” to “Additional Epinephrine as ordered.”
Carbon Monoxide Inhalation	Moved to Hazmat
Cerebrovascular Event	Level I-Bullet #7-changed from “Complete Stroke check list” to “Complete Cincinnati Stroke check list,”Bullet #8-moved “check a blood glucose level” to Level II Bullet #1, Bullet #8-added “Elevate head of bed 30°.” Level II-Bullet #5-removed “Transport to state approved stroke center.”
Chronic Obstructive Pulmonary Disease	Level II-Bullet #4-changed from “this may be administered (as needed) before vascular access” to “you may administer nebulized drugs prior to vascular access” Bullet #7- added “(if available)” to Solu-medrol and removed “Trebudaline 0.25mg SQ (if available).”
Diabetic Emergencies (Hyperglycemia)	Level I-Bullet #4-moved “check a blood glucose level” to Level II Bullet #1
Diabetic Emergencies (Hypoglycemia)	Level I-Bullet #3-moved “check a blood glucose level” to Level II Bullet #1. Level II-Bullet #5-added “(if available)” to Glucagon use.
Hypertensive Emergencies	Level II-Bullet #4-added “See Chest Pain protocol” Bullet #5-added “If neurological changes see Cerebrovascular protocol.”
Overdose (Non-Tricyclic/Unknown Etiology)	Level I-Bullet #4-moved “check a blood glucose level” to Level II Bullet #1. Level II-Bullet #5-added “in increments of 0.5mg” to Narcan IV administration
Overdose (Tricyclic)	Level I-Bullet #4-moved “check a blood glucose level” to Level II Bullet #1. Level II-Bullet #7- added “in increments of 0.5mg” to Narcan IV administration.
Poisoning	Level I-Bullet #1-changed from “(rescuer should wear S.C.B.A. if required)” to “(rescuer should wear appropriate PPE).”
Seizure Disorder	Level I-Bullet #3-moved “check a blood glucose level” to Level II Bullet #1.

The following pages have been updated or revised as of **09-15-09** as approved by the EMS Subcommittee

Standard Cardiac Arrest Procedures	Level 1-moved “check a blood glucose level” to Level II Bullet #1. Level 2-Bullet #3-added “ALS airway if needed with ET tube (1 attempt only) or King Airway (>12kg or 25lbs).” Bullet #4-added “capnography and 2 other documented methods.” Bullet #6-removed.
Asystole	For Epinephrine administration added “if” for ETT administration. Listed H’s and T’s in Notes section.
Bradycardia	Reorder boxed indicating CPR to be performed before medication administration. For Epinephrine administration added “if” for ETT administration. Notes-added “Consider transcutaneous pacing if highly suspicious for beta blocker or calcium channel blocker overdose.”
Pulseless Electrical Activity	For Epinephrine administration added “if” for ETT administration. Listed H’s and T’s in Notes section.
Supraventricular Tachycardia	For Adenosine administration specified bolus dose of 20mL. Removed Valium as sedative for electrical cardioversion. Changed Versed routes to include IO/IM/Nasal. Notes-added Do not delay cardioversion for IV access
Ventricular Fibrillation / Pulseless Ventricular Tachycardia	For Epinephrine administration added “if” for ETT administration.
Ventricular Tachycardia (Pulse Producing)	Removed Valium as sedative. Changed Versed routes to include IM

The following pages have been updated or revised as of **09-15-09** as approved by the EMS Subcommittee

Standard Pediatric Medical Care Procedures	Level 1-moved “check a blood glucose level” to Level II Bullet #1. Level 2-Bullet #3 added-“ Establish an ALS airway if needed with ET tube (1 attempt only) or King Airway (>12kg or 25lbs).” Bullet #4 added-“ Confirm airway placement with capnography and 2 other documented methods.”
Abdominal Pain	Level 2-Bullet # 2 added “with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.” Bullet #3 added “If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg). Bullet #4 added-“Confirm airway placement with capnography and 2 other documented methods.” Level 3- Bullet #1 moved Zofran to Level 2 and changed to include “6 months or older or Oral Dissolving Troche (ODT) 4mg for 12 years and older”
Airway Management	Rationale-added “Consider King Airway if greater than 12kg/25lbs or BVM only if effective over endotracheal tube. If endotracheal intubation is attempted, only 1 attempt should be made followed by King Airway or BVM.” Level 2-removed all bullets and replaced with Bullet #1 “Establish an ALS airway if needed with ET tube (1 attempt only) or King Airway (>12kg or 25lbs).” Bullet #2”RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.” Bullet #3 “If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg)” Bullet #4 “Confirm airway placement with capnography and 2 other documented methods.”
Allergic Reaction	Level 2-Bullet # 3 added “with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.” Bullet #4 added “If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg). Bullet #5 added-“Confirm airway placement with capnography and 2 other documented methods.”
Altered Mental Status	Level 1-moved “check a blood glucose level” to Level II Bullet #1. Level 2-Bullet # 4 added “with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.” Bullet #5 added “If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg). Bullet #6 added-“Confirm airway placement with capnography and 2 other documented methods.”
Anaphylaxis	Level 2-Bullet # 3 added “with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.” Bullet #4 added “If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg). Bullet #5 added-“Confirm airway placement with capnography and 2 other documented methods.”
Asthma/Bronchitis	Level 2-Bullet # 3 added “with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.” Bullet #4 added “If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg). Bullet #5 added-“Confirm airway placement with capnography and 2 other documented methods.”
Croup/Epiglottitis	Level 2 Bullet #2 changed arrest to failure. Bullet #3 changed arrest to failure.
Carbon Monoxide Inhalation	Moved to Haz Mat Section
Diabetic Emergencies (Hyperglycemia)	Level 1-moved “check a blood glucose level” to Level II Bullet #1. Level 2-Bullet # 4 added “with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.” Bullet #5 added “If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg). Bullet #6 added-“Confirm airway placement with capnography and 2 other documented methods.”

Diabetic Emergencies (Hypoglycemia)	Level 1-moved “check a blood glucose level” to Level II Bullet #1. Bullet #6-added “(if available)” to Glucagon administration.
Environmental Cold Emergencies	Level 2-Bullet # 3 added “with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.” Bullet #4 added “If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg). Bullet #5 added-“Confirm airway placement with capnography and 2 other documented methods.”
Environmental Heat Emergencies	Level 2-Bullet # 3 added “with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.” Bullet #4 added “If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg). Bullet #5 added-“Confirm airway placement with capnography and 2 other documented methods.”
Overdose	Removed subtitles “(Non-Tricyclic / Unknown Etiology).” Level I-moved “check a blood glucose level” to Level II Bullet #1. Level 2-Bullet #4 added “Obtain 12 lead ECG if high suspicion for Tricyclic antidepressant overdose.” Bullet # 5 added “with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.” Bullet #6 added “If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg). Bullet #7 added-“Confirm airway placement with capnography and 2 other documented methods.” Level 3 Bullet #1 changed to say “Sodium Bicarbonate 1 mEq / kg as ordered if high suspicion for Tricyclic antidepressant overdose and patient is tachycardic with widened QRS.”
Overdose (Tricyclic)	Removed
Poisoning	Level 2-Bullet # 3 added “with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.” Bullet #4 added “If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg). Bullet #5 added-“Confirm airway placement with capnography and 2 other documented methods.”
Seizure Disorder	Level 1-moved “check a blood glucose level” to Level II Bullet #1. Level 2-Bullet # 4 added “with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.” Bullet #5 added “If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg). Bullet #6 added-“Confirm airway placement with capnography and 2 other documented methods.” Bullet #8 removed Valium administration. Bullet #9 removed Versed intranasal route. Level 3-Bullet #1 removed additional Valium.

The following pages have been updated or revised as of **09-15-09** as approved by the EMS Subcommittee

Standard Trauma Care Procedures	Rationale-added “ideally scene time should remain under 10 minutes.” Level 2-Bullet #2 added “Establish an ALS airway if needed with ET tube (1 attempt only) or King Airway (>12kg or 25lbs).” Bullet #3 added “Confirm airway placement with capnography and 2 other documented methods.”
Animal Bites and Stings	Level 2-Bullet #1 added-“ if indicated.” Bullet # 3 added “with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.” Bullet #4 added “If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg). Bullet #5 added-“Confirm airway placement with capnography and 2 other documented methods.” Bullet #6 removed.
Burns	Level 2-Bullet # 4 added “(preferably ET tube considering potential for

	sub-glottic swelling) with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.” Bullet #5 added “If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg). Bullet #6 added-“Confirm airway placement with capnography and 2 other documented methods.” Bullet #8 added “Morphine IV/IO 0.1 mg/kg (max dose 5 mg) for burns exceeding 10% (2nd or 3rd degree) BSA.”
Chest Injury	Level 2-Bullet # 3 added “with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.” Bullet #4 added “If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg). Bullet #5 added-“Confirm airway placement with capnography and 2 other documented methods.”
Fractures	Level 2-Bullet #1 added “if indicated” Bullet #2 added-“ • Morphine IV/IO 0.1 mg/kg (max 5mg).”
Head Injuries	Level 2-Bullet # 3 added “with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.” Bullet #4 added “If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg). Bullet #5 added-“Confirm airway placement with capnography and 2 other documented methods.” Bullet #7 removed Narcan administration
Ophthalmic Injuries	Level 2-Bullet #1 removed “Do not repeat dose” from Tetracaine administration
Traumatic Shock	Level 2-Bullet # 3 added “with RSI if indicated including Etomidate IV 0.15-0.3 mg/kg, Atropine IV 0.02 mg/kg (if under age 5), and Succinylcholine IV 1-2 mg/kg.” Bullet #4 added “If intubated, sedate with Versed IV 0.05mg/kg (max dose 2 mg). Bullet #5 added-“Confirm airway placement with capnography and 2 other documented methods.”

The following pages have been updated or revised as of **12-15-09** as approved by the EMS Subcommittee

Adenosine	Added contraindication “WPW or accessory pathway cardiac condition conduction abnormalities” Added pediatric max dose 6mg for initial weight based dose and 12mg for second dose. Changed follow-up bolus dose to 20mL from 5-10mL
Albuterol	Added note “Albuterol can be combined with Atrovent in the nebulizer. This may be administered (as needed) before vascular access”
Amiodarone	Added comment “chronic use” to adverse reaction Pulmonary Fibrosis. Specified adult and pediatric doses.
Aspirin	Added protocol
Atropine	Added note “Neonates and most children under 1 month of age would receive <0.1mg of Atropine and therefore should not receive Atropine. Studies show that ET administration of medications is generally ineffective in both adults and children but still remains in the most recent PALS and ACLS manual.” Removed mention of HazMat protocols. Specified doses for symptomatic bradycardia and RSI indications.
Calcium Chloride	Specified indication of acute hyperkalemia to relate to dialysis patients. Changed contents of pre-filled syringe from 13.6 mEq to 1 gram. Specified adult and pediatric dosing.
Dextrose	Changed Chemstrip to glucometer under indications. Specified pediatric dosing based on glucometer reading “Administer D25W 2-4 ml/kg IV (<34 kg) if glucose <60 mg/dl Administer D50W 25gm IV (>34kg if glucose <60mg/dl)
Diazepam	Added pacing to indications. Changed dosing for seizure activity from

	5-10mg to 5mg increments, maximum dose of 10mg. Changed dose for cardioversion or pacing from 2-5mg to 5-10 mg.
Diphenhydramine	Changed adult dosing from 10-50mg to 0.5mg/kg maximum 50mg.
Dopamine	Added under adult administration "ROSC after Cardiac Arrest: 10-20 mcg/kg/min to keep SBP >140 or MAP 80-90. Cardiogenic Shock: 5-20 mcg/kg/min for hypotension not corrected by fluid challenge. Can be administered with physicians orders for Traumatic Shock. Symptomatic Bradycardia: 5-10 mcg/kg/min" Added pediatric administration "only with physicians orders. Administer dopamine 5-20 mcg/kg/min for Neurogenic Shock after volume replacement. Titrate dopamine to maintain a SBP >90."
Epinephrine	Specified dosing of adults for anaphylaxis, asthma, and cardiopulmonary arrest. Specified pediatric doses for respiratory compromise and asthma.
Etomidate	Added adult dosage for sedation prior to cardioversion 5-10mg. Changed pediatric dosing from 0.2mg/kg to 0.15-0.30mg/kg.
Furosemide	Added note "Not to be given to febrile patient with signs and symptoms such as rales and shortness of breath may also be present with pneumonia. Maximum dose of Lasix is 80mg."
Lidocaine	Added for adult VF/VT "repeat in 3-5 minutes" Added "For VT 1.5mg/kg IV repeat 0.75 mg/kg every 5 minutes as needed to a maximum of 3 mg/kg. Added "follow bolus therapy with maintenance infusion of 2-4mg/min (NOTE: PVCs in an otherwise slow heart rate represents ventricular escape beats, and if eliminated with Lidocaine may lead to asystole). Added pediatric dosing 1mg/kg IV as needed every 10 minutes to a maximum dose 3mg/kg. Follow bolus therapy with maintenance infusion of 20-50 mcg/kg/min." Added note "300mg of Lidocaine into 250mL of NS yields 1 micro-drop/kg/minute = 20mcg/kg/min.
Metoprolol	Changed heart rate for indication to greater than 60 from greater than 80.Changed contraindication for systolic blood pressure from <140 to <120. Added "repeat dose once if indicated (HR >60 and SBP >120)" to administration and dosage.
Midazolam	Added to adult dosage "If ROSC occurs with patients that receive cold fluids, administer Versed for sedation 2-5mg IV if the patient is not hypotensive. If actively seizing, consider IM/Nasal Versed 1-2mg (maximum dose 5mg.) while attempting IV access."
Morphine	Added to administration and dosage Adults-" Administer Morphine 5mg IV or IM for burns that meet trauma alert criteria and for isolated long bone fractures. May repeat 5mg one time. CP or AMI: 2mg IV PRN. Repeat at 5 minute intervals to a total of 10mg. CHF: 2 mg to 4 mg IV if patient not tolerating C-PAP well. Morphine's effects may be acutely reversed with Narcan" and pediatric "Burns: Morphine IV/IO 0.1 mg/kg (max dose 5 mg) for burns exceeding 10% (2nd or 3rd degree) BSA. Fractures: Morphine IV/IO 0.1 mg/kg (max 5mg). May only be administered with physicians orders."
Naloxone	Added to administration and dosage Adult "If unresponsive and / or respirations are compromised, administer Narcan 2 mg IV in increments of 0.5mg. OD: May repeat as needed for Methadone or Darvocet overdose. If moderately obtunded, incremental doses of 0.5 mg may be prudent since immediate narcotic withdrawal syndromes may be precipitated. Some agents such as Propoxyphene/ Darvon may require higher doses of Narcan (up to 10 mg) to reverse narcotic effects. AMS: Administer Narcan 2 mg IV in increments of 0.5mg , or Nasal Atomized

	if no IV access as needed for respiratory depression., Cardiac Arrest: 2mg if indicated., Repeat as needed.” Pediatrics added “0.1 mg/kg or nasal atomized if no IV access >12 years, as needed for respiratory depression. Repeat as needed
Sodium Bicarbonate	Changed administration and dosage to “1 mEq/kg for cardiac arrest with prolonged downtime (>10 min and intubate), Should be administered to all arrested dialysis patients. Tricyclic Overdose: with physicians orders.”
Succinylcholine	Changed dosage from 1.5-2 mg/kg for adults and peds to 1.5mg/kg adults and 1.5-2mg/kg for peds
Vasopressin	Added comment to adult dosage “can be substituted for 1 <sup>st</sup> or 2 <sup>nd</sup> dose of Epi.”
Zofran	Added protocol
Pralidoxime Chloride	Removed protocol

The following pages have been updated or revised as of **12-15-09** as approved by the EMS Subcommittee

Child Birth	Added “provide supplemental oxygen” to #6. Changed APGAR to < 7 from $\leq 7$ to begin neonatal resuscitation #9. Changed normal APGAR range from 8-10 to 7-10 #10.
Combitube	Protocol removed (company name)
Double Lumen Catheter	Protocol removed
Electrical Defibrillation	Removed “If using Biphasic unit follow manufacturer’s direction for settings.”
Endotracheal Intubation-Direct Visual Intubation Adult Care	Changed BTLS to ITLS-#3. Removed “if available” from CO2 indicator-#9. Removed “if available” from capnography-#27. Changed total attempts to two from three-#30.
Endotracheal Intubation-Direct Visual Intubation Pediatric Care	Removed “Use an uncuffed for patients less than 8 years of age”
EZ-IO	Removed Protocol (company name)
Interfacility Monitoring IV Pumps	Removed aminophylline, aminocaproic acid(amicar), bretylium(bretylol), isoproterenol(isuprel), amrinone(inocor), nitroprusside(nipride), procainamide(pronestyl), streptokinase(streptase), ranitidine(zantac)
Mechanical Ventilator	Added “Manufacturer’s recommendations” and removed “slide adjuster to 10-15mL/kg” for settings-#5
Neonatal Resuscitation	Changed resuscitation level to APGAR < 7 from < 8.
Peak Flow Meter	Removed Hudson RCI or Access LR (company names).
Peripheral Venipuncture	Removed “if blood tubes available”-#10
Pulmonary Artery Catheter Transports	Removed Protocol
Rapid Sequence Induction for Intubation	Removed dosing references for medication administration and added “Administer Versed, Etomidate, Succinylcholine, and Atropine per drug manual.” Replaced “perform Combitube” with “place bilumen or subglottic airway device”-#13. Changed “combitube” to “bilumen or subglottic airway device”-#14.
Rectal Medication Administration	Removed Protocol
Surgical Cricothyrotomy	Added “(10 years or greater)” to protocol title
Twelve Lead ECG Monitor	Removed reverence to Physio Control and Life Pak, Physio Control Life Pak 10 removed
Nasal Atomizer	Removed dosing references
Tourniquet	Added Protocol

The following pages have been updated or revised as of **01-19-10** as approved by the EMS Subcommittee

Hazardous Materials Treatment	Pontocaine Eye Drops – Add Utilizing Morgan Lens if available
Hazardous Materials Treatment	<p>Symptomatic Cyanide Poisoning – Add:</p> <ul style="list-style-type: none"> <li>- Initiate O2 immediately while preparing for intravenous administration</li> <li>- Simultaneously with the oxygen, administer Amyl Nitrite inhalant for 15-30 seconds q 2-3 minutes</li> <li>- Discontinue Amyl Nitrite and then inject adults with 300 mg (10 mL of a 3% solution) of sodium nitrite intravenously at the rate of 2.5 to 5 mL/minute. The recommended dose of sodium nitrite for children is 6 to 8 mL/square meter (approximately 0.2 mL/kg of body weight) but is not to exceed 10 mL.</li> <li>- Immediately thereafter, inject adults with 12.5 g (50 mL of a 25% solution) of sodium thiosulfate. The dosage for children is 7 g/square meter of body surface area, but dosage should not exceed 12.5 g. The same needle and vein may be used for both steps</li> <li>- If the poison was taken by mouth, gastric lavage should be performed as soon as possible, but this should not delay the treatments outlined above.</li> </ul>
Hazardous Materials Treatment	Hydrocarbon exposure – Add Epinephrine is contraindicated
Atropine Sulfate	<p>Add under Contraindications:</p> <ul style="list-style-type: none"> <li>- Organochlorine insecticides (aldrin, benzene hexachloride (BHC), HCH, hexachlor, hexachloran, chlordane, chlordecone, DDT, Kepone, chlorobenzilate, dicofol, Kelthane, dieldrin, dieldrite, dienchlor, pentac, endosulfan, endrin, hexadrin, heptachlor, hexachlorobenzene, lindane, gamma BHC or HCH, kwell, mehtoxychlor, Marlata, mirex, terpene polychlorinates, strobane, toxaphene</li> <li>- Nitrophenolic and Nitroresolic Herbicides (dinitroresol, dinitrophenol, dessin, acrex, talan, dinocap, crotothane, karathane, dinopenton, dinoprop, dinoseb, acricid, Hel-Fire, vertac)</li> <li>- CS (tear gas) or CN (mace)</li> </ul> <p>Add under Dosage:</p> <ul style="list-style-type: none"> <li>- Moderately severe poisoning (hypersecretion and other end-organ manifestations without CNS depression)</li> <li>- Adults and Children &gt; 12 years: 2.0-4.0 mg q 15 min until pulmonary secretions are controlled, which may be accompanied by other signs of atropinization (flushing, dry mouth, dilated pupils, and tachycardia &gt; 140/min)</li> </ul> <p>Severe poison: may need two or more times the dose</p> <p>Add Notes Section:</p> <p><b>Do not administer atropine prophylactically</b>  <b>Do not administer in fungicide poisoning (not a cholinesterase inhibitor)</b></p>
Cyanokit	<p>Starting dose: 5 g (2 vials)</p> <ol style="list-style-type: none"> <li>1. Reconstitute: Add 100 mL of 0.9% Sodium Chloride injection to vial using transfer spike. Fill to line. Vial in upright position.</li> <li>2. Mix: Rock or rotate vial for 30 seconds to mix solution. Do not shake.</li> <li>3. Infuse First Vial: Use vented IV tubing to hang and infuse over 7.5 minutes.</li> <li>4. Infuse Second Vial (Repeat Steps 1 and 2 before second infusion): Use vented IV tubing to hand and infuse over 7.5 minutes</li> </ol>
Pralidoxime Chloride	Add – Do not administer prophylactically



The following pages have been updated or revised as of **6-1-10** as approved by the EMS Subcommittee

Introduction	Changed under Table of Contents
	- Added review date of 6-1-12 to Document Maintenance
	- Changed Cardiac Arrest (General Procedures) to Standard Cardiac Arrest Procedures under Adult Cardiac Care.
	- Removed Tourniquet from Adult Trauma Care
	- Added Carbon Monoxide Inhalation to Pediatric Medical Care
	- Added Vomiting to Pediatric Medical Care
	- Added Community Health Care as Chapter 7
	- Added Baker Act to Administrative Policies
	- Removed Medical Rehabilitation from Administrative Policies
	- Added Transport Destination (non-ALS) to Administrative Policies
	- Added Autopulse to Procedures Manual
	- Added Combitube to Procedures Manual
	- Added EZ-IO to Procedures Manual
	- Added King Airway to Procedures Manual
	- Added Res-Q-Pod to Procedures Manual
	- Added Tourniquet to Procedures Manual
	- Added Cyanokit to Procedures Manual
	- Added Assessment Tools
Adult Cardiac Care	Atrial Fib/Atrial Flutter RVR
	- Level II cardioversion for a-fib changed to 100 to 200 Joules escalating to 300 joules then 360 joules
	- Level II cardioversion for a-flutter changed to 50 to 100 Joules escalating to 200 joules, 300 joules then 360 joules
	Mild Induced Hypothermia
	- Added 93.2 – 89.6 degrees F
Adult Trauma Care	Removed Tourniquet and added to Procedures Manual
Pediatric Medical Care	- Abdominal Pain added max dose of 4mg Zofran
	- Carbon Monoxide Inhalation protocol added
	- Seizure Disorder added intranasal Versed to Level II
Community Health Care	- Added as Chapter 7
Administrative Policies	- Baker Act added
	- Removed Medical Rehabilitation from Administrative Policies
	- Added Transport Destination (non-ALS) to Administrative Policies
Drug Manual	Cardizem – changed hypertension to hypotension under adverse Reactions
	Etomidate – added max dose of 20mg
	Midazolam – increased max adult dose to 15 mg to accommodate long transport times
Procedures Manual	- Added Autopulse
	- Added Combitube
	- Added EZ-IO
	- Added King Airway
	- Added Res-Q-Pod
	- Added Tourniquet
	- Removed 12 lead transmission procedure

Hazardous Material Exposure	Cyanokit added
Assessment Tools	Assessment Tools added

The following pages have been updated or revised as of **11-9-10** as approved by the EMS Subcommittee

Trauma Transport Protocol	Changed age for Pediatric Trauma Alert from 16 yoa to 15 yoa
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The following pages have been updated or revised as of **2-1-11** as approved by the EMS Subcommittee

Introduction	Changed in Table of Contents
	- Adult Cardiac Care Placed in Alphabetical Order
Adult Cardiac Care	Standard Cardiac Arrest Procedures
	- Reversed order of CPR and AED in Level I
	Asystole
	- Removed Atropine from Algorithm
	Atrial Fib and Atrial Flutter
	- Changed beginning joule setting for cardioversion in A-fib to 200J. Added notes to follow manufacturers recommendations for joule settings in A-Fib and A-Flutter. Removed "If defibrillator is capable language."
	Bradycardia
	- Reversed order of Dopamine and Transcutaneous Pacing in algorithm
	- Added language in note section " Atropine has been shown to be ineffective in patients who have undergone cardiac transplantation as well as patients presenting Type II second degree and third degree AV blocks."
	PEA
	- Removed use of Atropine for treatment of Bradycardia in notes section.
	Ventricular Tachycardia
	- Added block to algorithm for stable patient "Consider Adenosine if rhythm regular and QRS monomorphic."
Pediatric Cardiac Care	Standard Cardiac Arrest Procedures
	- Reversed order of CPR and AED in Level I
	Ventricular Tachycardia
	- Added block to algorithm for stable patient "Consider Adenosine if rhythm regular and QRS monomorphic."
Adult Cardiac Care	Mild Induce Hypothermia
	- Added "VF" to Rationale (Non-traumatic adult cardiac arrest patients with <u>VF</u> ,VT, asystole or PEA ...).
Adult Trauma Care	Burns
	- Added "not" to Rationale. (Prolonged treatment in the field is <u>not</u> justified).

The following pages have been updated or revised as of **8-9-11** as approved by the EMS Subcommittee

Adult Cardiac	PEA
	- Removed "IV may be Substituted for 1st or 2nd dose of epi.". Added "single dose" to Vasopressin box.
	SVT (non – Atrial Fibrillation)
	- Unstable: Select PRN box added "max dose 10 mg" to Valium. Added "max dose 5 mg" to Versed. Added "max dose 10mg " to Etomidate.

	<ul style="list-style-type: none"> <li>- Stable: Adensoine box, removed “ 6mg” and added “12 mg “ to first box. Removed the Cardizem box.</li> <li>-Note: Removed the first bullet “If after chemical cardioversion PSVT recurs, repeated cardioversion is not indicated.”</li> </ul>
	Ventricular Fibrillation & Pulseless Ventricular Tachycardia
	<ul style="list-style-type: none"> <li>- Added “* see note below” to the Lidocaine and Amiodarone boxes.</li> </ul>
	Ventricular Tachycardia
	<ul style="list-style-type: none"> <li>- Removed (Valium or Versed). Added “Valium 5 – 10 mg max dose 10 mg or Versed 1 –2 mg max dose 5 mg”.</li> </ul>
Adult Medical Care	Altered Mental Status
	<ul style="list-style-type: none"> <li>- Added “Obtain 12 Lead ECG” in Level II</li> </ul>
	<ul style="list-style-type: none"> <li>-Removed “Administer Ativan as per Medical Direction.”</li> </ul>
	Overdose – (Tricyclic / Unknown Etiology)
	-Removed Protocol
	Added “Syncope” as a stand alone protocol
Drug Manual	<p>Atropine</p> <ul style="list-style-type: none"> <li>- Indications: Removed “Asystole”</li> <li>- Administration and Dosages: <ul style="list-style-type: none"> <li>Adults – added “to a maximum of 3 mg” in bullet 1. Removed Bullet 2.</li> <li>Pediatric – removed “0.05 mg/kg” in bullet 1. Added 3<sup>rd</sup> bullet “Atropine is given 0.02 mg/kg IV/IO for rapid sequence intubation of patients under 5 years of age.”</li> </ul> </li> </ul>
	<p>Diphenhydramine (Benadryl)</p> <ul style="list-style-type: none"> <li>- Administration and Dosages: <ul style="list-style-type: none"> <li>Adults - changed “IM, IV” to read “IV, IM”</li> </ul> </li> </ul>
	<p>Dopamine</p> <ul style="list-style-type: none"> <li>- Contraindications: Eliminated bullet 1, 2 and 3.</li> <li>- Bullet 4 added, “ and myocardial ischemia”.</li> <li>- Administration and Dosage: Changed bullet 5 to read “5-20mcg/kg/min”.</li> </ul>
	<p>Epinephrine</p> <ul style="list-style-type: none"> <li>- Indications: Change “asthma” to read “severe asthma”</li> <li>- Administration and Dosage: <ul style="list-style-type: none"> <li>Adult: Bullet 1- eliminate “refer to appropriate Protocol for proper dosage”. Bullet 3 Anaphylaxis – sub bullet 2 changed to read “1:1,000 0.3 mg SQ for Anaphylaxis if no IV available”. Bullet 4 Asthma – sub bullet 2 changed to read “1:1,000 0.1 mg SQ for extreme respiratory compromise”.</li> <li>Pediatrics: Bullet 2 – eliminated.</li> </ul> </li> <li>- Precautions: Eliminated</li> </ul>
	<p>Etomidate</p> <ul style="list-style-type: none"> <li>- Indications: Bullet 1 - removed existing language replaced with “Etomidate is indicated by intravenous injection for sedation.”</li> </ul>
	<p>Glucagon</p> <ul style="list-style-type: none"> <li>- Indications: Bullet 1 – replace “coma” with “obtundation”.</li> </ul>

	<p>Glucagon</p> <ul style="list-style-type: none"> <li>- Administration and Dosage: Adult: Bullet 1 – eliminate “1 hour after coma develops”</li> </ul>
	<p>Haldol</p> <ul style="list-style-type: none"> <li>-Removed from Protocol.</li> </ul>
	<p>Lidocaine</p> <ul style="list-style-type: none"> <li>- Contraindications: Added second bullet to read “Bradycardia with PVC’s.”</li> </ul>
	<p>Midazolam</p>
	<ul style="list-style-type: none"> <li>- Indications: Bullet 1 - deleted “either alone or with a narcotic and/or seizure control.” Bullet 2 – Added “ – seizure control.” Bullet 3 added “agitated delirium.”</li> <li>- Precautions: Eliminated bullets 2, 3 and 4.</li> <li>- Administration and Dosage: Adult: Added Bullet 4 to read “ If agitated delirium consider IM/Nasal Versed 1 to 2 mg (maximum dose 5 mg) while attempting IV access.” Pediatric: Changed “0.05 mg/kg IV/IO/IM. May be repeated one time to a maximum total dose of 1 mg” to read “0.05 mg /kg IV/IO/IM, maximum single dose 1 mg may repeat one time (maximum combined dose of 2 mg).</li> </ul>
	<p>Morphine</p> <ul style="list-style-type: none"> <li>- Administration and Dosage: Adults: Bullet 3 added “for the normotensive patients.”</li> </ul>
	<p>Nitroglycerin</p> <ul style="list-style-type: none"> <li>- Administration and Dosage: Added Bullet 5 to read “ Caution with inferior myocardial infarction. Fluid should be given as a bolus of at least 500 ml. Nitroglycerin can be given after systolic blood pressure greater than 120”</li> </ul>
	<p>Oxygen</p> <ul style="list-style-type: none"> <li>- Precautions: Eliminated</li> </ul>
	<p>Succinylcholine (Anectinie)</p> <ul style="list-style-type: none"> <li>- Administration and Dosage: Pediatrics: Bullet 1 – Changed to read “1 to 2 mg /kg IVP.”</li> <li>- Note: Eliminated</li> </ul>
	<p>Toradol</p> <ul style="list-style-type: none"> <li>- Eliminated from the Protocol.</li> </ul>
Pediatric Cardiac Care	<p>Ventricular Fibrillation / Pulseless Ventricular Tachycardia</p> <ul style="list-style-type: none"> <li>- Amiodarone box: Added “max 300 mg”</li> </ul>
	<p>Ventricular Tachycardia (Pulse Producing)</p>
	<ul style="list-style-type: none"> <li>-Stable: Amiodarone box removed “given over 20 to 60 minutes. Added “given over 20 minutes max dose 300 mg”.</li> </ul>
Pediatric Medical Care	<p>Seizure Disorder</p>
	<ul style="list-style-type: none"> <li>- Removed “Administer Versed IM or intranasal if no IV access is available 0.1 mg/kg, repeat one time if seizures continue (if available)”</li> <li>-Added “Administer Versed – 0.05 mg/kg IV/IO/IM, maximum single dose of 1 mg may repeat once (maximum combined dose of 2 mg), or intranasal if no IV/IO access is available, 0.1 mg/kg, repeat one time if seizures continue.</li> </ul>

Administrative Policies	Death Scene
	- Added under item 4, Unquestionable Death Criteria: “D. If the deceased resides in a licensed care facility and meets the minimum requirements of A., B., and C. above, EMS crews may turn care/custody of the deceased over to The licensed care facility after ensuring that law enforcement is enroute.”
	- Under item 5, Asystole Protocol, Section B. Removed “Atropine and added “Epinephrine or single dose of Vasopressin has been administered.”
	- Under item 6, Control of Death Scenes. Removed “Death Scene”. Added “Possible Crime Scene.”

The following pages have been updated or revised as of **1-10-12** as approved by the EMS Subcommittee

Introduction	Table of Contents
	-Added Ketamine
Adult Medical Care	Agitated Patient
	- Removed Under Level II - “Consider Versed – 2 mg IV. May be repeated in 3 –5 minutes. If no IV, 4 mg IM. May repeat once in 15 minutes.” - Added Under Level II: Bullet 1 –“Ketamine 2 mg/kg IM. Maximum per dose 200 mg or 2 mL. May repeat times one if uncontrolled combative agitated delirium persists.” Bullet 2 – “Consider Versed – 4 mg IM. May repeat times one in 15 minutes if uncontrolled combative agitated delirium persists.” Bullet 3 – “ <b>DO NOT ATTEMPT IV</b> in the combative patient with uncontrolled agitated delirium.” Bullet 4 – “Consider Versed – 2mg IV for patient restrained with conventional methods and IV access has been established without difficulty. -Added Under Level III: Bullet 1 - Call medical control if uncontrolled combative agitated delirium persists
Drug Manual	Added Ketamine