

## INTRODUCTION

The Douglas County Protocols have been provided to allow immediate, pre-authorized treatment of patients, as a standardized approach in the prehospital care of sick and injured patients.

The authorization to provide prehospital care under these protocols is limited to those pre-hospital care providers with current certification by the State of Oregon Department of Health and official endorsement of a Medical Program Director.

The prehospital care provider is expected to follow these statements

1. It is imperative that scene safety be established prior to entering the scene. This includes body substance isolation (BSI) as described by OSHA CFR 1910.1030.
2. Perform rapid evaluation and initiate the appropriate emergency treatment as outlined in the Douglas County Patient Care Protocols
3. It is expected that BLS procedures will be completed prior to ALS interventions. The prehospital care provider is also given the latitude to flow between protocols as appropriate
4. Make Base Station contact if further orders are needed. The Medical Program Director authorizes the on-duty Emergency Department physician at the designated Base Station, to provide on-line Medical Control utilizing both the Standing and Physician Order sections as guidelines. The Base Station physician is also available to provide advice regarding patient disposition, alternative interventions, interfacility medication authorization, and delegation of on-line medical control to other physicians
5. The treatment protocols on the following pages are designed to be used as a guideline in the treatment of your patients. Patients do not always present with signs and symptoms that allow the use of a single protocol and therefore each patient should be treated on an individual basis. The prehospital care provider should be prepared to use any and all training, tools, and medications within their scope to treat each patient. All prehospital care providers are responsible to know and understand the action of medications and treatments within their scope so that they can best treat the patient's individual signs and symptoms.
6. Trauma banding is required for all patients meeting trauma criteria as outlined by State of Oregon Department of Health
7. A complete set of vital signs will always be taken unless time or the patient's condition prevents this being done. Documentation is required on the PCRf for any deviation from this standard.
8. A copy of cardiac monitor tracing **MUST** be attached to all copies of the PCRf anytime a cardiac monitor is placed on a patient.

9. All patients should be transported to the closest appropriate facility. Weather and road conditions must be taken into account as well as mileage.
10. The prehospital contact report to include:
  - a. Unit identification
  - b. Age and sex of patient
  - c. Level of transport (code 1 or code 3)
  - d. Chief complaint
  - e. Medical history relevant to chief complaint
  - f. Vital signs
  - g. Treatment given, and response to treatment
  - h. ETA
  - i. Request for additional information or treatment

## **PATIENT CONFIDENTIALITY**

1. Patient confidentiality will be preserved at all times. Individual cases may be discussed during training and quality improvement, and may be referred to as needed. Patients will not be discussed with anyone outside of training, quality assurance, or billing. By State and Federal Law patients will not:
  - a. be the subject of casual discussion among prehospital care providers
  - b. be discussed with family, or friends
  - c. be discussed with other patients
  - d. be specifically discussed for secondary gain, such as to defame the ability or character of another provider

## **PREHOSPITAL CARE PROVIDER CONDUCT**

1. Prehospital care providers will remain courteous to the public and to the patient. If a patient is physically threatening, the EMS provider may request the assistance of law enforcement, or may discontinue patient contact if situation is unsafe.
2. Prehospital care providers will remain courteous and respectful to each other and to other healthcare providers
3. If prehospital care providers wish to help improve the performance of an individual, they may instruct them in a professional and positive manner. If necessary, the incident may be discussed with the agency's Medical Officer, MPD, or QI Coordinator
4. If prehospital care providers of equal certification and training disagree on patient diagnosis or management, the provider who does not have on scene medical authority has an ethical obligation to discuss their concern in a professional manner and not in front of the patient if possible. In the event a disagreement over patient care persists the provider without medical control is obligated to continue to assist with patient care.
5. Matters of disagreement between prehospital care providers not related to the scene should not be discussed at the scene. Providers should not threaten, degrade, insult or verbally abuse each other. An environment of mutual respect must be maintained.

## **SPECIAL CIRCUMSTANCES**

### **PHYSICIAN PRESENT AT THE SCENE**

The prehospital care provider functions under the direction of the on-duty Base Station physician. Physicians, (other than Base Station physicians), may participate in the care of a patient at the scene of any emergency in one of the following ways:

1. Turn over control of the patient, but offer assistance, allowing the prehospital care provider to remain under the control of the Base Station physician
2. Take total responsibility for management of the patient(s) and must continue to personally direct the care of the patient until care is transferred to a hospital physician.

The physician on scene must supply proof of being a licensed physician prior to initiation of any patient care direction or treatment

In general, the physician who has the most experience in the management of prehospital emergencies will assume control. This usually will be the Base Station physician. Access to communication with the Base Station should be provided to any on-scene physician on request

### **EMERGENCY AT A PHYSICIAN'S OFFICE**

At a Physician's office or clinic, the individual physician maintains the responsibility for the treatment and management decisions for the patient. During transport, the treatment rendered by the paramedic must fall within the scope of the Douglas County Standing Orders/Protocols. The paramedic should request that the physician contact the receiving emergency department with a report on the patient.

### **PATIENT REFUSAL OF MEDICAL EVALUATION**

1. Consent
  - a. The patient has responsibility to consent to or refuse treatment. If the patient is unable to do so, a responsible relative or guardian has this right
  - b. If waiting to obtain lawful consent from the authorized person would present a serious risk of death, serious impairment of health, or would prolong severe pain or suffering to the patient, treatment may be undertaken to avoid these risks without consent. In no event should legal consent procedures be allowed to delay immediately required treatment
  - c. The patient must be eighteen years of age or emancipated to legally refuse treatment
  - d. If the patient is under age, consent or refusal of treatment should be from a natural parent, adopted parent, or legal guardian only. (Refer to 2f)
2. Mental competence
  - a. A person is mentally competent if
    1. Capable of understanding the nature and consequence of the proposed treatment
    2. Sufficient emotional control, judgment, and discretion to make rational decisions.

- b. A person is not mentally competent if they have an altered mental status, presents in shock, or under the influence of drugs or alcohol.
- c. If a conscious patient who is irrational or may harm him/herself refuses treatment, you should contact Base Station Medical Resource (and police if necessary)
- d. If a patients family, nursing home staff, or other care provider refuses treatment for the patient, contact Base Station Medical Resource
- e. Nurses may speak for the Base Station physician if the physician is unable to come to the telephone. The nurse must give the prehospital care provider the name of the Base physician who is directing the nurse
- f. **When in doubt, contact Base Station Medical Resource and fully document all of your actions**

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## TREATMENT PROTOCOLS INTRODUCTION

The treatment protocols on the following pages are designed to be used as a guideline in the treatment of your patients not a “cookbook”. Patients do not always present with signs and symptoms that allow the use of a single protocol and therefore each patient should be treated on an individual basis. The prehospital care provider should be prepared to use any and all training, tools, and medications within their scope to treat each patient. All prehospital care providers are responsible to know and understand the action of medications and treatments within their scope so that they can best treat the patient’s individual signs and symptoms. All patient care should start with the following before progressing to advanced skills, unless otherwise noted in the individual protocol.

**A**irway – does the patient have an open and adequate airway?

**B**reathing – is the patient breathing at an adequate rate and tidal volume?

**C**irculation – does the patient have a pulse of adequate rate and quality?

**Vital Signs** – LOC, pulse, blood pressure, respirations, temperature, lung sounds, chem. BG (all diabetics, possible diabetics, or altered LOC) & pulse ox (done without O<sub>2</sub> if possible). Vital signs should be repeated every 5 – 10 minutes depending on patient condition. Vital signs should also be taken and documented before and after any interventions. Orthostatic vital signs should be taken on any patient with suspected hypovolemia or dehydration.

**Oxygen** – patients should be given supplemental O<sub>2</sub> by most appropriate device and respirations assisted as necessary.

**Cardiac Monitor** – a cardiac monitor should be placed on all patients where a cardiac event is suspected or on patients who have experienced a syncopal or near syncopal episode of unknown origin. If available and time permits a 12 lead ECG should be done on all suspected MI patients and patients with unexplainable pain.

**H**istory – a patient history should be obtained when possible. The patient history should be as complete as possible and follow an accepted format. (ie: SAMPLE, PASTMED, PQRST)

**E**xam – a systematic patient exam should be done and should include a GCS score.

While it is understood that some of these steps will and may be performed simultaneously, it is expected that the basic life support measures will be taken care of before moving on to advanced measures. If you can’t provide an adequate airway nothing else will matter. The format of the protocol is as follows; EMT Basics can perform **BLS** treatment, EMT Intermediates perform all **BLS** treatment and **ILS** treatment, EMT Paramedics perform all **BLS**, **ILS**, and **ALS** treatments. **Remember BLS treatment comes first.**

## ABDOMINAL PAIN

Abdominal pain is one of the most common presenting complaints in emergency medicine. In up to 42% of patients, the etiology remains obscure. Recalling the differences between generalized types of pain can be helpful diagnostically. Visceral abdominal pain results from stretching of the autonomic nerve fibers. The pain may be described as cramp like, colicky or gaseous and is often intermittent. Obstruction is often the cause. Somatic pain occurs when pain fibers located in the parietal peritoneum are irritated by chemical or bacterial inflammation. The pain is described as sharp, more constant and more precisely located. Referred pain is any pain felt at a distance from a diseased organ. Referred pain generally follows certain classic patterns. For example, diaphragmatic irritation often radiates to the supraclavicular area.

<b>SIGNIFICANT FINDINGS</b>		<b>(*AUTOMATIC ALS)</b>
Tender abdomen <b>*Diaphoresis</b> <b>*Altered LOC</b> <b>*Distended or rigid abdomen</b>		<b>*Pulsating abdominal mass</b> <b>*Unequal/absent femoral pulses</b> <b>*Orthostatic changes</b>
<b>BLS TREATMENT</b>		
		<b>**Request Paramedic Evaluation If**</b>
1. ABC, Hx, physical exam, Orthostatic VS (if indicated) cardiac monitor, Pulse Ox <b>(a)(b)</b> 2. Frequent vital signs 3. Place patient in position of comfort 4. O2 & Assist respirations as needed 5. NPO 6. Treat other associated signs and symptoms per appropriate protocol	1. Unconscious/not breathing 2. Respiratory distress 3. Vomiting red blood 4. Black, tarry stools 5. Upper abdominal pain 6. Lower abdominal pain, women age 12-50 with dizziness, syncope or heavy vaginal bleeding 7. Abdominal/back pain with syncope or near syncope when sitting 8. Orthostatic changes >20 SBP and/or > than 20 BPM	
<b>ILS TREATMENT</b>		
<b>(Standing Orders)</b>		<b>**Consider Paramedic Intercept If**</b>
1. Obtain IV access 2. Fluid bolus NS PRN		1. Any ILS skills performed
<b>ALS TREATMENT</b>		
<b>(Standing Orders)</b>		<b>(Physician Orders)</b>
1. Treat pain PRN pain management protocol 2. <b>Zofran 4 mg slowly over 2 min IV/IM/IO. PRN for vomiting</b> 3. Treat other associated signs and symptoms per appropriate protocol		1. To exceed maximum dose of pain medication 2. To use more than one narcotic

**Note:**

- a. Abdominal pain may be the first sign of an impending rupture of the appendix, liver, spleen, ectopic pregnancy or aneurysm. Monitor for signs of hypovolemic shock.
- b. If pulsating mass is felt, suspect an abdominal aneurysm discontinue palpation, and use caution with IV fluids.

## ALLERGIC REACTION/ANAPHYLAXIS

Allergic reactions can range from mild local eruptions to severe and life-threatening, multisystem systemic illnesses. The most common presenting complaints involve the dermatologic and respiratory systems, but gastrointestinal and cardiovascular involvement also occur frequently.

<b>SIGNIFICANT FINDINGS</b>	<b>(*AUTOMATIC ALS)</b>
Itching, hives (extreme in hands and feet) Nausea, vomiting Anxiety Paleness Flushing around face and chest Dizziness	<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p><b>*Cyanosis around lips</b></p> <p><b>*Chest discomfort</b></p> <p><b>*Altered LOC</b></p> <p><b>*Swelling of face and tongue</b></p> </div> <div style="width: 30%;"> <p><b>*Abdominal cramps</b></p> <p><b>*Weak, rapid pulse</b></p> <p><b>*Difficulty breathing</b></p> </div> </div>
<b>BLS TREATMENT</b>	
	<b>**Request Paramedic Evaluation If**</b>
<ol style="list-style-type: none"> <li>1. ABC, Hx, physical exam, VS, cardiac monitor, lung sounds, Pulse Ox <b>(c)</b></li> <li>2. O2 &amp; Assist respirations as needed</li> <li>3. <b>Administer Epinephrine SQ (1:1000)(a)(b)</b></li> <li>4. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	<ol style="list-style-type: none"> <li>1. Unconscious/not breathing</li> <li>2. Cannot speak in full sentences</li> <li>3. Swelling in throat or difficulty swallowing</li> <li>4. Diaphoresis</li> <li>5. Syncope</li> <li>6. History of anaphylactic reactions</li> </ol>
<b>ILS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
<ol style="list-style-type: none"> <li>1. Obtain IV access</li> <li>2. <b>Epinephrine (1:1000) 0.3– 0.5 mg SQ or Epinephrine (1:10,000) 0.1 – 0.3 mg IV (b)(d)(e)</b></li> <li>3. <b>Albuterol 2.5 mg UDN</b></li> <li>4. <b>Benadryl 25 – 50 mg PO/IM/IV (e)</b></li> </ol>	<ol style="list-style-type: none"> <li>1. Any ILS skills performed</li> </ol>
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>Special considerations</b>
<ol style="list-style-type: none"> <li>1. <b>Solumedrol 62.5 mg IV X 1 PRN</b></li> <li>2. Fluid bolus NS PRN</li> <li>3. <b>Dopamine titrated to SBP of 100 mmHg</b></li> <li>4. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	<p>Protect the airway and suction if needed.</p> <p>Consider intubation if needed to maintain the airway.</p>

**Note:**

- a. Epinephrine to be given only if the patient is in respiratory distress or hypoperfused
- b. A single dose of Epinephrine may not reverse the effects of anaphylaxis. Administer the additional Epinephrine auto-injector as needed
- c. Anaphylaxis is an extreme emergency since cardiac arrest can occur. Do not delay treatment or transport
- d. If unable to access IV and no BP, may give Epinephrine (1:1000) 0.1 – 0.3 cc SL
- e. Pediatric dose: Epinephrine 0.01mg/kg. Benadryl 1.0 – 2.0mg/kg.

## ANIMAL BITES AND STINGS

Insect stings and animal, snake, or spider bites from a variety of species can result in serious illness and injury. Animal bites from wild animals such as skunks, bats, raccoons, and foxes pose a special risk of rabies. Bites or stings from snakes, insects or spiders inject poisonous venom into its victims generally affecting the cardiovascular or neurological system. Individual reactions to venom vary greatly depending on the person's sensitivity. Anaphylactic shock can occur from any allergic reaction. Five percent of the general population is allergic to the sting of wasps, bees, hornets, yellow jackets and ants. Insect stings cause twice as many deaths as snakebites each year.

<b>SIGNIFICANT FINDINGS</b>		<b>(*AUTOMATIC ALS)</b>
Hives	Burning sensation at site	<b>*Altered LOC</b>
Chest tightness	Joint pain	<b>*Weakness or collapse</b>
Headache, dizziness	Muscle cramps,	<b>*Constricted upper airway</b>
Localized pain or itching	Swelling or blistering at site	<b>*Anaphylactic shock</b>
Excessive salivation	Profuse sweating	<b>*Difficulty breathing</b>
Nausea/vomiting		
<b>BLS TREATMENT</b>		
<b>**Request Paramedic Evaluation If**</b>		
<ol style="list-style-type: none"> <li>1. ABC, Hx, physical exam, VS</li> <li>2. Administer O2 per procedure</li> <li>3. Control bleeding</li> <li>4. Remove jewelry or other constricting items</li> <li>5. Scrape away stingers or venom sacs, taking care not to pinch venom sac</li> <li>6. Wash area gently</li> <li>7. Immobilize extremity level to or below heart</li> <li>8. Identify and transport organism if possible</li> <li>9. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	<ol style="list-style-type: none"> <li>1. Unconscious/not breathing</li> <li>2. Uncontrolled bleeding</li> <li>3. Respiratory distress</li> <li>4. Serious face and neck bites</li> <li>5. Bite from poisonous animal</li> <li>6. Signs of shock</li> </ol>	
<b>ILS TREATMENT</b>		
<b>**Consider Paramedic Intercept If**</b>		
<p style="text-align: center;"><b>(Standing Orders)</b></p> <ol style="list-style-type: none"> <li>1. Obtain IV access (if needed)</li> <li>2. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	<ol style="list-style-type: none"> <li>1. Any ILS skills performed</li> </ol>	
<b>ALS TREATMENT</b>		
<p style="text-align: center;"><b>(Standing Orders)</b></p> <ol style="list-style-type: none"> <li>1. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	<p style="text-align: center;"><b>(Physician Orders)</b></p>	

**Note:**

- a. Do not apply an ice bag or cold pack on snakebites since this can cause additional tissue damage. However, ice bags can be applied to insect bites to reduce pain and swelling

**BLEEDING  
Non-Traumatic**

Acute hemorrhage is defined as rapid blood loss and is seen with various medical and surgical conditions. Some of the most common causes of significant hemorrhage are trauma, disorders of the gastrointestinal and reproductive tracts, and vascular disease. The majority occur in patients with normal hemostasis. With careful attention to the history and physical findings, patients with pathologic bleeding can often be readily identified. Hemorrhagic (hypovolemic) shock occurs when the degree of blood loss overcomes the body's compensatory mechanisms and compromises tissue perfusion and oxygenation.

<b>SIGNIFICANT FINDINGS</b>		<b>(*AUTOMATIC ALS)</b>
Diaphoresis	Anxiety	<b>*Rapid, weak pulse</b>
Paleness	<b>*Bloody, "coffee like" emesis</b>	<b>*Low blood pressure</b>
Obvious bleeding	<b>*Decreased capillary refill (a)</b>	<b>*Bloody or tarry stools</b>
Intense thirst	<b>*Altered LOC</b>	
General weakness & fatigue	<b>*Signs of internal bleeding, rigid abdomen</b>	
Dizziness		
<b>BLS TREATMENT</b>		
	<b>**Request Paramedic Evaluation If**</b>	
1. ABC, Hx, physical exam, Orthostatic VS (if indicated), CARDIAC MONITOR, Pulse Ox 2. O2 & Assist respirations as needed 3. Treat other associated signs and symptoms per appropriate protocol <p align="center"><b>Nose Bleed</b></p> 1. Pinch nostrils 2. Elevate head <b>(b)</b> 3. Consider ice	1. Unconscious/not breathing 2. Signs of shock 3. Syncopal episodes 4. Respiratory distress 5. Vomiting blood 6. Black, tarry stools 7. Vaginal bleeding >20 weeks pregnant 8. Orthostatic changes of >20 Systolic BP and/or >20 Beats/Min 9. Lower abdominal pain, women 12 – 50 years with dizziness, syncope or heavy vaginal bleeding	
<b>ILS TREATMENT</b>		
<b>(Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>	
1. Obtain IV access 2. Fluid bolus NS PRN	1. Any ILS skills performed	
<b>ALS TREATMENT</b>		
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>	
1. Treat other associated signs and symptoms per appropriate protocol		

**Note:**

- a. Capillary refill time is a reliable sign typically only in infants and children less than 6 years old
- b. Position patient to reduce ingestion of blood

## BREATHING DIFFICULTY Pulmonary Edema

Left ventricular failure is the inability of the left ventricle to adequately move blood into the systemic circulation. In left ventricular failure, an imbalance in the output of the two sides of the heart occurs. The left ventricle is unable to move all the blood delivered to it from the right side of the heart. As left ventricular pressure rises so does the left atrial pressure and thereby transmitted back to the pulmonary veins and capillaries. When the pressure in the pulmonary vessels becomes too high, increased fluid is forced into the alveoli, resulting in pulmonary edema. Left ventricular failure may be caused by various types of heart disease, including AMI, chronic hypertension, mitral valve disease, certain arrhythmias and non-compliance of medication to control CHF.

SIGNIFICANT FINDINGS (*AUTOMATIC ALS)	
Cough *Audible wheezing *Rapid pulse and/or respirations *Diaphoresis *Chest pain *Extreme difficulty breathing *Tripod position	*Use of accessory muscles *Cyanosis *Appearing acutely ill with fever *Hypertension *Hypotension *Pink, frothy sputum *Altered LOC
<b>TREATMENT</b>	
<b>BLS</b>	
<b>**Request Paramedic Evaluation If**</b>	
1. ABC, Hx, physical exam, VS, cardiac monitor, lung sounds, Pulse Ox, <b>(a)</b> 2. O2 & Assist respirations as needed 3. <b>Administer Pt's Inhaler per pt's prescription</b> 4. Treat other associated signs and symptoms per appropriate protocol	1. Unconscious/not breathing 2. Respiratory distress 3. Dyspnea with chest pain 4. Inhaled toxic substances 5. Unable to speak in full sentences 6. Recent childbirth/trauma/immobilization (2 – 3 months) without respiratory Hx 7. Drooling/difficult swallowing
<b>ILS TREATMENT</b>	
<b>**Consider Paramedic Intercept If**</b>	
<b>(Standing Orders)</b>	1. Obtain IV access 2. <b>Nitroglycerin 0.4 mg SL q 5 if SBP &gt; 100</b> 3. <b>Lasix 40 mg IV (b)</b> 4. <b>Morphine 4 mg IV PRN q 3 – 5 min x 2 mg to 10 mg</b> 5. <b>Albuterol 2.5mg UDN, may repeat PRN</b>
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. Treat other associated signs and symptoms per appropriate protocol	1. <b>Morphine &gt; 10 mg</b>

**Note:**

- a. Remove obstructions, if any.
- b. Or double patient's single dose up to 160 mg.

**BREATHING DIFFICULTY**  
**Reactive Airway Disease**

Asthma is defined as a reversible airway obstruction, associated with hyper-responsiveness of the tracheobronchial tree. An early component of an asthma attack is bronchial smooth-muscle contraction. Bronchial inflammation, edema and mucus hypersecretion become more prominent as the attack progresses. Although bronchospasms can be reversed within minutes, mucus plugging and inflammatory changes do not decrease for days to weeks. Direct physical examination reveals hyperresonance to percussion, decreased intensity of breath sounds and prolongation of the expiratory phase, usually with wheezing. Although wheezing results from movement of air through narrowed airways, the intensity of the wheeze may not correlate with the severity of the airflow obstruction. The quiet chest reflects very severe airflow obstruction with air movement insufficient to promote a wheeze.

<b>SIGNIFICANT FINDINGS (*AUTOMATIC ALS)</b>	
Cough *Extreme difficulty breathing *Wheezing *Rapid pulse and/or respirations *Diaphoresis *Chest pain *Pink, frothy sputum	*Tripod position *Use of accessory muscles *Cyanosis *Appearing acutely ill with fever *Hypertension *Hypotension *Altered LOC
<b>BLS TREATMENT</b>	
1. ABC, Hx, physical exam, VS, cardiac monitor, lung sounds, Pulse Ox, <b>(a)</b> 2. O2 & Assist respirations as needed 3. <b>Administer Pt's Inhaler per pt's prescription</b> 4. Treat other associated signs and symptoms per appropriate protocol	**Request Paramedic Evaluation If** 1. Unconscious/not breathing 2. Respiratory distress 3. Dyspnea with chest pain 4. Inhaled toxic substances 5. Unable to speak in full sentences 6. Recent childbirth/trauma/immobilization (2 -3 months) without respiratory Hx 7. Drooling/difficult swallowing
<b>ILS TREATMENT</b>	
<b>(Standing Orders)</b> 1. Obtain IV access 2. Fluid bolus NS PRN if febrile or hypotensive 3. <b>Albuterol 2.5mg &amp; Atrovent 0.5mg UDN, may repeat Albuterol PRN</b> 4. <b>Epinephrine (1:1,000) 0.3 – 0.5mg SQ</b>	**Consider Paramedic Intercept If** 1. Any ILS skills performed
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b> 1. <b>Solumedrol 62.5mg IVP</b> 2. Treat other associated signs and symptoms per appropriate protocol	<b>(Physician Orders)</b> 1. <b>Magnesium 2Gm in 100ml NS over 5-10 min PRN</b>

**Note:**

- a. Remove obstructions if any

## CARDIAC ARREST

Cardiac arrest occurs in approximately 360,000 people in the United States each year. Resuscitative efforts can restore these hearts to spontaneous activity before the brain has been permanently injured. The core purpose of emergency cardiac care is to provide effective care as soon as possible to hearts that have stopped beating. The chain of survival relies on five principles; early recognition, early EMS activation, early CPR, early defibrillation and early ACLS intervention. Each component of the chain of survival is crucial. Numerous clinical studies have confirmed two simple observations; (1) almost every adult who survives sudden non-traumatic arrest was resuscitated from ventricular fibrillation. (2) The success of defibrillation is time dependent. The probability of defibrillating someone back to a perfusing rhythm declines about 2 – 10% per minute, starting with an estimated probability of 70 – 80% survivability at time zero. **NOTE: If unknown down time or down time greater than 5 minutes perform 2 minutes of CPR prior to any other treatment!!!!**

<b>SIGNIFICANT FINDINGS (*AUTOMATIC ALS)</b>	
<b>*Unresponsive</b> <b>*Apenic</b> <b>*Pulseless</b>	
<b>BLS TREATMENT</b>	
1. ABC, Initiate CPR/AED <b>(a)(b)</b> 2. Hx & physical exam as time permits	<b>**Request Paramedic Evaluation If**</b> 1. <b>This is an automatic ALS response</b>
<b>ILS TREATMENT</b>	
<b>(standing Orders)</b> 1. Obtain IV access 2. Treat other associated signs and symptoms per appropriate protocol and AHA guidelines <b>(c)</b>	<b>**Consider Paramedic Intercept If**</b> 1. Any ILS skills performed
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b> 1. ECG, (Hx & physical exam as time permits) 2. Treat other associated signs and symptoms per appropriate protocol and AHA guidelines <b>(c)</b> 3. Consider termination of efforts if appropriate	<b>(Physician Orders)</b>

**Note:**

- a. Do not initiate CPR if DNR documentation or signs of obvious death are present
- b. If valid DNR papers are presented after CPR is initiated, CPR may be discontinued. Refer to *Discontinuation of CPR*
- c. Dialysis patients only: *Flush thoroughly between medications to prevent the formation of sediment.*
  - Sodium Bicarbonate 50 mEq
  - CaCl 1 Gm
  - Dextrose 25 Gm if indicated by Chem BG
  - Regular Insulin 10 units IV if available (patient's prescription) **Regular Insulin Only**
- d. Termination of efforts may be considered after the patient has been effectively ventilated and two rounds of ACLS pharmacology has been given

**CARDIAC ARREST****Asystole**

Usually asystole, the complete absence of electrical activity in the myocardium, represents extensive myocardial ischemia from prolonged periods of inadequate perfusion. Such a status has a grim prognosis. Asystole most often represents a confirmation of death rather than a “rhythm” to be treated. **NOTE: If unknown down time or down time greater than 5 minutes perform 2 minutes of CPR prior to any other treatment!!!!**

<b>BLS TREATMENT</b>	
1. ABC, Initiate CPR/AED	<b>**Request Paramedic Evaluation If**</b>
2. Hx & physical exam as time permits	<b>1. This is an automatic ALS response</b>
<b>ILS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
1. Obtain IV access 2. <b>Epinephrine (1:10,000) 1 mg IVP q 3–5min</b> 3. <b>Vasopressin 40 units IV may replace 1<sup>st</sup> or 2<sup>nd</sup> dose of Epinephrine</b> 4. <b>Atropine 1 mg IVP q 3 – 5 min – max 0.04 mg/kg</b>	1. Any ILS skills performed
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. Confirm asystole in two (2) or more leads 2. Assist respirations as needed <b>(a)</b> 3. Consider immediate Transcutaneous Pacing (TCP) <b>(b)</b> 4. <b>Epinephrine (1:10,000) 1 mg IVP q 3–5min (a)</b> 5. <b>Versed 2.5 – 10mg IV PRN post arrest</b> 6. Consider termination of efforts if appropriate <b>(c)</b>	

**Note:**

- a. Drugs given down the ETT should be 2 - 2.5 times the recommended IV dose.
- b. TCP must be preformed early and simultaneously with drugs to be effective. Evidence does not support the routine use of TCP for asystole
- c. Termination of efforts may be considered after the patient has been effectively ventilated and two rounds of ACLS pharmacology has been given

**CARDIAC ARREST**  
**Pulseless Electrical Activity**  
**(PEA)**

Pulseless electrical activity is the presence of electrical complexes without accompanying mechanical contraction of the heart. These rhythms may be due to a number of problems. EMS providers must identify possible reversible causes and institute cause-specific interventions. A useful mnemonic for causes for PEA is 5 H's, 5 T's.

- |                         |                                  |
|-------------------------|----------------------------------|
| Hypovolemia             | Tablets (drug OD, accidents)     |
| Hypoxia                 | Tamponade, cardiac               |
| Hydrogen ion (acidosis) | Tension Pneumothorax             |
| Hyper/hypokalemia       | Thrombosis, coronary (ACS)       |
| Hypothermia             | Thrombosis, pulmonary (embolism) |

**NOTE: If unknown down time or down time greater than 5 minutes perform 2 minutes of CPR prior to any other treatment!!!!**

BLS TREATMENT	
1. ABC, Initiate CPR/AED	<b>**Request Paramedic Evaluation If**</b>
2. Hx & physical exam as time permits	<b>1. This is an automatic ALS response</b>
ILS TREATMENT	
<b>(Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
1. Obtain IV access 2. <b>Epinephrine (1:10,000) 1mg IVP q 3 – 5min</b> 3. <b>Vasopressin 40 units IV may replace 1<sup>st</sup> or 2<sup>nd</sup> dose of Epinephrine</b> 4. Fluid bolus NS PRN 5. <b>Atropine 1 mg IVP q3 – 5 min – max 0.04 mg/kg if HR &lt; 60 BPM</b>	1. Any ILS skills performed
ALS TREATMENT	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. ABC, CPR, EKG, (Hx, PE as time permits) 2. Assist respirations as needed <b>(a)</b> 3. Use specific protocol if cause is known <b>(b)</b> 4. Fluid bolus NS PRN 5. Transcutaneous pacing <b>(c)</b> 6. <b>Dopamine 5 - 20 mcg/kg/min titrated</b> 7. <b>Versed 2.5 – 10mg IV PRN post arrest</b> 8. Consider termination of efforts if appropriate <b>(d)</b>	

**Note:**

- a. Drugs given down the ETT should be 2 – 2.5 times the recommended IV dose.
- b. Dialysis patients only: *Flush thoroughly between medications to prevent the formation of sediment.*
  - Sodium Bicarbonate 50 mEq
  - CaCl 1 Gm
  - Dextrose 25 GM if indicated by Chem BG
  - Regular Insulin 10 units IV if available (patient's prescription) **Regular Insulin Only**
- c. A wide complex bradycardia may indicate a structural lesion below the Bundle of His. Atropine may not be effective, consider going straight to TCP
- d. Termination of efforts may be considered after the patient has been effectively ventilated with endotracheal intubation and causes have been explored. Refer to *Discontinuation of CPR*

**CARDIAC ARREST**  
**Ventricular Fibrillation**  
**Pulseless Ventricular Tachycardia**

Ventricular fibrillation is totally disorganized depolarization and contraction of small areas in the ventricular myocardium. During this time, there is no effective pumping activity, pulse, or blood pressure. The cardiac monitor of ventricular fibrillation shows a fine-to-course zigzag pattern without discernible P waves or QRS complexes. Ventricular fibrillation is most commonly seen in patients with severe ischemic heart disease and is the most frequently encountered rhythm in sudden cardiac death in adults. Defibrillation is required to stop ventricular fibrillation. It constitutes the most important aspect of therapy for ventricular fibrillation. The sooner the shocks are given, the more likely they are to be successful. **NOTE: If unknown down time or down time greater than 5 minutes perform 2 minutes of CPR prior to any other treatment!!!!**

<b>BLS TREATMENT</b>	
1. ABC, Initiate CPR/AED	<b>**Request Paramedic Evaluation If**</b>
2. Hx & physical exam as time permits	1. <b>This is an automatic ALS response</b>
<b>ILS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
1. ABC, Initiate CPR/AED 2. Obtain IV access 3. Electrical therapy after each drug given 4. <b>Epinephrine (1:10,000) 1 mg IVP q3 – 5 min</b> 5. <b>Vasopressin 40 units IV may replace 1<sup>st</sup> or 2<sup>nd</sup> dose of Epinephrine</b> 6. <b>Amiodarone 300mg IVP</b> or 7. <b>Lidocaine 1.5 mg/kg IVP q3 – 5 min to max 3 mg/kg</b>	1. Any ILS skills performed
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. Assist respirations as needed (a) 2. <b>Magnesium 1 – 2 Gm in 10 ml IVP if Torsades is suspected</b> 3. <b>Consider Sodium Bicarbonate 50 – 100 mEq/kg IVP</b> 4. <b>Versed 2.5 – 10 mg IV PRN post-arrest</b> 5. Treat other associated signs and symptoms per appropriate protocol or AHA guidelines	

**Note:**

- a. Drugs given down the ETT should be 2 – 2.5 times the recommended IV dose.
- b. Consider post arrest sedation to avoid the removal of ETT and facilitate management and monitoring of the patient

## CHEST PAIN/HEART PROBLEMS

In the United States, coronary artery disease may cause as many as half of all deaths to patients aged 36 to 64 years. It is important to have a high index of suspicion for the presence of acute myocardial ischemia when evaluating patients in the appropriate age group, especially when risk factors are present. Risk factors include being male or postmenopausal female, hypertension, cigarette smoking, hypercholesterolemia, diabetes, sedentary life-style, obesity, and family history. Chest pain or discomfort should be characterized completely, including quality, location, radiation, duration, frequency, pattern, and onset of pain and what exacerbates and relieves the pain.

SIGNIFICANT FINDINGS	(*AUTOMATIC ALS)
Frightened appearance Restlessness, anxiety Radiation of pain *Altered LOC	*Hypotension *Difficulty breathing *Nausea, vomiting *Rapid pulse *Cyanosis *Diaphoresis *Irregular pulse *Pale, grey skin
BLS TREATMENT	
<b>**Request Paramedic Evaluation If**</b>	
1. ABC, Hx, physical exam, VS, Cardiac monitor, Pulse Ox <b>(a)(b)</b> 2. O2 & Assist respiratory status as needed 3. <b>Baby Aspirin 324mg PO chewable</b> 4. <b>Nitroglycerin per pt's prescription with Pt. seated or supine &amp; SBP &gt;100 q 5min x 3</b> 5. Treat other associated signs and symptoms per appropriate protocol	1. Unconscious/not breathing 2. Chest pain with symptoms of SOB, nausea or diaphoresis 3. Rapid HR with chest pain or signs of shock 4. Chest pain with drug use 5. Implanted defibrillator shock
ILS TREATMENT	
<b>**Consider Paramedic Intercept If**</b>	
<b>(Standing Orders)</b>	
1. Obtain IV access 2. <b>Nitroglycerin 0.4 mg SL, repeat q3 - 5min if SBP &gt;100</b> 3. <b>Morphine 4 mg IV, may repeat 2 mg q 3 - 5min for total of 10mg if no relief from NTG</b>	1. Any ILS skills performed
ALS TREATMENT	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. <b>Atenolol 5mg IV over 5min, may repeat once after 10min (c) or Lopressor 5mg given over 5min, may repeat twice q 5min (c)</b> 2. Treat other associated signs and symptoms per appropriate protocol.	1. <b>Repeat Morphine &gt; 10 mg</b>

**Note:**

- a. Obtain twelve lead ECG if available and time permits
- b. Perform pre-hospital thrombolytic screening
- c. Do not give beta blockers if SBP < 100 or HR < 60

## CHEST PAIN/HEART PROBLEMS

### Atrial Fibrillation

Atrial Fibrillation is a chaotic firing of the atrial muscle. Many patients in the prehospital environment present with this rhythm which is commonly detected by a notably “regularly irregular” pulse. Most patients tolerate atrial fibrillation well and in such cases should not be treated for what may be considered their “normal rhythm”. Atrial Fibrillation accompanied with rapid ventricular response presents with the same signs and symptoms as in supraventricular tachycardia.

BLS	TREATMENT
1. ABC, Hx, physical exam, VS, cardiac monitor, lung sounds, Pulse Ox 2. O2 & Assist respiratory status as needed 3. Treat other associated signs and symptoms per appropriate protocol	<b>**Request Paramedic Evaluation If**</b> 1. Unconscious/not breathing 2. Chest pain with symptoms of SOB, nausea diaphoresis 3. Chest pain with potential illicit drug use 4. Implanted defibrillator shock
ILS	TREATMENT
	<b>**Consider Paramedic Intercept If**</b>
3. Obtain IV access	1. Any ILS skills performed
ALS	TREATMENT
(Standing Orders)	(Physician Orders)
<b><u>Asymptomatic (Stable) (a)</u></b> 1. Treat other associated sign and symptoms per appropriate protocol  <b><u>Symptomatic (a)</u></b> 1. <b>Cardizem 20mg over 2 min or Atenolol 5mg IV over 5min, may repeat once after 10min or Lopressor 5mg given over 5min, may repeat twice q 5min</b> 2. Treat other associated sign and symptoms per appropriate protocol  <b><u>Unstable (a)(c)</u></b> 1. <b>Versed 2.5-10 mg IV pre-cardioversion repeat PRN</b> 2. Electrical therapy <b>(b)(c)</b> 3. Treat other associated signs and symptoms per appropriate protocol	1. <b>Amiodarone 150mg IV over 10min</b>

**Note:**

- a. Obtain 12 lead ECG if available and time permits
- b. Obtain ECG tracing during all pharmacological and electrical cardioversions
- c. Serious signs and symptoms include: Chest pain, dyspnea, ALOC, hypotension, shock, pulmonary congestion, CHF

## CHEST PAIN/HEART PROBLEMS

### Cardiogenic Shock

Of all patients with acute myocardial infarction, 10–15% develop cardiogenic shock. It is generally agreed that 40% of the left ventricular myocardium must be damaged before shock develops. It has also been determined that all patients dying of the symptoms have apical involvement of the myocardium and 84% have severe disease of the left anterior descending coronary artery. The majority of patients who develop cardiogenic shock have had previous infarctions. When the mean arterial blood pressure falls below 70 mmHg, coronary perfusion becomes inadequate, which further extends the area of the infarction.

<b>SIGNIFICANT FINDINGS</b>	<b>(*AUTOMATIC ALS)</b>
Restlessness, anxiety Radiation of pain Frightened appearance *Pale, grey skin color *Irregular pulse *Cyanosis	*Low blood pressure *Difficulty breathing or SOB *Rapid pulse *Nausea, vomiting *Diaphoresis
<b>BLS TREATMENT</b>	
<b>**Request Paramedic Evaluation If**</b>	
1. ABC, Hx, physical exam, VS, Cardiac monitor, lung sounds, Pulse Ox 2. O2 & Assist respiratory status as needed 3. <b>Baby Aspirin 324 mg PO chewable</b> 4. Treat other associated signs and symptoms per appropriate protocol	1. Unconscious/not breathing 2. Chest pain with symptoms of SOB, nausea diaphoresis 3. Rapid HR with chest pain or signs of shock 4. Chest pain with potential illicit drug use 5. Implanted defibrillator shock
<b>ILS TREATMENT</b>	
<b>**Consider Paramedic Intercept If**</b>	
<b>(Standing Orders)</b>	1. Any ILS skills performed
1. Obtain IV access 2. Fluid bolus NS PRN (a)	
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. <b>Dopamine 5 – 20 mcg/kg/min maintain SBP&gt;100(b)</b> (start at 5 & titrate up) 2. Treat other associated signs and symptoms per appropriate protocol	

**Note:**

- a. Be cautious of impending pulmonary edema
- b. Reference for approximate dosage with microdrip tubing:  
 5 – 7 mcg/kg = Weight in pounds and drop the last digit will give approximate drops per minute. Example: 150# - 0 = 15 gtts/minute

## CHEST PAIN/HEART PROBLEMS

### Bradycardia

Brady-arrhythmias can be caused by two mechanisms: depression of sinus nodal activity or conduction system blocks. In both situations, subsidiary pacemakers take over and pace the heart, provided the pacemaker is located above the bifurcation of the Bundle of HIS, and the rate is generally adequate to maintain cardiac output. The need for emergent treatment is guided by two considerations: Evidence of hypoperfusion and the potential to degenerate into a more profound bradycardia or ventricular asystole

<b>BLS TREATMENT</b>	
<ol style="list-style-type: none"> <li>1. ABC, Hx, physical exam, VS, Cardiac monitor, lung sounds, Pulse Ox</li> <li>2. O2 &amp; Assist respiratory status as needed</li> <li>3. <b>Baby Aspirin 324 mg PO chewable</b></li> <li>4. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	<p style="text-align: center; margin: 0;"><b>**Request Paramedic Evaluation If**</b></p> <ol style="list-style-type: none"> <li>1. Unconscious/not breathing</li> <li>2. Chest pain with symptoms of SOB, nausea diaphoresis</li> <li>3. Slow HR with Chest pain or signs of shock</li> <li>4. Chest pain with potential illicit drug use</li> <li>5. Implanted defibrillator shock</li> </ol>
<b>ILS TREATMENT</b>	
<p style="text-align: center; margin: 0;"><b>(Standing Orders)</b></p> <ol style="list-style-type: none"> <li>1. Obtain IV access</li> <li>2. <b>Atropine 0.5 mg IVP q 3-5 min – max 0.04 mg/kg PRN if symptomatic (a)(d) paramedics(b)(c)</b></li> <li>3. Fluid bolus NS PRN if hypotensive</li> </ol>	<p style="text-align: center; margin: 0;"><b>**Consider Paramedic Intercept If**</b></p> <ol style="list-style-type: none"> <li>1. Any ILS skills performed</li> </ol>
<b>ALS TREATMENT</b>	
<p style="text-align: center; margin: 0;"><b>(Standing Orders)</b></p> <ol style="list-style-type: none"> <li>1. <b>Versed 2.5 – 5.0 mg IVP PRN if pacing</b></li> <li>2. Transcutaneous pacing</li> <li>3. <b>Dopamine 5-20 mcg/kg/min to maintain SBP&gt;100 after fluid bolus</b> (start at 5 &amp; titrate up)</li> <li>4. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	<p style="text-align: center; margin: 0;"><b>(Physician Orders)</b></p>

**Note:**

- a. Inferior wall infarcts can present with hypotension, and brady-arrhythmias. Obtain 12 lead ECG if available and time permits
- b. TCP should be done first if delay in IV access
- c. In symptomatic 2<sup>nd</sup> and 3<sup>rd</sup> degree heart block, consider pacing before atropine
- d. Serious signs and symptoms include chest pain, dyspnea, Altered LOC, hypotension, shock, pulmonary congestion

**CHEST PAIN/HEART PROBLEMS**  
**Suppression of Ventricular Ectopy**

Premature ventricular contractions (PVC's) can occur in a variety of pathologic and non-pathologic states. The problem is not the PVC's themselves, but that it is an indication of myocardial irritability that may lead to more serious dysrhythmias. In the setting of acute myocardial infarction, consider whether the PVC's are due to an associated problem with oxygenation, hypotension, acid-base abnormalities, other medication or increased catecholamine states from unrelieved ischemic pain or anxiety. The best approach to PVC management in AMI is to provide treatment of the AMI with oxygen, nitroglycerine and pain relief.

<b>BLS TREATMENT</b>	
<ol style="list-style-type: none"> <li>1. ABC, Hx, physical exam, VS, Cardiac monitor, lung sounds, Pulse Ox</li> <li>2. O2 &amp; Assist respiratory status as needed (a)</li> <li>3. <b>Baby Aspirin 324 mg PO chewable</b></li> <li>4. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	<p style="text-align: center;"><b>**Request Paramedic Evaluation If**</b></p> <ol style="list-style-type: none"> <li>1. Unconscious/not breathing</li> <li>2. Chest pain with symptoms of SOB, nausea diaphoresis</li> <li>3. Chest pain with potential illicit drug use</li> <li>4. Implanted defibrillator shock</li> </ol>
<b>ILS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
<ol style="list-style-type: none"> <li>3. Obtain IV access</li> </ol>	<ol style="list-style-type: none"> <li>1. Any ILS skills performed</li> </ol>
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
<ol style="list-style-type: none"> <li>1. <b>Amiodarone 150mg IV over 10min or Lidocaine 1-1.5 mg/kg IVP – may repeat 0.5-0.75 mg in 5-10 min</b></li> <li>2. <b>Amiodarone drip 1mg/min over 6hrs. post abolition of ectopy or Lidocaine drip 1-4mg/min</b></li> <li>3. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	

**Note:**

- a. If symptomatic PVCs continue, increase oxygenation by NRB mask

**CHEST PAIN/HEART PROBLEMS**  
**Supraventricular Tachycardia**  
**(Narrow Complex Tachycardia)**

Supraventricular tachycardia is a regular, rapid rhythm that arises from either reentry or an ectopic pacemaker in areas above the bifurcation of the Bundle of His. The reentry variety is clinically the most common. These patients present with acute, symptomatic episodes termed paroxysmal supraventricular tachycardia (PSVT). SVT often causes a sensation of palpitations and light-headedness. In patients with coronary artery disease, anginal chest pain and dyspnea may occur.

BLS TREATMENT	
1. ABC, Hx, physical exam, VS, Cardiac monitor, lung sounds, Pulse Ox 2. O2 & Assist respiratory status as needed 3. Treat other associated signs and symptoms per appropriate protocol	<b>**Request Paramedic Evaluation If**</b> 1. Unconscious/not breathing 2. Chest pain with symptoms of SOB, nausea diaphoresis 3. Chest pain with potential illicit drug use 4. Implanted defibrillator shock
ILS TREATMENT	
(Standing Orders)	<b>**Consider Paramedic Intercept If**</b>
3. Obtain IV access	1. Any ILS skills performed
ALS TREATMENT	
(Standing Orders)	(Physician Orders)
<b><u>Asymptomatic (stable) (a)</u></b> 1. Treat other associated signs and symptoms per appropriate protocol <b><u>Symptomatic (a)</u></b> 1. Vagal maneuvers (b) 2. <b>Adenosine 6 mg rapid IVP (c)(d)(f)</b> 3. <b>Adenosine 12 mg rapid IVP in 1-2 min</b> 4. <b>Adenosine 12 mg rapid IVP in 1-2 min</b> 5. <b>Atenolol 5mg IV over 5min, may repeat once after 10min or Lopressor 5mg given over 5min, may repeat twice q 5min or Cardizem 20mg IV over 2 min.(g)</b> 6. Treat other associated signs and symptoms per appropriate protocol <b><u>Unstable (a) (e)</u></b> 1. <b>Adenosine 6mg rapid IVP (c)(d)(f)</b> 2. <b>Versed 2.5-10 mg pre-cardioversion, repeat PRN</b> 3. Electrical therapy (e) 4. Treat other associated signs and symptoms per appropriate protocol	1. <b>Amiodarone 150mg IV over 10min</b>

**Note:**

- a. Obtain 12 lead EKG if available and time permits
- b. Breath holding, bearing down or coughing only
- c. Obtain CARDIAC MONITOR tracing during all pharmacological and electrical cardioversions
- d. Be absolutely certain that you are treating a narrow complex SVT and not VT.  
If any uncertainty exists, treat as VT
- e. Serious signs and symptoms include: Chest pain, dyspnea, Altered LOC, hypotension, shock, pulmonary congestion, CHF, fatigue, nausea, and vomiting
- f. Adenocard is less effective the more distal the IV; consider a more proximal IV site.
- g. Do not give beta blockers if SBP < 100 or HR < 60

Revised July 2008

## CHEST PAIN/HEART PROBLEMS

### Ventricular Tachycardia (With a Pulse)

Ventricular tachycardia is very rare in patients without underlying heart disease. The most common causes of ventricular tachycardia are an ischemic heart and acute myocardial infarction. It is a common misconception that patients with ventricular tachycardia appear clinically unstable; this is the basis for the mistaken assumption that patients who appear unstable with a wide complex tachycardia have SVT with aberrancy rather than ventricular tachycardia. Ventricular tachycardia cannot be differentiated from SVT with aberrancy on the basis of clinical symptoms, blood pressure or heart rate. Patients who are unstable should be cardioverted. Therefore, in general it is best to treat all wide complex tachycardias as ventricular tachycardia with an anti-arrhythmic. Adenosine appears to have little harm in patients with ventricular tachycardia and has potential merit for treatment of wide QRS complex tachycardias.

<b>BLS</b>	<b>TREATMENT</b>
<ol style="list-style-type: none"> <li>1. ABC, Hx, physical exam, VS, cardiac monitor, lung sounds, Pulse Ox</li> <li>2. O2 &amp; Assist respiratory status as needed</li> <li>3. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	<p style="text-align: center;"><b>**Request Paramedic Evaluation If**</b></p> <ol style="list-style-type: none"> <li>1. Unconscious/not breathing</li> <li>2. Chest pain with symptoms of SOB, nausea diaphoresis</li> <li>3. Chest pain with potential illicit drug use</li> <li>4. Implanted defibrillator shock</li> </ol>
<b>ILS</b>	<b>TREATMENT</b>
<ol style="list-style-type: none"> <li>1. Obtain IV access</li> </ol> <p><b><u>Asymptomatic (Stable) (a)</u></b></p> <ol style="list-style-type: none"> <li>1. <b>Amiodarone 150mg IV over 10min or Lidocaine 1-1.5 mg/kg IVP – may repeat 0.5-0.75 mg/kg in 5-10 min (b)(c)</b></li> </ol> <p><b><u>Symptomatic (Unstable) (a)(e)</u></b></p> <ol style="list-style-type: none"> <li>1. <b>Consider Amiodarone 150mg IV over 10min or Lidocaine 1-1.5 mg/kg IV, if time permits (b)(c)</b></li> </ol>	<p style="text-align: center;"><b>**Consider Paramedic Intercept If**</b></p> <ol style="list-style-type: none"> <li>1. Any ILS skills performed</li> </ol>
<b>ALS</b>	<b>TREATMENT</b>
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
<p><b><u>Asymptomatic (Stable) (a)</u></b></p> <ol style="list-style-type: none"> <li>1. <b>Magnesium 1-2 Gm IV over 5-10 min Torsades (c)(d)</b></li> </ol> <p><b><u>Symptomatic (Unstable) (a)(e)</u></b></p> <ol style="list-style-type: none"> <li>1. <b>Versed 5-10 mg IVP pre-cardioversion, repeat PRN</b></li> <li>2. Electrical therapy (c)</li> <li>3. <b>Amiodarone 150mg IV over 10min or Lidocaine 0.5-0.75 mg/kg IVP, if cardioversion failed (c)</b></li> <li>4. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	

**Note:**

- a. Obtain 12 lead ECG if available and time permits
- b. Consider Lidocaine drip 1 – 4 mg/min IV, after successful cardioversion to NSR and an initial loading dose has been given or Amiodarone drip 1mg/min over 6 hrs.
- c. Obtain ECG tracing during all pharmacological and electrical cardioversions
- d. Magnesium is contraindicated in dialysis patients
- e. Serious signs and symptoms include: Heart rate  $\geq$  150 BPM, chest pain, dyspnea, ALOC, hypotension, shock, pulmonary congestion, CHF

## CHOKING

The inhalation or aspiration of foreign objects can cause symptoms ranging from none to serious life threats. The most common scenario is one in which the patient attempts to swallow food, usually meat that is larger than the esophagus can accept, and thus finds its way into the hypopharynx or trachea. Several factors may contribute to the choking event. Patients who have been consuming alcohol may not notice that the object is larger than normal and may attempt to swallow it anyway. In children, this is a major cause of death, involving approximately 2,000 children in the United States, most of the victims being under the age of four. All too often, the child who is playing or running with a mouthful of food falls, and aspirates as a result. Another probable source of aspiration is childhood curiosity. Children explore their world through touch and taste.

<b>SIGNIFICANT FINDINGS (*AUTOMATIC ALS)</b>	
Universal choking sign Audible, noisy breathing Strained neck and facial muscles Labored use of muscles Progressive restlessness, anxiety and confusion	*Cyanosis *Flared nostrils *No breath sounds *Inability to speak *Unresponsiveness
<b>BLS TREATMENT</b>	
1. ABC 2. Manage airway per AHA guidelines 3. O2 & Assist respiratory status as needed 4. Hx, physical exam, VS, cardiac monitor, lung sounds, Pulse Ox as time permits 5. Treat other associated signs and symptoms per appropriate protocol	**Request Paramedic Evaluation If** 1. Unconscious/not breathing 2. Signs of partial or full obstruction ( <b>a</b> ) 3. Unable to speak normally 4. Turning blue
<b>ILS TREATMENT</b>	
<b>(Standing orders)</b>	<b>**Consider Paramedic Intercept If**</b>
1. Obtain IV access, as needed	1. Any ILS skills performed
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. Reassess ABC 2. Treat other associated signs and symptoms per appropriate protocol	1. <b>Glucagon 1mg IM</b>

**Note:**

- a. If obstruction is successfully cleared, BLS transport may be considered
- b. All symptomatic choking victims need to be transported to the hospital
- c. If the patient is thought to have aspirated a foreign object but is in no distress, he or she still requires evaluation.
- d. The only way to prove non-aspiration is by x-ray; this needs to be done as soon as possible
- e. Children who have possibly aspirated anything may not be transported POV, but can be transported BLS if stable
- f. **If the parent refuses to have the child transported by your agency, a Patient Refusal Form must be signed and it is advisable to accompany POV**

## DIABETIC EMERGENCIES

Diabetes mellitus type I is a condition caused by decreased insulin production, type II is a condition caused by insulin resistance. This condition cannot be cured, only controlled through diet, medication or insulin injections. The diabetic is at risk for developing diabetic coma or insulin shock. Both problems can be life threatening.

HYPERGLYCEMIA/DIABETIC COMA	HYPOGLYCEMIA/INSULIN SHOCK
Results from a decreased insulin supply and an elevated or excessively high blood sugar level (hyperglycemia) The body is not producing adequate insulin or the person's medication is not adequate.	Occurs when there is a seriously low blood sugar level (hypoglycemia) This can occur if the diabetic doesn't eat enough, takes too much insulin, takes too much medication, is ill, or over exercises.
SIGNIFICANT FINDINGS	(*AUTOMATIC ALS)
Dry mouth and intensive thirst Abdominal pain and vomiting Weak, rapid pulse, Restlessness Altered LOC Dry, red, warm skin	Dizziness and headache Abnormal, hostile or aggressive behavior Full, rapid pulse Skin pale, cold and clammy <b>*Syncope, seizures</b>
BLS	TREATMENT
<ol style="list-style-type: none"> <li>1. ABC, Hx, physical exam, VS, cardiac monitor, Pulse Ox</li> <li>2. O2 &amp; Assist respiratory status as needed</li> <li>3. Position in left lateral recumbent position if Altered LOC</li> <li>4. Blood-Glucose check (a)</li> <li>5. <b>Glucose paste 15gm PO (b)(c)</b></li> <li>6. Repeat glucose check 10min after glucose</li> <li>7. Treat other associated sign and symptoms per appropriate protocol</li> </ol>	<p style="text-align: center;"><b>**Request Paramedic Evaluation If**</b></p> <ol style="list-style-type: none"> <li>1. Unconscious/not breathing</li> <li>2. Altered LOC</li> <li>3. Signs of shock</li> <li>4. Chest pain</li> <li>5. Unusual behavior</li> <li>6. Seizures</li> </ol>
ILS	TREATMENT
<b>(Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
<ol style="list-style-type: none"> <li>1. Obtain IV access if no marked improvement</li> <li>2. <b>Dextrose 25 Gm IVP</b> through large patent IV if possible – <b>may repeat (e)(h)</b></li> <li>3. <b>Glucagon 1 mg IM if unable to start IV</b></li> </ol>	<ol style="list-style-type: none"> <li>1. Any ILS skills performed</li> </ol>
ALS	TREATMENT
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
<ol style="list-style-type: none"> <li>1. <b>Thiamine 100 mg IM/IV (d)</b></li> <li>2. Fluid bolus NS PRN</li> <li>3. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	

**Note:**

- a. Normal glucose levels are 60 – 120 mg/dl, but may vary per individual
- b. Patient must have a patent airway and gag reflex
- c. If unable to check Blood-glucose, may give glucose paste
- d. To be administered if glucose paste or Dextrose 25 Gm is given to malnourished patients
- e. Or appropriate dose for weight (see pediatric appendix)
- f. Reduce fluid bolus in elderly patients
- g. If a hypoglycemic patient responds to treatment, consider non-transport if left in the care of a responsible individual, and has the ability to eat
- h. If unable to establish an IV Dextrose may be given 25gm PR.

## ENVIRONMENTAL EMERGENCIES

### Hyperthermia

Regardless of extreme weather conditions, the healthy human body keeps a steady temperature of 98.6 degrees Fahrenheit. In hot weather, or during vigorous activity, the body perspires. As this perspiration evaporates from the skin, the body is cooled. If challenged by long periods of intense heat, the body may lose its ability to respond efficiently. When this occurs, a person can experience hyperthermia. A person's general health and life style can increase the chance of a heat-related illness. These factors include: the very young and the elderly, circulatory problems, heart or lung diseases, kidney disease, persons with high blood pressure, medications that effect the ability to perspire, persons that are substantially over or under unbearably hot living quarters, overdressing, visiting overcrowded places, and the lack of understanding of weather conditions. A person with symptoms including headache, nausea, and fatigue after exposure to heat probably has some measure of a heat-related illness. It is important to recognize the difference between the very serious condition of heat stroke and other heat-related illnesses. The main three seen by EMS personnel are: **Heat cramps** are painful muscle spasms in the abdomen, arms, or legs following strenuous activity. The skin is usually moist and cool, the pulse is normal or slightly raised, and body temperature is mostly normal. **Heat exhaustion** is a warning that the body is getting too hot. The person may be thirsty, giddy, weak, uncoordinated, nauseated, and sweating profusely. The body temperature is usually normal, the pulse is normal or slightly raised, and the skin is cold and clammy. **Heat Stroke** is a true life threatening emergency. The body temperature is above 104 degrees Fahrenheit. Other symptoms may include confusion, combativeness, bizarre behavior, faintness, staggering, strong rapid pulse, dry flushed skin, lack of sweating, possible delirium or coma. Heat-related illnesses can become serious if preventative steps and treatments are not taken.

<b>SIGNIFICANT FINDINGS (*AUTOMATIC ALS)</b>	
Weakness Dizziness/faintness Severe muscular cramps/pain Rapid, weak pulse	*Pale, clammy skin *Altered LOC *Hot, dry skin *Seizures *Rapid, shallow breathing
<b>BLS TREATMENT</b>	
1. ABC, Hx, physical exam, VS, Temp, cardiac monitor, Pulse Ox 2. O2 & Assist respiratory status as needed 3. Remove patient from heat source 4. Blood-Glucose check( <b>a</b> ) 5. Cooling measures ( <b>b</b> ) 6. Treat other associated signs and symptoms per appropriate protocol	**Request Paramedic Evaluation if** 1. Unconscious/not breathing 2. Altered LOC 3. Signs of shock 4. Respiratory distress 5. Syncope or near syncope 6. Pale, clammy skin
<b>ILS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
1. Obtain IV access 2. Fluid bolus NS PRN	1. Any ILS skills performed
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. Treat other associated signs and symptoms per appropriate protocol	

**Note:**

- a. Normal Blood-glucose levels are 60 – 120 mg/dl
- b. Do not delay transport for procedure

## ENVIRONMENTAL EMERGENCIES

### Hypothermia

When exposed to cold temperatures, the body begins to lose heat faster than it can be produced. The result is hypothermia, or abnormally low body temperature. Body temperature that is too low affects the brain, making the victim unable to think clearly or move well. This makes hypothermia particularly dangerous because a person may not know it is happening and won't be able to do anything about it. Hypothermia occurs most commonly at very cold temperatures, but can occur even at cool temperatures (above 40 degrees Fahrenheit) if a person becomes chilled from rain, sweat, or submersion in cold water. The elderly and infants, as well as people under the influence of alcohol and people who remain outdoors for long periods of time are the most susceptible to hypothermia. Mild hypothermia - 97 to 95 degrees Fahrenheit. Moderate hypothermia – 95 to 90 degrees Fahrenheit. Severe Hypothermia less than 90 degrees Fahrenheit. Patient with moderate to severe hypothermia need to be handled with care to avoid cardiac arrhythmias.

<b>SIGNIFICANT FINDINGS (*AUTOMATIC ALS)</b>	
Shivering Rapid pulse and breathing Poor muscle coordination <b>*No shivering despite being very cold</b>	<b>*Temperature of 90° or less</b> <b>*Cold, pale skin</b> <b>*Depressed VS</b> <b>*Altered LOC</b>
<b>BLS TREATMENT</b>	
1. ABC, Hx, physical exam, VS, Rectal temp, cardiac monitor, Pulse Ox <b>(a)(b)(c)</b> 2. O2 & Assist respiratory status as needed 3. Remove wet clothing, cover with blanket, and keep warm <b>(d)</b> 4. Treat other associated signs and symptoms per appropriate protocol	<b>**Request Paramedic Evaluation if**</b> 1. Unconscious/not breathing 2. Altered LOC 3. Signs of shock 4. Respiratory distress 5. Syncope or near syncope 6. Diaphoresis 7. Pale, clammy skin
<b>ILS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
1. Obtain IV access and check Blood-glucose <b>(e)</b> 2. Fluid bolus NS PRN	1. Any ILS skills performed
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. Treat other associated signs and symptoms per appropriate protocol	

**Note:**

- a. Assess pulses for a minimum of 30 seconds. If there are no pulses start CPR, consider one series of defibrillation (200j, 300j, and 360j) or one round of the AED protocol.
- b. Treat very gently. Do not rub or manipulate the extremities. Keep the patient supine
- c. Oxygen should be heated if possible
- d. Prevent further heat loss. Insulate from the ground, protect from the wind, eliminate evaporative heat loss by removing wet clothes or by packing the patient with a vapor barrier, cover the head and neck. Place heat packs wrapped in towels around the neck, arm pits and groin areas
- e. Use warm fluids if possible on patients that are hypothermic and dehydrated

## GENERAL ILLNESS

### Sick/Unknown

As prehospital care providers frequently encounter patients who present with no specific complaints. The pre-hospital provider should be very careful to insure that these patients' concerns are given due regard. The patient's symptoms and recent history must determine the most appropriate care.

<b>SIGNIFICANT FINDINGS (*AUTOMATIC ALS)</b>	
Increased/decreased BP Increased temperature Nausea, vomiting Dizziness Indigestion	Weakness *Altered LOC *Non-descriptive pain *Difficulty breathing *Diaphoresis
<b>BLS TREATMENT</b>	
1. ABC, Hx, physical exam, VS, cardiac monitor, Pulse Ox, Orthostatic VS (a) 2. O2 & Assist respiratory status as needed 3. Blood-glucose check 4. Evaluate for neurological deficits 5. Treat other associated signs and symptoms per appropriate protocol	**Request Paramedic Evaluation if** 1. Unconsciousness/not breathing 2. Altered LOC 3. Chest discomfort 4. Diaphoresis 5. Syncope or near syncope 6. Pale, clammy skin 7. Respiratory distress 8. Orthostatic changes of > 30 SBP/BPM
<b>ILS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
1. Obtain IV access 2. Fluid bolus NS PRN(b)	1. Any ILS skills performed
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. <b>Zofran 4 mg slowly over 2 min IV/IM/IO. PRN for persistent vomiting</b> 2. Treat other associated signs and symptoms per appropriate protocol	

**Note:**

- a. It should be noted that patients who present with general illness might be an atypical presentation of myocardial infarction
- b. Monitor lung sounds with fluid bolus to evaluate for pulmonary edema

## GYNECOLOGY/MISCARRIAGE

Spontaneous abortion is common, although it often goes unrecognized when it occurs before a menstrual period. Most spontaneous abortions are indicative of some fetal abnormality incompatible with life. Threatened abortion describes a pregnant patient who presents with vaginal bleeding and/or cramping. About 15 – 20% of all pregnancies end in spontaneous abortion. Many findings of ectopic pregnancy can mimic a spontaneous abortion.

<b>SIGNIFICANT FINDINGS</b>	<b>(*AUTOMATIC ALS)</b>
Heavy vaginal bleeding Passage of tissues Paleness Cramp-like pains in lower abdomen Patients knowledge of pregnancy	* <b>Altered LOC</b> * <b>Low blood pressure</b> * <b>Rapid, weak pulse</b> * <b>Cool, clammy skin</b>
<b>BLS</b>	<b>TREATMENT</b>
1. ABC, Hx, physical exam, Orthostatic VS if indicated, cardiac monitor, Pulse Ox <b>(a)(b)(c)</b> 2. O2 & Assist respiratory status as needed 3. NPO 4. Treat other associated signs and symptoms per appropriate protocol	** <b>Request Paramedic Evaluation if**</b> 1. Unconscious/not breathing 2. Altered LOC 3. Vaginal bleeding with syncope 4. Signs of shock 5. Significant bleeding 6. Abdominal injury, with contraction > 20 weeks pregnant 7. Lower abdominal pain, women age 12-50 with dizziness, syncope or heavy vaginal bleeding 8. Orthostatic changes of > 20 SBP and/or > 20 BPM
<b>ILS</b>	<b>TREATMENT</b>
<b>(Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
1. Obtain IV access 2. Fluid bolus NS PRN	1. Any ILS skills performed
<b>ALS</b>	<b>TREATMENT</b>
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. Treat other associated signs and symptoms per appropriate protocol	

**Note:**

- a. History to include last menstrual period, gravida, parity
- b. Obtain FHT by doppler if available and time permits
- c. History of sexual activity is needed, but patient confidentiality must be maintained, it may be beneficial to question juveniles without parents present.

## HEADACHE

Approximately 40% of all Americans have a significant headache at some time. Because many headache patients have a normal physical exam, the most important tool for making a correct assessment is a detailed history. Important details as to the speed of onset and relationship to other headaches are important. A headache that recurs regularly over a number of years is most likely a tension or migraine type headache. A severe headache with rapid onset, particularly if accompanied by ALOC or a neurological finding, is much more likely to suggest a hemorrhage, infarct or illness such as meningitis. A violent and sudden headache, particularly for the first time or headache accompanied with stiffness of the neck or generalized parasthesia may indicate subarachnoid hemorrhage.

<b>SIGNIFICANT FINDINGS</b>	<b>(*AUTOMATIC ALS)</b>
Vertigo Photophobia Loss of balance/coordination * <b>Altered LOC</b> * <b>Confusion</b> * <b>Abnormal pupil changes</b>	** <b>Worst headache ever</b> * <b>Diaphoresis</b> * <b>Nausea, vomiting</b> * <b>Slurred speech</b> * <b>Blurred, double vision</b> * <b>Weakness, paralysis</b>
<b>BLS</b>	<b>TREATMENT</b>
1. ABC, Hx, physical exam, cardiac monitor, Pulse Ox 2. O2 & Assist respiratory status as needed 3. Blood-glucose check <b>(a)</b> 4. Perform neurological exam 5. Treat other associated signs and symptoms per appropriate protocol	** <b>Request Paramedic Evaluation if**</b> 1. Unconscious/not breathing 2. Altered LOC 3. "Worst headache ever" 4. Sudden onset 5. Headache after physical exertion 6. Headache if associated with, slurred speech, blurred/double vision, weakness, paralysis, diaphoresis and vomiting 7. Positive Cincinnati Stroke Test
<b>ILS</b>	<b>TREATMENT</b>
<b>( Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
1. Obtain IV access	1. Any ILS skills performed
<b>ALS</b>	<b>TREATMENT</b>
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. Treat pain per pain management protocol <b>(b)</b> 2. <b>Zofran 4 mg slowly over 2 min IV/IM/IO. PRN for persistent vomiting</b> 3. Treat other associated signs and symptoms per appropriate protocol	1. <b>Benadryl</b>

**Note:**

- a. Normal glucose levels are 60 – 120 mg/dl
- b. The goal in pain management of migraine type headaches is to allow the patient to rest comfortably, not total pain relief
- c. Inquire if headache is consistent with prior episodes

## HYPERTENSION

It is estimated that hypertension afflicts nearly 60 million Americans and is directly responsible for more than 30,000 deaths per year. In addition, hypertension is a major contributing cause in many cases of myocardial infarction, congestive heart failure, and stroke. Hypertension itself is not an emergency. True hypertensive emergencies occur in only about 1 percent of all hypertensive patients. A hypertensive emergency is defined as an acute elevation of blood pressure, usually greater than 200/130, with evidence of end-organ damage or hypertensive encephalopathy. The goal in treating an acute hypertensive crisis is to lower the blood pressure in a gradual and controlled manner over 30 to 60 minutes, which is best done in the controlled environment of the hospital, so if you are within 20 to 30 minutes of the hospital supportive treatment may be the best option. **Caution should be used in the treatment of hypertension, because the lowering of an elevated blood pressure in the setting of an ischemic stroke can have a devastating outcome.**

SIGNIFICANT FINDINGS (*AUTOMATIC ALS)	
<ul style="list-style-type: none"> <li>*Unresponsive</li> <li>*Apenic</li> <li>*Pulseless</li> <li>*Seizures</li> <li>*Hemiparesis</li> </ul>	<ul style="list-style-type: none"> <li>*Severe headache</li> <li>*Altered LOC</li> <li>*Blindness</li> <li>*Aphasia</li> <li>Nausea and vomiting</li> </ul>
BLS TREATMENT	
<ol style="list-style-type: none"> <li>1. ABC, Hx, physical exam, VS, cardiac monitor, lung sounds, Pulse Ox</li> <li>2. O2 &amp; Assist respirations as needed</li> <li>3. Evaluate for neurological deficits</li> <li>4. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	<p style="text-align: center;"><b>**Request Paramedic Evaluation If**</b></p> <ol style="list-style-type: none"> <li>1. This is an automatic ALS response</li> </ol>
ILS TREATMENT	
<b>(standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
<ol style="list-style-type: none"> <li>1. Obtain IV access</li> </ol>	<ol style="list-style-type: none"> <li>1. Any ILS skills performed</li> </ol>
ALS TREATMENT	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
<ol style="list-style-type: none"> <li>1. Continually reassess patients VS and neurological status for changes.</li> <li>2. If symptoms are severe, continue to worsen or transport time is lengthy contact medical control.</li> </ol>	<ol style="list-style-type: none"> <li>1. <b>Nitroglycerin 0.4mg SL, may repeat PRN</b></li> <li>2. <b>Atenolol 5mg IV over 5min, may repeat once after 10min.</b></li> <li>3. <b>Lopressor 5mg given over 5min, may repeat twice q 5min</b></li> </ol>

**Note:**

## MENTAL/EMOTIONAL/PSYCHOLOGICAL EMERGENCIES

Psychiatric patients may have an illness that presents with symptoms such as delusions, hallucinations, depression or significant trauma. The patient's symptoms demand immediate response as they may appear intense, raise the anxiety levels of those around the patient to an intolerable level, or create problems in the immediate environment. The patient may perceive their life to be at immediate risk, either from suicide or their current inability to make logical decisions. Remember that **personal safety takes priority over patient intervention!** If condition is the result of a suicide gesture or illicit substance abuse, scene should be secured by law enforcement prior to entering the scene.

SIGNIFICANT FINDINGS (*AUTOMATIC ALS)	
Withdrawn Profuse sweating Flushed appearance Hyperventilation Rapid speech Hallucinating	Not responding to people or environment Hostile or aggressive behavior Tries to hurt self or others Anxious and fearful, Crying or hysterical Evidence of illicit drug abuse History of medication noncompliance
BLS TREATMENT	
1. ABC, Hx, physical exam, cardiac monitor, Pulse Ox, chem. BG 2. O2 & Assist respiratory status as needed 3. Calm, relax and reassure patient 4. Restrain patient PRN if there is imminent concern for safety (a) 5. Treat other associated signs and symptoms per appropriate protocol	<b>**Request Paramedic Evaluation**</b> 1. Unconscious/not breathing 2. Altered LOC 3. Unusual behavior associated with diabetes or suicidal overdose 4. GSW/stabs to head, neck, torso, thigh
ILS TREATMENT	
(Standing Orders)	<b>**Consider Paramedic Intercept If**</b>
1. Obtain IV access	1. Any ILS skills performed
ALS TREATMENT	
(Standing Orders)	(Physician Orders)
1. <b>Versed 2.5 – 10 mg IV/IM (b)</b> 2. Treat other associated signs and symptoms per appropriate protocol	1. <b>To exceed 10mg Versed</b>

**Note:**

- a. If restraining the patient is not possible or the pre-hospital care provider feels they are in danger, they should withdraw from patient contact until scene safety can be established
- b. Frequent monitoring of VS including pulse ox.
- c. Patients with altered mental status due to Alzheimer's, senile dementia, or degenerative diseases may require only emotional support as pre-hospital support and do not warrant invasive procedures.

## OVERDOSE / POISONINGS

The majority of poisonings occur in young children (1 – 5 years); however, adult poisoning is responsible for 80 – 90% of hospital admissions (as a note adult poisonings are often polypharmacy). A thorough, accurate history provides a working assessment and assists with management decisions for most patients. Unfortunately the history of poisoning is notoriously unreliable whether it is obtained from the patient, friends and family members or emergency service personnel. Despite the possible inaccuracies, the important historical factors include **what** poison was involved, **how much** was taken, **how** it was taken, **when** it was taken, **why** it was taken and especially **what else** was taken. Refer to note a on next page.

<b>BLS TREATMENT</b>	
<ol style="list-style-type: none"> <li>1. ABC, Hx, physical exam, VS, cardiac monitor, lung sounds, Pulse Ox <b>(c)</b></li> <li>2. O2 &amp; Assist respiratory status as needed</li> <li>3. Blood-glucose check <b>(b)</b></li> <li>4. Notify base station or poison control of ingested toxin. <b>Activated charcoal 50 Gm if requested.</b></li> <li>5. Treat other associated signs and symptoms per appropriate protocol</li> </ol> <p>Poison Control # 1-800-222-1222</p>	<p style="text-align: center;"><b>**Request Paramedic Evaluation if**</b></p> <ol style="list-style-type: none"> <li>1. Unconscious/not breathing</li> <li>2. Respiratory distress</li> <li>3. Altered LOC</li> <li>4. Intentional/accidental with Rx medicines</li> <li>5. Ingestion of household cleaners</li> <li>6. Difficulty swallowing</li> <li>7. Acute alcohol intoxication, age &lt; 17 yrs</li> <li>8. Combined alcohol and drug overdose</li> <li>9. Chest pain in the presence of stimulant overdose or poisoning (cocaine/crack, or meth)</li> <li>10. Seizure secondary to drug overdose</li> </ol>
<b>ILS TREATMENT</b>	
<p style="text-align: center;"><b>( Standing Orders)</b></p> <ol style="list-style-type: none"> <li>1. Obtain IV access</li> <li>2. <b>Narcan 2 mg IV</b>, in presence of decreased respirations and hypotension</li> <li>3. <b>Activated charcoal 50 Gm if appropriate</b></li> </ol>	<p style="text-align: center;"><b>**Consider Paramedic Intercept If**</b></p> <ol style="list-style-type: none"> <li>1. Any ILS skills performed</li> </ol>
<b>ALS TREATMENT</b>	
<p style="text-align: center;"><b>(Standing Orders)</b></p> <ol style="list-style-type: none"> <li>1. <b>Narcan 0.4 – 2mg IV or 2mg Intranasal PRN</b> in presence of decreased respirations and hypotension.</li> <li>2. <b>Activated charcoal 50 Gm if appropriate</b></li> <li>3. <b><u>Tricyclic Anti-Depressants (symptomatic)</u></b> <ul style="list-style-type: none"> <li>• <b>Sodium bicarbonate 100 mEq IVP followed by 25 mEq in 250 ml NS and run 250 ml/hr</b></li> <li>• <b>Dopamine titrated to maintain 100 SBP</b></li> </ul> </li> <li>7. <b><u>Calcium Channel Blockers</u></b> <ul style="list-style-type: none"> <li>• <b>Calcium chloride 500 mg IV slowly</b></li> <li>• <b>Consider TCP</b></li> <li>• <b>Dopamine titrated to maintain 100 SBP</b></li> </ul> </li> </ol>	<p style="text-align: center;"><b>(Physician Orders)</b></p> <ol style="list-style-type: none"> <li>1. <b>Repeat Versed</b></li> <li>2. Gastric lavage</li> </ol>

<p>8. <b><u>Beta Blockers</u></b></p> <ul style="list-style-type: none"> <li>• Dopamine titrated to maintain 100 SBP</li> <li>• Glucagon 2 mg IV</li> </ul> <p>9. <b><u>Organophosphates</u></b></p> <ul style="list-style-type: none"> <li>• Atropine 2 mg IVP q 5-15 min PRN For excess airway secretions</li> </ul> <p>10. <b><u>CNS Stimulants</u></b></p> <ul style="list-style-type: none"> <li>• Versed 2.5 – 10mg IV/IM</li> </ul> <p>11. Treat other associated signs and symptoms per appropriate protocol</p>	
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**Note:**

(\* = Automatic ALS)

**a. Toxic Syndromes Seen in Emergency Medicine**

**Anticholinergic Syndromes**

Significant physical findings: \*Delirium with mumbling speech, \*tachycardia, dry, flushed skin, dilated pupils, myoclonus, slightly elevated temperature, urinary retention, decreased bowel sounds, \*seizures, \*dysrhythmias, widening QRS.

Common causes: Antihistamines, antiparkinson's medication, atropine, scopolamine, amantadine, antipsychotic agents, antidepressant agents, antispasmodic agents, mydriatic agents, skeletal muscle relaxants, many plants

**Sympathomimetic Syndromes**

Significant physical findings: Delusions, paranoia, \*tachycardia, hypertension, hyperoxia, \*diaphoresis, piloerection, mydriasis, hyperreflexia, \*seizure, \*hypotension, \*dysrhythmia

Common causes: Cocaine, amphetamine, methamphetamine, over the counter decongestants, caffeine, and theophylline

**Opiates, Sedatives, or Ethanol intoxication**

Significant physical findings: \*Unconscious/unresponsive, \*respiratory distress, miosis, \*hypotension, \*bradycardia, \*hypothermia, \*pulmonary edema, decreased bowel sounds, hyporeflexia, needle marks

Common causes: Narcotics, barbiturates, benzodiazepines, ethanol, clonidine

**Cholinergic Syndromes**

Significant physical findings: Confusion, \*CNS depression, weakness, salivation, lacrimation, urinary and fecal incontinence, gastrointestinal cramping, emesis, \*muscle fasciculations, \*diaphoresis, \*pulmonary edema, miosis, \*bradycardia, \*tachycardia, \*seizures

Common causes: Organophosphates and carbonate insecticides, physostigmine, and some mushrooms

b. Normal glucose levels are 60 – 120 mg/dl

c. Common levels of toxicity

Aspirin	200 – 300 mg/kg
Acetaminophen	150 mg/kg
NSAIDS	100 – 300 mg/kg
Tricyclic Antidepressants	5 mg/kg or 1.0 gm
Iron	30 – 40 mg/kg

d. Reason for ingestion: screen for neglect, abuse, or suicide

## PAIN MANAGEMENT

The practice of pre-hospital emergency medicine requires expertise in a wide variety of pharmacological and non-pharmacological techniques to treat acute pain resulting from a myriad of injuries and illnesses. One of the most essential missions for all healthcare providers should be the relief or prevention of pain and suffering. Approaches to pain relief must be designed to be safe and effective in the organized chaos of the pre-hospital environment. The degree of pain and the hemodynamic status of the patient will determine the rapidity of care.

<b>BLS TREATMENT</b>	
<ol style="list-style-type: none"> <li>1. ABC, Hx, physical exam, cardiac monitor, Pulse Ox <b>(a)</b></li> <li>2. O2 &amp; Assist respiratory status as needed <b>(b)</b></li> <li>3. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	<p style="text-align: center;"><b>**Request Paramedic Evaluation if**</b></p> <ol style="list-style-type: none"> <li>1. Pain not relieved by positioning or oxygen</li> <li>2. Pain related to medical or trauma that would require ALS care</li> </ol>
<b>ILS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
<ol style="list-style-type: none"> <li>1. Obtain IV access</li> <li>2. <b>Morphine 2 - 4 mg IV/IM titrated 1 - 3 mg q 2 min up to 20 mg PRN (b)(d)(e)(f)</b></li> <li>3. <b>Fentanyl 50mcg, may titrate by 50mcg increments up to 5mcg/kg or Fentanyl lollypop (b)(d)(e)(f)</b></li> </ol>	<ol style="list-style-type: none"> <li>1. Any ILS skills performed</li> </ol>
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
<ol style="list-style-type: none"> <li>1. <b>Nitrous Oxide if available</b></li> <li>2. <b>Fentanyl 50mcg, may titrate by 50mcg increments up to 5mcg/kg or Fentanyl lollypop(b)(d)(e)(f)</b></li> <li>3. <b>Demerol 12.5 – 25 mg IV titrated 12.5 mg q 2 min up to 100 mg PRN or 50–75 mg IM (MS allergy)(b)(d)(e)(f)</b></li> <li>4. <b>Zofran 4 mg slowly over 2 min IV/IM/IO</b></li> <li>5. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	<ol style="list-style-type: none"> <li>1. To exceed maximum dose of any pain medication</li> <li>2. To use more than one narcotic</li> <li>3. Contraindicated patients as noted in (c)</li> </ol>

**Note:**

- a. Obtain subjective measurement of patient's pain using the 1 – 10 scale
- b. Patients receiving narcotic analgesics should remain on oxygen and require frequent monitoring of vital signs
- c. Contraindications
  - Pt's with Chronic Pain Syndromes are usually under Physician care, EMS may treat new onset or acute pain
  - Patients with adverse or allergic response to pain medications
- d. Have the following items immediately available
  - Airway/suction equipment
  - BVM
  - Narcan
- e. Throughout procedure check and record VS, pulse ox, and pain scale
- f. **See pediatric appendix for pediatric dosages**
- g. Document changes with interventions
- h. Burn or traumatic injuries may require higher doses, contact physician for orders

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**PEDIATRIC EMERGENCIES**  
**Cardiopulmonary Arrest**

Resuscitation of the newborn can present a challenge to many EMS providers. Aside from caring for the neonate the pre-hospital care provider must be attentive to and treat the post partum mother. The vast majority of term newborns require no resuscitation beyond mild stimulation, suctioning of the airway and maintenance of temperature. Only a small number of these newborns require further intervention, such as BVM ventilation and, in severe cases, chest compression and medications. Resuscitation of the pediatric patient is challenging because of the technical demands of vascular access and airway control. In addition, the causes of pediatric cardiac arrest are different than those of the adult. Cardiac arrest in a child is usually the result of either respiratory failure or shock. A child's body is able to compensate well during the initial stages of shock. This can rapidly change leading the pediatric patient into a state of compromise. It is very important for the EMS provider to have a high index of suspicion for possible cardio-respiratory collapse and treat these patients as early as possible during their emergency contact.

<b>SIGNIFICANT FINDINGS (*AUTOMATIC ALS)</b>	
<p><b>*Unresponsive</b>  <b>*Pulseless</b></p>	<p><b>*Apneic</b>  <b>*Bradycardia &lt; 90 persistent over several minutes</b></p>
<b>BLS TREATMENT</b>	
<p>1. ABC, Initiate CPR                  2. Hx &amp; physical exam as time permits <b>(a)</b></p>	<p><b>**Request Paramedic Evaluation if**</b>                  1. This is an automatic ALS response</p>
<b>ILS TREATMENT</b>	
<p><b>(Standing Orders)</b>                  1. Obtain IV access                  2. Check Blood-glucose                  3. <b>Epinephrine (1:10,000) 0.01 mg/kg IV/IO q 3 – 5 min PRN</b></p>	<p><b>**Consider Paramedic Intercept If**</b>                  1. Automatic ALS</p>
<b>ALS TREATMENT</b>	
<p><b>(Standing Orders)</b>                  1. ECG, Hx, physical exam as time permits                  2. O2 &amp; Assist respiratory status as needed <b>(b)(c)</b>                  3. Obtain IV/IO access                  4. Check Blood-glucose                  5. <b>Epinephrine (1:1,000) 0.1 mg/kg ET q 3 – 5 min PRN</b> if no IV or IO access                  6. Treat other associated signs and symptoms per appropriate protocol</p>	<p><b>(Physician Orders)</b></p>

**Note:**

- a. If ALS ETA delayed, consider rendezvous/transport after contact with incoming ALS unit
- b. Insert NG tube if intubation done with an uncuffed tube
- c. If meconium is present: Once baby is delivered, maintain body heat, but **do not vigorously stimulate the infant to breath spontaneously, until meconium has been suctioned, to avoid meconium aspiration.** Immediately visualize the cords. Suction vigorously through ET tube with a meconium aspirator. Re-intubate and repeat procedure as necessary to retrieve meconium. If baby has already started breathing do not attempt deep intubation suction

**PEDIATRIC EMERGENCIES**  
**Breathing Difficulty**

Acute respiratory emergencies in the pediatric patient are common. When not properly treated, respiratory distress can result in significant morbidity and mortality. Decisive intervention is mandatory to insure the best outcome. Appearance of the child reflects the adequacy of oxygenation and ventilation. An increased effort to breathe may indicate an airway obstruction or lack of oxygenation. Decreased breathing effort may indicate impending respiratory failure. If this process is not interrupted by effective treatment, deterioration to respiratory failure will occur.

<b>SIGNIFICANT FINDINGS (*AUTOMATIC ALS)</b>	
<ul style="list-style-type: none"> <li>*<b>Extreme difficulty breathing</b></li> <li>*<b>Audible wheezing</b></li> <li>*<b>Rapid pulse and/or respiratory rate</b></li> <li>*<b>Diaphoresis</b></li> <li>*<b>See-Saw breathing</b></li> <li>*<b>Bradycardia for age of child</b></li> </ul>	<ul style="list-style-type: none"> <li>*<b>Tripod position</b></li> <li>*<b>Use of accessory muscles</b></li> <li>*<b>Cyanosis</b></li> <li>*<b>Appearing acutely ill with fever</b></li> <li>*<b>Altered LOC</b></li> </ul>
<b>BLS TREATMENT</b>	
<ol style="list-style-type: none"> <li>1. ABC, Hx, physical exam, VS, cardiac monitor, Pulse Ox</li> <li>2. Allow child to stay in position of comfort</li> <li>3. O2 &amp; Assist respiratory status as needed (a)</li> <li>4. <b>Administer Inhaler per pt's prescription</b></li> <li>5. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	<p align="center"><b>**Request Paramedic Evaluation if**</b></p> <ol style="list-style-type: none"> <li>1. Unconscious/not breathing</li> <li>2. Altered LOC</li> <li>3. Respiratory distress</li> <li>4. Inhaled toxic substances</li> <li>5. Unable to speak in full sentences</li> <li>6. Drooling/difficulty swallowing</li> <li>7. Bradycardia</li> </ol>
<b>ILS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
<ol style="list-style-type: none"> <li>1. <b>Albuterol &amp; Atrovent UDN X 1 may repeat Albuterol PRN</b></li> <li>2. <b>Epinephrine (1:1000) 0.01 mg/kg SQ (0.3 mg max)(b)</b></li> </ol>	<ol style="list-style-type: none"> <li>1. Any ILS skills performed</li> </ol>
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
<ol style="list-style-type: none"> <li>3. <b>Solu-Medrol 1 – 2 mg/kg IV</b></li> <li>4. <b>Racemic Epinephrine .3-.5ml UDN for croup</b></li> <li>5. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	

**Note:**

- a. Use cool humidified O2 if available when viral croup is suspected
- b. To be used in asthma only with severe respiratory distress with marked bronchoconstriction and decreased tidal volume

## PEDIATRIC EMERGENCIES

### Fever

Fever is a common chief complaint of children encountered in the pre-hospital environment. It is important to recognize that fever represents a symptom of underlying illness and the actual illness must be determined and treated. Febrile seizures typically occur once from a rapid rise in temperature, usually above 101.8 degrees Fahrenheit. If more than one seizure occurs, suspect causes other than fever. The first occurrence of a seizure warrants the most concern, because the benign nature of the illness has not been established.

<b>SIGNIFICANT FINDINGS (*AUTOMATIC ALS)</b>	
Flushed, dry/hot skin Non-blanching rash or stiff neck Recent history of elevated temperature Loss of appetite Rapid pulse Nausea/vomiting	Restlessness Decreased urine output *Dehydration *Seizures *Altered LOC
<b>BLS TREATMENT</b>	
1. ABC, Hx, physical exam, Pulse Ox, VS to include temperature 2. O2 & Assist respiratory status as needed 3. Remove any heavy clothing 4. Tepid water sponging (a) 5. Treat other associated signs and symptoms per appropriate protocol	**Request Paramedic Evaluation if** 1. Unconscious/not breathing 2. Altered LOC 3. Respiratory distress 4. Prolonged or multiple seizures 5. Signs of shock
<b>ILS TREATMENT</b>	
(Standing orders)	**Consider Paramedic Intercept If** 1. Any ILS skills performed
<b>ALS TREATMENT</b>	
(Standing Orders)	(Physician Orders)
1. Tylenol 10-15 mg/kg PO/PR if last dose > 4 hrs (c) 2. Ibuprofen 5-10 mg/kg PO if last dose > 4hrs (b) 3. Treat other associated signs and symptoms per appropriate protocol	

**Note:**

- a. Do not delay transport for procedure
- b. Not recommended for children under 6 months of age
- c. See medication page for dosage chart

## PREGNANCY / CHILDBIRTH

Childbirth is a normal, natural process. Only in a few situations involving complications does the pre-hospital care provider need to see that the mother reaches the hospital quickly. Care of patients in emergencies involving reproductive organs is not a common event. However, one must be prepared to deal with these emergencies in an absolute professional, effective and compassionate way.

<b>SIGNIFICANT FINDINGS</b>	<b>(*AUTOMATIC ALS)</b>
Abdominal pain Nausea/vomiting Vaginal bleeding Weakness/dizziness Bloody show Reoccurrence of contractions after first infant born	*Altered LOC *Seizures *Edema in face or extremities *Signs of shock *Meconium staining *Labor before 38 weeks *Urge to have a bowel movement
<b>BLS</b>	<b>TREATMENT</b>
1. ABC, Hx, physical exam, CARDIAC MONITOR, Pulse Ox, VS <b>(b)</b> 2. O2 & Assist respiratory status as needed 3. Place in left lateral recumbent position 4. unless birth imminent 5. Childbirth imminent, prepare for delivery <b>(a)</b> 6. Initiate post-partum care <b>(c)</b> 7. Treat other associated signs and symptoms per appropriate protocol	<b>**Request Paramedic Evaluation if**</b> 1. Unconscious/not breathing 2. Altered LOC 3. Vaginal bleeding with syncope 4. Signs of shock 5. Labor pains/contractions < 2 min apart 6. 2 <sup>nd</sup> pregnancy < 5 min apart, prior delivery with labor lasting < 1 hour 7. Bleeding > 20 wks pregnant 8. Premature labor > 4 wks early 9. Delivery 10. Abdominal injury w/contractions > 20 wks 11. Seizure > 20 wks pregnant or associated with street drugs 12. Birthing process not progressing or an abnormal presentation
<b>ILS</b>	<b>TREATMENT</b>
<b>( Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
1. Obtain IV access	1. Any ILS skills performed
<b>ALS</b>	<b>TREATMENT</b>
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. Treat other associated signs and symptoms per appropriate protocol	

**Note:**

- a. Be aware of the possibility of multiple deliveries
- b. If patient has history of previous cesarean, do not delay transport.
- c. Post partum care for newborn to include an APGAR score at 1 and 5 minutes.

**PREGNANCY / CHILDBIRTH  
Eclampsia**

Eclampsia or pre-eclampsia is a toxic state that develops in the last trimester. Pre-eclampsia is characterized by increased blood pressure, fluid retention. Eclampsia is characterized by pre-eclampsia with seizures.

<b>SIGNIFICANT FINDINGS (*AUTOMATIC ALS)</b>	
<b>*3<sup>rd</sup> trimester BP &gt; 140/90 or increase of 15 mmHg above normal BP</b> <b>*Seizures</b> <b>*Altered LOC</b>	<b>*Unresponsiveness</b> Significant, sudden weight gain Edema of extremities
<b>BLS TREATMENT</b>	
1. ABC, Hx, physical exam, VS, cardiac monitor, Pulse Ox 2. O2 & Assist respiratory status as needed 3. Place in left lateral recumbent 4. Transport gently <b>(a)(b)</b> 5. Treat other associated signs and symptoms per appropriate protocol	<b>**Request Paramedic Evaluation if**</b> 1. Unconscious/not breathing 2. Altered LOC 3. Increase of SBP > 15 above normal 4. Seizures
<b>ILS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
1. Obtain IV access	1. Any ILS skills performed
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. <b>Magnesium Sulfate 4Gm IV (c)</b> 2. <b>Versed 2.5-5mg (d)(e)</b> 3. Treat other associated signs and symptoms per appropriate protocol	

**Note:**

- Sirens and flashing lights may precipitate seizures
- If ALS ETA delayed, consider rendezvous/transport after contact with incoming ALS unit
- Mix Magnesium Sulfate in 50 – 100 cc NS and give over 20 minutes
- If seizure activity not controlled by Magnesium Sulfate
- Utilize IM administration if unable to establish an IV

**PREGNANCY / CHILDBIRTH**  
**Birth Complications**

Although most babies are born without difficulty, complications may occur. Breech Birth presentation is one in which the fetal buttocks or lower extremities are low in the uterus and are the first to be delivered. Delivery may be prolonged for these newborns, which are at great risk of delivery trauma. Limb Presentation is when one arm or leg is the first to protrude from the birth canal. The treatment necessary is the same as you would provide for a breech presentation. Prolapsed Cord may occur after the amniotic sac ruptures. The umbilical cord, rather than the head, may be the first part presenting at the vaginal opening. In this situation the umbilical cord may get compressed against the walls of the vagina by the pressure of the infant's head. As a result the infant's supply of oxygenated blood can be cut off. This is a true emergency.

<b>BLS</b>		<b>TREATMENT</b>	
1. ABC, Hx, physical exam, VS, cardiac monitor, Pulse Ox 2. O2 & Assist respiratory status as needed 3. Place prone, knee to chest for breech <b>(a)</b> 4. prolapsed cord <b>(b)</b> , limb presentation <b>(c)</b> 5. Treat other associated signs and symptoms per appropriate protocol <b>(d)</b>		<b>**Request Paramedic Evaluation**</b> 1. <b>This is an automatic ALS response</b>	
<b>ILS</b>		<b>TREATMENT</b>	
<b>(Standing Orders)</b>		<b>**Consider Paramedic Intercept If**</b>	
1. Obtain IV access		1. Any ILS skills performed	
<b>ALS</b>		<b>TREATMENT</b>	
<b>(Standing Orders)</b>		<b>(Physician Orders)</b>	
1. Treat other associated signs and symptoms per appropriate protocol			

**Note:**

- If unable to deliver head, place gloved index and middle finger in the vagina with the palm towards the baby's face to maintain airway. Transport immediately
- Place sterile gloved index and middle finger into the vagina, pushing the infant up to relieve pressure on the cord (consider keeping the exposed cord moist). Encourage the mother not to push and transport immediately
- Transport immediately
- If ALS ETA delayed, consider rendezvous or transport after contact with incoming ALS unit

**PREGNANCY / CHILDBIRTH**  
**Post Partum**

When caring for the healthy newborn, it is important that pre-hospital care concentrates on the basics. The newborn's airway should be suctioned immediately when the head presents from the birth canal. A second suctioning should be performed immediately after the neonate is fully delivered. Suctioning should begin with the mouth then progress to the nose. Stimulating a newborn's breathing may be done by gently rubbing its back. Supporting the baby's respirations with blow by oxygen may be performed but is seldom necessary in the routine delivery. Keeping the newborn warm is imperative. The hypothermic newborn will suffer bradycardia and subsequent hypoperfusion. Dry the newborn immediately after clearing the airway. Use dry towels and blankets to insure the neonate is warm. The newborn may also be laid on top of the mother to maintain warmth. When cutting the umbilical cord, the pre-hospital care provider should place the first umbilical clamps or tie approximately 6 inches from the neonate and the second clamp or tie approximately 3 inches from the first and cut in between. Assess the newborn every five minutes while enroute to the hospital.

<b>BLS TREATMENT</b>	
<ol style="list-style-type: none"> <li>1. ABC, Hx, physical exam, VS, cardiac monitor, Pulse Ox</li> <li>2. O2 &amp; Assist respiratory status as needed</li> <li>3. Massage fundus, encourage breast feeding</li> <li>4. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	<p align="center"><b>**Request Paramedic Evaluation if**</b></p> <ol style="list-style-type: none"> <li>1. Any unexpected birth complications</li> <li>2. Signs of shock</li> <li>3. Uncontrolled vaginal bleeding</li> <li>4. Newborn unconscious/not breathing</li> <li>5. Newborn with HR &lt; 90 BPM</li> <li>6. Meconium present</li> </ol>
<b>ILS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
<ol style="list-style-type: none"> <li>1. Obtain IV access</li> </ol>	<ol style="list-style-type: none"> <li>1. Any ILS skills performed</li> </ol>
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
<ol style="list-style-type: none"> <li>1. <b>Oxytocin 20 units in 1000cc NS at 500cc/hr after placenta is delivered (a)(b)(c)(d)(e)</b></li> <li>2. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	

**Note:**

- a. If cramping becomes too severe, consider slowing down oxytocin drip
- b. May give oxytocin 10 units IM, if unable to obtain IV access
- c. Do not give Oxytocin if multiple births suspected
- d. Do not attempt to deliver the placenta, allow it to deliver naturally (do not pull on the cord)
- e. If the placenta delivers, take it to the hospital with the patient

## SEIZURES

A seizure is a period of altered neurologic function caused by abnormal neuronal electrical discharges. Approximately 1% - 2% of the general population has recurrent seizures. Generalized seizures begin with abrupt loss of consciousness. If motor activity is present, it symmetrically involves all four extremities. Episodes that develop over minutes to hours are less likely to be seizures. Most seizures only last 1– 2 minutes. Patients with seizure disorders tend to have stereotype, or similar, seizures with each episode and are less likely to have inconsistent or highly variable attacks. True seizures are usually not provoked by emotional stress. Most seizures are followed by a postictal state of lethargy and confusion.

SIGNIFICANT FINDINGS (*AUTOMATIC ALS)	
<ul style="list-style-type: none"> <li>*Altered LOC</li> <li>*Ongoing seizure activity, lasting longer than 5 minutes</li> <li>*Pregnancy</li> </ul>	<ul style="list-style-type: none"> <li>Medic alert tag</li> <li>Incontinence</li> <li>Head or mouth trauma</li> </ul>
BLS TREATMENT	
<ol style="list-style-type: none"> <li>1. ABC, Hx, physical exam, VS, cardiac monitor, Pulse Ox</li> <li>2. Protect patient from injury</li> <li>3. O2 &amp; Assist respiratory status as needed</li> <li>4. Blood-glucose check(a)</li> <li>5. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	<p style="text-align: center;"><b>**Request Paramedic Evaluation if**</b></p> <ol style="list-style-type: none"> <li>1. Unconscious/not breathing</li> <li>2. Seizures &gt; 5 min</li> <li>3. Status seizures</li> <li>4. First time seizures</li> <li>5. Diabetic</li> <li>6. Pregnant &gt; 20 wks</li> <li>7. Evidence of illicit drugs</li> <li>8. Evidence of recent head injury</li> <li>9. Seizure, unknown Hx, age &gt; 50 yrs</li> </ol>
ILS TREATMENT	
<p><b>(Standing Orders)</b></p>	<p><b>**Consider Paramedic Intercept If**</b></p>
<ol style="list-style-type: none"> <li>1. Obtain IV access</li> <li>2. Check Blood-glucose (a)</li> </ol>	<ol style="list-style-type: none"> <li>1. Any ILS skills performed</li> </ol>
ALS TREATMENT	
<p><b>(Standing Orders)</b></p>	<p><b>(Physician Orders)</b></p>
<ol style="list-style-type: none"> <li>1. <b>Versed 2.5 – 10 mg IV/IM/IN (b)</b></li> <li>2. <b>Magnesium Sulfate 4Gm IV if pregnant</b></li> <li>3. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	

**Note:**

- a. Normal glucose levels are 60 – 120 mg/dl
- b. Refer to Pediatric appendix for dose

# STROKE

Stroke is the third leading cause of death and a major cause of disability in the U.S. There are two main mechanisms of stroke: (1) Blood-vessel occlusion, Leads to ischemic stroke (85% of all strokes); and (2) Blood-vessel rupture, leads to hemorrhagic stroke. Ischemic strokes are most often caused by large vessel thrombosis, although embolism or hypoperfusion can cause them. Causes of thrombosis include atherosclerosis, vessel dissection and some infectious diseases. Hemorrhagic strokes are divided into intracerebral (IHC) and subarachnoid (SAH) hemorrhages. Risk factors for stroke include hypertension, older age, prior stroke, and cocaine use.

<b>SIGNIFICANT FINDINGS</b>	<b>(*AUTOMATIC ALS)</b>
Headache Impaired vision Personality changes Loss of function to extremities on one side Confusion, dizziness Facial drooping of one side	Syncope Slurred or abnormal speech Arm/pronator drift *Difficulty breathing *Coma *Altered LOC
<b>BLS</b>	<b>TREATMENT</b>
1. ABC, Hx, physical exam, VS, cardiac monitor, Pulse Ox <b>(a)</b> 2. O2 & Assist respiratory status as needed 3. Blood-glucose check <b>(b)</b> 4. Perform Prehospital Cincinnati Stroke Test 5. Treat other associated signs and symptoms per appropriate protocol	**Request Paramedic Evaluation if** 1. Unconscious/not breathing 2. Stroke symptoms age 3. Altered LOC 4. Respiratory distress 5. Diabetic 6. Seizure 7. Severe headache 8. Onset of symptoms < 3 hrs 9. Positive Cincinnati Stroke Test
<b>ILS</b>	<b>TREATMENT</b>
<b>(Standing Orders)</b>	<b>**Request Paramedic Intercept If**</b>
1. Obtain IV access 2. Check Blood-glucose <b>(a)(b)(c)</b>	1. Any ILS skills performed
<b>ALS</b>	<b>TREATMENT</b>
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. Treat other associated signs and symptoms per appropriate protocol	1. Treatment of hypertension in the clinical setting of stroke

**Note:**

- a. Determine time of onset of symptoms if possible. Time is critical for pharmacological intervention. (onset of symptoms to pharmacological intervention  $\leq$  3 hours)
- b. Normal glucose levels are 60 – 120 mg/dl
- c. Invasive procedures should be limited to the unaffected side whenever possible

**UNCONSCIOUS / UNRESPONSIVE / SYNCOPÉ**  
**Altered Level of Consciousness**

In the usual clinical approach to a patient, the examiner first obtains a history, performs a physical examination, and then administers treatment. However, this sequence is not correct for patients with an altered level of consciousness. Altered LOC is such a major variance from normal neurological function that immediate supportive efforts may be required. For patients who do not have a functional airway or require breathing assistance, consider providing an airway immediately. If a cervical spine fracture is suspected or if the mechanism of altered LOC is unknown, the spine must be stabilized while the airway is secured. The possibility of trauma always exists in patients with seizures and intoxication. Finally, obvious hemorrhage should be treated before a detailed neurological exam is initiated.

<b>SIGNIFICANT FINDINGS (*AUTOMATIC ALS)</b>	
Medic alert tag Breath odor Hyper/hypotension <b>*Altered LOC</b>	<b>*Evidence of trauma</b> <b>*Evidence of drug use</b> <b>*Abnormal or inadequate breathing</b> <b>*Diaphoresis, chest pain</b>
<b>BLS</b>	<b>TREATMENT</b>
<ol style="list-style-type: none"> <li>1. ABC, Hx, physical exam, Orthostatic VS, cardiac monitor, Pulse Ox</li> <li>2. Spinal immobilization if indicated</li> <li>3. O2 &amp; Assist respiratory status as needed</li> <li>4. Blood-glucose check <b>(a)</b></li> <li>5. Perform neurological exam</li> <li>6. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	<p align="center"><b>**Request Paramedic Evaluation if**</b></p> <ol style="list-style-type: none"> <li>1. Unconscious/not breathing</li> <li>2. Multiple syncope episodes</li> <li>3. Combined drugs and alcohol OD</li> <li>4. Respiratory distress</li> <li>5. Syncope associated with headache, chest pain/discomfort/palpitations diabetic, GI/vaginal bleeding, abdominal pain</li> <li>6. Intoxication</li> </ol>
<b>ILS</b>	<b>TREATMENT</b>
<b>(Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
<ol style="list-style-type: none"> <li>1. Obtain IV access</li> <li>2. <b>Dextrose 25 gm IVP PRN</b></li> <li>3. <b>Narcan 2 mg IV</b></li> </ol>	<ol style="list-style-type: none"> <li>1. Any ILS skills performed</li> </ol>
<b>ALS</b>	<b>TREATMENT</b>
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
<ol style="list-style-type: none"> <li>1. <b>Dextrose 25 gm IV PRN</b></li> <li>2. <b>Thiamine 100 mg IVP (b)</b></li> <li>3. <b>Glucagon 1 mg IM PRN if no IV access</b></li> <li>4. <b>Narcan 0.4 – 2 mg IV/IM PRN or 2mg Intranasal (c)(d)</b></li> <li>5. Treat other associated signs and symptoms per appropriate protocol</li> </ol>	

**Note:**

- Normal glucose levels are 60 – 120 mg/dl
- Given for the Malnourished patient
- For intranasal administration see Intranasal Treatment protocol
- Narcan is only indicated in unstable patient with CNS depression (resp., B/P, &Etc.)

## TRAUMA Assault Trauma

Trauma is the leading cause of death and disability among Americans between the ages of one and 37. It is also the fourth leading cause of death among all Americans. Trauma is categorized as either blunt or penetrating. In blunt trauma, injuries are produced as the tissues are compressed, decelerated or accelerated. Penetrating trauma is produced as the tissues are crushed and separated along the path of the penetrating object. Pre-hospital care providers must realize and respect the fact that critical trauma is a surgical emergency. The role of EMS in the treatment of critical trauma is recognition, insure rapid transport, and stabilize injuries while enroute to the most appropriate facility. Special attention should always be given to the trauma victim's airway, neurological and hemodynamic status. Patients who suffer injury as the result of an assault present the EMS provider with several challenges. The scene of a violent attack should be secured by law enforcement prior to EMS personnel making entry. The victim of violence should not only be treated for their physical injuries but also their emotional injuries. Honest reassurance by the EMS provider as well as prompt referral to community support services should be made. Consider transporting to the most appropriate facility. Trauma band the patient. If sexual assault suspected, inform Base Hospital for possible resource activation

<b>SIGNIFICANT FINDINGS</b>		<b>(*AUTOMATIC ALS)</b>
Obvious bleeding Contusions Paleness Decreased capillary refill <b>(a)</b> Deformity to torso, or extremities Alcohol or drug use		Diaphoresis Low blood pressure <b>*Altered LOC</b> <b>*Deformity to head</b> <b>*Signs of internal bleeding</b>
<b>BLS</b>		<b>TREATMENT</b>
1. Assure scene safety 2. ABC, VS, cardiac monitor, lung sounds, Pulse Ox, Hx, physical exam 3. Spinal immobilization if indicated 4. Control bleeding 5. O2 & Assist respiratory status as needed 6. NPO 7. Treat other associated signs and symptoms per appropriate protocol		<b>**Request Paramedic Evaluation if**</b> 1. Unconscious/not breathing 2. Altered LOC 3. Crushing, penetrating or significant blunt trauma to head, neck, chest, abdomen and thigh 4. Uncontrolled bleeding 5. Seizures secondary to head injury
<b>ILS</b>		<b>TREATMENT</b>
<b>(Standing Orders)</b>		<b>**Consider Paramedic Intercept If**</b>
1. Obtain IV access 2. Fluid bolus NS PRN		1. Any ILS skills performed
<b>ALS</b>		<b>TREATMENT</b>
<b>(Standing Orders)</b>		<b>(Physician Orders)</b>
1. Treat other associated signs and symptoms per appropriate protocol		

**Note:**

- a. Capillary refill time is a reliable sign typically only in infants and children less than 6 years old

## TRAUMA Burns

Burns are a devastating form of trauma associated with high mortality rates, lengthy rehabilitation, cosmetic disfigurement, and permanent physical disabilities. Thermal, chemical, electrical, nuclear radiation, or solar sources may cause burns. Burns can affect more than just the skin. They affect the body's fluid and chemical balance, temperature regulation, and musculoskeletal, circulatory and respiratory functions. Burns are classified by degree; **First Degree** (superficial) some reddening. **Second Degree** (partial thickness) has blistering and deep reddening. **Third Degree** (full thickness) causes damage to all skin layers and is either charred/black or white/leathery with little or no pain at the site. Always consider other associated trauma.

<b>SIGNIFICANT FINDINGS</b>	<b>(*AUTOMATIC ALS)</b>
Burned areas 1 <sup>st</sup> , 2 <sup>nd</sup> , 3 <sup>rd</sup> Secondary trauma *Singed nasal hairs or mouth *Altered LOC	*Difficulty breathing *Hoarseness *Low blood pressure *Rapid, weak pulse
<b>BLS</b>	<b>TREATMENT</b>
1. Remove patient from burning source <b>(a)</b> 2. ABC, VS, cardiac monitor, lung sounds, Pulse Ox, Hx, physical exam 3. O2 & Assist respiratory status as needed 4. Treat burn PRN <b>(b)</b> 5. Treat other associated signs and symptoms per appropriate protocol	**Request Paramedic Evaluation if** 1. Unconscious/not breathing/Altered LOC 2. Burns to airway, nose or mouth 3. Respiratory distress 4. Hoarseness, difficulty talking/swallowing 5. Second or third degree burns to neck, hands, feet or genitalia 6. Circumferential burns to the extremities, second or third degree 7. Burns over 20% BSA 8. Electrical burns/electrocution
<b>ILS</b>	<b>TREATMENT</b>
<b>(Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
1. Obtain IV access 2. Fluid bolus NS PRN	1. Any ILS skills performed
<b>ALS</b>	<b>TREATMENT</b>
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. Treat pain per pain protocol 2. Treat other associated signs and symptoms per appropriate protocol	

**Note:**

- a. Remove electrical source if trained to do so safely. Remove patient's clothing as appropriate. Brush off solid/dry chemicals. Remove rings, bracelets and other constricting items.
- b. **Thermal Burns:**
  - Cover burned area with dry, sterile dressing
  - Cool or room temperature saline soaks for pain relief in 1<sup>st</sup> & 2<sup>nd</sup> degree burns if  $\leq 10\%$  of BSA and no open wounds
- Chemical Burns:**
  - Continue to flush with water for 20 minutes
  - If eyes are involved, cover with moistened pads
- Electrical Burns:**
  - Apply dry, sterile dressing
  - Monitor for arrhythmia
- c. Consider transport to Trauma Center for burn management. Trauma band patient if indicated

**TRAUMA**  
**Drowning / Near Drowning**

Approximately 4500 people die of submersion in the United States each year, making drowning the third leading cause of accidental death. Drowning, like other causes of accidental death, often strikes the young or otherwise healthy individual. Prevention is the most important step to reduce these unnecessary deaths. The patient prognosis after near drowning depends on the speed of rescue and resuscitation, emphasizing the role of emergency care. Treatment of near drowning begins at the scene with rapid, cautious removal of the victim from the water. Spinal precautions should be observed if the mechanism of injury such as a high velocity impact, diving or surfing raises suspicion of such injuries. Concern of saltwater vs. freshwater aspiration is not of immediate importance in the pre-hospital environment. Factors that increase survivability include; (1) The younger the person the better, (2) The colder the water the better, (3) The cleaner the water the better, and (4) The less time submerged the better.

<b>SIGNIFICANT FINDINGS (*AUTOMATIC ALS)</b>	
Cough *Seizures *Pink, frothy sputum	*Altered LOC *Absent respirations or pulse *Signs of respiratory distress
<b>BLS TREATMENT</b>	
1. ABC, VS, cardiac monitor, lung sounds, Pulse Ox, Hx, physical exam, neuro exam if indicated (a) 2. Spinal immobilization if indicated 3. O2 & Assist respirations as needed 4. Remove wet clothing and keep warm 5. Treat other associated signs and symptoms per appropriate protocol	**Request Paramedic Evaluation if** 1. Unconscious/not breathing 2. Altered LOC 3. Respiratory distress 4. Submersion confirmed > 1 min 5. SCUBA diving accident
<b>ILS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
1. Obtain IV access	1. Any ILS skills performed
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. Treat other associated signs and symptoms per appropriate protocol	

**Note:**

- a. All patients suspected of submersion need to be evaluated at an emergency department & transported by ALS

**TRAUMA**  
**SCUBA Diving Related – Decompression Illness**

Dysbarism is a term that encompasses all pathologic changes caused by altered environmental pressures. It most often develops acutely because of problems caused by the mechanical effects of pressure on closed air spaces (barotraumas) or problems caused by breathing gases at elevated partial pressures. Most dive related injuries occur during descent or ascent within 0-33 feet of water. Two life-threatening conditions may occur as a result of a diving accident-air embolism and decompression sickness-grouped together as *Decompression Illness*. Air emboli occur when bubbles entering the blood stream, obstruct the blood flow to an area of the brain, usually causing unconsciousness and paralysis within minutes of surfacing. Decompression sickness is the syndrome of joint pain, numbness, paralysis and other symptoms caused by nitrogen gas dissolved in tissue forming bubbles. Symptoms usually occur within ten minutes upon surfacing but can be evident up to 48 hours after diving activities.

<b>SIGNIFICANT FINDINGS (*AUTOMATIC ALS)</b>	
Cough <b>*Pink, frothy sputum</b> <b>*Absent respirations or pulse</b>	<b>*Seizures</b> <b>*Altered LOC</b> <b>*Signs of respiratory distress</b>
<b>BLS TREATMENT</b>	
1. ABC, VS, cardiac monitor, lung sounds, Pulse Ox, Hx, physical exam, neuro exam if indicated <b>(a)(b)(c)</b> 2. Spinal immobilization if indicated 3. O2 & Assist respirations as needed <b>(d)</b> 4. Remove wet clothing and keep warm 5. Treat other associated signs and symptoms per appropriate protocol	<b>**Request Paramedic Evaluation if**</b> 1. Unconscious/not breathing 2. Altered LOC 3. Respiratory distress 4. SCUBA diving accident
<b>ILS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
1. Obtain IV access	1. Any ILS skills performed
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. Treat other associated signs and symptoms per appropriate protocol <b>(e)</b>	

**Note:**

- a. Obtain dive plan information, including repetitive dive plans and any previous dives within the last twenty-four hour time period
- b. Place patient in supine position
- c. Patients should have high flow oxygenation therapy regardless of respiratory status

**TRAUMA**  
**Falls / Accidents**

There are many ways for an accident to occur. The most common of these in the field are falls. Falls are the most common accidental injury in patients over 75 years of age and the second most common injury in the group 65 to 74 years. Even a short fall can be life threatening. When approaching the scene, pay particular attention to the height of the fall, surface the patient landed on, what part of the body hit first, if they struck anything on the way down, and if there was a loss of consciousness. Syncope has been implicated in many cases of elderly patients who fall and may be secondary to dysrhythmias, venous pooling, medication, hypoxia, anemia, and hypoglycemia. Consider transporting to the most appropriate facility. Trauma band the patient if indicated.

<b>SIGNIFICANT FINDINGS (*AUTOMATIC ALS)</b>	
Pain or trauma to the head, back, neck or extremities significant bleeding *Altered LOC	*Rapid, weak pulse *Low blood pressure *Signs of internal bleeding *Decreased capillary refill (a)
<b>BLS TREATMENT</b>	
1. ABC, VS, cardiac monitor, Pulse Ox, Hx, physical exam, neurological exam 2. Spinal immobilization if indicated 3. Control bleeding 4. O2 & Assist respiratory status as needed 5. NPO 6. Stabilize extremity deformities as time permits 7. Treat other associated signs and symptoms per appropriate protocol	**Request Paramedic Evaluation if** 1. Unconscious/not breathing 2. Altered LOC 3. Uncontrolled bleeding 4. Seizures, secondary to recent head injury 5. Falls associated with or preceded by pain/discomfort in chest, dizziness, headache or diabetic 6. Accident with penetrating/crushing injury to head, neck, torso or thigh 7. Neurological deficit 8. Falls > 10 feet
<b>ILS TREATMENT</b>	
<b>( Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
1. Obtain IV access 2. Fluid bolus NS PRN	1. Any ILS skills performed
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. Treat other associated signs and symptoms per appropriate protocol	

**Note:**

- a. Capillary refill time is a reliable sign typically only in infants and children less than 6 years old

**TRAUMA**  
**Motor Vehicle Collision**

Motor vehicle collisions can be classified as frontal, rear-end, lateral, rotational, or rollover impact. Recognizing the mechanism of injury, having a good index of suspicion and doing a complete physical exam is critical in making priority decisions of assessment, care and transport of the patient.

<b>SIGNIFICANT FINDINGS (*AUTOMATIC ALS)</b>	
Neck or spinal cord pain	<b>*Altered LOC</b>
Pain or trauma to the head, back, neck or extremities	<b>*Rapid, weak pulse</b>
Obvious bleeding	<b>*Low blood pressure</b>
Penetrating wounds	<b>*Signs of internal bleeding</b>
Diaphoresis	<b>*Decreased capillary refill (a)</b>
	<b>*Neurological deficits</b>
<b>BLS TREATMENT</b>	
1. Assure scene safety	<b>**Request Paramedic Evaluation if**</b>
2. ABC, VS, cardiac monitor, lung sounds, Pulse Ox, Hx, physical exam, neurological exam	1. Unconscious/not breathing
3. Spinal immobilization if indicated	2. Altered LOC
4. Control bleeding	3. Respiratory distress
5. O2 & Assist respiratory status as needed	4. Chest pain prior to accident
6. Stabilize deformed extremities & perform neurovascular check as time permits	5. Patient ejected
7. Treat other associated signs and symptoms per appropriate protocol	6. Patient trapped, extrication > 20 min
	7. MCI criteria met
<b>ILS TREATMENT</b>	
<b>( Standing Orders)</b>	<b>**Consider Paramedic Intercept If**</b>
1. Obtain IV access	1. Any ILS skills performed
2. Fluid bolus NS PRN	
<b>ALS TREATMENT</b>	
<b>(Standing Orders)</b>	<b>(Physician Orders)</b>
1. Treat other associated signs and symptoms per appropriate protocol	

**Note:**

- Capillary refill time is a reliable sign typically only in infants and children less than 6 years old
- If patient meets trauma system entry criteria transport to the most appropriate facility. Trauma band the patient if indicated.

## 12 – LEAD ECG

Today the 12-Lead ECG stands at the center of decision making for the care of patients with acute coronary syndrome (ACS). The prehospital ECG has been demonstrated to be an effective means of rapidly identifying patients with acute myocardial infarction who might be eligible for reperfusion therapy. When used appropriately, the 12-lead ECG will also allow the evaluator to be more dynamic with decision-making, differential diagnosis and specific treatment interventions. A prehospital twelve lead is useful in finding trends that will assist in the definitive treatment of the patient.

The following list is a suggestion of patients that should be considered candidates for 12-lead ECG evaluation:

- 1) Chest pain, dyspnea, syncope, near syncope, weakness, DKA, diaphoresis, palpitations
- 2) CVA (CVA is often associated with large anterior wall MI's and/or dysrhythmias)
- 3) Pre and post cardioversion of stable patients
- 4) Post cardioversion of unstable patients, including post arrest
- 5) Suspected electrolyte disturbances
- 6) Overdose (unknown or suspected illicit drugs)
- 7) Blunt chest trauma only if time permits
- 8) Respiratory failure and/or signs of hypoxia
- 9) CHF
- 10) Any patient with unexplained distress

The following graph illustrates anatomically contiguous lead groups used to demonstrate infarct location recognition

<b>I Lateral</b>	<b>aVR</b>	<b>V1 Septal</b>	<b>V4 Anterior</b>
<b>II Inferior</b>	<b>aVL Lateral</b>	<b>V2 Septal</b>	<b>V5 Lateral</b>
<b>III Inferior</b>	<b>aVF Inferior</b>	<b>V3 Anterior</b>	<b>V6 Lateral</b>

**ANATOMICALLY CONTIGUOUS LEADS**

## ADVANCED AIRWAY MANAGEMENT RSI

Rapid Sequence Induction (RSI) is a treatment used to facilitate the placement of an airway device such as an endotracheal tube. It is frequently necessary to gain immediate control of the airway in the critically ill patient who does not have a functional airway or is at risk for airway compromise.

### ALS Treatment

#### (Standing Orders)

1. Pre-oxygenate with 100% O<sub>2</sub> NRB. If ventilatory assistance is necessary, bag gently while applying cricoid pressure
2. Assemble required equipment
  - -BVM
  - -Suction with Yankauer tip
  - -Endotracheal tube with intact cuff, stylette, syringe, ETT securing device
  - -Laryngoscope and blades
  - -Have an alternative airway available
3. Check to insure that a functioning, secure IV line is in place
4. Continuously monitor the cardiac rhythm and oxygen saturation
5. Apnea, jaw relaxation, or decreased resistance to BVM indicates the patient is sufficiently relaxed to proceed with intubation
6. Premedicate as appropriate
  - **Lidocaine 1.5 mg/kg IV** to patients with suspected head injuries or reactive airway disease (allow 2 – 3 minutes for medication effect)
  - **Atropine 0.02 mg/kg IVP** for children (minimum dose 0.1 mg) or relative bradycardia
  - **Etomidate 0.1 – 0.3 mg/kg IVP over 15 seconds** or if Etomidate unavailable
    - **Fentanyl 1 – 3mcg/kg**
    - **Versed 2 – 10 mg IV slowly** (allow 1 minute for medication effect)(May repeat q 5 - 10 minutes for effect.)
7. **Succinylcholine defasciculating dose 0.1 – 0.15 mg/kg IVP** to patients with suspected head injuries or open eye injuries (do not give more than 5 minutes prior to full dose)  
**\*Use only those medications necessary to achieve the desired effect\***
8. **Succinylcholine 1 – 1.5 mg/kg IVP**  
**or 3 – 4 mg/kg IM max 150 mg onset 2 – 3 minutes**
9. Intubate. If unable to intubate during the first attempt, stop and ventilate the patient with BVM for 30 – 60 seconds
10. Treat bradycardia occurring during intubation with oxygenation and hyperventilation first. If no improvement, **Atropine 0.5 mg IV** (See Pediatric Appendix)
11. Once intubation is completed, inflate the cuff and confirm tube placement by auscultation of breath sounds, checking pulse oximetry and capnography if available
12. Release cricoid pressure and secure tube
13. For lengthy transports consider ongoing sedation and pain management with **fentanyl 50 – 100mcg q 30min** and **versed 2 – 10 mg q 10min**. The use of long acting paralytics such as **vecuronium** should only be used if attempts with sedation and pain management are unsuccessful.

#### (Physician Orders)

1. To exceed maximum dose of **Versed** or **Fentanyl**

#### Note:

- a. If unable to intubate, bag the patient until spontaneous respiration returns or proceed with combi-tube or surgical cricothyrotomy if necessary

## APGAR

The APGAR score is used to evaluate newborns at 1 minute and 5 minutes post delivery.

### Appearance:

Extremities as well as trunk are pink	= 2
Trunk is pink, feet and hands are blue	= 1
Entire body is blue (cyanotic) or pale	= 0

### Pulse:

Heart rate > 100	= 2
Heart rate < 100	= 1
No pulse	= 0

### Grimace:

Stimulation causes grimace, sneeze, cough, or crying	= 2
Only some facial grimace	= 1
No reflexive activity	= 0

### Activity:

Actively moving around	= 2
Some flexion without active movement	= 1
Is limp with no extremity movement	= 0

### Respiration:

Good respiration and strong cry	= 2
Slow or irregular respirations with weak cry	= 1
No respiratory effort	= 0

1. A score of 7 – 10 = active and vigorous newborn
2. A score of 4 – 6 = moderately depressed newborn
3. A score of 0 – 3 = severely depressed newborn

To provide early defibrillation to patients in ventricular fibrillation. The AED policy and procedure applies to EMTs and FRs currently certified in the Douglas County Region for automatic and semiautomatic defibrillation. **Note: if the patient's down time is unknown or greater than 5 minutes, then 2 minutes of effective CPR must be done prior to other interventions including defibrillation.**

1. Rationale for early defibrillation
  - a. The most frequent initial rhythm in sudden cardiac arrest is ventricular fibrillation
  - b. The most effective treatment for ventricular fibrillation is electrical defibrillation combined with effective CPR.
  - c. The probability of successful defibrillation diminishes rapidly over time
  - d. Ventricular fibrillation tends to convert to asystole within a few minutes
2. General guidelines
  - a. One AED series equals zero (0) to three (3) shocks depending on what the AED indicates. **Never shock a conscious patient.**
  - b. Rapid defibrillation is the treatment of choice for ventricular fibrillation and takes precedence over other treatment modalities, such as suctioning, IVs, oxygen administration.
  - c. A EMT or FR may not change the automatic settings if a manual override capability is available
  - d. If the ALS ETA is delayed, consider rendezvous/transport after contact with the incoming ALS unit
3. Indications
  - a. Unresponsive, apneic, pulseless patients who are over 1 year of age
4. Contraindications
  - a. The following patients should not be attached to an automatic or semiautomatic defibrillator:
    1. Any patient who is responsive, breathing, or has a pulse
    2. Children under 1 years of age
    3. Obvious "dead on scene" (decapitation, decomposition, or the presence of rigor mortis)
    4. Any patient who is actively seizing
5. Precautions
  - a. All persons should be clear of the patient while the machine is analyzing the rhythm and/or delivering a shock
6. Considerations
  - a. Pediatric cardiac arrests are usually due to respiratory failure. Evidence suggests that ventricular fibrillation does occur in association with congenital heart problems, drug overdoses and glue sniffing
  - b. Hypothermia
    1. Defibrillation should not be withheld from the cold patient in ventricular fibrillation unless they are under 1 year of age.
    2. Perform one series of AED protocol only

3. If the patient does not respond to one AED series, resume CPR and rewarming efforts. Do not continue defibrillation series
  - c. Trauma
    1. Consider the causes of the cardiac arrest before applying AED pads
    2. Cardiac arrest secondary to major trauma seldom responds to defibrillation
    3. Remember a ventricular fibrillation arrest may have been the actual cause of the accident
  - d. If the AED protocol is interrupted by the return of a normal rhythm, continue AED monitoring of the patient. Do not turn the unit off as the machine will reset back to the initial shock status
7. Procedure
- a. Verify unresponsiveness, apnea and the absence of a pulse
  - b. Start and perform 2 minutes of CPR while the AED is readied for use
  - c. Call for ALS if not already enroute
  - d. Turn on the AED
  - e. Apply the pads to the patient's bare chest use pediatric adapter/pad for children under 8 years old if available.
  - f. Follow all AED screen and voice prompts during the rhythm analysis
  - g. Administer shocks as indicated by AED
  - h. Continue CPR for two minutes immediately following the shock regardless of the rhythm
  - i. Repeat f, g, and h until
    1. The ALS unit arrives and takes over resuscitative efforts
    2. The Base Station Physician orders you to discontinue efforts
8. Training and skills maintenance
- a. Any AED operator must practice their skills with the device at least once a year. This should include reviewing incidents of AED use in the system, studying any new protocols, and most important, practice working with the AED
9. Post AED usage
- a. Data cards or modules must be downloaded and erased after use to assure a clean card for future use. Events will not record over existing data on cards or tapes

1. Adult ( $\geq 8$  years)
  - a. Determine unresponsiveness
  - b. Open the airway using head-tilt-chin lift (jaw –thrust if trauma suspected)
  - c. Determine breathlessness
  - d. Give 2 at 1 second per breath
  - e. Determine pulselessness
  - f. If the patient has a pulse, perform rescue breathing
    1. Provide 10 to 12 breaths per minute (1 breath every 5 to 6 seconds) **(a)**
  - g. If no pulse begin the first cycle of compressions and ventilations
    1. Position 1 hand in the middle of the chest, between the nipples, then place the second hand on top of the first.
    2. Depress sternum  $1\frac{1}{2}$  to 2 inches at a rate of approximately 100 compressions per minute
  - h. Use a ratio of 2 breaths to 30 compressions with 1 and 2 rescuer CPR. Until the airway is secured, then provide breaths at 8 to 10 per minute (1 breath every 6 to 8 seconds) without interrupting compressions
    1. Check for return of breathing and pulse after 5 cycles or 2 minute of CPR
    2. Attach defibrillator and provide shock if indicated, if no shock indicated continue CPR
    3. If there is a pulse but no breathing, give 1 rescue breath every 5 to 6 seconds
  
2. Child (1year to adolescent)
  - a. Determine unresponsiveness
  - b. Open the airway using head-tilt-chin lift (jaw –thrust if trauma suspected)
  - c. Determine breathlessness
  - d. Give 2 at 1 second per breath
  - e. Determine pulselessness
  - f. If the patient has a pulse, perform rescue breathing
    1. Provide 12 to 20 breaths per minute (1 breath every 3 to 5 seconds) **(a)**
  - g. If no pulse begin the first cycle of compressions and ventilations
    1. Position 1 hand in the middle of the chest, between the nipples. (may use 2 hands as in adult CPR)
    2. Depress sternum  $\frac{1}{3}$  to  $\frac{1}{2}$  the depth of the chest at a rate of approximately 100 compressions per minute
  - h. Use a ratio of 2 breaths to 30 compressions for 1 rescuer CPR and the ratio of 2 breaths to 15 compressions for 2 rescuer CPR. Until the airway is secured, then provide breaths at 8 to 10 per minute (1 breath every 6 to 8 seconds) without interrupting compressions
    1. Check for return of breathing and pulse after 5 cycles or 2 minute of CPR
    2. Attach defibrillator and provide shock if indicated, if no shock indicated continue CPR
    3. If there is a pulse but no breathing, give 1 rescue breath every 5 to 6 seconds

3. Infant (less than 1 year)
  - a. Determine unresponsive
  - b. Position the infant on his back on a firm surface
  - c. Open the airway using head tilt-chin lift (jaw-thrust if trauma suspected)
    1. Take care not to tilt the head to far back
  - d. Determine breathlessness
    1. If the patient is not breathing, give 2 effective breaths at 1 second per breath
  - e. Determine pulselessness
    1. Feel for the brachial pulse
  - f. If the patient has a pulse, perform rescue breathing
    1. Provide 12 to 20 ventilations per minute (1 breath every 3 to 5 seconds)
  - g. If no pulse, begin the first cycle of compressions and ventilations
    1. For one-rescuer CPR: Place 2 fingers just below the nipple line.
    2. For two-rescuer CPR: The “2 thumb-encircling hands” technique is preferred for compressions.
    3. Do not compress over the xiphoid process
    4. Compress the sternum approximately 1/3 to 1/2 the depth of the chest approximately 100 times per minute
    5. Give 2 rescue breaths for every 30 compressions for 1 rescuer CPR and 2 rescue breaths for every 15 compressions for 2 rescuer CPR.

**Note:**

- a. For continuous ventilations use smaller tidal volumes and cricoid pressure with the bag-valve-mask.
- b. See procedure use of Automatic External Defibrillation (AED)

1. An ALS responder may not access an A-V shunt.
2. An ALS responder may access a central line catheter or any other permanent indwelling line in the following life threatening situations:
  - a. In situation of cardiac arrest
  - b. Symptomatic hypovolemic shock
  - c. Under request of base station physician
3. ALS provider must follow written procedure for central line catheter access.

### **PROCEDURE for External Catheter:**

1. Remove cap (if applicable), cleanse end port with alcohol.
2. Attach needle with syringe to port, unclamp catheter, aspirate blood into syringe to confirm patent.
3. Re-clamp catheter, remove syringe.
4. Attach IV tubing , unclamp catheter.
5. Observe free flow of fluid, adjust to desired flow rate, secure catheter and tubing.

### **PROCEDURE for Medi-Port:**

1. Cleanse site with Betadine swab, remove Betadine with alcohol swab.
2. Hold port firmly between thumb and index finger of non-dominant hand
3. Attach syringe to Huber needle and insert at 90-degree angle until needle rests in port cavity.
4. Aspirate blood into syringe to confirm patent.
5. Remove syringe and attach IV tubing.
6. Observe free flow of fluid, adjust to desired rate, secure needle and tubing.

**Sterile technique is imperative, even with the placement of a peripheral line in a patient with a central line in place, as patient has an increased risk of infection.**

## CHEST DECOMPRESSION

### Needle Thoracentesis

A tension pneumothorax is a rare condition, but can occur both with trauma and spontaneously. It can also occur as a complication of CPR. A tension pneumothorax takes time to develop, but the rate of development may be increased by positive pressure ventilation. Exact diagnosis is important; diminished breath sounds and complaint of dyspnea alone are not sufficient findings to warrant decompression.

#### INDICATIONS:

- a. Respiratory arrest must appear imminent.
- b. Pertinent history: i.e. chest trauma, patient on positive pressure ventilation, or pulmonary disease.
- c. Progressive, severe respiratory distress
- d. Shock unrelated to hemorrhage, cardiovascular collapse (BP <90mmHg and HR >120)
- e. Drum-like percussion on affected side
- f. Hyperexpanded chest on affected side
- g. Asymmetrical movement on inspiration
- h. LATE FINDINGS: distended neck veins and tracheal shift away from the affected side.

#### PROCEDURE: (Use sterile technique if possible)

- a. Place patient on high flow O<sub>2</sub>
- b. Expose the entire chest
- c. Locate site; second intercostal space midclavicular line on the affected side.
- d. Prepare the skin area using appropriate antiseptic solution
- e. Attach a 10cc syringe to a 12 or 14g IV catheter
- f. Insert the catheter so that you hit the top of the third rib and the slide over the top of it.
- g. If the air is under tension, the barrel will easily pull from the syringe and “pop” out.  
Remove the syringe, advance the catheter, and discard the needle.
- h. Attach an appropriate one-way valve device; closed end away from the patient
- i. Tape securely around the catheter
- j. Reassess breath sounds and vital signs frequently

#### PRECAUTIONS:

- a. Patient should be generously oxygenated; assist ventilations if indicated
- b. The procedure is extremely painful, especially when piercing the pleura
- c. **Once a catheter has been inserted, it must be left in place whether a tension pneumothorax is present or not.**

#### POSSIBLE COMPLICATIONS:

- a. The creation of a pneumothorax where none existed before
- b. Laceration of the lung or of the blood vessels that run under each rib
- c. Infection: clean rapidly but vigorously and use sterile technique when ever possible

1. Conscious
  - a. Determine if victim is able to speak or cough
  - b. Perform the Heimlich maneuver (abdominal thrust) until the foreign body is expelled or the victim becomes unconscious
    1. Stand behind the victim and wrap your arms around the victim's waist. Press fist into abdomen with quick inward and upward thrusts
  - c. Do the chest thrust for victims who are in advanced pregnancy or who are obese
    1. Stand behind the victim and place your arms under the victim's armpits to encircle the chest. Press with quick backward thrusts
2. Unconscious
  - a. Check for a foreign body
    1. Sweep deeply into the mouth with a hooked finger to remove the foreign body
  - b. Attempt rescue breathing
    1. Open the airway
    2. Try to give 2 breaths. If needed, reposition the head and try again
  - c. If the airway is obstructed, perform the Heimlich maneuver
    1. Kneel astride the victim's thighs
    2. Place the heel of one hand on the victim's abdomen, midline slightly above the navel and well below the tip of the xyphoid
    3. Place the second hand on top of the first
    4. Press into the abdomen with quick upward thrusts
  - d. Repeat the sequence until successful
    1. Alternate between the finger sweep, rescue breathing attempts, and abdominal thrusts

The prehospital stroke test developed in Cincinnati effectively identifies patients with stroke. This scale evaluates three major physical findings: facial droop, motor arm weakness and speech abnormalities. The condensed examination can be accomplished with a series of simple tests that can help prehospital care providers to quickly identify a stroke patient who requires rapid transport to the hospital. A more extensive examination or institution of supportive therapies can be accomplished enroute to the hospital and in the emergency department. If possible, prehospital care providers should establish the time of onset of stroke signs and symptoms. This timing will have important implications for potential therapy. If the time of onset of symptoms is viewed as time zero, all assessments and therapies can be related to that time.

1. **Facial droop** – Have the patient show their teeth or smile
  - a. **Normal** – Both sides of face move equally well
  - b. **Abnormal** – One side of the face does not move as well as the other
  
2. **Arm drift** – The patient closes their eyes and holds both arms out with palms up
  - a. **Normal** – Both arms move the same direction or do not move at all (pronator grip may be helpful)
  - b. **Abnormal** – One arm does not move or one arm drifts down compared to the other
  
3. **Speech** – Have the patient say “you can’t teach an old dog new tricks”
  - a. **Normal** – The patient uses the correct words with no slurring
  - b. **Abnormal** – The patient slurs their words, uses inappropriate words or is unable to speak

Cardiopulmonary resuscitation has the same goal as all other medical interventions- to preserve life, restore health and relieve suffering and limit disability. An additional goal unique to advanced cardiac life support (ACLS) is the reversal of “clinical death.” However, in providing ACLS these goals are often not achieved or may not be in the patient’s best interest. Each decision to discontinue CPR/ACLS must be individualized and made with compassion and reason.

### **ALS/BLS Treatment**

1. CPR may be discontinued without Base Station contact and the patient determined to be dead for the following reasons **only if**:
  - a. Upon further examination it is determined that the patient meets the “Determination of Death Criteria” and CPR was initiated prior to this discovery (See determination of death in the field #4)
  - b. CPR was initiated but upon the arrival of the Paramedic, it is determined that the patient presentation is incompatible with life
  - c. DNR or Hospice agreement papers are presented after CPR was initiated
2. Once death has been determined and resuscitation efforts discontinued, all ALS therapeutic modalities initiated during the resuscitation must be left in place until it has been determined that the patient will not be a Medical Examiner’s case. This includes such equipment as endotracheal tubes, IV catheters, monitor electrodes and personal items including clothes, jewelry etc. If the Medical Examiner releases the body while the prehospital care provider is still on scene, remove all medical equipment used during the resuscitation attempt.
3. Children fourteen years and under are excluded from this policy unless ALS personnel make Base contact for consultation with the Base Hospital Physician

## DO NOT ATTEMPT RESUSCITATION – DETERMINATION OF FIELD DEATH

1. Prehospital care providers need not initiate CPR or ALS measures when death has been determined using the criteria outlined in this policy
2. Prehospital care providers need not initiate CPR if
  - a. DNR papers or Hospice Agreements, dated and signed by the patient or person legally responsible for the patients health care decisions, are available with appropriate witnessed signatures and there is no question they belong to the patient.(c)
3. Paramedics may declare apparent death but may not pronounce death  
Once CPR has been initiated and there is no favorable response, consider discontinuation of CPR as outlined in “Discontinuation of CPR” procedure
4. Death category criteria (a)
  - a. Category I – obvious death
    - Decomposition of body tissue
    - Total decapitation
    - Total incineration
    - Total separation or destruction of the heart or brain
    - Rigor Mortis
  - b. Category II – Traumatic Arrest I(b)
    - Trauma deaths which do not meet the criteria in Category I, require resuscitation or contact with base station
    - Trauma deaths with the appearance incompatible with life do not require resuscitation.

### Note:

- a. Prehospital care providers desiring support in the field may contact the Base Station Hospital at any time for Determination of Death
- b. Exception – suspected hypothermia requires full resuscitation efforts
- c. The patient may be of any age

To identify the location of electrode placement for CARDIAC monitoring, 12 lead ECG, cardioversion, defibrillation, and pacing.

### **CARDIAC Monitoring:**

1. Left arm lead should be placed on the left shoulder or wrist
2. Right arm lead should be placed on the right shoulder or wrist
3. Left leg lead should be placed on the left ankle
4. Right leg lead should be placed on the right ankle

### **12 Lead ECG:**

1. Arm and leg leads should be placed as above
2. V1 – 4<sup>th</sup> intercostal space, just to the right of the sternum
3. V2 – 4<sup>th</sup> intercostal space, just to the left of the sternum
4. V3 – halfway between V2 and V4
5. V4 – 5<sup>th</sup> intercostal space, left midclavicular line
6. V5 – left anterior-axillary line, horizontal with V4
7. V6 – left mid-axillary line, horizontal with V4

### **Cardioversion:**

1. Arm and leg leads should be placed as above
2. The negative quick-combo pad should be placed on the left anterior chest between the xiphoid process and the left nipple with the upper edges of the electrode below the nipple line
3. The positive quick-combo pad should be placed on the posterior chest, beneath the scapula and lateral from the spine
4. As an option the pads may be placed in the defibrillation locations

### **Defibrillation:**

1. The positive quick-combo pad should be placed on the right upper chest between the clavicle and the nipple
2. The negative quick-combo pad should be placed on the left lower chest, below and to the left of the nipple
3. The arm and leg leads should be attached as above as time allows
4. As an option the quick-combo pads may be placed in the cardioversion locations

### **Pacing:**

1. Arm and leg leads should be placed as above
2. The negative quick-combo pad should be placed in either the cardioversion or defibrillation locations
3. The positive quick-combo pad should be placed in either the cardioversion or defibrillation locations
4. The preferred location is posterior/anterior

To identify medications that may be administered by the EMT in the prehospital setting.

**POLICY**

1. EMT B's may administer/assist the following medications if indicated
  - a. **Albuterol** metered dose inhaler per patient prescription **(a)**
  - b. **Epinephrine 1:1000 sq (b)**
  - c. **Nitroglycerin** per patient prescription SL tab or Spray if SBP is > 100 mmHg **(c)**
  - d. **Oral glucose**
  - e. **Aspirin 81 mg PO chewed to total 324 mg** (4 tabs) **(d)**
2. The EMT may administer only after Base Station contact
  - a. **Activated charcoal**
3. Basic Life Support (BLS) units are permitted to carry the following medications
  - a. **Activated Charcoal 50 Gm**
  - b. **Aspirin** – Patients do not necessarily take Aspirin on a routine basis requiring EMTs to carry it
  - c. **Nitroglycerin (spray)** – In the interest of quality patient care, Nitroglycerin may be carried as the patient's medication may be expired
  - d. **Epinephrine auto-injector** (junior and adult) or **Epinephrine 1:1000 for sq administration**
  - e. **Oral glucose paste**

**NOTE:**

- a. Also known as Proventil or Ventolin
- b. A single dose may not reverse the effects of an anaphylactic reaction. Administer additional Epinephrine auto-injections, as needed. Bring additional auto-injectors or epinephrine with the patient for use during transportation, if necessary
- c. Nitroglycerine should be used in patients with established coronary artery chest pain, symptoms of cardiac ischemic events and who are already taking Nitroglycerin by prescription. Patients who have taken a medication for erectile dysfunction (such as Viagra™) within thirty six (36) hours should not be given Nitroglycerin
- d. All patients with the complaint of cardiac chest pain should receive aspirin unless they are allergic to it

To identify medications that may be administered by the **EMT Intermediate** in the prehospital setting.

**POLICY**

1. **EMT Intermediate** may administer/assist the following medications if indicated:
  - a. **Albuterol** 2.5 mg SVN for inhalation **(a)** Pediatric dose is ½ adult dose
  - b. **Amiodarone** 300 mg IVP for pulseless VT/VF may repeat 150 mg X 1, all other rhythms 150mg over 10 minutes
  - c. **Atropine** 0.5 – 1.0 mg IV to a max of 0.4 mg/kg or Pediatric 0.01 – 0.02 mg/kg (min. dose 0.1mg)
  - d. **Atrovent** 0.5 mg SVN for inhalation **(a)** Pediatric dose is ½ adult dose
  - e. **Aspirin** 325 mg PO may use 4 children’s 81 mg tablets chewed **(d)**
  - f. **Dextrose 50% and 25%** IV for Pt’s with glucose of 60 mg/dl or less
  - g. **Diphenhydramine** 25 – 50 mg IV, 25 mg PO for pediatric refer to pediatric chart
  - h. **Epinephrine 1:1000** Adult 0.1-0.3 mg SQ or Pediatric 0.01mg/kg SQ (max 0.3 mg) **(b)**
  - i. **Epinephrine 1:10,000** Adult 1.0 mg may repeat every 3 – 5 min PRN or Pediatric 0.01 – 0.03 mg/kg
  - j. **Fentanyl** 50mcg, may titrate by 50mcg increments up to 5mcg/kg or Fentanyl lollypop Pediatric dose 2-3 mcg/kg
  - k. **Furosemide** 0.5 – 1 mg/kg IV not to exceed 20mg
  - l. **Glucagon** 1 mg IM for hypoglycemia and no IV access
  - m. **Ketorolac** 30 mg IV, cut dose in half if over 65 years old or under 100 lbs.
  - n. **Lidocaine** 1.5 mg/kg IV may repeat once for a total of 3.0 mg/kg
  - o. **Morphine** 2 – 4 mg IV up to 10 mg total.
  - p. **Naloxone:** 2 mg IN/IV, May repeat in 2 to 3 minute intervals to a maximum of 10 mg Pediatric dose 0.1 mg/kg
  - q. **Nitroglycerin** ; one dose 0.4 mg SL tab or Spray may repeat in 3 to 5 min if SBP is > 100 mmHg and authorized by base station up to a maximum of three doses **(c)**
  - r. **Oral Glucose Paste** for Pt’s with blood glucose level of 60 mg/dl or less
  - s. **Vasopressin** 40 units IV may use in place of 1<sup>st</sup> or 2<sup>nd</sup> dose of epinephrine
  
2. **EMT Intermediate** may administer only after Base Station contact
  - a. **Activated Charcoal** PO

**NOTE:**

- a. Also known as **Proventil** or **Ventolin**
- b. Epinephrine for anaphylaxis administered from a commercially preloaded measured device. A single dose may not reverse the effects of an anaphylactic reaction. Administer additional doses as needed.
- c. Nitroglycerin should be used in patients with established coronary artery chest pain, symptoms of cardiac ischemic events and who are already taking Nitroglycerin by prescription. Patients who have taken medication for erectile dysfunction such as Viagra\_ within thirty-six (36) hours of the onset of chest pain should not be given Nitroglycerin
- d. All patients with the complaint of cardiac chest pain should receive aspirin unless they are allergic to it

**ESOPHAGEAL TRACHEAL COMBITUBE**  
**To be used by ETC Certified prehospital care providers**

**INDICATIONS:**

The Combitube is approved as a second line airway device; endotracheal intubation is preferred. Patients must be in cardiac arrest or comatose with absent gag reflex. This device may be used in lieu of an ET tube in the following situations:

1. **When ALS is not reasonably expected to arrive within 10 minutes**, even if ventilation is proceeding without serious complication, an EMT – I or an EMT – B (with additional training and prior physician approval) may insert a combitube in cardiac arrest patient.
2. Whenever adequate ventilation cannot be achieved while using standard manual airway maneuvers augmented with an OPA and endotracheal intubation is not an option.
3. When intubation is **urgently necessary** and endotracheal intubation has not been achieved on three attempts.
4. When hyperventilation or ventilatory assistance must be performed in the head or spinal injured patient and nasotracheal intubation is not an option.
5. When repeated, copious amounts of emesis cannot be cleared to allow visualization for endotracheal intubation.
6. When a copious amount of blood is draining into the hypopharynx and deeper from the mouth and nose.

**BASIC LIFE SUPPORT:**

1. Verify cardiac and/or respiratory arrest
2. Initiate CPR (if indicated) and ventilate per pocket mask or BVM with supplemental O<sub>2</sub>
3. Ventilate 1 – 2 minutes prior to the ETC intubation attempt

**COMBITUBE INTUBATION:**

1. If the patient is in cardiopulmonary arrest, and an automated or manual defibrillator is immediately available, first proceed with AED per procedure
2. Placement of the ETC may be done at a point during the AED procedure where a shock is not indicated, or where rhythm analysis not being performed
3. After determining the patient's height, place the patient's head in a neutral position
4. Insert ETC along the midline of the mouth. Advance gently until the teeth (or gums) are aligned between the two black rings on the tube
5. For patients greater than five (5) feet in height, use the regular adult size ETC
  - a. Using the large syringe, inflate Line 1 through the pilot balloon with 100 cc of air
  - b. Using the small syringe, inflate Line 2 through the pilot balloon with 15 cc of air
6. For patients between four (4) and five (5) feet in height, use the small adult (SA) size ETC
  - a. Using the large syringe, inflate Line 1 through the pilot balloon with 85 cc of air
  - b. Using the small syringe, inflate Line 2 through the pilot balloon with 12 cc of air
7. Attach a BVM with supplemental O<sub>2</sub> to Tube #1 and begin ventilations
8. Using a stethoscope, listen for lung sounds in both lateral lung fields and over the epigastrium
  - a. If lung sounds are present, and there are no gastric sounds, continue ventilations
  - b. If lung sounds are absent, and gastric sounds are present, esophageal placement may have been accomplished

1. Remove the bag-valve device from Tube #1 and continue ventilations through Tube #2

## **ESOPHAGEAL TRACHEAL COMBITUBE (Continued)**

2. Listen for lung sounds in both lateral lung fields and over the epigastrium
3. If lung sounds are absent and air exchange is heard over the epigastrium, deflate both cuffs, remove the ETC and continue ventilations
4. If neither lung sounds or gastric sounds are heard, deflate the pharyngeal cuff and gently withdraw the ETC approximately 2 – 3 cm and attempt to ventilate through Tube #1
9. The entire procedure should be accomplished within 30 seconds or less
10. During the first attempt, if resistance is encountered during insertion, consider the use of a water-soluble lubricant applied to the distal shaft of the ETC
11. If unsuccessful after the second attempt to insert the ETC, discontinue the procedure and continue ventilations using an alternative method
12. If esophageal intubation has occurred, consider attaching the mask elbow to Tube #2 to deflect the potential flow of stomach contents
13. Periodically check for appropriate placement of the ETC and adequate ventilations

### **EXTUBATION OF THE COMBITUBE:**

1. If the patient regains consciousness or begins to fight the tube, restrain the patient if necessary and consider removing the ETC
  - a. Turn the patient on their side
  - b. Deflate both the pharyngeal and esophageal cuffs through Lines 1 and 2
  - c. Gently remove the ETC
  - d. Be prepared for the patient to vomit. Suction as needed
  - e. Assure the patient's airway is patent and respirations are adequate  
Assist ventilations as necessary
  - f. Administer O2 by NRB

### **IF ENDOTRACHEAL TUBE IS TO BE PLACED BY ALS PERSONNEL DUE TO A NONFUNCTIONING OR INADQUATELY VENTILATING ETC.**

**Note: If the ETC is functioning properly and adequately do not remove it to intubate.**

1. When the ALS provider is ready to intubate, deflate the pharyngeal cuff through Line #1
2. Move the ETC to the left side of the patient's mouth
3. After the endotracheal tube has been successfully placed, deflate the esophageal cuff through Line #2 and gently remove the ETC

### **CONTRAINDICATIONS:**

1. An intact gag reflex
2. Airway obstruction
3. Patients under four (4) feet in height
4. Cases of known or suspected caustic ingestion
5. Known esophageal disease

**ESOPHAGEAL TRACHEAL COMBITUBE  
(Continued)**

**NOTE:**

1. For patients in cardiopulmonary arrest, early defibrillation takes precedence over placement of the ETC
2. Before releasing a patient with an ETC in place to another level of care (i.e., emergency physician, nurse, paramedic), the EMT performing the procedure must be certain that the receiving person is knowledgeable about the proper use and function of the device, and is aware that it is in place
3. In the event an ETC has been placed, and the ambulance that will transport the patient is not staffed with personnel trained to use the device, the EMT who performed the procedure will remain with the patient throughout transport, or until personnel with an equal or higher level of certification can assume patient care

## EXTERNAL TRANSCUTANEOUS PACEMAKER

External transcutaneous pacing is the technique of electronic cardiac pacing accomplished by using skin electrodes to pass repetitive electrical impulses through the thorax.

### INDICATIONS:

Unstable bradycardia with heart rate < 60 with evidence of inadequate perfusion to vital organs (i.e. hypotension <90, altered mental status) and patient is unresponsive to Atropine or Atropine is unavailable (i.e. no IV). This is a standing order.

### CONTRAINDICATIONS:

1. Weight under 25Kg (55Lbs.)
2. Patient meeting death in the field criteria.
3. Patients with sign of penetrating or blunt trauma.
4. Asystole (except in the rare circumstance immediately following defibrillation or P waves without ventricular response).

### PROCEDURE:

1. Initiate bradycardia protocol.
2. Assist ventilations and/or CPR as needed.
3. Ensure that the monitoring leads are attached and displaying a cardiac rhythm.
4. Attach pacing pads (may be located anterior/posterior or in standard defib location).
5. Turn on pacer button and make sure that the pacer is sensing the patient's native rhythm (indicated by sensing marks on the screen).
6. Set the pacer rate at 80 beats per minute.
7. Turn on pacer button, observe pacer spikes and record pre-paced rhythm.
8. Increase current quickly by 20mA increments to a level necessary to obtain capture.
9. When capture is achieved, check for a pulse with each beat.
10. Observe the patient for changes in mental status, pulse, and blood pressure. If patient is awake during pacing, decrease current output by 5mA increments to a level just above capture threshold.
11. If patient complains of pain during pacing despite reduced current output and patient maintains a systolic B/P >90, administer **Fentanyl** as per pain protocol **OR Versed** 2.5 to 10mg IV slowly to effect.
12. If patient remains unconscious during pacing, assess capture by observing the monitor and evaluating the pulse and blood pressure.
13. If capture is not obtained with increased current, replace pacer pads with new pads in other location.
14. If there is electrical capture and no pulse, follow PEA protocol.

## HELICOPTER TRANSPORT

In general, an ALS helicopter may be utilized when the net savings in time to the hospital for the seriously ill or injured patient is shortened by 20 minutes. When the need is unclear, EMT's should consider discussing the flight with medical control. The prehospital provider must consider the ready time for the helicopter, the loading time at the scene and the possibility of a closer rendezvous site for lengthy flights or to get a better quality landing zone.

1. For patients of cardiac arrest and over 5 minutes from the hospital, the cabin restrictions of an ALS helicopter **do not enhance** resuscitation needs. *The exceptions include small children and the hypothermia victim.*
2. A seriously injured trauma patient is defined as a patient with the trauma score of 12 or less. Helicopter transport should be considered for:
  - a. Profound respiratory distress from upper airway injury, thoracic trauma, or pulmonary edema.
  - b. Exsanguinating hemorrhage and signs of shock syndrome.
  - c. Deep coma, Glasgow coma scale score of 10 or less.
  - d. Spinal cord injury with neurodeficits or where road conditions may compromise spinal immobilization.
  - e. Extremity amputation or scalping.
  - f. Extensive burns
3. A seriously ill medical patient would be a similar risk and should be considered for helicopter transport:
  - a. Impending respiratory failure from any cause.
  - b. Profound shock.
  - c. Deep coma.
  - d. Chest pain suggestive of myocardial infarction or confirmed myocardial infarction and unresponsive to nitroglycerine and oxygen.

## INTRANASAL (IN) MIDAZOLAM

**Indications:** For treatment of persistent seizure activity

**Procedure:**

- Assess ABC's – Airway, Breathing, Circulation
- For pulseless patients, proceed to ACLS guidelines
- Apply 100% oxygen NRB mask to seizing patient
- Use age based table to determine proper volume of midazolam for atomization:

Patient age (years)	Weight (kg)	IN Midazolam volume in ml*	
		5mg/ml concentration	
		IN volume (ml) (mg) 5 mg / ml	Dose
<b>Neonate</b>	3 kg	0.3 ml	0.6 mg
<b>&lt;1 yr</b>	6 kg	0.4 ml	1.2 mg
<b>1 yr</b>	10 kg	0.5ml	2.0 mg
<b>2 yr</b>	14 kg	0.7 ml	2.8 mg
<b>3 yr</b>	16 kg	0.8 ml	3.2 mg
<b>4 yr</b>	18 kg	0.9 ml	3.6 mg
<b>5 yr</b>	20 kg	1.0 ml	4.0 mg
<b>6 yr</b>	22 kg	1.0 ml	4.4 mg
<b>7 yr</b>	24 kg	1.1 ml	4.8 mg
<b>8 yr</b>	26 kg	1.2 ml	5.2 mg
<b>9 yr</b>	28 kg	1.3 ml	5.6 mg
<b>10 yr</b>	30 kg	1.4 ml	6.0 mg
<b>11 yr</b>	32 kg	1.4 ml	6.4 mg
<b>12 yr</b>	34 kg	1.5 ml	6.8 mg
<b>Small teenager</b>	40 kg	1.8 ml	8.0 mg
<b>Adult or full-grown teenager</b>	≤ 50 kg	2.0 ml	10.0 mg

\* This volume is based on the calculated dose PLUS 0.12 ml dead space and rounded off to the next highest 0.1 ml. Slightly higher doses may be appropriate at the lower range of volume due to measurement difficulties and possible under dosing which may not stop the seizure.

- To calculate it manually, use the below formula
  - Assess weight: children weight in kg = 10 + 2(Age in years)
  - Calculate appropriate dose of midazolam using the following formula:
    - Children: Total kg wt X 0.2 mg = total mg dose of midazolam, maximum of 10 mg
    - Adults over 50 kg: 10 mg (2 ml) of midazolam
    - Total volume in milliliters of midazolam (5mg/ml concentration) = (Total mg dose divided by 5mg/ml) + 0.12 ml for dead space of device.
- Load syringe with appropriate milliliter volume of midazolam (use only 5mg/ml concentration) and attach MAD nasal atomizer
- Place atomizer within the nostril
- Briskly compress syringe to administer 1/2 of the volume as atomized spray.
- Remove and repeat in other nostril, so all the medication is administered
- Continue ventilating patient as needed

- If seizures persist 5 minutes after treating, consider repeating ½ dose of midazolam either intranasally, intramuscularly or intravenously. Secure airway if necessary.

## INTRANASAL (IN) NALOXONE

**Indications:** For use on patients suspected of opiate overdose

**Procedure:**

- Assess ABC's – Airway, Breathing, Circulation
- For pulseless patients, proceed to ACLS guidelines
- Apnea with pulse – Establish oral airway and begin bag ventilation with 100% oxygen
- Load syringe with 2 mg (2 ml) of naloxone and attach MAD nasal atomizer
- Place atomizer 1.5 cm within the nostril
- Briskly compress syringe to administer 1 ml of atomized spray.
- Remove and repeat in other nostril, so all 2 ml (2 mg) of medication are administered
- Continue ventilating patient as needed
- Proceed down standard unconscious protocol:
  - Ventilate, oxygenate
  - Check blood sugar and treat if low
  - Secure airway if necessary.

If no arousal occurs after 3 minutes, establish an IV and administer intravenous naloxone, then continue with altered mental status protocol.

## INTRAOSSEROUS INFUSION

### Indications:

1. For serious or critical pediatric patients, who require immediate IV access and peripheral IV access is unobtainable or inaccessible. (Not a prophylactic line)

### Contraindications:

1. Abdominal or lower extremity trauma

### Precautions:

1. IO lines are not to be started for prophylaxis
2. Attempts should be made to start a peripheral line before an IO is attempted. The greater saphenous vein is often accessible; consider the AC
3. In cardiac arrest, intubation may provide a quicker route for medications
4. In newborns, consider umbilical catheterization
5. Push fluid boluses with a syringe

### Procedure:

1. Place patient supine and rotate the foot externally
2. Select the site: proximal-anterior tibia, 1 – 2cm below the tuberosity
3. Scrub the site with betadine followed by alcohol
4. Twist while pushing an 16 or 18g IO needle in at a 60° angle caudally
5. After feeling a “pop”, remove the obturator
6. Attach a 5cc syringe to the IO device; aspirate marrow and use to fill blood tubes
7. If unable to aspirate, fill syringe with NS solution then flush
8. Connect IV tubing and initially run wide open to verify free flow of fluid
9. If IO will not run, a pressure bag may be necessary (do not overload the patient)
10. Secure the IO device with bridge taping
11. All medications and fluids that can be given IV may be given through the IO line
12. If infiltration occurs, discontinue and apply firm pressure for five minutes

## MNEMONIC'S

### MEDICAL

Signs and symptoms

Allergies

Medications

Pertinent past medical history

Last oral intake

Events leading to injury or illness

Progression of symptoms

Associated chest pain

Sputum production, speech, word sentences

Temperature, tiredness

Medications the patient is currently taking

Exercise normally tolerated

Diagnosis (previous)

Provocation, progression

Quality

Radiation

Severity

Time

Morphine

Oxygen

Nitrates

Aspirin

### TRAUMA

Deformities

Contusions

Abrasions

Punctures

Body

Surface

Area

Burns

Tenderness

Lacerations

Swelling

### NEUROLOGICAL

Alert

Verbal

Pain

Unresponsiveness

### GLASGOW COMA SCORE

**Eye Opening**

4 - Spontaneous

3 - To Command

2 - To Pain

1 - No Response

**Best Verbal Response**

5 - Oriented

4 - Confused

3 - Inappropriate Words

2 - Incomprehensible

1 - No Response

**Best Motor Response**

6 - Obeys Commands

5 - Localizes Pain

4 - Withdraws from Pain

3 - Flexion (decorticate)

2 - Extension (decerebrate)

1 - No Response

### CHARTING

Subjective

Objective

Assessment

Plan

### CAUSES OF PULSELESS ELECTRICAL ACTIVITY (PEA) – The “5” H’s and “5” T’s

Hypovolemia

Hypoxia

Hydrogen ion – acidosis

Hyper/Hypokalemia

Tablets (drug OD, accidents)

Tamponade, cardiac

Tension Pneumothorax

Thrombosis, coronary (ACS)

**NASOGASTRIC TUBE INSERTION**

The purpose of nasogastric tube insertion is to relieve pressure and distention of the stomach in patients requiring ventilatory support by removing fluid and/or air from the stomach, thereby reducing the incidents of vomiting and aspiration. Paramedics may insert a nasogastric tube on pediatric patients that are being intubated with an uncuffed tube and intubated adults with a distended abdomen.

**PROCEDURE**

1. Measure the length of the tube to be inserted by placing the tip of the tube over the approximate area of the stomach and extending it to the patient's ear and from the ear to the tip of the nose. Note the marks on the tube used for measurement
2. Lubricate distal end of the tube with a water soluble lubricant
3. Insert the NG tube into the nose and slowly pass it the distance to where the tube was marked
  - a. Flexing the neck will help with tube placement as long as c-spine precautions are maintained if indicated
4. To check for proper tube placement, connect a 10 – 20 cc syringe to the NG tube and attempt to aspirate stomach contents. If not contents are obtained disconnect the syringe. Fill the same syringe with air. Put a stethoscope over the stomach area and inject air through the NG tube rapidly. If the tube is in the stomach, appropriate sounds will be heard
  - a. If no stomach contents are aspirated or no burping sound is heard with the injection of air, remove the tube and try again
  - b. Often the NG tube will follow the ET tube
5. Secure the tube with a minimal amount of tape to the nose
6. The NG tube should be connected from low to medium suction
  - a. Syringe aspiration will suffice on small infants

## ORTHOSTATIC VITAL SIGNS

Orthostatic vital signs are used to evaluate patients with fluid loss, hemorrhage, syncope or autonomic dysfunction. They are also used to assess the patient's response to therapy. When shock exists, assessment of blood volume deficit is straightforward. It is preferable that volume loss be detected before loss of physiologic compensation and shock occur. Many techniques have been advocated to assess volume status. Serial vital sign measurements have been used for assessing blood loss, but they do not reliably detect small degrees of blood loss. Up to 15% of the total blood volume can be lost with minimal hemodynamic changes or any alteration of supine vital signs.

When the volume status of a patient is assessed by use of orthostatic vital signs, several points should be remembered. Many factors influence orthostatic blood pressures including age, pre-existing medical conditions including pregnancy, the use of medications and autonomic dysfunction. The pre-hospital care provider must consider the condition of the patient as well as the orthostatic vital signs in evaluating a patient for volume depletion.

Orthostatic vital signs are indicated as part of the evaluation of any patient with a known or suspected volume loss or a history of syncope. The use of orthostatic vital signs is unnecessary and dangerous in a patient with supine hypotension, shock, an altered mental status, possible spinal injuries, and in patients with lower extremity or pelvic fractures.

Once the decision to obtain orthostatic vital signs has been made, the blood pressure and pulse are recorded after the patient has been in the supine position for two to three minutes. No invasive procedures should be performed during the test. The patient is then asked to stand. The pre-hospital care provider should be prepared to assist the patient if severe symptoms develop.

If severe symptoms develop (defined as syncope or extreme dizziness requiring the patient to lie down) on standing, the test is considered positive and should be terminated. If the patient is not symptomatic, the blood pressure and pulse should be recorded after the patient has been standing for one to two minutes.

Criteria for positive vital sign changes is tachycardia greater than 20 BPM. Although blood pressure changes may be seen, they are too variable to be used as an indicator for blood volume loss. Because of the lack of agreement about the degree of postural blood pressure change that constitutes a positive test, the most reasonable definition may be any postural fall in blood pressure that results in symptoms or cerebral hypoperfusion.

### PROCEDURE

1. Obtain baseline vital signs while the patient is lying down.
2. Obtain a second set of vital signs while the patient is standing. Allow one to two minutes between sets of vitals.
3. A test is considered positive if the patient has dizziness, increased weakness, nausea, vomiting or the systolic blood pressure drop of greater than 20 mmHg and/or an increase in the pulse rate of greater than 20 beats per minute.

## OXYGEN THERAPY

There are two main purposes for oxygen therapy. The most important of those is physiological, for treatment of acute illness or injury. It is important for the pre-hospital care provider to recognize signs and symptoms that indicate the necessary use of high concentration oxygen. The second purpose for oxygen therapy is psychological. Many times the use of oxygen is not necessary for treatment, but is done to “put the patient at ease”. Whether the pre-hospital care provider has access to a pulse oximeter or not, the patient’s chief complaint and general appearance must be taken into account regardless of the pulse oximeter reading. Treat the patient not the pulse oximeter. The correct use of oxygen is dependent on good patient assessment skills.

### **POLICY**

1. Patients should be allowed to assume a position of comfort if no co-existent injuries preclude this
  2. Patient assessment shall include checking for signs of shock, including signs of central and peripheral cyanosis
  3. The delivery devices that shall be carried are nasal cannulas, non-rebreather(adult and pediatric), and bag-valve masks
- I. **Departments with pulse oximetry**
    - a. Pulse oximetry is a convenient tool to use if available, however it should not be used to gauge the amount of oxygen a patient is given.
  - II. **Departments that do not have pulse oximetry**
    - a. If respirations are absent or respiratory rate is < 10 or > 30 (inadequate respirations), positive pressure ventilation should be considered
    - b. If the patient’s general appearance is poor (signs of shock, cyanosis, extreme pain, etc.), administer oxygen at 15 LPM via non-rebreather mask as tolerated
    - c. Monitor the patient closely for changes in condition or appearance
    - d. Continue monitoring the patient’s condition and adjust the O2 delivery accordingly

## PHONE NUMBERS

<b>Hospital</b>	<b>E. R.</b>
Albany General	(541) 812 – 2190
Bess Kaiser Hospital	(503) 285 – 9321 ext 124100
Cottage Grove Hospital	(541) 942 – 6646
Doernbecher Hospital	(503) 494 – 8811
Emanuel ER	(503) 413 – 4218
Mercy Medical Center ER Desk	(541) 677 – 4333
Mercy Medical Center EMT Desk	(541) 677 – 2299
McKenzie Willamette ER	(541) 726 – 4400 ext 3296
OHSU	(503) 494 – 8111
OHSU ER	(503) 494 – 7551
Providence Medford ER	(541) 732 – 5059
Providence Portland ER	(503) 215 – 6000
Rogue Valley Medical Center ER	(541) 608 – 4144
Sacred Heart	(541) 686 – 6929
Sacred Heart Operator	(541) 686 – 7300
Salem Memorial Hospital ER	(503) 561 – 5373
St. Vincent's ER	(503) 216 – 2361
3 Rivers ER	(541) 472 – 7100
VA Portland (Bed Control)	(503) 721 – 7803
VA Portland (Main)	(503) 220 – 8262
VA Roseburg AOD	(541) 440 – 1250 ext 45355

Poison Control (800) 222 - 1222

### COMMUNICATION CENTERS

Douglas County Communications (541) 440 – 4471

### STATIONS

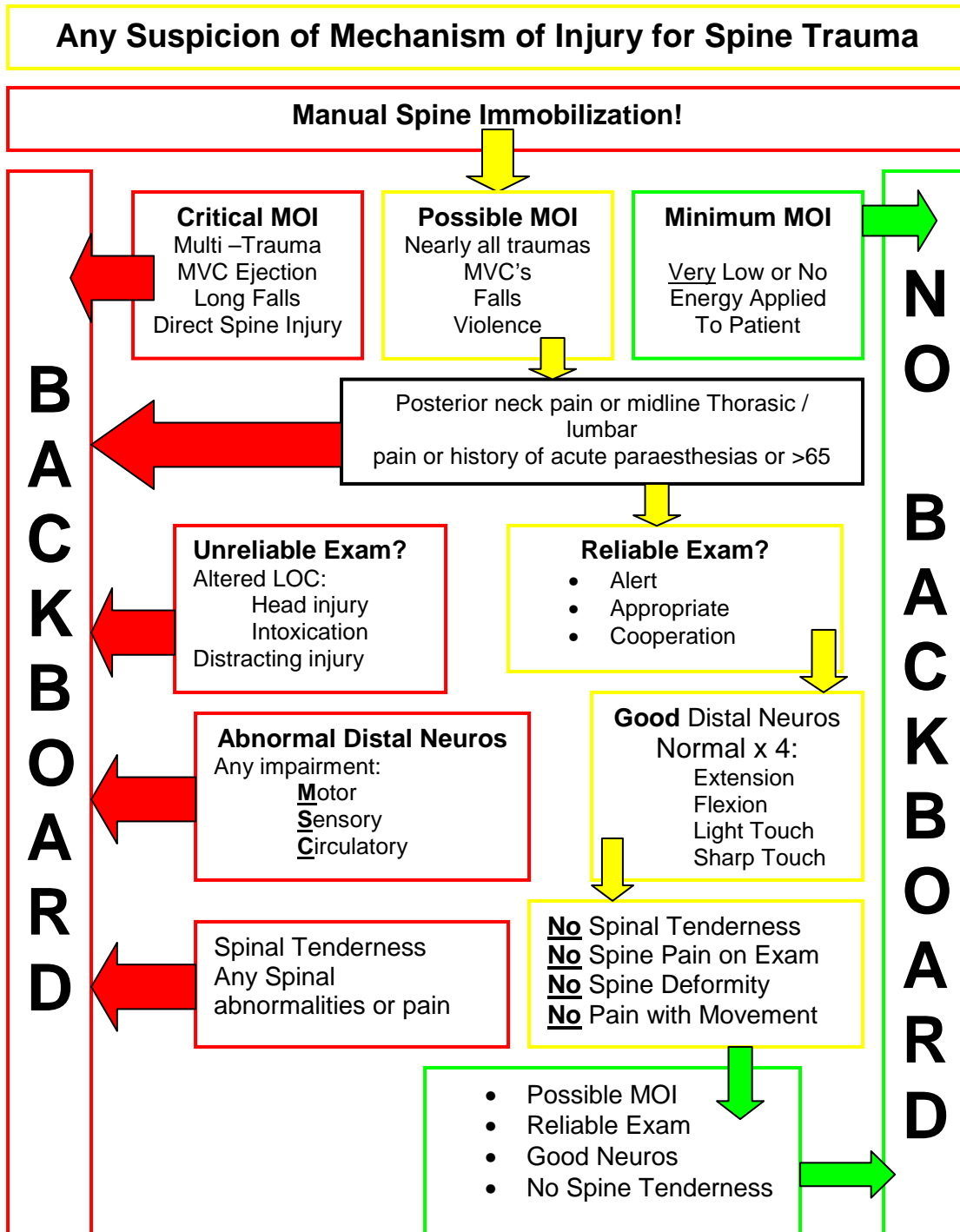
DCFD2 Station 1	(541) 673 – 5503
DCFD2 Station 2	(541) 679 – 6331
DCFD2 Station 3	(541) 672 – 3858
DCFD2 Station 4	(541) 673 – 5074
DCFD2 Station 5	(541) 673 – 2043
Roseburg Fire Station 1	(541) 672 – 5133
Roseburg Fire Station 3	(541) 673 – 0025
Sutherlin Fire	(541) 459 – 1394
WEST Roseburg	(541) 673 – 0632
WEST South County	(541) 863 – 6408
Winston Fire	(541) 679 – 8721

### Gate and Door Codes

Mercy Medical Center ER	911
Roseburg Airport gate	Contact dispatch
Sacred Heart ER	99991

## PREHOSPITAL SPINAL CLEARANCE

There are currently more than 200,000 spinal injury victims living in the United States, and 10,000 new cases occur each year. Automobile and motorcycle crashes account for approximately half of all spinal injuries, whereas falls are responsible for approximately 20% of all cases. Significant fractures or dislocations may follow minor trauma in people with arthritic disease or osteoporosis. Accidents, as a result of participation in sporting activities, comprise another 15% of all cases. The remaining 15% of spinal injuries are the result of intentional acts of human violence. The median age of spinal injury victims is 25 years, with men outnumbering women four to one.



## **RESTRAINTS**

### **For Aggressive or Violent Patients During Transport**

**PURPOSE:** The use of physical restraints for patients who pose a threat to themselves or others is indicated only as a last resort. Physical restraints should be preceded by an attempt at verbal control and the least restrictive means of control necessary must be employed. If restraints are used, care must be taken to protect the patient from possible injury.

1. Request assistance from law enforcement.
2. Restraint equipment applied by EMS personnel must be either padded leather restraints or soft restraints (i.e. Posey, Velcro or seatbelt type). Either method must allow for quick release.
3. The application of any of the following forms of restraint should not be used by EMS personnel:
  - a. hard plastic ties or any restraint device requiring a key to remove
  - b. “sandwiching” patients between backboards, scoop-stretchers, or flat, as a restraint
  - c. restraining a patient’s hands and feet behind the patient (i.e. hog-tying)
  - d. methods or other material applied in a manner that could cause respiratory, vascular, or neurological compromise
4. Restraint equipment applied by law enforcement (i.e. handcuffs, plastic ties, or “hobble” restraints) must provide sufficient slack in the restraint device to allow the patient to straighten the abdomen and chest and to take full tidal volume breaths. Restraint devices applied by law enforcement require the officers continued presence to insure patient and scene safety. The officer should, if at all possible, accompany the patient in the ambulance or follow by driving in tandem with the ambulance along a predetermined route. A method to alert the officer of any problems that may occur during transport should be discussed prior to leaving the scene.
5. Patients should not be transported in the prone position (on their stomach) unless necessary to provide emergency medical stabilization. EMS personnel must ensure that the patient’s position does not compromise the patients respiratory/circulatory systems, or does not preclude any necessary medical intervention to protect the patient’s airway should vomiting occur.
6. Restrained extremities should be evaluated for pulse quality, capillary refill, color, nerve and motor function every fifteen minutes. It is recognized that the evaluation of nerve and motor status requires patient cooperation, and thus may be difficult or impossible to monitor.
7. The Medical Incident Report must document the following:
  - a. the reason restraints were needed
  - b. which agency applied the restraints
  - c. the periodic extremity evaluation
  - d. the periodic evaluation of the patient’s respiratory status
  - e. the time the restraints were applied

## STEMI – CARDIAC ALERT ST ELEVATED MYOCARDIAL INFARCTION

**Purpose:** To provide a means by which patients eligible to receive interventional cardiovascular therapy may be rapidly identified in the prehospital setting. Emergency Departments (ED's) receiving these patients may then decrease the time to initiation of such therapy, thereby limiting the amount of cardiac damage and reducing morbidity and mortality of the patient with acute myocardial infarction (AMI).

### PROCEDURE:

- Diagnostic quality prehospital 12 lead ECG's will be performed on all patients at risk for Acute Coronary Syndrome (ACS).
- Prehospital 12-lead ECG's will be acquired on the following patients: (acquisition time should be approximately 1 – 2 minutes and should not compromise care of the patient)
  1. Patients calling 911 with a complaint of acute, non-traumatic, chest pain.
  2. Patients with chief complaints classified as classic anginal chest pains, atypical presentations, and anginal equivalent symptoms
    - a) **Classic** – Substernal chest pains originating in the center of the chest with or without radiation. Anginal type pains (tightness, squeezing, pressure)
    - b) **Atypical** – Vague musculoskeletal complaints, back pains, arm or shoulder pain, jaw or tooth pain, epigastric pains and diaphoresis.
    - c) **Anginal Equivalents** – Weakness, syncope, near syncope, shortness of breath, feeling of impending doom / anxiousness, DKA
  3. Any patient for whom a physician requests a Prehospital 12-lead ECG be acquired.

### SUGGESTED SEQUENCE:

1. Reassure and inform patient, place in position of rest and administer oxygen as needed.
2. Place on cardiac monitor using modified limb lead (4) placement if a 12-lead is anticipated (Modified = arm leads on upper/outer shoulder and leg leads anywhere below the groin)
3. Complete patient assessment.
4. Vital signs (bilateral blood pressure when possible).
5. History and medications.
6. Attach precordial electrodes.
7. Acquire Prehospital 12-lead ECG **before** nitroglycerin, aspirin, morphine or other medication whenever possible. (Remember, if precordial electrodes are attached and 12-lead ECG is acquired while patient assessment is taking place your scene time is not adversely affected).
8. Acquire 12-lead ECG either in the patients residence or incident location prior to moving patient to vehicle in preparation for transport or in the vehicle just prior to beginning transport. (**Note:** Until cellular transmission is available 12-lead will need to be done before moving to the ambulance).
9. If the diagnostic 12-lead ECG indicates an ST elevated myocardial infarction (STEMI) (ST segment elevation of >1mm in two anatomically contiguous leads. See next page or 12-lead procedure), then the paramedic will prepare the patient for transport to the closest appropriate hospital.

**STEMI – CARDIAC ALERT (Continued)**  
**ST ELEVATED MYOCARDIAL INFARCTION**

10. Transmit 12-lead ECG to receiving facility either by landline or cellular telephone while in residence or business or by cellular telephone while enroute to receiving facility. Notify the receiving hospital of the ECG transmission. If not able to transmit 12-lead ECG contact the doctor at the receiving facility as soon as possible, notify them of a possible STEMI patient, and relay all pertinent findings.
11. Transport of the patient should begin as soon as possible. Attempt to limit on scene times to less than 10 minutes.
12. When time allows, acquire a second 12-lead ECG during transport **AFTER** initiation of IV (initiate a second IV if time permits and readily available) and or administration of nitroglycerin, aspirin, morphine, or other medication. Pre and Post medication 12-leads can give the emergency physician/cardiologist additional useful information. **The antecubital fossa (AC) should only be used as the last resort for IV placement.**
13. If either defibrillation or synchronized cardioversion is necessary, quickly remove the precordial leads necessary to allow for the paddles or Quick-Combo pads and proceed with appropriate protocol.
14. Prehospital personnel should notify the receiving hospital by radio as soon as possible that they are enroute with a “cardiac alert patient”. They should communicate the suspected AMI patient’s age, gender, and clinical finding, including cardiac rhythm (12-lead ECG) and pertinent medical history including cardiac risk factors.

The following graph illustrates anatomically contiguous lead groups used to demonstrate infarct location recognition

<b>I Lateral</b>	<b>aVR</b>	<b>V1 Septal</b>	<b>V4 Anterior</b>
<b>II Inferior</b>	<b>aVL Lateral</b>	<b>V2 Septal</b>	<b>V5 Lateral</b>
<b>III Inferior</b>	<b>aVF Inferior</b>	<b>V3 Anterior</b>	<b>V6 Lateral</b>

**ANATOMICALLY CONTIGUOUS LEADS**

## SURGICAL CRICOTHYROTOMY

A cricothyrotomy is an invasive surgical procedure aimed at obtaining a patent airway in a specific patient population. It should only be performed in the situations outlined below. In these situations, speed is of the essence. However, do not allow the urgency of the situation to take precedence over reasonable judgment or action. The indications and technique must be clearly documented whenever it is utilized.

### ANATOMY

Knowledge of the anatomy of the neck and upper airway is essential. The anatomical landmarks include the hyoid bone, the thyroid cartilage, the cricoid cartilage and the tracheal rings. The hyoid bone is located midway between the mental protuberance of the mandible and the third cervical vertebra. The thyroid cartilage consists of two quadrilateral shape laminae of hyaline cartilage that fuse anteriorly to form the laryngeal prominence. Except in infants, the markedly obese patient or the patient with massive edema, the laryngeal prominence of the thyroid cartilage is usually easily recognized and palpable. The cricoid cartilage is the only circumferential ring in the larynx. The cricoid ring forms the inferior border of the cricothyroid membrane. The thyroid cartilage forms the superior border of the cricothyroid membrane. The cricothyroid membrane is a dense fibroelastic membrane located between the thyroid cartilage superiorly and the cricoid cartilage inferiorly. The cricothyroid muscles bind it laterally. The average size of the cricothyroid membrane in adults is approximately 22 to 30 mm wide and 9 - 10 mm high. The cricothyroid membrane can be identified by palpation of a notch inferiorly to the laryngeal prominence. The cricothyroid membrane is located 2 - 3 cm below the laryngeal prominence in adults.

### INDICATIONS

1. Acute upper airway obstruction which cannot be relieved by other BLS and ALS maneuvers
2. Patient in respiratory arrest with neck injury or head injury who cannot be ventilated adequately with bag/valve/mask and in whom orotracheal intubation cannot be accomplished. After intubation attempts have failed, or is clearly not possible, attempt to ventilate the patient with bag/valve/mask technique. If this also fails to result in adequate ventilation, then proceed with surgical cricothyrotomy.
3. Patient who is in respiratory arrest with facial injuries which preclude endotracheal intubation
4. Patient with neck injury in which tracheal intubation either cannot be accomplished or has failed to ventilate the patient due to damage to the airway
5. Other patients who are apneic and in whom all other BLS and ALS airway techniques have failed and when the time to the closest receiving hospital is prolonged

### PRECAUTIONS

1. If bleeding occurs, use suction and proceed. Insertion and inflation of endotracheal tube through cricothyrotomy will protect patient from the hazard of blood in the airway. Direct pressure can then be used on the area.
2. Advance an endotracheal tube only 1 to 1.5 inches to avoid a right main stem intubation

## SURGICAL CRICOTHYROTOMY

### PROCEDURE

1. Establish the presence of an indication for a surgical cricothyrotomy to maintain a patent airway.
2. Assemble necessary equipment
  - a. betadine prep swabs
  - b. scalpel (11 blade, preferred)
  - c. large curved hemostat or extra scalpel handle
  - d. endotracheal tube
  - e. tape
3. Expose the neck
4. Identify the thyroid cartilage, palpate the prominent cricothyroid notch. The space between the cricoid and thyroid cartilages is the cricothyroid space. This is the location of the cricothyroid membrane
5. Prep area
6. Stabilize the trachea by holding the thyroid cartilage between thumb and fingers
7. Make a horizontal stab incision, approximately 1/2 inch, through the skin and cricothyroid membrane. Incise as close to the cricoid cartilage as possible
8. Insert hemostat to dilate incision or turn scalpel handle until opening sufficient to allow passage of small endotracheal tube. (6.0 - 7.0 mm)
9. Pass endotracheal tube about 1 to 1.5 inches into trachea
10. Inflate cuff, if cuffed tube, and ventilate patient with high flow O<sub>2</sub>
11. Check for breath sounds bilaterally and secure with tape
12. Monitor patient condition and reassess frequently
13. Control bleeding and dress wound
14. Document the indications and procedure on the first care form

Note: Insure that necessary monitoring equipment is available and placed into service as time permits. This may include pulse oximetry and CARDIAC monitoring.

## SYNCHRONIZED CARDIOVERSION

Synchronized cardioversion involves the delivery of a synchronized electrical current to the myocardium of a patient who is exhibiting supraventricular or ventricular tachydysrhythmias that result in hemodynamic compromise (i.e. a systolic BP less than 90mmHg with shock like symptoms). Emergency synchronous cardioversion is appropriate in the field in only those settings where there is hemodynamic compromise or it is evident that the patient's condition may further deteriorate.

### INDICATIONS:

1. **Adult** – Supraventricular or ventricular tachydysrhythmias with hemodynamic compromise. Start with 50 to 200J depending on rhythm.
2. **Pediatric by physician order** – Rarely indicated. When the pediatric patient is severely compromised from a tachydysrhythmia (unconscious and exhibits signs and symptoms of shock). Start with 0.5J/Kg

### CONTRAINDICATIONS:

1. Tachydysrhythmias due to known digitalis toxicity.

### PROCEDURE:

1. Assess need for synchronized cardioversion.
2. Maintain a patent airway and administer oxygen
3. Establish an IV
4. Consult with Physician with pediatric patient and time permits
5. If patient is conscious explain the procedure
6. consider sedation with 2.5 to 10mg **versed** (start with smaller dose and increase as needed)
7. Make sure defib pads and electrodes are firmly attached and a clear ECG tracing is seen. (Pads may be in either anterior/posterior location or standard defib location)
8. Activate synchronizer and observe for synchronizing marker on QRS
9. Select desired energy level (Adult).
  - a. VT – 100J
  - b. PSVT – 100J
  - c. Atrial flutter – 100J
  - d. Atrial fibrillation – 100J (**May consider 50J**)
  - e. Pediatric – 0.5J/Kg
10. Charge paddles/pads
11. Say clear and ensure no one is touching patient
12. Depress shock button until shock is delivered
13. Reassess patient.
  - a. If patient converted, reassess VS, continue oxygen, and give **lidocaine** or **amiodarone** if initial rhythm was VT.
  - b. If no change repeat attempt with increased energy. (not to exceed 360J for adults or 2J/Kg for pediatrics)
  - c. If patient exhibits ventricular fibrillation, immediately turn of synchronizer and defibrillate with appropriate energy per protocol.
  - d. If patient becomes pulseless while the defibrillator is charged or charging, internally dump the charge by changing the energy selection, turn off the synchronizer and begin CPR.

## TASER® REMOVAL TREATMENT

This skill may be performed by EMT – B, ILS, and ALS providers.

Unlike other forms of penetrating foreign bodies, Taser® barbed darts because of their short length (1/4") may be safely removed by EMS personnel when requested by law enforcement. The darts should only be removed in the field if they do not involve the eye, face, neck, breast, or groin. Patients with retained darts in these areas will be transported to a hospital for removal by a physician.

Prior to removal the individual/patient must be in police custody and adequately restrained.

1. Universal precaution procedures must be taken.
2. Ensure that the wires are disconnected from the gun or that the wires have been cut.
3. Push in on the body part in which the barbed dart (straight #8 fish hook) is imbedded and simultaneously pull the dart straight out.
4. Apply alcohol, betadine, or antibiotic ointment (Neosporin) to the puncture area and cover with dressing or band-aid.
5. Treat the dart as a "contaminated sharp". The dart should be placed in a biohazard sharps container and turned over to law enforcement.
6. The patient must be thoroughly assessed to determine if other medical problems or injuries are present.
7. If the individual does not have any other presenting injuries/illness, they may be left in the custody/care of law enforcement.
8. If transported to the hospital, follow the Patient Care Procedures regarding restraints for aggressive or violent patients.
9. Detailed documentation is very important as it is likely to become evidence.

## THROMBOLYTIC SCREENING

Thrombolytic therapy has become the first line treatment for acute myocardial infarction or cerebral vascular accident in most suburban and rural hospital settings. The success of this treatment depends greatly on the early recognition of the acute myocardial infarction and rapid introduction of thrombolytics. Though the treatment has been proven to work well in most patients receiving thrombolytics, this therapy is not for everyone. To assist in identifying candidates for this therapy it is helpful for the screening to be performed on a prehospital basis on all patients suspected to be having a myocardial infarction. Some agencies MIRs have a check list on the back page or providers may use this page. Consider screening patients with suspected acute myocardial infarction in order to advise base station physician for patient transport destination considerations.

### THROMBOLYTIC CHECK SHEET

**PATIENT NAME:**

**DATE:**

**TIME:**

**CLINICAL INFORMATION:**

Active internal bleeding:	YES	NO
Major trauma, head trauma, spinal trauma, or intracranial or intraspinal surgery; within the previous two months: Describe: _____	YES	NO
Previous cerebrovascular accident: Describe: _____	YES	NO
Known bleeding disorder: Describe: _____	YES	NO
Aortic dissection suspected: Explain: _____	YES	NO
Suspected intracranial neoplasm, avm, or aneurysm: Explain: _____	YES	NO

**RELATIVE CONTRAINDICATIONS:**

	YES	NO
CPR > 10 mins. Explain:		
HTN unresolved with treatment, > 180/110		
Recent TIA or CVA < 6 months ago		
Diabetic (or other) hemorrhagic retinopathy		
Recent major surgery, non-compressible vessel puncture, or GI/GU bleeding within 10 days		
Severe liver or renal disease suspected		
Subacute bacterial endocarditis suspected		
Acute pericarditis suspected		
Left heart thrombus likely (mitral stenosis, chronic a-fib)		
Septic thrombophlebitis		
Pregnancy		
Takes coumadin		

Paramedic: \_\_\_\_\_

Date: \_\_\_\_\_

Revised July 2008

**MEDICATION LIST**

<b>NAME</b>	<b>MEDICATION PAGE #</b>	<b>PROTOCOL / PROCEDURE PAGE #</b>
Acetaminophen (Tylenol)	95	41
Acetylsalicylic Acid (Aspirin)	96	20, 22, 23, 24, 69, 70
Activated Charcoal	97	36, 69, 70
Adenocard (Adenosine)	98	25
Adenosine (Adenocard)	98	25
Adrenalin (Epinephrine)	110	11, 17, 18, 19, 39, 40, 69, 70
Afrin (Oxymetazoline)	99	
Albuterol (Ventolin, Proventil)	100	11, 14, 15, 40, 69, 70
Amidate (Etomidate)	111	56
Amiodarone (Cordarone)	101	19, 21, 24, 25, 26, 90
Anectine (Succinylcholine)	135	56
Asprin (Acetylsalicylic Acid)	96	20, 22, 23, 24, 69, 70
Atenolol (Tenormin)	102	20, 21, 25, 34
Atropine Sulphate	103	17, 18, 23, 37, 56, 70
Atrovent (Ipratropium Bromide)	117	15
Benadryl (Diphenhydramine)	108	11, 33
Calcium Chloride	104	16, 18, 36
Cardizem (Diltiazem)	107	21, 25
Clopidogrel (Plavix)	105	
Cordarone (Amiodarone)	101	19, 21, 24, 25, 26, 90
Demerol (Meperidine)	121	38
Dextrose (D50, D25)	106	16, 18, 28, 48, 70
Diltiazem (Cardizem)	107	21, 25
Diphenhydramine (Benadryl)	108	11, 33
Dopamine (Intropin)	109	11, 18, 22, 23, 36, 37
Epinephrine (Adrenalin) 1:1,000	110	11, 39, 40, 69, 70
Epinephrine (Adrenalin) 1:10,000	110	11, 17, 18, 19, 39, 70
Etomidate (Amidate)	111	56
Fentanyl Citrate (Sublimaze)	112	38, 56, 74
Furosemide (Lasix)	113	14
Glucagon	114	27, 28, 37, 48
Glucose Paste (Oral glucose)	115	28, 69, 70
Ibuprofen	116	41
Intropin (Dopamine)	109	11, 18, 22, 23, 36, 37
Ipratropium Bromide (Atrovent)	117	15
Ketorolac (Toradol)	118	
Lasix (Furosemide)	113	14
Lidocaine (Xylocaine)	120	19, 24, 26, 56, 70, 90
Lopressor (Metoprolol)	123	20, 21, 25, 34
Magnesium Sulphate	120	15, 19, 26, 43, 46
Meperidine (Demerol)	121	38
Methylprednisolone(Solu-Medrol)	122	11, 15
Metoprolol (Lopressor)	123	20, 21, 25, 34
Midazolam (Versed)	124	17, 18, 19, 21, 23, 25, 26, 35, 37, 43, 46, 56, 74, 76, 90
Morphine	125	14, 20, 38

Naloxone (Narcan)	126	36, 48, 70, 77
Narcan (Naloxone)	126	36, 48, 70, 77
Nitroglycerin	127	14, 20, 34, 69, 70
Nitrous Oxide	128	38
Norcuron (Vecuronium)	137	56
Ondansetron (Zofran)	138	10, 31, 33, 38
Oral Glucose (Glucose Paste)	115	28, 69, 70
Oxygen	129	
Oxymetazoline (Afrin)	99	
Oxytocin (Pitocin)	130	45
Phenergan (Promethazine)	131	
Pitocin (Oxytocin)	130	45
Pitressin (Vasopressin)	136	17, 18, 19
Plavix ( Clopidogrel)	105	
Promethazine (Phenergan)	131	
Proventil (Albuterol, Ventolin)	100	11, 14, 15, 40, 69, 70
Racemic Epinephrine (Vaponefrin)	132	40
Sodium Bicarbonate	133	16, 18, 19, 36
Solu-Medrol (Mthylprednisolone)	122	11, 15
Sublimaze (Fentanyl Citrate)	112	38, 56, 74
Succinylcholine (Anectine)	134	56
Tenormin (Atenolol)	102	20, 21, 25, 34
Thiamine (Vitamin B <sub>1</sub> )	135	28, 48
Toradol (Ketorolac)	118	
Tylenol (Acetaminophen)	95	41
Vaponefrin (Racemic Epinephrine)	132	40
Vasopressin (Pitressin)	136	17, 18, 19
Vecuronium (Norcuron)	137	56
Ventolin (Albuterol, Proventil)	100	11, 14, 15, 40, 69, 70
Versed (Midazolam)	124	17, 18, 19, 21, 23, 25, 26, 35, 37, 43, 46, 56, 74, 76, 90
Vitamin B1 (Thiamine)	135	28, 48
Xylocaine (Lidocaine)	119	19, 24, 26, 56, 70, 90
Zofran	138	10, 31, 33, 38

## ACETAMINOPHINE (Tylenol)

<b>Classification</b>	Para-aminophenol derivative; antipyretic; analgesic																											
<b>Mechanism of action</b>	The mechanism of action is unclear and may be related to inhibition of prostaglandin synthesis in the CNS. It is believed to exert its antipyretic effect by direct action on the hypothalamic heat-regulating center to block the effects of endogenous pyrogens. This results in increased heat dissipation through sweating and vasodilatation. Its analgesic effect may be related to an elevation of the pain threshold																											
<b>Indication</b>	Fever																											
<b>Contraindication</b>	Hypersensitivity, hepatic disease																											
<b>Side effects</b>	Allergic reaction, decreased renal and hepatic function																											
<b>Dose to give</b>	<p><b>ADULT:</b> 500 - 1,000 mg PO</p> <p><b>PEDS:</b> 10 - 15 mg/kg PO, PR (Refer to Pediatric Appendix)</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 10%;">AGE</th> <th style="width: 10%;">0 - 3 MONS</th> <th style="width: 10%;">4 - 11 MONS</th> <th style="width: 10%;">12 - 23 MONS</th> <th style="width: 10%;">2 - 3 YRS</th> <th style="width: 10%;">4 - 5 YRS</th> <th style="width: 10%;">6 - 8 YRS</th> <th style="width: 10%;">9 - 10 YRS</th> <th style="width: 10%;">11 - 12 YRS</th> </tr> </thead> <tbody> <tr> <td><b>WEIGHT (LBS)</b></td> <td>6 - 11</td> <td>12 - 17</td> <td>18 - 23</td> <td>24 - 35</td> <td>36 - 47</td> <td>48 - 59</td> <td>60 - 71</td> <td>72 - 95</td> </tr> <tr> <td><b>DOSAGE (MG)</b></td> <td>40</td> <td>80</td> <td>120</td> <td>160</td> <td>240</td> <td>320</td> <td>400</td> <td>480</td> </tr> </tbody> </table> <p>PT &gt; 12 YRS OF AGE AND/OR &gt; 96LBS = 640mg</p> <p><b>Note:</b> infant drops contain 80mg in .8cc (use syringe not the dropper), children's meltaways contain 80mg per tab, Jr. meltaways contain 160mg per tab</p>	AGE	0 - 3 MONS	4 - 11 MONS	12 - 23 MONS	2 - 3 YRS	4 - 5 YRS	6 - 8 YRS	9 - 10 YRS	11 - 12 YRS	<b>WEIGHT (LBS)</b>	6 - 11	12 - 17	18 - 23	24 - 35	36 - 47	48 - 59	60 - 71	72 - 95	<b>DOSAGE (MG)</b>	40	80	120	160	240	320	400	480
AGE	0 - 3 MONS	4 - 11 MONS	12 - 23 MONS	2 - 3 YRS	4 - 5 YRS	6 - 8 YRS	9 - 10 YRS	11 - 12 YRS																				
<b>WEIGHT (LBS)</b>	6 - 11	12 - 17	18 - 23	24 - 35	36 - 47	48 - 59	60 - 71	72 - 95																				
<b>DOSAGE (MG)</b>	40	80	120	160	240	320	400	480																				
<b>Special considerations</b>	<p>Use in caution in the setting of hepatic disease</p> <p><b>**Acetaminophen is a standing order**</b></p>																											

## ACETYLSALICYLIC ACID (Aspirin)

<b>Classification</b>	Antiplatelet agent
<b>Mechanism of action</b>	Blocks prostaglandin synthetase action, which prevents formation of the platelet-aggregating substance thromboxane A <sub>2</sub>
<b>Indication</b>	Acute coronary syndrome
<b>Contraindication</b>	Hypersensitivity to non-steroidal anti-inflammatory, GI bleeding, ulcers, other bleeding disorders
<b>Side effects</b>	Gastric irritation, GI bleeding
<b>Dose to give</b>	<b>ADULT:</b> 324 mg PO <b>PEDS:</b> Not recommended
<b>Special considerations</b>	Can be given to patients taking coumadin as a one time event in the case of suspect myocardial infarction. Use in caution in the setting of renal failure.  <b>**Acetylsalicylic Acid is a standing order</b>

## ACTIVATED CHARCOAL

<b>Classification</b>	Absorbent
<b>Mechanism of action</b>	Binds poisons, toxins and irritants in GI tract. Bound toxins are inactive until excreted
<b>Indication</b>	Emergency treatment of most orally ingested poisonings
<b>Contraindication</b>	Hypersensitivity, Altered mental status with depressed gag reflex; Cyanide, mineral acids, alkali's, iron and carbon based products
<b>Side effects</b>	Constipation, nausea and vomiting
<b>Dose to give</b>	<b>ADULT:</b> 50gm PO, NG <b>PEDS:</b> 0.5 - 1 gm/kg PO, NG (Refer to Pediatric Appendix)
<b>Special considerations</b>	Activated Charcoal is most effective if give within 30 minutes of ingestion  <b>**Activated Charcoal is a standing order**</b>

## ADENOSINE (Adenocard)

<b>Classification</b>	Endogenous nucleoside
<b>Mechanism of action</b>	Slows the conduction through AV node; interrupts reentry pathways through AV node
<b>Indication</b>	PSVT, PSVT and wide complex tachycardia of unknown etiology
<b>Contraindication</b>	Hypersensitivity, 2° or 3° AV block, VT, sick sinus syndrome
<b>Side effects</b>	Transient dysrhythmias, dyspnea, chest pressure, hypotension, bronchospasm, facial flushing, headache
<b>Dose to give</b>	<b>ADULT:</b> 6 mg IVP; May repeat 12 mg IVP twice at 2 minute intervals <b>PEDS:</b> 0.1 - 0.2 mg/kg IVP, may double the dose if no effect; Max 12 mg/kg IVP (Refer to Pediatric Appendix)
<b>Special considerations</b>	Adenosine is blocked by methylxanthines and potentiated by dipyridamole and carbamazepine. Use a large proximal IV.  <b>**Adenosine is a standing order**</b>

## AFRIN (Oxymetazoline)

<b>Classification</b>	Decongestant
<b>Mechanism of action</b>	Local vasoconstriction on nasal mucosal blood vessels
<b>Indication</b>	Nasal congestion, epistaxis, pre-nasal intubation
<b>Contraindication</b>	Hypersensitivity, Angle closure glaucoma
<b>Side effects</b>	Dizziness, blurred vision, headache, hypertension, sneezing, transient burning
<b>Dose to give</b>	<b>Adult:</b> 2 – 3 sprays in each nostril <b>Peds:</b> 2 – 3 sprays in each nostril ½ strength
<b>Special Considerations</b>	Do not use longer than 3 – 5 days or rebound congestion may occur  <b>** Afrin is a standing order**</b>

## ALBUTEROL (Ventolin, Proventil)

<b>Classification</b>	$\beta_2$ bronchodilator
<b>Mechanism of action</b>	Causes bronchodilation by $\beta_2$ -stimulation, resulting in relaxation of bronchial smooth muscles; inhibits mast cell degranulation; stimulates cilia to remove secretions
<b>Indication</b>	Bronchospasms and reactive airway disease, Pulmonary edema
<b>Contraindication</b>	Hypersensitivity, Cardiac ischemia, or Cardiac insufficiency
<b>Side effects</b>	Tachydysrhythmias
<b>Dose to give</b>	<b>ADULT:</b> 2.5 mg via UDN, may repeat PRN <b>PEDS:</b> 0.03 mg/kg via UDN, may repeat PRN (Refer to Pediatric Appendix)
<b>Special considerations</b>	Proper inhalation technique is extremely important for proper delivery of medication  <b>** Albuterol is a standing order**</b>

## AMIODARONE (Cordarone)

<b>Classification</b>	Alpha and Beta noncompetitive receptor blocking agent, as well as calcium, potassium, and sodium channel blocker
<b>Mechanism of action</b>	Prolongs action potential duration and effective refractory period; noncompetitive alpha and beta adrenergic inhibition
<b>Indication</b>	Pulseless VT/VF, Stable wide complex tachycardia, SVT, PSVT, Atrial fibrillation/flutter, Ventricular ectopy
<b>Contraindication</b>	Hypersensitivity, Cardiogenic shock, bradycardia, 2 <sup>nd</sup> or 3 <sup>rd</sup> degree heart block in absence of a functional pacemaker, Do not use with drugs that prolong QT interval
<b>Side effects</b>	Vasodilatation, Hypotension, Bradycardia, AV block, Hepatotoxicity, Increased QT interval, VF, VT
<b>Dose to give</b>	<p><b>Adult: VT/VF:</b> 300mg IVP may repeat 150mg IVP q 3 – 5min X 1. If defibrillation successful administer slow infusion 1mg/min infusion over next 6 hours</p> <p><b>All other arrhythmias refer to the following dosing regimen:</b> Loading: 150mg in 100ml D5W and infuse over 10 minutes Followed by slow infusion: 450mg in 250ml D5W and infuse 1mg/min (30 gtt/min using a 60 gtt set)</p> <p><b>Max Dose:</b> 2gm IV per 24 hours</p>
<b>Special considerations</b>	<p>Hypotension is the most common adverse effect seen and may be related to the rate of infusion. Hypotension should be treated by slowing the infusion or with standard therapy: Vasopressor drugs.</p> <p><b>**Amiodarone is a standing order for VT/VF (wide complex tachycardia) ; Physician order for SVT, PSVT, Afib/flutter (narrow complex tachycardia)</b></p>

## ATENOLOL (Tenormin)

<b>Classification</b>	Beta Blocker
<b>Mechanism of action</b>	Beta blocking agents attenuate the effects of circulating catecholamines by blocking their ability to bind to beta adrenergic receptors. This action reduces heart rate, blood pressure, myocardial contractility, and myocardial oxygen consumption. Predominately a Beta - 1 blocking activity.
<b>Indication</b>	Isolated hypertension in the absence of CVA signs and symptoms, Acute Myocardial Infarctions in hemodynamically stable patients, Supraventricular tachyarrhythmias.
<b>Contraindications</b>	HR <60, SBP <100mmHg, Known hypersensitivity to beta blockers, Moderate to severe cardiac failure or cardiogenic shock, 2 <sup>nd</sup> or 3 <sup>rd</sup> degree AV block, Wolff-Parkinson-White syndrome, and symptomatic reactive airway disease
<b>Side effects</b>	Bradycardia and hypotension
<b>Dose to give</b>	5mg IV over 5 minutes, wait 10 minutes and if first dose was well tolerated, give second dose of 5mg over 5 minutes
<b>Special considerations</b>	Beta blockers should be used cautiously in patients with coronary insufficiency because beta blockers may precipitate CHF, Use in caution in patients with pre-existing bradycardia or sick sinus syndrome, Concurrent IV administration with IV calcium channel blockers may cause severe hypotension.  <b>**Atenolol is a standing order**</b>

## ATROPINE SULFATE

<b>Classification</b>	Anticholinergic
<b>Mechanism of action</b>	Competitively blocks acetylcholine at muscarinic sites, thereby increasing SA and AV node conduction velocity. It also increases sinus node discharge rate and decreases the AV node's effective refractory period
<b>Indication</b>	Symptomatic bradycardia, asystole, cholinergic poisoning, pediatric RSI
<b>Contraindication</b>	Hypersensitivity, AFib/AFlutter, Tachycardias, Glaucoma
<b>Side effects</b>	Tachycardia, myocardial ischemia VT/VF, dilated pupils, HA, dry mouth
<b>Dose to give</b>	<p><b>ADULT:</b>  <b>Symptomatic bradycardia:</b>  0.5 - 1 mg IV q 3-5 min; up to 0.04 mg/kg  <b>Asystole:</b>  1.0 mg IVP q 3-5 min; Up to 0.04 mg/kg  <b>Cholinergic poisoning:</b>  2 - 5 mg IV q 15-30 min  <b>PEDS:</b>  <b>RSI:</b>  0.02 mg/kg IV (0.1 mg is the minimum dose)  (Refer to Pediatric Appendix)</p>
<b>Special considerations</b>	<p>Best endpoint for medicating organophosphate poisonings is the cessation of secretions.</p> <p><b>**Atropine is a standing order**</b></p>

## CALCIUM CHLORIDE

<b>Classification</b>	Electrolyte
<b>Mechanism of action</b>	Calcium ions are rapidly transferred to the sites of interaction between actin and myosin filaments of the sarcomere initiating myofibril shortening resulting in increased force of myocardial contraction. Calcium's positive inotropic and vasoconstriction effects produce a predictable rise in systemic arterial pressure
<b>Indication</b>	Calcium blocker toxicity and hyperkalemia,
<b>Contraindication</b>	Hypersensitivity, VF, digitalis toxicity, hypercalcemia
<b>Side effects</b>	Bradycardia, asystole, hypotension, VF, extravasation causes necrosis, coronary and cerebral artery spasm
<b>Dose to give</b>	<b>ADULT:</b> 5 - 10 mg/kg IV <b>PEDS:</b> 10 - 20 mg/kg IV (Refer to Pediatric Appendix)
<b>Special considerations</b>	Precipitates in the presence of sodium bicarbonate.  Bradycardia may be caused by rapid administration.  <b>**Calcium Chloride is a standing order and in some cases a physician order**</b>

## CLOPIDOGREL (Plavix)

<b>Classification</b>	Platelet aggregation inhibiting agent
<b>Mechanism of action</b>	Selectively inhibits the binding of adenosine diphosphate (ADP) to its platelet receptor and the subsequent ADP-mediated activation of the glycoprotein GPIIb/IIIa complex, thereby inhibiting platelet aggregation. Clopidogrel also inhibits platelet aggregation by agonists other than ADP by blocking the amplification of platelet activation by released ADP.
<b>Indication</b>	Acute coronary syndrome
<b>Contraindication</b>	Hypersensitivity to the drug substance or any component of the product. Active pathological bleeding such as peptic ulcer or intracranial hemorrhage.
<b>Side effects</b>	Abdominal pain, back pain, bronchitis, bruising and bleeding under the skin, chest pain, coughing, depression, diarrhea, difficulty breathing, dizziness, fatigue, fluid retention and swelling, flu symptoms, headache, high blood pressure, high cholesterol, indigestion, inflammation of the nasal passages, itching, joint pain, nausea, pain, purple discoloration of skin, rash, upper respiratory tract infection, urinary tract infection
<b>Dose to give</b>	<b>ADULT:</b> 300 mg PO <b>PEDS:</b> Not recommended
<b>Special considerations</b>	Can be given to patients taking coumadin as a one time event in the case of suspect myocardial infarction.  <b>**Clopidogrel is a physician order</b>

## DEXTROSE

<b>Classification</b>	Carbohydrate
<b>Mechanism of action</b>	Dextrose is a rapidly metabolized source of calories and fluid in patients with inadequate oral intake.
<b>Indication</b>	Hypoglycemia, hyperkalemia, ALOC of unknown etiology
<b>Contraindication</b>	Hypersensitivity, CVA, ICP, intracranial hemorrhage
<b>Side effects</b>	Tissue necrosis
<b>Dose to give</b>	<p><b>ADULT:</b> 25 Gm IV</p> <p><b>PEDS:</b>  <math>\leq 2</math> y/o. 0.25-0.5 Gm/kg D<sub>25</sub> IV  <math>\geq 2</math> y/o. 0.5 Gm/kg D<sub>50</sub> IV                      (Refer to Pediatric Appendix)</p>
<b>Special considerations</b>	<p>Draw blood sample and perform capillary blood sugar analysis before and after the administration of Dextrose</p> <p><b>**Dextrose is a standing order**</b></p>

## DILTIAZEM (Cardizem)

<b>Classification</b>	Calcium channel blocker
<b>Mechanism of action</b>	Inhibits calcium ion influx across cell membranes during cardiac depolarization; produces relaxation of coronary vascular smooth muscle; slows SA/AV node conduction times; decreases myocardial contractility and peripheral vascular resistance
<b>Indication</b>	PSVT, AFib/Aflutter
<b>Contraindication</b>	Sick sinus syndrome, high degree heart blocks, concomitant use of IV beta blockers, wide complex tachycardia of unknown etiology, CHF, hypotension
<b>Side effects</b>	Hypotension, brady-dysrhythmias, pulmonary edema, dyspnea, syncope, chest pain
<b>Dose to give</b>	<b>ADULT:</b> 20 mg IV over 2 minutes <b>PEDS:</b> Not recommended in the emergency setting
<b>Special considerations</b>	Consider administration of 200mg of Calcium as a pretreatment in elderly dehydrated patients or in the case of drug induced hypotension  <b>**Diltiazem is a standing order**</b>

## DIPHENHYDRAMINE (Benadryl)

<b>Classification</b>	Antihistamine
<b>Mechanism of action</b>	Antihistamines compete for histamine H <sub>1</sub> -receptor sites on the smooth muscle of the bronchi, GI tract, uterus and large vessels. By binding to cellular receptors, they prevent access of histamine and suppress histamine induced allergic symptoms, even though they do not prevent its release. Antihistamines are also effective in the treatment of extra pyramidal reactions
<b>Indication</b>	Allergic reactions, extra pyramidal symptoms (dystonic reaction), migraine headaches, may be used as an antiemetic if allergy to promethazine
<b>Contraindication</b>	Hypersensitivity, Active asthma attacks, pregnancy or lactating females
<b>Side effects</b>	Sedation, hypotension, Anticholinergic effects
<b>Dose to give</b>	<p><b>ADULT:</b> 25 - 50 mg IV/IM 25 mg PO</p> <p><b>PEDS:</b> 1 - 2 mg/kg IV/IM (Refer to Pediatric Appendix) 6.25 – 25 mg PO 3 – 6 years 6.25 mg ½ meltaway strip 6 – 12 years 12.5 mg 1 meltaway strip 12 years and up 25mg 2 meltaway strips</p>
<b>Special considerations</b>	<b>**Diphenhydramine is a standing order and in some cases a physician order**</b>

## DOPAMINE (Intropin)

<b>Classification</b>	Sympathomimetic
<b>Mechanism of action</b>	An immediate precursor of norepinephrine, dopamine stimulates dopaminergic and beta-adrenergic receptors of the sympathetic nervous system. Low to moderate dosages result in renal/mesenteric vasodilatation and increased chronotropic and inotropic properties of the heart. High doses result in vasoconstriction
<b>Indication</b>	Cardiogenic shock and vasogenic shock
<b>Contraindication</b>	Hypersensitivity, Relative ventricular ectopy, Ectopy secondary to shock may resolve as cardiac perfusion is improved
<b>Side effects</b>	Tachydysrhythmias, VT/VF, increased myocardial ischemia, AMI, hypertension
<b>Dose to give</b>	<b>ADULT:</b> 5 – 20 mcg/kg/min IVD, start at 5 mcg and titrate to effect <b>PEDS:</b> 5 – 20 mcg/kg/min IVD (Refer to Pediatric Appendix)
<b>Special considerations</b>	<p>Correct hypovolemia prior to using dopamine in hypotensive patients</p> <p>Pediatric patients respond better to an epinephrine pressor drip than dopamine drips in the emergency setting. Refer to the Epinephrine drug profile for drip set up and maintenance</p> <p>An approximate dose of 5.0 mcg/kg/min can be obtained by determining the patients weight in pounds, take ten percent of that weight and use that number as your initial drip rate (this assumes that you are using a 60 gtt/min administration set and have a solution concentration of 1600 mcg/ml)</p> <p><b>**Dopamine is a standing order**</b></p>

## EPINEPHRINE (Adrenalin)

<b>Classification</b>	Adrenergic
<b>Mechanism of action</b>	Acts directly by stimulating alpha and beta adrenergic receptors in the sympathetic nervous system. Epinephrine relaxes bronchial smooth muscles and constricts bronchial arterioles, resulting in relief of bronchospasm, reduces congestion and edema. Vasodilatation results from its effect on beta <sub>2</sub> receptors. As a vasopressor, epinephrine produces a positive chronotropic and inotropic effect by action on beta <sub>1</sub> receptors of the heart, increasing cardiac output, myocardial oxygen consumption and force of contraction; vasoconstriction results from beta adrenergic effect
<b>Indication</b>	Cardiac arrest, anaphylactic shock, bronchospastic conditions, croup, pediatric shock
<b>Contraindication</b>	Hypersensitivity
<b>Side effects</b>	Hypertension, VT/VF, Tachydysrhythmias, angina
<b>Dose to give</b>	<p><b>ADULT:</b></p> <p><b>Cardiac arrest</b> 1 mg 1:10,000 IV q 3-5 min 2.5 mg 1:10,000 ETT q 3-5 min</p> <p><b>Anaphylaxis</b> 0.3 - 0.5 mg 1:1,000 SQ q 20 min for a total of 3 doses</p> <p><b>Anaphylactic shock</b> 0.3 - 0.5 mg 1:1,000 SQ q 20 min for a total of 3 doses</p> <p><b>Bronchospasm</b> 0.3 - 0.5 mg 1:1,000 SQ q 20 min for a total of 3 doses</p> <p><b>PEDS:</b></p> <p><b>Cardiac arrest</b> 0.01 mg/kg 1:10,000 IV q 3-5 min 0.1mg/kg 1:1,000 ETT q 3-5 min</p> <p><b>Anaphylaxis</b> 0.01 mg/kg (max 0.3 mg) 1:1,000 SQ q 20 min for a total of 3 doses</p> <p><b>Bronchospasms</b> 0.01 mg/kg 1:1,000 SQ q 20 min for a total of 3 doses</p> <p><b>Croup</b> 5 mg 1:1000 in 5.0 cc NS nebulized UDN</p>
<b>Special considerations</b>	<p>Use cautiously when giving IV in anaphylactic shock as myocardial ischemia and or cardiac arrest may occur</p> <p>Epinephrine is the pressor of choice in the case of pediatric shock states. Dopamine may be ineffective</p> <p><b>**Epinephrine is a standing order**</b></p>

## ETOMIDATE (Amidate)

<b>Classification</b>	Hypnotic
<b>Mechanism of action</b>	An ultra short acting, nonbarbiturate hypnotic, with no analgesic effects. It produces rapid induction of anesthesia with minimal cardiovascular and respiratory effects. Etomidate is rapidly distributed following IV injection or infusion and is rapidly metabolized and excreted. Onset in 10 – 20 seconds, duration 3 – 5 minutes, and half life is 30 – 75 minutes.
<b>Indication</b>	Induce sedation to facilitate intubation
<b>Contraindication</b>	Hypersensitivity, Do not use in children under 10 years old
<b>Side effects</b>	Myoclonic skeletal muscle movement, apnea, hyperventilation, laryngospasm, dysrhythmias, nausea (common), vomiting, eye movement (common), hiccups, snoring, and seizures
<b>Dose to give</b>	<b>ADULT:</b> 0.1 – 0.3 mg/kg IV over 15 – 30 seconds. May repeat X 1 <b>PEDS:</b> children over 10 years old, same as adult dose
<b>Special considerations</b>	Concurrent use with Verapamil may cause prolonged respiratory depression & apnea. Flumazenil DOES NOT reverse the effects of Etomidate.  <b>**Etomidate is a standing order**</b>

## FENTANYL CITRATE (Sublimaze)

<b>Classification</b>	Opioid agonist
<b>Mechanism of action</b>	Narcotic agonist with activity at u – receptors (supraspinal analgesia, euphoria, respiratory and physical depression), k – receptors (sedation and miosis), and delta – receptors (dysphonia, hallucinations, respiratory and vasomotor stimulation)
<b>Indications</b>	Analgesia for pain relief
<b>Contraindications</b>	Hypersensitivity to opiates, Myesthesia Gravis, Head injury, exacerbated COPD, depressed respiratory drive, hypotension, Altered LOC, and pediatric patients under 2 years old.
<b>Side effects</b>	Respiratory depression, hypotension, Altered LOC, nausea and vomiting.
<b>Dose to give</b>	Start at 50mcg and titrate by 50mcg increments up to max dose of 5mcg/kg. To exceed maximum dose contact medical control
<b>Special considerations</b>	A fentanyl lollipop may be used to treat pain per package instructions for pediatric patient or if an IV is not obtainable on adult patients. <b>**Fentanyl is a standing &amp; in some cases a physician order**</b>

**FUROSEMIDE (Lasix)**

<b>Classification</b>	Loop diuretic
<b>Mechanism of action</b>	Loop diuretics inhibit sodium and chloride reabsorption in the proximal part of the ascending loop of Henle, promoting the excretion of sodium, water, chloride and potassium. Intravenous doses can also reduce cardiac preload by increasing venous capacitance
<b>Indication</b>	Pulmonary edema
<b>Contraindication</b>	Hypersensitivity, Dehydration/hypovolemia, hypokalemia, hepatic coma, transient hearing loss
<b>Side effects</b>	Hypotension, electrolyte imbalance
<b>Dose to give</b>	<b>ADULT:</b> 0.5 - 1 mg/kg IV (not to exceed 20.0 mg/min) <b>PEDS:</b> 1 mg/kg IV (Refer to Pediatric Appendix)
<b>Special considerations</b>	Double the patient's single oral daily dose up to 160 mg IV  <b>**Furosemide is a standing order**</b>

## GLUCAGON

<b>Classification</b>	Polypeptide hormone
<b>Mechanism of action</b>	Accelerates liver glycogenolysis and inhibits glycogen synthetase resulting in blood glucose elevation; stimulates hepatic gluconeogenesis and causes an inotropic myocardial effect because of the stimulation of adenylate cyclase to produce cyclic 3'5'-AMP
<b>Indication</b>	Hypoglycemia, $\beta$ blocker overdoses, Second line for Calcium channel blocker overdose, Esophageal spasm
<b>Contraindication</b>	Hypersensitivity
<b>Side effects</b>	Nausea and vomiting
<b>Dose to give</b>	<b>ADULT:</b> Hypoglycemia 1 mg IM $\beta$ & $Ca^{++}$ channel blocker overdose 3 - 10 mg IV <b>PEDS:</b> 0.03 mg/kg IM (max 1 mg) (Refer to Pediatric Appendix)
<b>Special considerations</b>	Should not be considered a first-line choice for hypoglycemia  Large amounts of glucagon followed by continuous infusions may be needed for overdose situations. Consider standard ACLS protocols for bradycardia  <b>**Glucagon is standing order**</b>

## ORAL GLUCOSE

<b>Classification</b>	Hyperglycemic
<b>Mechanism of action</b>	Provides a quickly absorbed form of glucose to increase blood glucose levels
<b>Indications</b>	Conscious patients with known or suspected hypoglycemia
<b>Contraindications</b>	Hypersensitivity, Decreased level of consciousness, Nausea and vomiting
<b>Side effects</b>	Nausea and vomiting
<b>Dose to give</b>	1 tube; May repeat as needed
<b>Special considerations</b>	<b>**Glucose paste is a standing order**</b>

## IBUPROFEN

<b>Classification</b>	Analgesic, Antipyretic, Non-Steroidal Anti-inflammatory																											
<b>Mechanism of action</b>	As with other non-steroidal anti-inflammatory agents the mechanism of action is not completely understood, but may be related to prostaglandin synthetase inhibition.																											
<b>Indication</b>	Fever																											
<b>Contraindication</b>	Children under 6 months, patients with known hypersensitivity to other anti-inflammatory medications, or third trimester of pregnancy.																											
<b>Side effects</b>	GI upset, possible dehydration																											
<b>Dose to give</b>	<p>5 – 10 mg/kg PO</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>AGE</th> <th>6 – 11 MONS</th> <th>12 – 23 MONS</th> <th>2 – 3 YRS</th> <th>4 – 5 YRS</th> <th>6 – 8 YRS</th> <th>9 – 10 YRS</th> <th>11 – 12 YRS</th> <th>&gt; 12 YRS</th> </tr> </thead> <tbody> <tr> <th>WEIGHT (LBS)</th> <td>12 - 17</td> <td>18 - 23</td> <td>24 - 35</td> <td>36 - 47</td> <td>48 – 59</td> <td>60 – 71</td> <td>72 - 95</td> <td>&gt;96</td> </tr> <tr> <th>DOSAGE (MG)</th> <td>50</td> <td>75</td> <td>100</td> <td>150</td> <td>200</td> <td>250</td> <td>300</td> <td>400- 600</td> </tr> </tbody> </table> <p><b>Note:</b> infant drops contain 50mg in 1.25cc (use syringe not the dropper), children’s liquid contain 100mg per 5ml, Jr. chewable contain 100mg per tab</p>	AGE	6 – 11 MONS	12 – 23 MONS	2 – 3 YRS	4 – 5 YRS	6 – 8 YRS	9 – 10 YRS	11 – 12 YRS	> 12 YRS	WEIGHT (LBS)	12 - 17	18 - 23	24 - 35	36 - 47	48 – 59	60 – 71	72 - 95	>96	DOSAGE (MG)	50	75	100	150	200	250	300	400- 600
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DOSAGE (MG)	50	75	100	150	200	250	300	400- 600																				
<b>Special considerations</b>	<p>Do not give to patients with decreased LOC.            In pediatric fever, Acetaminophen is 1<sup>st</sup> line, Ibuprofen is 2<sup>nd</sup> line.            Find out what parents have given, how much, and time of last dose.            May alternate between Acetaminophen and Ibuprofen.</p> <p><b>**Ibuprofen is a standing order**</b></p>																											

## IPRATROPIUM BROMIDE (Atrovent)

<b>Classification</b>	Anticholinergic bronchodilator
<b>Mechanism of action</b>	Inhibits vagally mediated reflexes by antagonizing the action of acetylcholine. Anticholinergic prevent the increase in intracellular concentration of cyclic guanosine monophosphate (CGMP) that results from the interaction of acetylcholine with the muscarinic receptor on bronchial smooth muscle
<b>Indication</b>	Bronchospasms secondary to COPD and reactive airway disease
<b>Contraindication</b>	Hypersensitivity
<b>Side effects</b>	Dry mouth, HA, cough
<b>Dose to give</b>	<b>ADULT:</b> 0.5 mg UDN <b>PEDS:</b> 0.25 mg UDN (Refer to Pediatric Appendix)
<b>Special considerations</b>	Use with caution in the setting of glaucoma  <b>**Atrovent is a standing order**</b>

## KETOROLAC (Toradol)

<b>Classification</b>	Nonsteroidal anti-inflammatory agent
<b>Mechanism of action</b>	Acts by inhibiting the synthesis of prostaglandins
<b>Indication</b>	Flank pain associated with renal colic, Muscle skeletal pain
<b>Contraindication</b>	Hypersensitivity, ASA allergies, bleeding disorders, renal failure, active peptic ulcer
<b>Side effects</b>	Increased bleeding time, anaphylaxis, headache
<b>Dose to give</b>	<b>ADULT:</b> 30 mg IV cut dose in half if over 65 years old or under 100lbs. <b>PEDS:</b> Not recommended for peds under 50lbs. 15 mg IV for peds greater than 50lbs.
<b>Special considerations</b>	Ketorolac (30 mg) usually provides analgesia comparable to 12mg of morphine or 100 mg of meperidine NOTE: onset of effects is 10 minutes or greater  <b>**Ketorolac is a standing order**</b>

## LIDOCAINE (Xylocaine)

<b>Classification</b>	Amide derivative
<b>Mechanism of action</b>	As an antiarrhythmic, it suppresses automaticity and shortens the effective refractory period and action potential duration of His-Purkinje fibers and suppresses spontaneous ventricular depolarization during diastole by altering sodium permeability through cellular fast channels membranes. The drug act preferentially on diseased or ischemic myocardial tissue, exerting its effects on the conduction system, by inhibits reentry mechanisms and halts ventricular arrhythmias
<b>Indication</b>	VT/VF, VT with a pulse, symptomatic PVCs, RSI with suspected closed head injuries and broncho-spasms
<b>Contraindication</b>	Hypersensitivity, High degree heart blocks, Stokes-Adams syndrome, hypotension
<b>Side effects</b>	Seizures, slurred speech, altered mental status
<b>Dose to give</b>	<p><b>DOSE:</b></p> <p><b>VT/VF</b> 1.5 mg/kg IV q 5-10 min, Max 3 mg/kg After conversion to NSR, start drip at 2 - 4 mg/min <b>VT with pulse</b> 1 - 1.5 mg/kg IV; then 0.5 - 0.75 mg/kg q 5-10 min up to 3 mg/kg. Start drip ASAP</p> <p><b>PVC</b> 0.5 - 1.5 mg/kg IV then 0.5 - 0.75 mg/kg q 5-10 min up to 3 mg/kg. Start drip ASAP</p> <p><b>RSI:</b> 1 - 1.5 mg/kg IV</p> <p><b>DRIP:</b> 2 - 4 mg/min</p> <p style="padding-left: 40px;">2 mg/min p 1 mg/kg bolus 3 mg/min p 1 - 2 mg/kg bolus 4 mg/min p 2 - 3 mg/kg bolus</p>
<b>Special considerations</b>	<p>Reduce maintenance infusion by 50% if pt is <math>\geq</math> 70 y/o., has liver disease, or is in CHF or shock</p> <p><b>**Lidocaine is a standing order**</b></p>

## MAGNESIUM SULFATE

<b>Classification</b>	Electrolyte
<b>Mechanism of action</b>	Reduces striated muscle contractions and blocks peripheral neuromuscular transmission by reducing acetylcholine release at the myoneural junction; slows the rate of SA node impulse formation, prolongs conduction time
<b>Indication</b>	Torsades de Pointes, VT/VF, Seizures 2 <sup>o</sup> eclampsia, refractory bronchospasm
<b>Contraindication</b>	Hypersensitivity, Renal disease, heart block, hypermagnesemia
<b>Side effects</b>	Hypotension, respiratory depression, cardiac arrest, CNS depression, flushing, sweating
<b>Dose to give</b>	<b>ADULT:</b> <b>Torsades de Pointes</b> 1 - 2 Gm/100ml IV over 2 min <b>VT/VF</b> 1 - 2 Gm/20ml IV <b>Seizures 2<sup>o</sup> eclampsia</b> 4 Gm/100ml IV over 2 min <b>Maintenance drip</b> 1 – 2 gm/hr <b>Asthma</b> 1 - 2 Gm IV over 5-10 min <b>PEDS:</b> Not recommended in the emergency setting
<b>Special considerations</b>	Caution should be used in patients receiving digitalis  Calcium chloride should be readily available as an antidote if respiratory depression ensues  <b>**Magnesium sulfate is a standing order and in some cases a physician order**</b>

## MEPERIDINE (Demerol)

<b>Classification</b>	Opioid
<b>Mechanism of action</b>	Narcotic agonist with activity at Mu receptors (supraspinal analgesia, euphoria, respiratory and physical depression) Kappa receptors (spinal analgesia, sedation and miosis) and Delta receptors (hallucinations, and respiratory and vasomotor stimulation); compared to morphine, equal analgesia, respiratory depression and physical dependence
<b>Indication</b>	Analgesia
<b>Contraindication</b>	Hypersensitivity, Patients receiving MAO inhibitors
<b>Side effects</b>	Sedation, apnea, hypotension, tachycardia, nausea & vomiting
<b>Dose to give</b>	<b>ADULT:</b> 25-100 mg IV/IM <b>PEDS:</b> 1 mg/kg IV/IM (Refer to Pediatric Appendix)
<b>Special considerations</b>	<b>**Meperidine is a standing order and in some cases a physician order**</b>

**METHYLPREDNISOLONE (Solu-Medrol)**

<b>Classification</b>	Synthetic glucocorticoid
<b>Mechanism of action</b>	Decreases inflammation by depressing migration of polymorphonuclear leukocytes and activity of endogenous mediators of inflammation
<b>Indication</b>	COPD, reactive airway disease, allergic reaction
<b>Contraindication</b>	Hypersensitivity, Premature infants, systemic fungal infections
<b>Side effects</b>	CHF, HTN, seizures, headache, nausea & vomiting
<b>Dose to give</b>	<b>ADULT:</b> <b>COPD &amp; Asthma, Allergic Reaction 62.5 mg IV</b> <b>PEDS:</b> <b>COPD &amp; Asthma, Allergic Reaction 1 - 2 mg/kg IV</b>
<b>Special considerations</b>	Onset of action maybe 2-6 hours and should be administered early to be most beneficial  <b>**Methylprednisolone is a standing order**</b>

**METOPROLOL (Lopressor)**

<b>Classification</b>	Beta-adrenergic blocking agent
<b>Mechanism of action</b>	As a competitive $\beta$ -adrenergic antagonist, negative inotropic and chronotropic responses are demonstrated by slowing of AV nodal conduction and decreased heart rate. Decreased myocardial oxygen consumption, antiarrhythmic effect, suppression of renin release and inhibition of central nervous system outflow is observed
<b>Indication</b>	Myocardial salvage in acute myocardial infarction, Tachydysrhythmias, Hypertension without evidence of CVA
<b>Contraindication</b>	Hypersensitivity, CHF, pulmonary edema, bronchospasm, heart block, bradycardia, hypotension, history of asthma
<b>Side effects</b>	Hypotension, CHF, bronchospasm, bradycardia, dizziness, chest pain, headache
<b>Dose to give</b>	<b>ADULT:</b> 5 mg IV over 5 min, repeat q 5 min to max 15 mg <b>PEDS:</b> Not recommended in the emergency setting of 15 mg
<b>Special considerations</b>	Use of calcium channel blockers may potentiate side effects  Vital signs including multi-lead ECG monitoring must be continuously evaluated  <b>**Metoprolol is a standing order**</b>

## MIDAZOLAM (Versed)

<b>Classification</b>	Benzodiazepine
<b>Mechanism of action</b>	CNS depressant via facilitation of inhibitory GABA at benzodiazepine receptor sites (BZ <sub>1</sub> -associated with sleep; BZ <sub>2</sub> associated with memory, motor, sensory and cognitive function); effects include muscle relaxation, anticonvulsant, ataxia, emotional behavior and anxiolytic effect
<b>Indication</b>	Conscious sedation, RSI, seizure, chemical restraint
<b>Contraindication</b>	Hypersensitivity, Acute narrow glaucoma, shock
<b>Side effects</b>	Respiratory depression, hypotension, bradycardia
<b>Dose to give</b>	<p><b>ADULT:</b>  <b>Conscious sedation</b> 2.5-10 mg IV over 2 min  <b>RSI</b> 5 - 10 mg IV over 2 min  <b>Chemical restraint</b> 2.5 - 10 mg IV/IM  <b>Seizure</b> 2.5 - 10 mg IM; may also be given intranasal</p> <p><b>PEDS:</b>  <b>Conscious sedation</b> 0.1 mg/kg IV over 2 min  <b>RSI</b> 0.1 mg/kg IV over 2 min  <b>Seizure</b> 0.25 mg/kg IM; may also be given intranasal  (Refer to Pediatric Appendix)</p>
<b>Special considerations</b>	<b>**Midazolam is a standing &amp; in some cases physician order**</b>

**MORPHINE SULFATE**

<b>Classification</b>	Opioid agonist
<b>Mechanism of action</b>	Narcotic agonist with activity at u-receptors (supraspinal analgesia, euphoria, respiratory and physical depression), k-receptors (sedation and miosis), and delta-receptors (dysphonia, hallucinations, respiratory and vasomotor stimulation)
<b>Indication</b>	Analgesia, pulmonary edema, cardiac chest pain
<b>Contraindication</b>	Hypersensitivity, Head injury, exacerbated COPD, depressed respiratory drive (unless being used in RSI), hypotension, Altered LOC
<b>Side effects</b>	Respiratory depression, hypotension, ALOC, nausea & vomiting
<b>Dose to give</b>	<b>ADULT:</b> <b>Analgesia</b> 2 - 4 mg IV q 2-5 min up to 20.0 mg <b>Pulmonary edema</b> 2 - 4 mg IV <b>Cardiac</b> 4 mg titrate by 2 mg up to 10 mg <b>PEDS:</b> <b>Analgesia</b> 0.1 mg/kg IV (Refer to Pediatric Appendix)
<b>Special considerations</b>	<b>**Morphine Sulfate is a standing &amp; in some cases physician order**</b>

## NALOXONE (Narcan)

<b>Classification</b>	Narcotic antagonist
<b>Mechanism of action</b>	Prevents or reverses the effects of opioids, including respiratory depression
<b>Indication</b>	Respiratory depression 2° to opiate overdose, ALOC of unknown etiology
<b>Contraindication</b>	Hypersensitivity
<b>Side effects</b>	Withdrawal syndrome in addicted patients, agitation, vomiting
<b>Dose to give</b>	<b>ADULT:</b> 0.5-2 mg IV/IM/ET; may also be given intranasal <b>PEDS:</b> 0.01 mg/kg IV/IM/ET; may also be given intranasal (Refer to Pediatric Appendix)
<b>Special considerations</b>	Naloxone is not recommended in newborn respiratory depression  Should be administered with caution to patients dependent on narcotics as it may cause withdrawal effects  Short acting, consider augmenting every 5-10 minutes  <b>**Naloxone is a standing order**</b>

## NITROGLYCERINE

<b>Classification</b>	Nitrate
<b>Mechanism of action</b>	Relaxes vascular smooth muscle of both the venous and arterial beds, resulting in a net decrease in myocardial oxygen consumption leading to redistribution of blood flow to ischemic tissue. Peripheral capacitance vessel dilation decreases venous return to heart (preload) while arterial vasodilation decreases arterial impedance (afterload), decreasing left ventricular work and aiding the failing heart
<b>Indication</b>	Acute angina, AMI, CHF with pulmonary edema
<b>Contraindication</b>	Hypersensitivity, Hypotension, hypovolemia, intracranial bleeding, aortic stenosis, recent use of Erectile dysfunction medications
<b>Side effects</b>	Hypotension, HA, syncope, tachycardia, flushing
<b>Dose to give</b>	<b>ADULT:</b> 0.4 mg SL q 3-5 min <b>PEDS:</b> Not recommended in the emergency setting
<b>Special considerations</b>	Minimum target systolic blood pressure is 90 mmHg  <b>**Nitroglycerine is a standing order**</b>

## NITROUS OXIDE

<b>Classification</b>	Analgesic gas
<b>Mechanism of action</b>	Exact mechanism is unknown, affects phospholipids in CNS, CNS depressant
<b>Indication</b>	Moderate to severe pain, childbirth, renal colic
<b>Contraindication</b>	Hypersensitivity, Patient who is unable to self administer, Nitrogen narcosis, Pnuemothorax, Perforated viscus, Otitus, Air embolism, or Decompression sickness, as the pockets of air expand and may exacerbate these problems.
<b>Side effects</b>	Administration of greater than 50% may cause hypoxia, dyspnea, dizziness, and drowsiness
<b>Dose to give</b>	Less than 30 minute episodes with at least 50% oxygen mixture
<b>Special considerations</b>	Ineffective for 20% of the population, minimal cardiovascular effects. No effect on pupils, respiratory drive, or gag reflex  <b>**Nitrous Oxide is a standing order**</b>

## OXYGEN

<b>Classification</b>	Oxygen is an odorless, tasteless, colorless gas necessary for life
<b>Mechanism of action</b>	Supplemental oxygen administration increases the oxygen available for transport to the tissues. Oxygen is essential for the breakdown of glucose into energy.
<b>Indication</b>	Possible hypoxemia or respiratory distress from any cause, acute chest pain suggestive of cardiac ischemia, shock, decreased oxygenation of tissue from any cause, major trauma, all cases of cardiopulmonary arrest, carbon monoxide poisoning
<b>Contraindication</b>	No absolute contraindications. Use in caution with COPD patients
<b>Side effects</b>	Can knock out the respiratory drive of patient with COPD, but do not withhold oxygen because of this possibility
<b>Dose to give</b>	24 – 100% depending on patient condition 2 – 4 liters per minute (LOW FLOW) 4 – 6 liters per minute (MODERATE FLOW) 6 – 15 liters per minute (HIGH FLOW)
<b>Special considerations</b>	Adequate ventilation is required for adequate oxygenation, oxygen without ventilation is a waste of oxygen (and patients)  <b>**Oxygen is a standing order**</b>

## OXYTOCIN (Pitocin)

<b>Classification</b>	Pituitary hormone, Uterine stimulant, Polypeptide
<b>Mechanism of action</b>	Increases amplitude and frequency of uterine contractions, Dilation of vascular smooth muscle (increases renal, coronary, and cerebral blood flow)
<b>Indication</b>	Postpartum hemorrhage
<b>Contraindication</b>	Hypersensitivity, Possibility of additional fetus
<b>Side effects</b>	Alterations in blood pressure, Severe cramping, tachycardia, arrhythmias, anaphylaxis, clotting disorders, electrolyte disturbances, and if used prior to delivery it can cause uterine rupture, uterine spasm, uterine lacerations, and fetal damage
<b>Dose to give</b>	Mix 20 units of Oxytocin in 1000ml of Normal Saline; run at 30 – 40gtt/min, and titrate to response or may administer 10 units IM if unable to establish an IV
<b>Special considerations</b>	Not to be used until the last fetus is delivered, monitor carefully so as to not produce uterine spasm, tetanic contractions or rupture the uterus.  <b>**Oxytocin is a standing order**</b>

## PHENERGAN (Promethazine)

<b>Classification</b>	Antiemetic
<b>Mechanism of action</b>	Acts as antihistamine by blocking H1 receptors; produces sedation, anti-vertigo
<b>Indication</b>	Treatment of motion sickness, nausea and vomiting, pain management adjunct
<b>Contraindication</b>	Hypersensitivity, Narrow angle glaucoma
<b>Side effects</b>	Hypotension, anxiety, dystonic reactions
<b>Dose to give</b>	<b>Adult:</b> 6.25 – 12.5 IV, 12.5 - 25 mg IM <b>Peds:</b> Not Recommended
<b>Special considerations</b>	Passes through breast milk, avoid prolonged exposure to sun Diphenhydramine will reverse dystonic effects  <b>**Phenergan is a standing &amp; in some cases a physician order</b>

## RACEMIC EPINEPHRINE

<b>Classification</b>	Sympathomimetic
<b>Mechanism of action</b>	Alpha and Beta agonist, arteriole constriction, positive inotropic, positive chronotropic, bronchial smooth muscle relaxer (bronchodilator). Also blocks histamine release, inhibits insulin release, and relaxes GI smooth muscle.
<b>Indication</b>	Croup, Post extubation edema, Laryngeal angioneurotic edema, Bronchospasm (as a second-line drug)
<b>Contraindication</b>	Hypersensitivity
<b>Side effects</b>	Palpitations, Anxiety, Headache, Hypertension, Nausea, Vomiting, Arrhythmias, and Rebound edema 15 – 30 minutes post administration.
<b>Dose to give</b>	<b>ADULTS:</b> 0.5 – 0.8ml in 3ml normal saline UDN  <b>PEDS:</b> 0.3 – 0.5ml in 3ml normal saline UDN
<b>Special considerations</b>	Can lead to hyperglycemia, Should not be mixed with other drugs  <b>**Racemic Epinephrine is a standing order**</b>

## SODIUM BICARBONATE

<b>Classification</b>	Alkalizing agent
<b>Mechanism of action</b>	Sodium bicarbonate is an alkalizing agent that dissociates to provide bicarbonate ion to buffer hydrogen ions in order to raise the pH level to reverse acidosis. It has also been found to be beneficial in the event of drug overdose in order to force urine alkalization/diuresis, membrane stabilization of cardiac cells as well and electrolyte balance restoration.
<b>Indication</b>	Hypersensitivity, Metabolic acidosis 2° cardiac arrest, cyclic antidepressant OD, hyperkalemia
<b>Contraindication</b>	None in the emergency setting
<b>Side effects</b>	Metabolic alkalosis, electrolyte imbalance, fluid overload
<b>Dose to give</b>	<b>ADULT:</b> 1 mEq/kg IV <b>PEDS:</b> 1 mEq/kg IV (Refer to Pediatric Appendix)
<b>Special considerations</b>	<b>**Sodium Bicarbonate is a standing order**</b>

## SUCCINYLCHOLINE (Anectine)

<b>Classification</b>	Depolarizing neuromuscular blocking agent
<b>Mechanism of action</b>	Similar to the acetylcholine molecular structure, succinylcholine has an affinity for Ach receptor sites and acts by prolonging depolarization at the motor end plate
<b>Indication</b>	Paralysis to facilitate intubation
<b>Contraindication</b>	Hypersensitivity, Acute narrow angle glaucoma, penetrating eye injury, burns/crush injuries greater than 12 hours old
<b>Side effects</b>	Apnea, malignant hyperthermia, dysrhythmias, bradycardia, hypertension, hypotension, hyperkalemia, increased intraocular pressure, cardiac arrest
<b>Dose to give</b>	<b>ADULT:</b> 1 - 1.5 mg/kg IV <b>PEDS:</b> 1 - 2 mg/kg IV (Refer to Pediatric Appendix)
<b>Special considerations</b>	Patients must be sedated  Have alternative airway management procedures readily available prior to administration of this drug  Consider applying cricoid pressure prior to administration and continue cricoid pressure until tube placement is verified  <b>**Succinylcholine is a standing order**</b>

## THIAMINE (Vitamin B<sub>1</sub>)

<b>Classification</b>	B complex vitamin
<b>Mechanism of action</b>	Thiamine is required for carbohydrate metabolism. It combines with adenosine triphosphate to form thiamine pyrophosphate, a coenzyme in carbohydrate metabolism and transketolation reactions.
<b>Indication</b>	Co-administration with D <sub>50</sub> W in patients with suspected malnutrition or thiamine deficiency
<b>Contraindication</b>	Hypersensitivity
<b>Side effects</b>	Nausea & vomiting, hypotension, restlessness
<b>Dose to give</b>	<b>ADULT:</b> 100 mg IV/IM <b>PEDS:</b> Not indicated in the emergency setting (Refer to Pediatric Appendix)
<b>Special considerations</b>	Rare anaphylactic reactions have been reported  <b>**Thiamine is a standing order**</b>

## VASOPRESSIN (Pitressin)

<b>Classification</b>	Posterior pituitary antidiuretic hormone
<b>Mechanism of action</b>	Acting primarily at the renal tubular level, vasopressin increases cyclic 3'5'-adenosine monophosphate, which increases water permeability at the renal tubule and collecting duct, resulting in increased urine osmolality and decreased urinary flow rate as well as vascular smooth muscle contraction
<b>Indication</b>	VT/VF/Asystole/PEA arrested states
<b>Contraindication</b>	Hypersensitivity, Chronic nephritis
<b>Side effects</b>	Moderate to severe skeletal weakness, which may require artificial respiration. Malignant hyperthermia
<b>Dose to give</b>	<b>ADULT:</b> 40 units IV <b>PEDS:</b> Not recommended
<b>Special considerations</b>	Vasopressin during CPR increases coronary perfusion pressure, vital organ blood flow, VF median frequency and cerebral oxygen delivery  <b>**Vasopressin is a standing order**</b>

## VECURONIUM BROMIDE (Norcuron)

<b>Classification</b>	Nondepolarizing neuromuscular blocking agent
<b>Mechanism of action</b>	Prevents acetylcholine from binding to receptors on the motor end plate, thus blocking depolarization. Vecuronium exhibits minimal cardiovascular effect and does not appear to effect heart rate, rhythm, systolic or diastolic blood pressure, cardiac output, systemic vascular resistance or mean arterial pressure. It has little to no histamine releasing properties
<b>Indication</b>	Paralysis to facilitate intubation
<b>Contraindication</b>	Hypersensitivity, Newborn infants, myasthenia gravis
<b>Side effects</b>	Apnea, profound weakness
<b>Dose to give</b>	<b>ADULT:</b> 0.1 mg/kg IV <b>PEDS:</b> 0.1 mg/kg IV (Refer to Pediatric Appendix)
<b>Special considerations</b>	<b>Patients must be sedated</b>  Have alternative airway management procedures readily available prior to administration of this drug  Apply cricoid pressure prior to administration and continue cricoid pressure until tube placement is verified  <b>**Vecuronium is a standing order**</b>

## Zofran (Ondansetron)

<b>Classification</b>	Antiemetic
<b>Mechanism of action</b>	Zofran is a 5HT <sub>3</sub> type serotonin antagonist that has both central and peripheral effects
<b>Indication</b>	Prevention and control of nausea and vomiting in adults
<b>Contraindication</b>	Allergy to Zofran or other serotonin antagonists – see special considerations below
<b>Side effects</b>	None noted at this time
<b>Dose to give</b>	<b>ADULT:</b> 4 mg IV/IM/IO. If given IV or IO give slowly over 2 min. <b>PEDS:</b> Not indicated at this time
<b>Special considerations</b>	<p>Hypersensitivity reactions have been reported in patients who have exhibited hypersensitivity to other 5HT<sub>3</sub> receptor antagonists (Dolasetron (Ansemet) and Granisetron (Kytril))</p> <p>Unlike other antiemetics, Zofran does not typically cause sedation.</p> <p>Peak plasma concentrations of the drug occur 10 minutes after IV administration and 40 minutes after IM administration. Both routes have the same mean elimination half-life of 4 hours.</p> <p><b>**Zofran is a standing order**</b></p>

1 kg = 2.2 lbs		
Age estimate – premature		
HR: 120 – 180	RR: 30 – 60	BP: 50 – 60/40 mmHg
ET: 2.5 – 3.0	Suction catheter: 5 – 6 F	NG tube: 5 F
Defibrillation: 1 J, repeat @ 2 J	Cardioversion: 0.1 J, repeat 1 J	
Fluid challenge: 10 ml (10 ml/kg, may repeat x2)		

	<u>Dose</u>	<u>Dose to Give</u>	<u>cc's</u>
Activated Charcoal	1.0 Gm/kg	1.0 Gm	4.8 cc
Adenosine	0.1-0.2 mg/kg	0.1-0.2 mg	0.03-0.07cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	0.01-0.02 mg/kg	0.1 mg (min dose)	1.0 cc
Atrovent	0.25 mg	0.25 mg	1.25 cc
Benadryl	1.0-2.0 mg/kg	1.0-2.0 mg	0.02-0.04 cc
Calcium	10.0-20.0 mg/kg	10.0-20.0 mg	0.1-0.2 cc
Demerol	1.0 mg/kg	1.0 mg	0.01 cc
Dextrose (D <sub>25</sub> W)	0.25-0.5 Gm/kg	0.25-0.5 Gm	1.0-2.0 cc
Dopamine (Not recommended without an infusion pump)			
Epinephrine 1:10,000	0.01-0.03 mg/kg	0.01-0.03 mg	0.1-0.3 cc
Epinephrine 1:1000 (Not recommended for neonates)	N/A	N/A	N/A
Epinephrine 1:1000 (SQ)	N/A	N/A	N/A
Fentanyl	N/A	N/A	N/A
Glucagon	N/A	N/A	N/A
Ibuprofen	N/A	N/A	N/A
Lasix	0.25-1.0 mg/kg	0.25-1.0 mg	0.025-0.1 cc
Lidocaine	1.0-1.5 mg/kg	1.5 mg	0.5-0.08 cc
Morphine	0.05-0.1 mg/kg	0.05-0.1 mg	0.01cc
Narcan	0.1 mg/kg	0.1 mg	0.25 cc
Phenergan	N/A	N/A	N/A
Sodium Bicarbonate (4.2%)	1.0-2.0 mEq/kg	1.0-2.0 mEq	2.0-4.0 cc
Solumedrol	1.0-2.0 mg/kg	1.0-2.0 mg	0.02-0.03 cc
Succinylcholine	1.5 mg/kg	1.5 mg	0.08 cc
Tylenol	10.0-15.0 mg/kg	10.0-15.0 mg	0.1-0.15 cc
Vecuronium	0.1 mg/kg	0.1 mg	0.1 cc
Versed	0.1 mg/kg	0.1 mg	0.1 cc
Versed (IM)	0.25 mg/kg	0.25 mg	0.25 cc

**2 kg = 4.4 lbs**  
**Age estimate = premature**

**Vital signs: HR: 120 – 180      RR: 30 – 60      BP: 50 – 60/40 mmHg**

**ET: 2.5 – 3.0      Suction catheter: 5 – 6 F      NG tube: 5 F**

**Defibrillation: 2 J, repeat @ 4 J      Cardioversion: 1 J, repeat @ 2 J**

**Fluid challenge: 20 ml (10 ml/kg, may repeat x2)**

	<b>Dose</b>	<b>Dose to Give</b>	<b>cc's</b>
Activated Charcoal	1.0 Gm/kg	2.0 gm	9.6 cc
Adenosine	0.1-0.2 mg/kg	0.2-0.4 mg	0.07- 0.13 cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	0.01-0.02 mg/kg	0.1 mg ( <b>min dose</b> )	1.0 cc
Atrovent	0.25 mg	0.25 mg	1.25 cc
Benadryl	1.0-2.0 mg/kg	2.0-4.0 mg	0.04-0.08 cc
Calcium	10.0-20.0 mg/kg	20.0-40.0 mg	0.2-0.4 cc
Demerol	1.0 mg/kg	2.0 mg	0.02 cc
Dextrose ( <b>D<sub>25</sub>W</b> )	0.25-0.5 Gm/kg	0.5-1.0 Gm	2.0-4.0 cc
<b>Dopamine (Not recommended without an infusion pump)</b>			
Epinephrine 1:10,000	0.01-0.03 mg/kg	0.02-0.06 mg	0.2-0.6 cc
Epinephrine 1:1000 ( <b>Not recommended for neonates</b> )	N/A	N/A	N/A
Epinephrine 1:1000 (SQ)	N/A	N/A	N/A
Fentanyl	N/A	N/A	N/A
Glucagon	N/A	N/A	N/A
Ibuprofen	N/A	N/A	N/A
Lasix	0.25-1.0 mg/kg	0.5-2.0 mg	0.05-0.2 cc
Lidocaine	1.0-1.5 mg/kg	2.0-3.0 mg	0.1-0.15 cc
Morphine	0.05-0.1 mg/kg	0.1-0.2 mg	0.01-0.02 cc
Narcan	0.1 mg/kg	0.2 mg	0.5 cc
Phenergan	N/A	N/A	N/A
Sodium Bicarbonate ( <b>4.2%</b> )	1.0-2.0 mEq/kg	2.0-4.0 mEq	4.0-8.0 cc
Solumedrol	1.0-2.0 mg/kg	2.0-4.0 mg	0.03-0.06 cc
Succinylcholine	1.5 mg/kg	3.0 mg	0.15 cc
Tylenol	10.0-15.0 mg/kg	20.0-30.0 mg	0.2-0.3 cc
Vecuronium	0.1 mg/kg	0.2 mg	0.2 cc
Versed	0.1 mg/kg	0.2 mg	0.2 cc
Versed (IM)	0.25 mg/kg	0.5 mg	0.5 cc

3 kg = 7 lbs		
Age estimate = term newborn – 1 month		
Vital Signs: HR: 95-145	RR: 35-45	BP: 60-70/50 mmHg
ET: 3.5 mm	Suction catheter: 8 F	NG tube: 8 F feeding tube
Defibrillation: 3 J repeat @ 6 J	Cardioversion: 1.5 J repeat @ 3 J	
Fluid challenge: 30 cc (10 cc/kg, may repeat x2)		

	Dose	Dose to Give	cc's
Activated Charcoal	1.0 Gm/kg	3.0 Gm	14.4 cc
Adenosine	0.1-0.2 mg/kg	0.3-0.6 mg	0.1-0.2 cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	0.01-0.02 mg/kg	0.1 mg (min dose)	1.0 cc
Atrovent	0.25 mg	0.25 mg	1.25 cc
Benadryl	1.0-2.0 mg/kg	3.0-6.0 mg	0.06-0.12 cc
Calcium	10.0-20.0 mg/kg	30.0-60.0 mg	0.3-0.6 cc
Demerol	1.0 mg/kg	3.0 mg	0.03 cc
Dextrose (D <sub>25</sub> W)	0.25-0.5 Gm/kg	0.75-1.5 gm	3.0-6.0 cc
Dopamine (Not recommended without an infusion pump)			
Epinephrine 1:10,000	0.01-0.03 mg/kg	0.03-0.09 mg	0.3-0.9 cc
Epinephrine 1:1000 (Not recommended for neonates)		N/A	N/A
Epinephrine 1:1000 (SQ)	0.01 mg/kg	0.03 mg	0.03 cc
Fentanyl	N/A	N/A	N/A
Glucagon	N/A	N/A	N/A
Ibuprofen	N/A	N/A	N/A
Lasix	0.25-1.0 mg/kg	0.75-3.0 mg	0.08-0.3 cc
Lidocaine	1.0-1.5 mg/kg	3.0-4.5 mg	0.15-0.23 cc
Morphine	0.05-0.1 mg/kg	0.15-0.3 mg	0.02-0.03 cc
Narcan	0.1 mg/kg	0.3 mg	0.75 cc
Phenergan	N/A	N/A	N/A
Sodium Bicarbonate (4.2%)	1.0-2.0 mEq/kg	3.0-6.0 mEq	6.0-12.0 cc
Solumedrol	1.0-2.0 mg/kg	3.0-6.0 mg	0.05-0.09 cc
Succinylcholine	1.5 mg/kg	4.5 mg	0.23 cc
Tylenol	10.0-15.0 mg/kg	30.0-45.0 mg	0.3-0.4 cc
Vecuronium	0.1 mg/kg	0.3 mg	0.3 cc
Versed	0.1mg/kg	0.3 mg	0.3 cc
Versed (IM)	0.25 mg/kg	0.75 mg	0.75 cc

4 kg = 9 lbs Age estimate = 1 – 6 wks		
Vital signs: HR: 95-14	RR: 35-45	BP: 60-70/50 mmHg
ET: 3.5 mm	Suction catheter: 8 F	NG tube: 8 F feeding tube
Defibrillation: 4 J repeat @ 8 J	Cardioversion: 2 J repeat @ 4 J	
Fluid challenge: 40 ml (10 ml/kg, may repeat x2)		

	<u>Dose</u>	<u>Dose to Give</u>	<u>cc's</u>
Activated Charcoal	1.0 Gm/kg	4.0 Gm	19.0 cc
Adenosine	0.1-0.2 mg/kg	0.4-0.8 mg	0.13-0.26 cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	0.01-0.02 mg/kg	0.1 mg (min dose)	1.0 cc
Atrovent	0.25 mg	0.25 mg	1.25 cc
Benadryl	1.0-2.0 mg/kg	4.0-8.0 mg	0.08-0.16 cc
Calcium	10.0-20.0 mg/kg	40.0-80.0 mg	0.4-0.8 cc
Demerol	1.0 mg/kg	4.0 mg	0.04 cc
Dextrose (D <sub>25</sub> W)	0.25-0.5 Gm/kg	1.0-2.0 Gm	4.0-8.0 cc
<b>Dopamine (Not recommended without an infusion pump)</b>			
Epinephrine 1:10,000	0.01-0.03 mg/kg	0.04-0.12 mg	0.4-1.2 cc
Epinephrine 1:1000(Not recommended for neonates)		N/A	N/A
Epinephrine 1:1000 (SQ)	0.01 mg/kg	0.04 mg	0.04 cc
Fentanyl	N/A	N/A	N/A
Glucagon	N/A	N/A	N/A
Ibuprofen	N/A	N/A	N/A
Lasix	0.25-1.0 mg/kg	1.0-4.0 mg	0.1-0.4 cc
Lidocaine	1.0-1.5 mg/kg	4.0-6.0 mg	0.2-0.3 cc
Morphine	0.05-0.1 mg/kg	0.2-0.4 mg	0.02-0.04 cc
Narcan	0.1 mg/kg	0.4 mg	1.0 cc
Phenergan	N/A	N/A	N/A
Sodium Bicarbonate (4.2%)	1.0-2.0 mEq/kg	4.0-8.0 mEq	8.0-16.0 cc
Solumedrol	1.0-2.0 mg/kg	4.0-8.0 mg	0.06-0.12 cc
Succinylcholine	1.5 mg/kg	6.0 mg	0.3 cc
Tylenol	10.0-15.0 mg/kg	40.0-60.0 mg	0.4-0.6 cc
Vecuronium	0.1 mg/kg	0.4 mg	0.4 cc
Versed	0.1 mg/kg	0.4 mg	0.4 cc
Versed (IM)	0.25 mg/kg	1.0 mg	1.0 cc

5 kg = 11 lbs Age estimate = 2 – 3 months		
Vital signs: HR: 95-145	RR: 35-45	BP: 60-70/50 mmHg
ET: 3.5 mm	Suction catheter: 8 F	NG tube: 8 F feeding tube
Defibrillation: 10 J repeat @ 20 J	Cardioversion: 2.5 J repeat @ 5J	
Fluid challenge: 100 ml (20 ml/kg, may repeat x2)		

	<u>Dose</u>	<u>Dose to Give</u>	<u>cc's</u>
Activated Charcoal	1.0 Gm/kg	5.0 gm	24.0 cc
Adenosine	0.1-0.2 mg/kg	0.5-1.0 mg	0.17-0.33 cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	0.01-0.02 mg/kg	0.1 mg (min dose)	1.0 cc
Atrovent	0.25 mg	0.25 mg	1.25 cc
Benadryl	1.0-2.0 mg/kg	5.0-10.0 mg	0.1-0.2 cc
Calcium	10.0-20.0 mg/kg	50-100 mg	0.5-1.0 cc
Demerol	1.0 mg/kg	5.0 mg	0.05 cc
Dextrose (D <sub>25</sub> W)	0.25-0.5 Gm/kg	1.25-2.5 Gm	5.0-10.0 cc
Dopamine (Not recommended without an infusion pump)			
Epinephrine 1:10,000	0.01-0.03 mg/kg	0.05-0.15 mg	0.5-1.5 cc
Epinephrine 1:1000	0.1 mg/kg	0.5 mg	0.5 cc
Epinephrine 1:1000 (SQ)	0.01 mg/kg	0.05 mg	0.05 cc
Fentanyl	N/A	N/A	N/A
Glucagon	N/A	N/A	N/A
Ibuprofen	N/A	N/A	N/A
Lasix	0.25-1.0 mg/kg	1.25-5.0 mg	0.13-0.5 cc
Lidocaine	1.0-1.5 mg/kg	5.0-7.5 mg	0.25-0.38 cc
Morphine	0.05-0.1 mg/kg	0.25-0.5 mg	0.03-0.05 cc
Narcan	0.1 mg/kg	0.5 mg	1.25 cc
Phenergan	N/A	N/A	N/A
Sodium Bicarbonate (8.4%)	1.0-2.0 mEq/kg	5.0-10.0 mEq	5.0-10.0 cc
Solumedrol	1.0-2.0 mg/kg	5.0-10.0 mg	0.08-0.15 cc
Succinylcholine	1.5 mg/kg	7.5 mg	0.4 cc
Tylenol	10.0-15.0 mg/kg	50.0-75.0 mg	0.5 cc
Vecuronium	0.1 mg/kg	0.5 mg	0.5 cc
Versed	0.1 mg/kg	0.5 mg	0.5 cc
Versed (IM)	0.25 mg/kg	1.25 mg	1.25 cc

6 kg = 12 lbs Age estimate = 6 months		
Vital signs: HR: 110-80	RR: 24-30	BP: 70-110/50 mm Hg
ET: 3.5 mm	Suction catheter: 8 F	NG tube: 8 F feeding tube
Defibrillation: 12 J repeat @ 24 J	Cardioversion: 3 J repeat @ 6J	
Fluid challenge: 120 ml (20 ml/kg may repeat x2)		

	<u>Dose</u>	<u>Dose to Give</u>	<u>cc's</u>
Activated Charcoal	1.0 Gm/kg	6.0 Gm	28.8 cc
Adenosine	0.1-0.2 mg/kg	0.6-1.2 mg	0.2-0.4 cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	0.01-0.02 mg/kg	0.1 mg (min dose)	1.0 cc
Atrovent	0.25 mg	0.25 mg	1.25 cc
Benadryl	1.0-2.0 mg/kg	6.0-12.0 mg	0.12-0.24 cc
Calcium	10.0-20.0 mg/kg	60.0-120.0 mg	0.6-1.2 cc
Demerol	1.0 mg/kg	6.0 mg	0.06 cc
Dextrose (D <sub>25</sub> W)	0.25-0.5 Gm/kg	1.5-3.0 Gm	6.0-12.0 cc
<b>Dopamine (Not recommended without an infusion pump)</b>			
Epinephrine 1:10,000	0.01-0.03 mg/kg	0.06-0.18 mg	0.6-1.8 cc
Epinephrine 1:1000	0.1 mg/kg	0.6 mg	0.6 cc
Epinephrine 1:1000(SQ)	0.01 mg/kg	0.06 mg	0.06 cc
Fentanyl	N/A	N/A	N/A
Glucagon	N/A	N/A	N/A
Ibuprofen	N/A	N/A	N/A
Lasix	0.25-1.0 mg/kg	1.5-6.0 mg	0.15-0.6 cc
Lidocaine	1.0-1.5 mg/kg	6.0-9.0 mg	0.3-0.45 cc
Morphine	0.05-0.1 mg/kg	0.3-0.6 mg	0.03-0.06 cc
Narcan	0.1 mg/kg	0.6 mg	1.5 cc
Phenergan	N/A	N/A	N/A
Sodium Bicarbonate (8.4%)	1.0-2.0 mEq/kg	6.0-12.0 mEq	6.0-12.0 cc
Solumedrol	1.0-2.0 mg/kg	6.0-12.0 mg	0.09-0.18 cc
Succinylcholine	1.5 mg/kg	9.0 mg	0.5 cc
Tylenol	10.0-15.0 mg/kg	60-90 mg	0.6-0.9 cc
Vecuronium	0.1 mg/kg	0.6 mg	0.6 cc
Versed	0.1 mg/kg	0.6 mg	0.6 cc
Versed (IM)	0.25 mg/kg	1.5 mg	1.5 cc

7 kg = 14 lbs		
Age estimate = 6 months		
Vital signs: HR: 110-180	RR: 24-30	BP: 70-110/50 mm Hg
ET: 3.5 mm	Suction catheter: 8 F	NG tube: 8 F
Defibrillation: 14 J repeat @ 28 J	Cardioversion: 3.5 J repeat @ 7 J	
Fluid challenge: 140 ml (20 ml/kg may repeat x2)		

	Dose	Dose to Give	cc's
Activated Charcoal	1.0 Gm/kg	7.0 gm	33.6 cc
Adenosine	0.1-0.2 mg/kg	0.7-1.4 mg	0.23-0.46 cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	0.01-0.02 mg/kg	0.1 mg (min dose)	1.0 cc
Atrovent	0.25 mg	0.25 mg	1.25 cc
Benadryl	1.0-2.0 mg/kg	7.0-14.0 mg	0.14-0.28 cc
Calcium	10.0-20.0 mg/kg	70-140 mg	0.7-1.4 cc
Demerol	1.0 mg/kg	7.0 mg	0.07 cc
Dextrose (D <sub>25</sub> W)	0.25-0.5 Gm/kg	1.75-3.5 Gm	7.0-14.0 cc
<b>Dopamine (Not recommended without an infusion pump)</b>			
Epinephrine 1:10,000	0.01-0.03 mg/kg	0.07-0.21 mg	0.7-2.1 cc
Epinephrine 1:1000	0.1 mg/kg	0.7 mg	0.7 cc
Epinephrine 1:1000 (SQ)	0.01 mg/kg	0.07 mg	0.07 cc
Fentanyl	N/A	N/A	N/A
Glucagon	N/A	N/A	N/A
Ibuprofen	5-10 mg/kg	35-70 mg	1.75-3.5 cc
Lasix	0.25-1.0 mg/kg	1.75-7.0 mg	0.18-0.7 cc
Lidocaine	1.0-1.5 mg/kg	7.0-10.5 mg	0.35-0.53 cc
Morphine	0.05-0.1 mg/kg	0.35-0.7 mg	0.04-0.07 cc
Narcan	0.1 mg/kg	0.7 mg	1.75 cc
Phenergan	N/A	N/A	N/A
Sodium Bicarbonate (8.4%)	1.0-2.0 mEq/kg	7.0-14.0 mEq	7.0-14.0 cc
Solumedrol	1.0-2.0 mg/kg	7.0-14.0 mg	0.1-0.2 cc
Succinylcholine	1.5 mg/kg	10.5 mg	0.53 cc
Tylenol	10.0-15.0 mg/kg	70.0-105.0 mg	0.7-1.0 cc
Vecuronium	0.1 mg/kg	0.7 mg	0.7 cc
Versed	0.1 mg/kg	0.7 mg	0.7 cc
Versed (IM)	0.25 mg/kg	1.75 mg	1.75 cc

8 kg = 16 lbs		
Age estimate = 6 months		
Vital signs: HR: 110-180	RR: 24-34	BP: 70-110/50 mm Hg
ET: 3.5 mm	Suction catheter: 8 F	NG tube: 8 F
Defibrillation: 16 J repeat @ 32		J Cardioversion: 4 J repeat @ 8 J
Fluid challenge: 160 cc (20 cc/kg may repeat x2)		

	Dose	Dose to Give	cc's
Activated Charcoal	1 Gm/kg	8.0 gm	38.4 cc
Adenosine	0.1-0.2 mg/kg	0.8-1.6 mg	0.27- 0.53 cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	0.01-0.02 mg/kg	0.1 mg (min dose)	1.0 cc
Atrovent	0.25 mg	0.25 mg	1.25 cc
Benadryl	1.0-2.0 mg/kg	8.0-16.0 mg	0.16-0.32 cc
Calcium	10.0-20.0 mg/kg	80.0-160.00 mg	0.8-1.6 cc
Demerol	1.0 mg/kg	8.0 mg	0.08 cc
Dextrose (D <sub>25</sub> W)	0.25-0.5 Gm/kg	2-4 Gm	8.0-16.0 cc
Dopamine (Not recommended without an infusion pump)			
Epinephrine 1:10,000	0.01-0.03 mg/kg	0.08-0.24 mg	0.8-2.4 cc
Epinephrine 1:1000	0.1 mg/kg	0.8 mg	0.8 cc
Epinephrine 1:1000 (SQ)	0.01 mg/kg	0.08 mg	0.08 cc
Fentanyl	N/A	N/A	N/A
Glucagon	N/A	N/A	N/A
Ibuprofen	5-10 mg/kg	40-80 mg	2-4 cc
Lasix	0.25-1.0 mg/kg	2.0-8.0 mg	0.2-0.8 cc
Lidocaine	1.0-1.5 mg/kg	8.0-12.0 mg	0.4-0.6 cc
Morphine	0.05-0.1 mg/kg	0.4-0.8 mg	0.04-0.08 cc
Narcan	0.1 mg/kg	0.8 mg	2.0 cc
Phenergan	N/A	N/A	N/A
Sodium Bicarbonate (8.4%)	1.0-2.0 mEq/kg	8.0-16.0 mEq	8.0-16.0 cc
Solumedrol	1.0-2.0 mg/kg	8.0-16.0 mg	0.12-0.24 cc
Succinylcholine	1.5 mg/kg	12.0 mg	0.6 cc
Tylenol	10.0-15.0 mg/kg	80.0-120.0 mg	0.8-1.2 cc
Vecuronium	0.1 mg/kg	0.8 mg	0.8 cc
Versed	0.1 mg/kg	0.8 mg	0.8 cc
Versed (IM)	0.25 mg/kg	2.0 mg	2.0 cc

9 kg = 18 lbs		
Age estimate = 9 months		
Vital signs: HR: 110-120	RR: 22-30	BP: 80-120/53 mmHg
ET: 4.0 mm	Suction catheter: 8F	NG tube: 10F
Defibrillation: 18 J repeat @ 36 J	Cardioversion: 4.5 J repeat @ 9 J	
Fluid challenge: 180 cc (20 cc/kg, may repeat x2)		

	<u>Dose</u>	<u>Dose to Give</u>	<u>cc's</u>
Activated Charcoal	1.0 Gm/kg	9.0 Gm	43.2 cc
Adenosine	0.1-0.2 mg/kg	0.9-1.8 mg	0.3-0.6 cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	0.01-0.02 mg/kg	0.1-0.18 mg	1.0-1.8 cc
Atrovent	0.25 mg	0.25 mg	1.25 cc
Benadryl	1.0-2.0 mg/kg	9.0-18.0 mg	0.18-0.36 cc
Calcium	10.0-20.0 mg/kg	90.0-180.0 mg	0.9-1.8 cc
Demerol	1.0 mg/kg	9.0 mg	0.09 cc
Dextrose ( <b>D<sub>25</sub>W</b> )	0.25-0.5 Gm/kg	2.25-4.5 Gm	9.0-18.0 cc
<b>Dopamine (Not recommended without an infusion pump)</b>			
Epinephrine 1:10,000	0.01-0.03 mg/kg	0.09-0.27 mg	0.9-2.7 cc
Epinephrine 1:1000	0.1 mg/kg	0.9 mg	0.9 cc
Epinephrine 1:1000 (SQ)	0.01 mg/kg	0.09 mg	0.09 cc
Fentanyl	N/A	N/A	N/A
Glucagon	N/A	N/A	N/A
Ibuprofen	5-10 mg	45-90 mg	2.25-4.5 cc
Lasix	0.25-1.0 mg/kg	2.25-9.0 mg	0.3-0.9 cc
Lidocaine	1.0-1.5 mg/kg	9.0-13.5 mg	0.45-0.68 cc
Morphine	0.05-0.1 mg/kg	0.45- 0.9 mg	0.05-0.09 cc
Narcan	0.1 mg/kg	0.9 mg	2.25 cc
Phenergan	N/A	N/A	N/A
Sodium Bicarbonate ( <b>8.4%</b> )	1.0-2.0 mEq/kg	9.0-18.0 mEq	9.0-18.0 cc
Solumedrol	1.0-2.0 mg/kg	9.0-18.0 mg	0.14-0.28 cc
Succinylcholine	1.5 mg/kg	13.5 mg	0.7 cc
Tylenol	10.0-15.0 mg/kg	90.0-135.0 mg	0.9-1.3 cc
Vecuronium	0.1 mg/kg	0.9 mg	0.9 cc
Versed	0.1 mg/kg	0.9 mg	0.9 cc
Versed (IM)	0.25 mg/kg	2.25 mg	2.25 cc

10 kg = 22 lbs Age estimate = 1 year		
Vital signs: HR: 110-120	RR: 22-30	BP: 80-120/53 mmHg
ET: 4.0 mm	Suction catheter: 8 F	NG tube: 10 F
Defibrillation: 20 J repeat @ 40 J	Cardioversion: 5 J repeat @ 10 J	
Fluid challenge: 200 cc (20 cc/kg may repeat x2)		

	Dose	Dose to Give	cc's
Activated Charcoal	1.0 Gm/kg	10.0 Gm	47.6 cc
Adenosine	0.1-0.2 mg/kg	1.0-2.0 mg	0.33-0.67 cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	0.01-0.02 mg/kg	0.1-0.2 mg	1.0-2.0 cc
Atrovent	0.25 mg	0.25 mg	1.25 cc
Benadryl	1.0-2.0 mg/kg	10.0-20.0 mg	0.2-0.4 cc
Calcium	10.0-20.0 mg/kg	100.0-200.0 mg	1.0-2.0 cc
Demerol	1.0 mg/kg	10.0 mg	0.1 cc
Dextrose (D <sub>25</sub> W)	0.25-0.5 Gm/kg	2.5-5.0 Gm	10.0-20.0 cc
<b>Dopamine (Not recommended without an infusion pump)</b>			
Epinephrine 1:10,000	0.01-0.03 mg/kg	0.1-0.3 mg	1.0-3.0 cc
Epinephrine 1:1000 (IV)	0.1 mg/kg	1.0 mg	1.0 cc
Epinephrine 1:1000 (SQ)	0.01 mg/kg	0.1 mg	0.1 cc
Fentanyl	N/A	N/A	N/A
Glucagon	N/A	N/A	N/A
Ibuprofen	5-10 mg/kg	50-100 mg	2.5-5 cc
Lasix	0.25-1.0 mg/kg	2.5-10.0 mg	0.3-1.0 cc
Lidocaine	1.0-1.5 mg/kg	10.0-15.0 mg	0.5-0.75 cc
Morphine	0.05-0.1 mg/kg	0.5-1.0 mg	0.05-0.1 cc
Narcan	0.1 mg/kg	1.0 mg	2.5 cc
Phenergan	N/A	N/A	N/A
Sodium Bicarbonate (8.4%)	1.0-2.0 mEq/kg	10.0-20.0 mEq	10.0-20.0 cc
Solumedrol	1.0-2.0 mg/kg	10.0-20.0 mg	0.15-0.3 cc
Succinylcholine	1.5 mg/kg	15.0 mg	0.75 cc
Tylenol	10.0-15.0 mg/kg	100.0-150.0 mg	1.0-1.5 cc
Vecuronium	0.1 mg/kg	1.0 mg	1.0 cc
Versed	0.1 mg/kg	1.0 mg	1.0 cc
Versed (IM)	0.25 mg/kg	2.5mg	2.5 cc

12 kg = 26 lbs Age estimate = 2 years		
Vital signs: HR: 110-120	RR: 22-30	BP: 90-130/55 mmHg
ET: 4.5 mm	Suction catheter: 8-10 F	NG tube: 10 F
Defibrillation: 24 J repeat @ 48 J	Cardioversion: 6 J repeat @ 12 J	
Fluid challenge: 240 ml (10 cc/kg may repeat x2)		

	<u>Dose</u>	<u>Dose to Give</u>	<u>cc's</u>
Activated Charcoal	1.0 Gm/kg	12.0 Gm	57.0 cc
Adenosine	0.1-0.2 mg/kg	1.2-2.4 mg	0.4-0.8 cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	0.01-0.02 mg/kg	0.12-0.24 mg	1.2-2.4 cc
Atrovent	Adult dose	0.5 mg	2.5 cc
Benadryl	1.0-2.0 mg/kg	12.0-24.0 mg	0.24-0.48 cc
Calcium	10.0-20.0 mg/kg	120.0-240.0 mg	1.2-2.4 cc
Demerol	1.0 mg/kg	12.0 mg	0.12 cc
Dextrose ( <b>D<sub>50</sub>W</b> )	0.5 Gm/kg	6.0 Gm	12.0 cc
Dopamine ( <b>Not recommended without an infusion pump</b> )			
Epinephrine 1:10,000	0.01-0.03 mg/kg	0.12-0.36 mg	1.2-3.6 cc
Epinephrine 1:1000 (IV)	0.1 mg/kg	1.2 mg	1.2 cc
Epinephrine 1:1000 (SQ)	0.01 mg/kg	0.12 mg	0.12 cc
Fentanyl	2-3 mcg/kg	24-36 mcg	0.48-0.72 cc
Glucagon	N/A	N/A	N/A
Ibuprofen	5-10 mg/kg	60-120 mg	3-6 cc
Lasix	0.25-1.0 mg/kg	3.0-12.0 mg	0.3-1.2 cc
Lidocaine	1.0-1.5 mg/kg	12.0-18.0 mg	0.6-0.9 cc
Morphine	0.05-0.1 mg/kg	0.6-1.2 mg	0.06-0.12 cc
Narcan	0.1 mg/kg	1.2 mg	3.0 cc
Phenergan	N/A	N/A	N/A
Sodium Bicarbonate ( <b>8.4%</b> )	1.0-2.0 mEq/kg	12.0-24.0 mEq	12.0-24.0 cc
Solumedrol	1.0-2.0 mg/kg	12.0-24.0 mg	0.18-0.36 cc
Succinylcholine	1.5 mg/kg	18.0 mg	0.9 cc
Tylenol	10.0-15.0 mg/kg	120.0-180.0 mg	1.2-1.8 cc
Vecuronium	0.1 mg/kg	1.2 mg	1.2 cc
Versed	0.1 mg/kg	1.2 mg	1.2 cc
Versed (IM)	0.25 mg/kg	2.5-3.0 mg	2.5 cc-3.0 cc

<b>14 kg = 31 lbs</b>		
<b>Age estimate = 3 years</b>		
<b>Vital signs: HR: 100-110</b>	<b>RR: 20-26</b>	<b>BP: 90-130/55 mm Hg</b>
<b>ET: 5.0 mm</b>	<b>Suction catheter: 10 F</b>	<b>NG tube: 12 F</b>
<b>Defibrillation: 28 J repeat @ 56 J</b>	<b>Cardioversion: 7 J repeat @ 14 J</b>	
<b>Fluid challenge: 280 ml (20 cc/kg may repeat x2)</b>		

	<b>Dose</b>	<b>Dose to Give</b>	<b>cc's</b>
Activated Charcoal	1.0 Gm/kg	14.0 Gm	67.2 cc
Adenosine	0.1-0.2 mg/kg	1.4-2.8 mg	0.47-0.93 cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	0.01-0.02 mg/kg	0.14-0.28 mg	1.4-2.8 cc
Atrovent	Adult dose	0.5 mg	2.5 cc
Benadryl	1.0-2.0 mg/kg	14.0-28.0 mg	0.28-0.56 cc
Calcium	10.0-20.0 mg/kg	140.0-280.0 mg	1.4-2.8 cc
Demerol	1.0 mg/kg	14.0 mg	0.14 cc
Dextrose ( <b>D<sub>50</sub>W</b> )	0.5 Gm/kg	7.0 Gm	14.0 cc
<b>Dopamine (Not recommended without an infusion pump)</b>			
Epinephrine 1:10,000	0.01-0.03 mg/kg	0.14-0.42 mg	1.4-4.2 cc
Epinephrine 1:1000 (IV)	0.1 mg/kg	1.4 mg	1.4 cc
Epinephrine 1:1000 (SQ)	0.01 mg/kg	0.14 mg	0.14 cc
Fentanyl	2-3 mcg/kg	28-42 mcg	0.56-0.84 cc
Glucagon	N/A	N/A	N/A
Ibuprofen	5-10 mg/kg	70-140 mg	3.4-7 cc
Lasix	0.25-1.0 mg/kg	3.5-14.0 mg	0.35-1.4 cc
Lidocaine	1.0-1.5 mg/kg	14.0-21.0 mg	0.7-1.05 cc
Morphine	0.05-0.1 mg/kg	0.7-1.4 mg	0.07-0.14 cc
Narcan	0.1 mg/kg	1.4 mg	3.5 cc
Phenergan	N/A	N/A	N/A
Sodium Bicarbonate ( <b>8.4%</b> )	1.0-2.0 mEq/kg	14.0-28.0 mEq	14.0-28.0 cc
Solumedrol	1.0-2.0 mg/kg	14.0-28.0 mg/kg	0.2-0.4 cc
Succinylcholine	1.5 mg/kg	21.0 mg	1 cc
Tylenol	10.0-15.0 mg/kg	140.0-210.0 mg	1.4-2.1 cc
Vecuronium	0.1 mg/kg	1.4 mg	1.4 cc
Versed	0.1 mg/kg	1.4 mg	1.4 cc
Versed (IM)	0.25 mg/kg	2.5-3.5 mg	2.5-3.5 cc

<b>16 kg = 35 lbs</b>		
<b>Age estimate = 4 years</b>		
<b>Vital signs: HR: 95-105</b>	<b>RR: 20-24</b>	<b>BP: 90-130/55 mmHg</b>
<b>ET: 5.0 mm</b>	<b>Suction catheter: 10 F</b>	<b>NG tube: 12 F</b>
<b>Defibrillation: 32 J repeat @ 64 J</b>	<b>Cardioversion: 8 J repeat @ 16 J</b>	
<b>Fluid challenge: 320 ml (20 cc/kg, may repeat x2)</b>		

	<b>Dose</b>	<b>Dose to Give</b>	<b>cc's</b>
Activated Charcoal	1.0 Gm/kg	16.0 Gm	76.0 cc
Adenosine	0.1-0.2 mg/kg	1.6-3.2 mg	0.53-1.0 cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	0.01-0.02 mg/kg	0.16-0.32 mg	1.6-3.2 cc
Atrovent	Adult dose	0.5 mg	2.5 cc
Benadryl	1.0-2.0 mg/kg	16.0-32.0 mg	0.32-0.64 cc
Calcium	10.0-20.0 mg/kg	160.0-320.0 mg	1.6-3.2 cc
Demerol	1.0 mg/kg	16.0 mg	0.16 cc
Dextrose ( <b>D<sub>50</sub>W</b> )	0.5 Gm/kg	8.0 Gm	16.0 cc
<b>Dopamine (Not recommended without an infusion pump)</b>			
Epinephrine 1:10,000	0.01-0.03 mg/kg	0.16-0.48 mg	1.6-4.8 cc
Epinephrine 1:1000 (IV)	0.1 mg/kg	1.6 mg	1.6 cc
Epinephrine 1:1000 (SQ)	0.01 mg/kg	0.16 mg	0.16 cc
Fentanyl	2-3 mcg/kg	32-48 mcg	0.64-0.96 cc
Glucagon	N/A	N/A	N/A
Ibuprofen	5-10 mg/kg	80-160 mg	4-8 cc
Lasix	0.25-1.0 mg/kg	4.0-16.0 mg	0.4-1.6 cc
Lidocaine	1.0-1.5 mg/kg	16.0-24.0 mg	0.8-1.2 cc
Morphine	0.05-0.1 mg/kg	0.8-1.6 mg	0.08-0.16 cc
Narcan	0.1 mg/kg	1.6 mg	4.0 cc
Phenergan	N/A	N/A	N/A
Sodium Bicarbonate ( <b>8.4%</b> )	1.0-2.0 mEq/kg	16.0-32.0 mEq	16.0-32.0 cc
Solumedrol	1.0-2.0 mg/kg	16.0-32.0 mg	0.25-0.5 cc
Succinylcholine	1.5 mg/kg	24.0 mg	1.2 cc
Tylenol	10.0-15.0 mg/kg	160.0-240.0 mg	1.6-2.4 cc
Vecuronium	0.1 mg/kg	1.6 mg	1.6 cc
Versed	0.1 mg/kg	1.6 mg	1.6 cc
Versed (IM)	0.25 mg/kg	2.5-4.0 mg	2.5-4.0 cc

18 kg = 40 lbs Age estimate = 5 years		
Vital signs: HR: 95-105	RR: 20-24	BP: 90-130/55 mmHg
ET: 5.0 mm	Suction catheter: 10-12 F	NG tube: 12 F
Defibrillation: 36J repeat @ 72 J	Cardioversion: 9 J repeat @ 18 J	
Fluid challenge: 360 ml (20 cc/kg, may repeat x2)		

	Dose	Dose to Give	cc's
Activated Charcoal	1.0 Gm/kg	18.0 Gm	86.0 cc
Adenosine	0.1-0.2 mg/kg	1.8-3.6 mg	0.6-1.2 cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	0.01-0.02 mg/kg	0.18-0.36 mg	1.8-3.6 cc
Atrovent	Adult dose	0.5 mg	2.5 cc
Benadryl	1.0-2.0 mg/kg	18.0-36.0 mg	0.36-0.72 cc
Calcium	10.0-20.0 mg/kg	180.0-360.0 mg	1.8-3.6 cc
Demerol	1.0 mg/kg	18.0 mg	0.18 cc
Dextrose(D <sub>50</sub> W)	0.5 Gm/kg	9.0 Gm	18.0 cc
<b>Dopamine (Not recommended without an infusion pump)</b>			
Epinephrine 1:10,000	0.01-0.03 mg/kg	0.18-0.54 mg	1.8-5.4 cc
Epinephrine 1:1000 (IV)	0.1 mg/kg	1.8 mg	1.8 cc
Epinephrine 1:1000 (SQ)	0.01 mg/kg	0.18 mg	0.18 cc
Fentanyl	2-3 mcg/kg	36-54 mcg	0.72-1.08 cc
Glucagon	Adult dose	1.0 mg	1.0 cc
Ibuprofen	5-10 mg/kg	90-180 mg	4.5-9 cc
Lasix	0.25-1.0 mg/kg	4.5-18.0 mg	0.45-1.8 cc
Lidocaine	1.0-1.5 mg/kg	18.0-27.0 mg	0.9-1.35 cc
Morphine	0.05-0.1 mg/kg	0.9-1.8 mg	0.09-0.18 cc
Narcan	0.1 mg/kg	1.8 mg	4.5 cc
Phenergan	6.25 mg	6.25 mg	0.25 cc
Sodium Bicarbonate (8.4%)	1.0-2.0 mEq/kg	18.0-36.0 mEq	18.0-36.0 cc
Solumedrol	1.0-2.0 mg/kg	18.0-36.0 mg	0.3-0.5 cc
Succinylcholine	1.5 mg/kg	27.0 mg	1.4 cc
Tylenol	10.0-15.0 mg/kg	180-270 mg	1.8-2.7 cc
Vecuronium	0.1 mg/kg	1.8 mg	1.8 cc
Versed	0.1 mg/kg	1.8 mg	1.8 cc
Versed (IM)	0.25 mg/kg	2.5-4.5 mg	2.5-4.5 cc

20 kg = 44 lbs Age estimate = 5 – 6 years		
Vital signs: HR: 90-100	RR: 20-24	BP: 95-130/60 mmHg
ET: 5.5 mm	Suction catheter: 12 F	NG tube: 14 F
Defibrillation: 40 J repeat @ 80 J	Cardioversion: 10 J repeat @ 20 J	
Fluid challenge: 400 ml (20 cc/kg, may repeat x2)		

	<u>Dose</u>	<u>Dose to Give</u>	<u>cc's</u>
Activated Charcoal	1.0 Gm/kg	20.0 Gm	96 cc
Adenosine	0.1-0.2 mg/kg	2.0-4.0 mg	0.7-1.3 cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	0.01-0.02 mg/kg	0.2-0.4 mg	2.0-4.0 cc
Atrovent	Adult dose	0.5 mg	2.5 cc
Benadryl	1.0-2.0 mg/kg	20.0-40.0 mg	0.4-0.8 cc
Calcium	10.0-20.0 mg/kg	200-400 mg	2.0-4.0 cc
Demerol	1.0 mg/kg	20.0 mg	0.2 cc
Dextrose ( <b>D<sub>50</sub>W</b> )	0.5 mg/kg	10.0 Gm	20.0 cc
<b>Dopamine (Not recommended without an infusion pump)</b>			
Epinephrine 1:10,000	0.01-0.03 mg/kg	0.2-0.6 mg	2.0-6.0 cc
Epinephrine 1:1000 (IV)	0.1 mg/kg	2.0 mg	2.0 cc
Epinephrine 1:1000 (SQ)	0.01 mg/kg	0.2 mg	0.2 cc
Fentanyl	2-3 mcg/kg	40-60 mcg	0.8-1.2cc
Glucagon	Adult dose	1.0 mg	1.0 cc
Ibuprofen	5-10 mg/kg	100-200 mg	5-10 cc
Lasix	0.25-1.0 mg/kg	5.0-20.0 mg	0.5-2.0 cc
Lidocaine	1.0-1.5 mg/kg	20.0-30.0 mg	1.0-1.5 cc
Morphine	0.05-0.1 mg/kg	1.0-2.0 mg	0.1-0.2 cc
Narcan	Adult dose	0.4-2.0 mg	1.0-5.0 cc
Phenergan	6.25 mg	6.25 mg	0.25 cc
Sodium Bicarbonate ( <b>8.4%</b> )	1.0-2.0 mEq/kg	20.0-40.0 mEq	20.0-40.0 cc
Solumedrol	1.0-2.0 mg/kg	20.0-40.0 mg	0.3-0.6 cc
Succinylcholine	1.5 mg/kg	30.0 mg	1.5 cc
Tylenol	10.0-15.0 mg/kg	200.0-300.0 mg	2.0-3.0 cc
Vecuronium	0.1 mg/kg	2.0 mg	2.0 cc
Versed	0.1 mg/kg	1.0-2.0 mg	1.0-2.0 cc
Versed (IM)	Adult dose	2.5-5.0 mg	2.5-5.0 cc

25 kg = 55 lbs Age estimate = 8 – 9 years		
Vital signs: HR: 90-100	RR: 18-22	BP: 95-130/60 mmHg
ET: 6.5 mm	Suction catheter: 12 F	NG tube: 14 F
Defibrillation: 50 J repeat @ 100 J	Cardioversion: 12.5 J repeat @ 25 J	
Fluid challenge: 500 ml (20 cc/kg, may repeat x2)		

	<u>Dose</u>	<u>Dose to Give</u>	<u>cc's</u>
Activated Charcoal	1.0 Gm/kg	25.0 Gm	120.0 cc
Adenosine	0.1-0.2 mg/kg	2.5-5.0 mg	0.8-1.7 cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	0.01-0.02 mg/kg	0.25-0.5 mg	2.5-5.0 cc
Atrovent	Adult dose	0.5 mg	2.5 cc
Benadryl	1.0-2.0 mg/kg	25.0-50.0 mg	0.5-1.0 cc
Calcium	10.0-20.0 mg/kg	250-500 mg	2.5-5.0 cc
Demerol	1.0 mg/kg	25.0 mg	0.25 cc
Dextrose (D <sub>50</sub> W)	0.5 Gm/kg	12.5 Gm	25.0 cc
Dopamine ( <b>Not recommended without an infusion pump</b> )			
Epinephrine 1:10,000	0.01-0.03 mg/kg	0.25-0.75 mg	2.5-7.5 cc
Epinephrine 1:1000 (IV)	0.1 mg/kg	2.5 mg	2.5 cc
Epinephrine 1:1000 (SQ)	0.01 mg/kg	0.25 mg	0.25 cc
Fentanyl	2-3 mcg/kg	50-75 mcg	1.0-1.5 cc
Glucagon	Adult dose	1.0 mg	1.0 cc
Ibuprofen	5-10 mg/kg	125-250 mg	6.25-12.5 cc
Lasix	0.25-1.0 mg/kg	6.25-25.0 mg	0.6-2.5 cc
Lidocaine	1.0-1.5 mg/kg	25.0-37.5 mg	1.25-1.7 cc
Morphine	0.05-0.1 mg/kg	1.25-2.5 mg	0.13-0.25 cc
Narcan	Adult dose	0.4-2.0 mg	1.0-5.0 cc
Phenergan	6.25 mg	6.25 mg	0.25 cc
Sodium Bicarbonate (8.4%)	1.0-2.0 mEq/kg	25.0-50.0 mEq	25.0-50.0 cc
Solumedrol	1.0-2.0 mg/kg	25.0-50.0 mg	0.4-0.8 cc
Succinylcholine	1.5 mg/kg	37.5 mg	2.0 cc
Tylenol	10.0-15.0 mg/kg	250.0-375.0 mg	1 tablet
Vecuronium	0.1 mg/kg	2.5 mg	2.5 cc
Versed	0.1 mg/kg	1.0-2.5 mg	1.0-2.5 cc
Versed (IM)	Adult dose	2.5-5.0 mg	2.5-5.0 cc

30 kg = 66 lbs Age estimate = 9 – 10 years		
Vital signs: HR: 90-100	RR: 18-22	BP: 100-130/60 mmHg
ET: 6.5 mm	Suction catheter: 12-14 F	NG tube: 14 F
Defibrillation: 60 J repeat @ 120 J	Cardioversion: 15 J repeat @ 30 J	
Fluid challenge: 600 ml (20 cc/kg, may repeat x2)		

	<u>Dose</u>	<u>Dose to give</u>	<u>cc's</u>
Activated Charcoal	1.0 Gm/kg	30.0 gm	144.0 cc
Adenosine	Adult dose	6.0 -12.0 mg	2.0- 4.0 cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	0.01-0.02 mg/kg	0.3-0.6 mg	3.0-6.0 cc
Atrovent	Adult dose	0.5 mg	2.5 cc
Benadryl	Adult dose	25.0-50.0 mg	0.5-1.0cc
Calcium	10.0-20.0 mg/kg	300-500 mg	3.0-5.0 cc
Demerol	1.0 mg/kg	30.0 mg	0.3 cc
Dextrose ( <b>D<sub>50</sub>W</b> )	0.5 Gm/kg	15.0 Gm	30.0 cc
<b>Dopamine (Not recommended without an infusion pump)</b>			
Epinephrine 1:10,000	0.01-0.03 mg/kg	0.3-0.9 mg	3.0-9.0 cc
Epinephrine 1:1000 (SQ)	Adult dose	0.1-0.3 mg	0.1-0.3 cc
Fentanyl	2-3 mcg/kg	60-90 mcg	1.2-1.8 cc
Glucagon	Adult dose	1.0 mg	1.0 cc
Ibuprofen	5-10 mg/kg	150-300 mg	7.5-15 cc
Lasix	0.25-1.0 mg/kg	7.5-30.0 mg	0.75-3.0 cc
Lidocaine	1.0-1.5 mg/kg	30.0-45.0 mg	1.5-2.25 cc
Morphine	0.05-0.1 mg/kg	1.5-3.0 mg	0.15-0.3 cc
Narcan	Adult dose	0.4-2.0 mg	1.0-5.0 cc
Phenergan	6.25 mg	6.25 mg	0.25 cc
Sodium Bicarbonate ( <b>8.4%</b> )	1.0-2.0 mEq/kg	30.0-60.0 mEq	30.0-60.0 cc
Solumedrol	1.0-2.0 mg/kg	30.0-60.0 mg	0.5-0.9 cc
Succinylcholine	1.5 mg/kg	45.0 mg	2.25 cc
Tylenol	10.0-15.0 mg/kg	300.0-450.0 mg	1-2 tablets
Vecuronium	0.1 mg/kg	3.0 mg	3.0 cc
Versed	0.1 mg/kg	1.0-3.0 mg	1.0-3.0 cc
Versed (IM)	Adult dose	2.5-5.0 mg	2.5-5.0 cc

40 kg = 88 lbs Age estimate = 12 years		
Vital signs: HR: 85-95	RR: 16-22	BP: 100-140/65 mmHg
ET: 7.0 mm	Suction catheter: 12-14 F	NG tube: 14 F
Defibrillation: 80 J repeat @ 160 J	Cardioversion: 20 J repeat @ 40 J	
Fluid challenge: 800 ml (20 cc/kg, may repeat x2)		

	<u>Dose</u>	<u>Dose to Give</u>	<u>cc's</u>
Activated Charcoal	1.0 Gm/kg	40.0 Gm	192.0 cc
Adenosine	Adult dose	6.0-12.0 mg	2.0 -4.0 cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	0.01-0.02 mg/kg	0.4-0.8 mg	4.0-8.0 cc
Atrovent	Adult dose	0.5 mg	2.5 cc
Benadryl	Adult dose	25.0-50.0 mg	0.5-1.0 cc
Calcium	10.0-20.0 mg/kg	400-800 mg	4.0-8.0 cc
Demerol	1.0 mg/kg	40.0 mg	0.4 cc
Dextrose ( <b>D<sub>50</sub>W</b> )	0.5 Gm/kg	20.0 Gm	40.0 cc
<b>Dopamine (Not recommended without an infusion pump)</b>			
Epinephrine 1:10,000	0.01-0.03 mg/kg	0.4-1.0 mg	4.0-10.0 cc
Epinephrine 1:1000 (SQ)	Adult dose	0.1-0.3 mg	0.1-0.3 cc
Fentanyl	2-3 mcg/kg	80-120 mcg	1.6-2.4 cc
Glucagon	Adult dose	1.0 mg	1.0 cc
Ibuprofen	5-10 mg/kg	200-400 mg	10-20 cc
Lasix	0.25-1.0 mg/kg	10.0-40.0 mg	1.0-4.0 cc
Lidocaine	1.0-1.5 mg/kg	40.0-60.0 mg	2.0-3.0 cc
Morphine	0.05-0.1 mg/kg	2.0-4.0 mg	0.2-0.4 cc
Narcan	Adult dose	0.4-2.0 mg	1.0-5.0 cc
Phenergan	6.25 mg	6.25 mg	0.25 cc
Sodium Bicarbonate ( <b>8.4%</b> )	1.0-2.0 mEq/kg	40.0-80.0 mEq	40.0-80.0 cc
Solumedrol	1.0-2.0 mg/kg	40.0-80.0 mg	0.6-1.2 cc
Succinylcholine	1.5 mg/kg	60.0 mg	3.0 cc
Tylenol	10.0-15.0 mg/kg	400.0-600.0 mg	1-2 tablets
Vecuronium	0.1 mg/kg	4.0 mg	4.0 cc
Versed	0.1 mg/kg	2.0-4.0 mg	2.0-4.0 cc
Versed (IM)	Adult dose	2.5-5.0 mg	2.5-5.0 cc

50 kg = 110 lbs Age estimate = 15 years		
Vital signs: HR: 75-80	RR: 14-20	BP: 100-140/70 mmHg
ET: 7.5 mm	Suction catheter: 14 F	NG tube: 18 F
Defibrillation: 100 J repeat @ 200 J    Cardioversion: 25 J repeat @ 50 J		
Fluid challenge: 1000 ml (20 cc/kg, may repeat x2)		

	<u>Dose</u>	<u>Dose to Give</u>	<u>cc's</u>
Activated Charcoal	1.0 Gm/kg	50.0 Gm	240.0 cc
Adenosine	Adult dose	6.0 -12.0 mg	2.0 - 4.0 cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	Adult dose	0.5-1.0 mg	5.0-10.0 cc
Atrovent	Adult dose	0.5 mg	2.5 cc
Benadryl	Adult dose	25-50 mg	0.5-1.0 cc
Calcium	Adult dose	500-1,000 mg	5.0-10.0 cc
Demerol	1.0 mg/kg	50 mg	0.5 cc
Dextrose ( <b>D<sub>50</sub>W</b> )	Adult dose	25.0 Gm	50.0 cc
Dopamine ( <b>Not recommended without an infusion pump</b> )			
Epinephrine 1:10,000	Adult dose	0.5-1.0 mg	5.0-10.0 cc
Epinephrine 1:1000 (SQ)	Adult dose	0.1-0.3 mg	0.1-0.3 cc
Fentanyl	2-3 mcg/kg	100-150 mcg	2-2.5 cc
Glucagon	Adult dose	1.0 mg	1.0 cc
Ibuprofen	5-10 mg/kg	250-500 mg	12.5-25 cc
Lasix	0.25-1.0 mg/kg	12.5-50.0 mg	1.25-5.0 cc
Lidocaine	1.0-1.5 mg/kg	50.0-75.0 mg	2.5-3.75 cc
Morphine	0.05-0.1 mg/kg	2.5-5.0 mg	0.25-0.5 cc
Narcan	Adult dose	0.4-2.0 mg	1.0-5.0 cc
Phenergan	6.25-25 mg	6.25-25 mg	0.25-1.0 cc
Sodium Bicarbonate ( <b>8.4%</b> )	Adult dose	50.0-100.0 mEq	50.0-100.0 cc
Solumedrol	1.0-2.0 mg/kg	50.0-100.0 mg	0.8-1.6 cc
Succinylcholine	1.5 mg/kg	75.0 mg	3.75 cc
Tylenol	10.0-15.0 mg/kg	500.0-750.0 mg	1-2 tablets
Vecuronium	0.1 mg/kg	5.0 mg	5.0 cc
Versed	Adult dose	2.5-5.0 mg	2.5-5.0 cc
Versed (IM)	Adult dose	2.5-5.0 mg	2.5-5.0 cc

<b>60 kg = 132 lbs</b>		
<b>Age estimate = 16 17 years</b>		
<b>Vital signs: HR: 60-100</b>	<b>RR: 12-20</b>	<b>BP: 90 + age/80 mmHg</b>
<b>ET: 7.5-8.0 mm</b>	<b>Suction catheter: 14 F</b>	<b>NG tube: 18 F</b>
<b>Defibrillation: 120 J repeat @ 240 J    Cardioversion: 30 J repeat @ 60 J</b>		
<b>Fluid challenge: 1200 ml (20 cc/kg, may repeat x2)</b>		

	<b>Dose</b>	<b>Dose to Give</b>	<b>cc's</b>
Activated Charcoal	1.0 Gm/kg	50.0 Gm	240.0 cc
Adenosine	Adult dose	6.0-12.0 mg	2.0- 4.0 cc
Albuterol	Adult dose	2.5 mg	3.0 cc
Atropine	Adult dose	0.5-1.0 mg	5.0-10.0 cc
Atrovent	Adult dose	0.5 mg	2.5 cc
Benadryl	Adult dose	25.0-50.0 mg	0.5-1.0 cc
Calcium	Adult dose	500-1000 mg	5.0-10.0 cc
Demerol	Adult dose	50.0-75.0 mg	0.5-0.75 cc
Dextrose ( <b>D<sub>50</sub>W</b> )	Adult dose	25.0 Gm	50.0 cc
<b>Dopamine (Not recommended without an infusion pump)</b>			
Epinephrine 1:10,000	Adult dose	0.5-1.0 mg	5.0-10.0 cc
Epinephrine (SQ) 1:1000	Adult dose	0.1-0.3 mg	0.1-0.3 cc
Fentanyl	2-3 mcg/kg	120-180 mcg	2.4-3.6 cc
Glucagon	Adult dose	1.0 mg	1.0 cc
Ibuprofen	5-10 mg/kg	300-600 mg	15-30 cc
Lasix	0.25-1.0 mg/kg	15-60 mg	1.5-6.0 cc
Lidocaine	1.0-1.5 mg/kg	60.0-90.0 mg	3.0-4.5 cc
Morphine	0.05-0.1 mg/kg	3.0-6.0 mg	0.3-0.6 cc
Narcan	Adult dose	0.4-2.0 mg	1.0-5.0 cc
Phenergan	6.25-25 mg	6.25-25 mg	0.25-1.0 cc
Sodium Bicarbonate ( <b>8.4%</b> )	Adult dose	50.0-100.0 mEq	50.0-100.0 cc
Solumedrol	1.0-2.0 mg/kg	60.0-120.0 mg	0.9-1.8 cc
Succinylcholine	1.5 mg/kg	90.0 mg	4.5 cc
Tylenol	10.0-15.0 mg/kg	600.0-900.0 mg	2-3 tablets
Vecuronium	0.1 mg/kg	6.0 mg	6.0 cc
Versed	Adult dose	2.5-5.0 mg	2.5-5.0 cc
Versed (IM)	Adult dose	2.5-5.0 mg	2.5-5.0 cc

## ABBREVIATIONS AND CHARTING SYMBOLS

@	=	at
Δ	=	change
♀	=	female
L	=	left
<	=	less than
>	=	greater than
♂	=	male
?	=	questionable
1°	=	primary, first degree
2°	=	secondary, second degree
3°	=	tertiary, third degree
AAA	=	Abdominal Aortic Aneurysm
Abd	=	Abdomen
ac	=	before meals
AC	=	antecubital
A fib	=	atrial fibrillation
AIDS	=	Acquired Immune Deficiency Syndrome
ALS	=	advanced life support
AMA	=	against medical advice
A & O X3	=	alert & oriented to person, place & time
ARDS	=	Adult Respiratory Distress Syndrome
ASA	=	aspirin
ASHD	=	arteriosclerotic heart disease
b.i.d.	=	twice daily

BLS	=	Basic Life Support
BPM	=	Beats per minute
BSA	=	Body Surface Area
CHI	=	closed head injury
CST	=	Cincinnati stroke test
DOS	=	dead on scene
DT's	=	Delirium tremens
Dx	=	diagnosis
EBL	=	estimated blood loss
ECG or EKG	=	electrocardiogram
EDC	=	estimated date of confinement
Elix	=	elixir
Eng.	=	Engine Company
est.	=	estimated
ETA	=	estimated time of arrival
ETD	=	estimated time of departure
ETOH	=	ethyl alcohol
ETT or ET	=	endotracheal tube
F°	=	Fahrenheit
FB	=	foreign body
FUO	=	fever of unknown origin
Fx	=	fracture
Gr	=	gravida
GCS	=	Glasgow Coma Scale
GI	=	gastrointestinal
gm	=	gram

gr	=	grain
GSW	=	gun shot wound
gtt	=	drops
gtt/min	=	drops per minute
GU	=	genitourinary
GYN	=	gynecologic
HBD	=	has been drinking
HCVD	=	hypertensive cardiovascular disease
HEENT	=	head, ears, eyes, nose and throat
HIV	=	human immunodeficiency virus
hr	=	hour
HR	=	heart rate
HTN	=	hypertension
Hx	=	history
IC	=	intracardiac
ICP	=	intracranial pressure
IDDM	=	insulin dependent diabetes mellitus
IM	=	intramuscular
IN	=	intranasal
IO	=	intraosseous
IUD	=	intrauterine device
IV	=	intravenous
IVP	=	IV push
IVR	=	idioventricular rhythm
J	=	joules
JVD	=	Jugular vein distention

kg	=	kilogram
KVO or TKO	=	keep vein open, to keep open
L	=	liter
lb	=	pound
LLE	=	left lower extremity
LLQ	=	left lower quadrant
LMP	=	last menstrual period
LOC	=	level of consciousness
L-spine	=	lumbar spine
LUE	=	left upper extremity
LUQ	=	left upper quadrant
L/min	=	liters per minute
M	=	meter
MAE	=	moves all extremities
MAO	=	monoamine oxidase
MAT	=	multifocal atrial tachycardia
mcg	=	microgram
MCL	=	modified chest lead
mEq	=	millequivalent
mg	=	milligram
ml	=	milliliter
min	=	minute
MMC	=	Mercy Medical Center
mm Hg	=	millimeter of mercury
MAST	=	military/medical antishock trousers
M.S.	=	morphine sulfate

MVA or MVC	=	motor vehicle accident or collision
NA or N/A	=	not applicable or not assessed
NAD	=	no apparent/acute distress
NaHCO <sub>3</sub>	=	Sodium Bicarbonate
NC or N/C	=	nasal cannula
Neg	=	negative
NG	=	nasogastric
NKDA	=	no known drug allergies
NPA	=	nasopharyngeal airway
NPO	=	nothing by mouth
NT or N/T	=	not taken
NV or N/V	=	nausea and vomiting
NS or N/S	=	Normal Saline
NSAID	=	non-steroidal anti-inflammatory drug
NSR	=	normal sinus rhythm
NTG	=	Nitroglycerin
OB	=	obstetrics
OD	=	overdose
od	=	right eye
OPA	=	oropharyngeal airway
O <sub>2</sub>	=	oxygen
OHSU	=	Oregon Health Sciences University
os	=	left eye
ou	=	both eyes
oz	=	ounce
PAC	=	premature atrial contraction

PCN	=	penicillin
PVAMC	=	Portland VA Medical Center
RVAMC	=	Roseburg VA Medical Center
SHMC	=	Sacred Heart Medical Center
SBP	=	Systolic Blood Pressure
STHB	=	said to have been
SIDS	=	Sudden Infant Death Syndrome
SL	=	sublingual
SNF	=	skilled nursing facility
SOB	=	shortness of breath
S-spine	=	sacral spine
SQ	=	subcutaneous
s/s	=	signs and symptoms
SSS	=	Sick Sinus Syndrome
ST	=	sinus tachycardia
SVT	=	supraventricular tachycardia
sx	=	signs and symptoms
TB	=	tuberculosis
TCA	=	tricyclic antidepressant
TIA	=	transient ischemic attack
TX or Tx	=	treatment
t.i.d.	=	three times daily
TKO	=	to keep open
T-spine	=	thoracic spine
UDN	=	updraft nebulizer
URI	=	upper respiratory infection

UTI	=	urinary tract infection
VD	=	venereal disease
VF	=	ventricular fibrillation
VT	=	ventricular tachycardia
VS or V/S	=	vital signs
W/D	=	warm and dry
$\bar{C}$	=	with
$\bar{S}$	=	without
WPW	=	Wolff-Parkinson-White Syndrome
X	=	multiplied by
yds	=	yards
YO or Y/O	=	year old

