



**PATIENT CARE PROTOCOLS**  
**EMT - PARAMEDIC**  
Fourth Edition

**UPDATE JUNE 25, 2008**

# PATIENT CARE PROTOCOLS

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# **Patient Care Protocols**

## **PREFACE**

These protocols are intended to guide the Emergency Medical Technician - Paramedic, in the treatments of patients. Anyone who wants to change the protocols can make a request in writing to the State Emergency Medicine Control Committee, or you may make the request by email to Dr. John Campbell, EMS Medical Director:

Alabama State Emergency Medical Control Committee  
C/O Office of EMS and Trauma  
Alabama Department of Public Health  
P.O. Box 30310  
Montgomery, AL 36130-3017

or [johncampbell@adph.state.al.us](mailto:johncampbell@adph.state.al.us)

At no time and in no instance, do these protocols authorize the utilization of drugs or procedures that are not approved by the Alabama State Committee of Public Health.

EMTs are responsible for their actions within the respective scope of privilege of the license that they hold.

On-line Medical Direction (OLMD) can and is expected to override these protocols at any time the patient's short or long-term interest is best served. OLMD cannot order EMTs to perform procedures not allowed in these protocols.

These protocols are intended as a reference for physicians providing OLMD to EMTs. Treatment direction, which is more appropriate to the patient's condition than the protocol, should be provided by the physician as long as the EMT scope of privilege is not exceeded.

**NOTE:** The Protocols contain all the allowable procedures for EMTs. OLMD cannot order EMTs to perform procedures not in these protocols.

The drug section of the protocols is intended as information only. The drugs may be administered only as listed in the protocol, unless OLMD orders a deviation.

### **PROTOCOL UPDATES**

The Patient Care Protocol manual is revised through Edition updates. Edition updates are performed by request of the State Emergency Medical Control Committee (SEMCC) or the Office of EMS & Trauma (OEMST) Director. Edition updates incorporate revised and new protocols which have been approved since the previous edition release. The

editions are numbered. The protocols are updated through REVISIONS. Each protocol can be revised individually and the revision and revision date are noted on the protocol in the upper right hand corner. The revisions are lettered.

# **Patient Care Protocols**

## **SECTION 1: RESPONSE**

1. Determine from dispatch information the potential to need certain protocols, equipment, and personnel.
2. Approach each scene with a scene size-up to assure your safety. If the scene appears unsafe, “stage” in a safe area until the scene is secure.
3. Approach the patient with appropriate equipment. The minimum equipment should consist of such items necessary to obtain vital signs, clear and maintain the airway and provide oxygen. The monitor/defibrillator and first line drugs should be considered part of the equipment on any event where cardiac problems are suspected.
4. If the scene requires resources such as rescue, haz-mat, or air transport, request the necessary assistance.
5. Utilize personal protective equipment when appropriate to protect yourself as well as the patient.
6. Approach the patient and gain a history while at the same time assessing airway, breathing, and circulation.
7. Problems found with any primary survey should be corrected as much as possible before beginning a secondary survey or ongoing exam.
8. After the primary survey the appropriate protocol(s) should be followed.
9. A secondary survey and/or ongoing exam should be performed if there is time.
10. Communications with the receiving hospital should be established as quickly as possible.
11. If OLMD is needed, call as early in the treatment sequence as possible.

# Patient Care Protocols

Revision A June 25, 2008

## SECTION 2: PATIENT RIGHTS

1. The ALS protocols are intended for use with a conscious, consenting patient, or an unconscious (implied consent) patient. An adult is considered to be of sound mind unless obviously under the influence of drugs or alcohol or has been determined by a judge to be incompetent. If the person is obviously under the influence of alcohol or drugs and yet refuses treatment, see three (3) below.
2. If a conscious, rational patient refuses treatment, you should comply with the patient's request and document the refusal. If in your judgment a patient who has refused treatment (whether competent or incompetent) needs emergency care, contact OLMD.
3. If a patient may harm him/herself and refuses treatment, you should contact your on-line Hospital (and police if necessary). If the patient threatens harm to you, move from the close proximity of the patient, and from harms way. If the police are unable or unwilling to restrain the patient, your responsibility is completed with your notification of the police agency and medical direction.
4. If a patient's family, physician, or nursing home refuses treatment for a patient, protocols are contained herein to deal with those situations.
5. An adult patient who is conscious and alert has the right to select a hospital to which he/she is to be transported, and neither the EMS service nor OLMD has the right to override that decision. If the hospital is on diversion status and the patient still demands to be taken to that hospital, the EMS service must honor this request and OLMD cannot override this decision. If, in your judgment, transport to the patient's chosen hospital will cause loss of life or limb, and you cannot convince the patient to allow you to take him/her to a more appropriate hospital, contact your OLMD or service medical director and ask him/her to speak to the patient. If the patient still demands to go to the inappropriate hospital, you must honor this request.
6. If the patient requests to be taken to a hospital out of your normal service area or that transport would leave your community without ambulance service, you may request a backup ambulance (or an ambulance from the hospital to which the patient requests to be transported) to transport the patient. This may require taking the patient (if unstable) to the nearest appropriate hospital while transportation is arranged.
- 7. When a minor may give consent generally: Public Health Laws of Alabama, 2006 edition, 22-8-4 states, "Any minor who is 14 years of age or older, or has graduated from high school, or is married, or having been married is divorced or is pregnant may give effective consent to any legally authorized medical, dental, or health or mental health services for himself or herself, and the consent of no other person shall be necessary." (Acts 1971, No 2281, p. 3681, 1). An EMT may treat and/or transport, under the doctrine of implied consent, a minor who requires immediate care to save his/her life or prevent serious injury. The age of adulthood in Alabama is 19 years old. If an unemancipated minor is old enough to consent but refuses (or their parent or legal guardian refuses) care that you think is needed, contact OLMD.**

- 8. In other situations involving minors where no parental contact can be obtained, OLMD contact is mandatory. To err on the side of treatment is the safe approach. Careful documentation is important.**

## **SECTION 3: Medical Direction for Drugs and Procedures**

### **SECTION 3.1 SCOPE OF PRIVILEGE**

A licensed Emergency Medical Technician (EMT) is authorized to perform procedures and administer medications as defined by these protocols. Each level of EMT, as defined by the EMS Rules, has a specific list of authorized procedures and medications as defined by that level's scope of privilege.

#### **EMT Basic Scope of Privilege**

An EMT-Basic, licensed by the ADPH-OEMST, is authorized to perform patient care procedures and administer medications as follows:

##### Procedures:

1. Patient assessment including taking and recording vital signs and appropriate history
2. Administration of supplemental oxygen via cannula or mask
3. Administration of aspirin for suspected cardiac chest pain
4. Use of oropharyngeal and nasopharyngeal airways
5. Use of bag-valve mask
6. Use of mouth to mask device with or without supplemental oxygen
7. Use of pulse oximetry devices
8. Opening and maintaining a patent airway using simple airway maneuvers
9. Use of suction equipment
10. Cardiopulmonary resuscitation
11. Simple management of a cardiac emergency including the use of an AED
12. Acquiring and transmitting 12-lead ECG (if AED is capable)
13. Control of bleeding and shock through positioning, direct pressure, and tourniquet
14. Use of hemostatic agents
15. Bandaging
16. Spinal Motion Restriction
17. Splinting including traction splint
18. Joint dislocation immobilization
19. Application of pneumatic anti-shock garment
20. Assistance with emergency childbirth, NOT including any surgical procedures
21. Capillary puncture for the purpose of blood glucose monitoring
22. Use of automated glucometer
23. Properly lifting and moving a patient
24. Patient extrication
25. Mass casualty incident triage including triage tags
26. Scene management, such as directing traffic, but only when such activities do not interfere with patient care duties and law enforcement personnel are not at the scene

##### Medications:

1. Administration of activated charcoal, aspirin, and glucose paste
2. Assist self-administration of nitroglycerin, auto-inhalers, and auto-injection epinephrine
3. Site maintenance of heparin locks and saline locks

## **Patient Care Protocols**

### **SECTION 3: Medical Direction for Drugs and Procedures (Continued)**

#### **EMT - Intermediate Scope of Privilege**

An EMT-Intermediate, licensed by the ADPH-OEMST, is authorized to perform all patient care procedures and administer all medications as defined in the EMT - Basic Scope of Practice AND the additional procedures and medications as follow:

##### Procedures:

1. Placement of oral and nasal endotracheal tubes
2. Peripheral venipuncture
3. Adult and pediatric intraosseous cannulation
4. Use of cardiac monitoring equipment, including placement of electrical leads
5. Delivery of electrical therapy to patients via defibrillators; 12-Lead ECGs
6. Continuous positive airway pressure (CPAP)

##### Medications:

1. Administration of Dextrose 50%, intravenously
2. Administration of nebulizer treatment with patient's medication
3. Administration of fluids (both intravenous and intraosseous)
4. Administration of Thiamine IV (should precede the administration of D50W to any adult patient if there is evidence of alcohol abuse or malnutrition)

#### **EMT Paramedic Scope of Privilege**

An EMT- Paramedic, licensed by the ADPH-OEMST, is authorized to perform all patient care procedures and administer all medications as defined in the EMT - Intermediate Scope of Practice AND the additional procedures and medications as follow:

##### Procedures:

1. External Cardiac Pacing
2. Naso-gastric tube placement
3. Needle Decompression of a tension pneumothorax

##### Medications:

1. Administration of drugs on the list approved by the State Board of Health for such use in the EMS setting. Drugs may be administered via the intravenous, intraosseous, subcutaneous, intramuscular, oral, sublingual, rectal routes, and through inhalers and endotracheal tubes if approved for such administration by the State Board of Health; and,
2. Within the constraints specified in the State EMS and Trauma rules, administration of drugs and maintenance of I.V. drips for inter-hospital transfer patients.

#### **SCOPE OF PRIVILEGE LIMITATIONS**

An EMT is prohibited from performing any procedure or utilizing any medication not approved by the State Board of Health even though they may have been taught these drugs and procedures in their EMT curriculum.

## **Patient Care Protocols**

### **SECTION 3: Medical Direction for Drugs and Procedures (Continued)**

#### **SECTION 3.2 MEDICAL DIRECTION HOSPITALS**

Medical direction must be provided by a medical direction hospital, or the agency's designated Medical Director if he/she has a current Medical Control Physician Identification (MCPI) number and is board certified in emergency medicine or is current in ACLS and ATLS. Medical direction hospitals are defined as those hospitals that provide OLMD by physicians with current medical control physician certification and MCPI numbers. Hospitals that do not provide OLMD are referred to as non-medical direction hospitals. Medical direction hospitals shall provide requested OLMD for all patients being transported to their facility. All medical direction for patients transported to non-medical direction hospitals must come from a medical direction hospital as outlined in the Regional Medical Control Plan or from the agency's designated Medical Director if he/she has a current MCPI number and is board certified in emergency medicine or is current in ACLS and ATLS.

#### **SECTION 3.3 PHYSICIAN MEDICAL DIRECTION**

Medical direction for drugs and patient care procedures is provided under physician oversight. To provide on-line medical direction a physician must have taken the medical direction course and hold a current medical direction physician identification number. Category A medications can be given and Category A procedures performed without direct physician contact as long as the patient is stable. In such cases only a report to a nurse at the receiving hospital is necessary. Category B drugs and procedures, however, require contact with a physician prior to administration. A report must be made to the physician in any case in which the patient is unstable.

#### **SECTION 3.4 DRUG AND PROCEDURE CATEGORIES**

Category A (CAT A): A drug or procedure that can be given or performed by protocol.

Category B (CAT B): A drug or procedure that requires the EMT to contact OLMD PRIOR TO administration or performance.

**Category A:** Drugs or procedures which may be used by the EMT - Paramedic in accordance with the protocols.

<b>DRUG/PROCEDURE</b>	<b>PROTOCOL</b>
Albuterol	Respiratory Distress
Albuterol	Allergic Reaction
Amiodarone	Adult Vfib/Pulseless Vtach
Aspirin	Chest Pain
Atropine Sulfate	Cardiac Arrest
Atropine Sulfate	Symptomatic Bradycardia
Calcium Gluconate	Cardiac Arrest
D50W	All Protocols as indicated
Diazepam	Seizures
Diphenhydramine	Allergic Reaction
Diphenhydramine	Nausea and Vomiting (adult)
Epinephrine	Allergic Reaction
Epinephrine	Cardiac Arrest

## **Patient Care Protocols**

### **SECTION 3: Medical Direction for Drugs and Procedures (Continued)**

#### **Category A (continued)**

<b>DRUG/PROCEDURE</b>	<b>PROTOCOL</b>
Intraosseous Infusion	Cardiac Arrest or late shock
Lidocaine	Cardiac arrest
Lorazepam	Seizures
Morphine Sulfate	Severe pain in adults
Naloxone	Altered Mental Status
Naloxone	Cardiac Arrest
Naloxone	Coma
Naloxone	Poisons & Overdoses
Naloxone	Seizures
Needle Decompression	Tension Pneumothorax associated with trauma arrest
Nitroglycerin	Cardiac Chest Pain
Normal Saline (IV Solution)	All Protocols as indicated
Sodium Bicarbonate	Cardiac Arrest
Thiamine	All Protocols as indicated
Vasopressin	Adult Vfib/Pulseless Vtach, Asystole, and PEA
Cyanokit (hydroxocobalamin)	Poisons and overdoses
12-Lead ECG	All Protocols as indicated
Blind Insertion Airway Devices (BIAD)	All Protocols as indicated
Hemostatic Agents	All Protocols as indicated
Continuous Positive Airway Pressure (CPAP)	Respiratory Distress
Endotracheal Intubation (Oral)	All Protocols as indicated
Intravenous Therapy	All Protocols as indicated
Pulse Oximetry	All Protocols as indicated

**Category B:** Drugs or procedures which may be used by the EMT - Paramedic in accordance with the protocols after contact with the medical direction physician **PRIOR TO** the drug/procedure being used as directed by the protocols.

<b>DRUG/PROCEDURE</b>	<b>PROTOCOL</b>
Activated Charcoal	Poisons & Overdoses
Adenosine	Cardiac Dysrhythmias
Albuterol	Congestive Heart Failure
Albuterol	Burns with wheezing
Atropine Sulfate	Poisons & Overdoses
Calcium Gluconate	Poisons & Overdoses
Diazepam	Seizures (Pediatrics)
Diazepam	Seizures (Rectal Administration)
Diphenhydramine	Pediatric Nausea and Vomiting
Dopamine	Cardiac Arrest
Dopamine	Poisons & Overdoses

## **Patient Care Protocols**

### **SECTION 3: Medical Direction for Drugs and Procedures (Continued)**

#### **Category B (continued)**

<b>DRUG/PROCEDURE</b>	<b>PROTOCOL</b>
Dopamine	Shock
Epinephrine	Respiratory Distress
Furosemide	Respiratory Distress
Glucagon	Hypoglycemia
Glucagon	Poisons & Overdoses
Intraosseous infusion	For critical patient other than those with cardiac arrest and late shock
Lidocaine	Cardiac chest pain
Lidocaine	Cardiac dysrhythmias
Lorazepam	Seizures (pediatric)
Magnesium Sulfate	Preeclampsia/Eclampsia
Magnesium Sulfate	Cardiac Dysrhythmias (Torsade de Pointes)
Morphine Sulfate	Pain in children, CHF/ Pulmonary Edema
Nitroglycerin	Congestive Heart Failure
Nitroglycerin	Hypertensive Emergencies
Nitroglycerin	Respiratory Distress
Nitrous Oxide	Amputation, Burns, Cardiac Chest Pain, Fractures and Dislocations
Sodium Bicarbonate	Poisons & Overdoses
Rectal Administration Diazepam (Pediatric)	Seizures
External Pacing	Cardiac Dysrhythmias
Intubation (Nasal)	All Protocols
Naso-gastric Tube Placement	All Protocols
Needle Decompression	Tension Pneumothorax except when associated with trauma arrest

#### **SECTION 3.5 OPTIONAL DRUGS AND PROCEDURES**

Licensed services are required to carry and provide most of the drugs and equipment necessary to perform patient care procedures as directed by the protocols. However, optional drugs and procedures are NOT required, and medical directors have the option to make all, some, or none required for his/her particular service. Optional drugs and procedures, listed below, are CAT A and/or CAT B as directed by the protocols and listed in the Category A and Category B tables.

<b>DRUGS</b>	<b>WHEN TO USE</b>	<b>NOTE</b>
Amiodarone	Adult/Pediatric VFib/Pulseless Vtach	
Glucagon	Hypoglycemia	
Glucagon	Poisons and Overdoses	
Hemostatic Agents	Exsanguinating hemorrhage that can't be controlled by pressure or tourniquet	
Lorazepam	Seizures	
Nitrous Oxide	Amputation	
Nitrous Oxide	Burns	
Nitrous Oxide	Cardiac Chest Pain	
Nitrous Oxide	Fractures & Dislocations	
Morphine Sulfate	All Protocols as Indicated	Required if Available
Vasopressin	Adult Vfib/Pulseless Vtach, PEA, Asystole	
Cyanokit (hydroxocobalamin)	Known or suspected cyanide poisoning	Added October 17, 2007

## **Patient Care Protocols**

### **SECTION 3: Medical Direction for Drugs and Procedures (Continued)**

#### **SECTION 3.5 OPTIONAL DRUGS AND PROCEDURES (continued)**

<b>PROCEDURES</b>	<b>WHEN TO USE</b>	<b>NOTE</b>
12 Lead ECG	Chest Pain and/or Chest Trauma	Required if Available
End-Tidal <b>Electronic</b> CO <sub>2</sub> monitoring	Intubated patient, respiratory problem, trauma patient	May replace colorimetric CO <sub>2</sub> detector in monitoring ET tube placement (use of one or the other is mandatory)
Portable ventilator	Intubated patient	
Continuous Positive Airway Pressure (CPAP)	Congestive Heart Failure, Respiratory Distress	
Nasogastric Tube Placement	All protocols as indicated	
Hemostatic agents	Exsanguinating Hemorrhage that cannot be controlled by pressure or tourniquet	

# **Patient Care Protocols**

## **SECTION 4: Treatment Protocols**

**SCENE SIZE-UP**

**PRIMARY SURVEY TO INCLUDE HISTORY AND VITAL SIGNS**

**AIRWAY:**

- A. Maintain patency.
- B. Suction as needed.
- C. Consider intubation.

**BREATHING:**

- A. Oxygen as needed to maintain oxygen saturation (pulse oximeter) reading >95%.
- B. Assist breathing as needed.

**CIRCULATION:**

- A. Consider/establish IV or Saline lock.
- B. Consider drawing one or two tubes of blood for hospital or prehospital analysis.
- C. Consider ECG monitor.

**FOLLOW PROTOCOL SPECIFIC HISTORY, ASSESSMENT, AND TREATMENT  
FOLLOW COMMUNICATIONS PROTOCOL  
SECONDARY SURVEY  
ONGOING EXAM**

**NOTIFY NURSE AT RECEIVING HOSPITAL FOR:**

- A. Stable patients.
- B. Stable patients requiring only Category A treatment.
  - Contact the nurse as soon as reasonably possible after leaving the scene.
  - The nurse is responsible for notifying the receiving physician.

**CALL OLMD:**

- A. Call as early as reasonably possible about all unstable patients.
- B. Before using Category B procedures or drugs.
- C. If in doubt as to protocol or procedures needed.
- D. If you need medical advice.

**SPECIAL NOTE:**

When making your report to the receiving hospital, do not refer to a patient as a “psychiatric patient” unless he/she is under a psychiatric hold as described below.

In prehospital care no one who is acting inappropriately is a “psychiatric” patient, unless that patient is under a psychiatric hold by a doctor, mental health professional, or police officer. Any patient with altered mental status or inappropriate behavior should be treated according to the appropriate medical protocol, such as coma or altered mental status.

**SPECIFIC INFORMATION NEEDED:**

- A. Pain: PQRST – Place, Quality, Radiation, Severity, and Time began.
- B. Associated symptoms: Nausea, vomiting (bloody or coffee-ground) diarrhea, constipation, melena, urinary difficulties, menstrual history, or fever.
- C. History: Previous trauma, abnormal ingestion, medications, known disease, surgery, pregnant or missed periods.

**PHYSICAL ASSESSMENT:**

- A. Vital signs.
- B. Abdomen: Tenderness, rebound tenderness, guarding, rigidity, bowel sounds, distention, or pulsating mass.
- C. Emesis: Type and amount.
- D. Note any evidence of blood in emesis or of rectal blood.

**TREATMENT:**

- A. Airway - ensure patency (vomiting precautions).
- B. Breathing - Oxygen as needed to maintain oxygen saturation (pulse oximeter) reading >95%.
- C. Circulation - obtain vital signs frequently, and monitor for shock.
  - Consider IV, Saline lock or large bore, normal saline, at a TKO rate.
  - If shock syndrome present, proceed to Shock Protocol (4.28).
- D. Position of comfort.
- E. Give nothing by mouth.
- F. Reassess patient and obtain vital signs frequently.
- G. Consider Morphine Sulfate for patients with severe pain as seen with kidney stones.  
Adult (CAT A): 4 mg IV initial dose. Titrate to pain relief in 2 mg doses, every 3-5 minutes, up to 10mg MAX.  
Adult (CAT B): If pain is not relieved after 10 mg you must call OLMD for further doses.

**Pediatric (CAT B): 0.1 mg/kg not to exceed 5 mg.**

**SPECIFIC PRECAUTIONS:**

- A. Abdominal pain may be the first warning of catastrophic internal bleeding (ruptured aneurysm, liver, spleen, ectopic pregnancy, perforated viscous, etc.). Since the bleeding is not apparent, you must think of volume depletion and monitor the patient closely to recognize shock.
- B. Use caution with fluid administration in patients with suspected dissecting aortic or abdominal aneurysm. Do not try to exceed systolic BP of 90 mmHg.
- C. Nitrous Oxide causes bowel distention and is contraindicated in abdominal pain.

**SPECIFIC INFORMATION NEEDED:**

- A. Present history: Recent exposure of the patient to specific allergen. Route of exposure, e.g., inhaled, oral, intravenous or dermal. Types of common allergens include medications, foods, or insect bites.
- B. Past History: Known allergies, previous type of allergic reaction. Previous treatment required.
- C. Symptoms: Pruritic (itching), dyspnea, sensation of airway closure, generalized weakness or dizziness.

**PHYSICAL ASSESSMENT:**

- A. Skin- allergic reactions can present as hives, swelling or generalized red skin (may not be present).
- B. Pulmonary- bronchoconstriction (wheezing), stridor (severe upper airway constriction), or hoarseness (moderate upper airway obstruction).
- C. Edema- facial, tongue and lips of most concern due to potential for airway compromise.
- D. Hemodynamic- tachycardia and hypotension.

**TREATMENT:**

**Minor Reaction- No sign of airway, respiratory or hemodynamic compromise. Reaction limited to skin.**

- A. Airway - monitor for development of increase in severity.
- B. Oxygen as needed to maintain oxygen saturation (pulse oximeter) reading >95%.
- C. Circulation - IV, Saline lock or large bore, NS at KVO rate. Closely monitor for changes.

**Moderate Reaction - Skin rash and mild or moderate respiratory symptoms (wheezing), however, no sign of airway compromise or shock.**

- A. Airway - monitor for development of respiratory compromise or increase in severity.
- B. Breathing - Oxygen 12-15 L/M, with non-rebreather mask.
- C. Circulation - IV, Saline lock or large bore, NS at a KVO rate. Monitor for signs of hypotension.
- D. Attach cardiac monitor.
- E. Epinephrine 1:1,000 (CAT A).  
Adults: 0.3 mg, SC (CAT A except CAT B if patient is elderly, has hypertension, or coronary artery disease).  
**Pediatrics: 0.01mg/kg up to 0.3 mg, SC.**
- F. If wheezing is present, begin inhalation therapy with Albuterol (CAT A).  
Adults: 2.5mg (nebulized, rotohaler, MDI w/spacer).  
**Pediatrics: 2.5mg (nebulized, rotohaler, MDI w/spacer).**
- G. Consider Diphenhydramine (CAT A).  
Adults: 25-50 mg IV, IM.  
**Pediatrics: 1 mg/kg IV, IM (do not exceed adult dose).**
- H. If patient has self-administration device for epinephrine or medications for allergy, the EMT may assist the patient in self-administration.

**Major Reaction - Severe respiratory symptoms or signs of airway compromise or shock; field treatment should not delay transport – Load & Go, treat en route.**

- A. Airway - maintain patency, consider intubation.
- B. Breathing - Oxygen 12-15 L/M, with non-rebreather mask.
- C. Consider bag-valve-mask assistance if necessary.
- D. Circulation - attach cardiac monitor - reassess vital signs frequently.
  - IV, large bore, with normal saline, at fluid bolus rate.
  - Adults - volume challenge 250-500 cc and reassess.
  - **Pediatrics under 8 years of age - volume challenge 20cc/kg and reassess.**
- E. Epinephrine 1:10,000 (CAT A).  
Adults: 0.3 mg, (3cc) IVP every 5 minutes if needed (CAT A except CAT B if patient is elderly, has hypertension, or coronary artery disease).  
**Pediatrics: 0.01mg/kg (0.1cc/kg) up to 0.3 mg (3cc), IVP every 5 minutes if needed.**
- F. If wheezing is present, begin inhalation therapy with Albuterol en route (CAT A).  
Adults: 2.5mg (nebulized, rotohaler, MDI w/spacer).  
**Pediatrics: 2.5mg (nebulized, rotohaler, MDI w/spacer).**
- G. Consider Diphenhydramine (CAT A).  
Adults: 25-50 mg IV, IM.  
**Pediatrics: 1 mg/kg IV, IM (do not exceed adult dose).**
- H. If patient has self-administration device for epinephrine or medication for allergy, the EMT may assist the patient in self-administration.

**SPECIFIC PRECAUTIONS:**

- A. Adverse reactions associated with epinephrine:
  - Hypertension, tachycardia, ectopy.
  - Tremor, anxiety, occasional vomiting.
  - Chest pain.
- B. Epinephrine is a mixed catecholamine. Its effects on the cardiovascular system include increased heart rate, arrhythmias, and vasoconstriction of the coronary arteries can also lead to angina. Epinephrine is relatively contraindicated in patients with known coronary artery disease, angina or previous heart attack except in life threatening circumstances. In these cases, call OLMD before giving.
- C. Epinephrine should be avoided in the elderly unless the benefits of treatment outweigh the risks of arrhythmias, angina or uncontrolled hypertension. In this case, call OLMD before giving.
- D. The two forms of epinephrine must not be confused or over-dosage may occur. These forms are epinephrine 1:1000 dilution, which is appropriate for subcutaneous administration, and the 1:10,000 dilution, which is for intravenous use.

**SPECIFIC INFORMATION NEEDED:**

- A. History: Recent crisis, emotional trauma, bizarre or abrupt changes in behavior, suicidal ideas, alcohol/drug intoxication, toxic exposure, recent head trauma, psychiatric disorders, medical problems or medications, or history of psychotropic or behavioral drugs.

**PHYSICAL ASSESSMENT:**

- A. Vital signs. Note pupil size, symmetry, and reactivity.  
 B. Mental status. Document status each time vital signs are taken.  
 C. Characteristic odor on breath.  
 D. Medical alert tag.

**TREATMENT:**

- A. Continually monitor patient and environment for scene safety.  
**BE PREPARED TO EXIT THE SCENE QUICKLY.**
- B. Airway - ensure patency.
- C. Breathing – Oxygen as needed to maintain oxygen saturation (pulse oximeter) reading >95%.  
 If possibility of carbon monoxide poisoning, give 100% oxygen. Pulse oximeter is unreliable if carbon monoxide is present.
- D. Circulation -consider IV, Saline lock or large bore, normal saline at a TKO rate.
- E. Draw one red top tube for hospital analysis (optional if local hospital will not accept).
- F. Glucometer- Adult: glucose < 70 administer 25GM D50W IVP (CAT A).  
 (Give thiamine, 100mg IVP [CAT A] before the D50W if there is any evidence of malnutrition or alcohol abuse).  
 If the patient is comatose from hypoglycemia and you cannot get an IV line, consider thiamine 100mg IM (CAT A) and glucagon 1mg IM (CAT B).  
**Pediatric: Glucose <60 administer 2-4cc/kg D25W (CAT A).  
 (Glucose <60 and can't get IV: consider glucagon 0.5mg IM for children under 44 lbs [CAT B]).**
- G. If respiratory depression is present, consider naloxone (CAT A.)  
 Adult: 2 mg IVP, every 5 minutes up to a total of 8 mg..  
**In children <5 years, give 0.1mg/kg (>5 years or 20 kg give 2 mg).**
- H. If potentially SUICIDAL:
  - Do not leave the patient alone.
  - Remove or have someone remove dangerous objects (i.e., knives, guns, pills),
  - Inquire HX regarding depression, helpless, or hopeless feelings and suicidal thoughts,
  - **CAUTION: SUICIDE PATIENTS ARE POTENTIALLY HOMICIDAL.**
- I. If displaying hallucinations or delusions- **CAUTION OF VIOLENT BEHAVIOR.**
- J. Transport in calm, quiet manner with continual monitoring.
- K. Consider restraint, if necessary: see Patient Restraint procedure.
- L. Any patient treated under this protocol should have a medical evaluation and should not be considered a psychiatric patient unless under a bona fide mental health hold by a physician, mental health professional, or police officer.
- M. Psychiatric disorders almost never cause organic brain syndrome. If patient is disoriented, rule out medical causes such as stroke, hypoglycemia, hypoxia, hypotension, or dementia.

**SPECIFIC INFORMATION NEEDED:**

- A. Time of amputation.
- B. Mechanism of amputation.
- C. Medications, bleeding tendencies, or problems with prior surgery.

**PHYSICAL ASSESSMENT:**

- A. Excessive bleeding.
- B. Vital signs.
- C. Note structural attachments in partial amputations.

**TREATMENT:**

- A. Airway - ensure patency.
- B. Breathing - Oxygen as needed to maintain oxygen saturation (pulse oximeter) reading >95%.
- C. Circulation - control bleeding with direct pressure.
- D. If bleeding cannot be controlled by direct pressure, elevation, and pressure points – use tourniquet. If tourniquet does not control bleeding consider hemostatic agent.
- E. Consider IV, Saline lock or large bore, normal saline at a TKO rate.
- F. If shock syndrome present, proceed to Shock Protocol: **DO NOT DELAY TRANSPORT. START IV EN ROUTE IF TRANSPORT IS IMMEDIATELY AVAILABLE.**
- G. Amputation category:
  - Stump: Control bleeding - cover with sterile dressing. **DO NOT COVER TOURNIQUET IF UTILIZED TO CONTROL BLEEDING.** Consider hemostatic agents.
  - Severed Part: Wrap in sterile dressing moistened with sterile saline, and place in a plastic bag. Place the bag in ice water combination without salt. The part should be transported with the patient if possible.
  - Partial Amputation: Control bleeding, consider hemostatic agents, saturate wound with sterile saline, cover with dry dressing, and splint in anatomical position. Avoid torsion and angulations. Reduce any torsion by moving part into normal anatomical position.
- H. If the patient has severe incapacitating pain, consider Morphine Sulfate.  
Adult (CAT A): 4 mg IV initial dose. Titrate to pain relief in 2 mg doses, every 3-5 minutes, up to 10mg MAX.  
Adult (CAT B): If pain is not relieved after 10 mg you must call OLM for further doses.  
**Pediatric (CAT B): 0.1 mg/kg not to exceed 5mg.**

**SPECIFIC PRECAUTIONS:**

- A. Do not immerse the part in a liquid or use dry ice.
- B. Time is of the greatest importance to assure viability. If the extrication time will be prolonged, consider sending the amputated part ahead to be surgically prepared for reimplantation.
- C. If bleeding cannot be controlled by direct pressure, elevation, and pressure points, a tourniquet should be applied as close as practical to the injury site. The tourniquet should not be covered. Note on the patient the time of application, and document in the record.

- D. If the part is recovered and appears to be reimplantable, consider transport to a hospital with reimplantation capability, OLMD should be consulted if there is any question concerning the viability of the part or transport distance.

**SPECIFIC INFORMATION NEEDED:**

- A. Environmental Hazards - Smoke, toxic chemicals or fumes, potential for explosion, electrical sources, etc.
- B. Type of exposure - Any information concerning products involved should be collected at the scene if possible. Note if patient was in a closed space and if inhalation of smoke or fumes occurred.
- C. Duration of exposure. Associated trauma or blast injury.
- D. History of loss of consciousness.
- E. Past medical history - especially cardiac or pulmonary disorders.

**PHYSICAL ASSESSMENT:**

- A. Airway - inhalation exposure can cause airway compromise. Note presence of stridor, facial swelling, carbonaceous sputum, singed nasal hair or drooling.
- B. Breathing - smoke or chemical exposure can cause bronchospasm. Note presence of wheezing. Carbon monoxide poisoning routinely will cause dyspnea. Pulse oximeter gives false high reading in presence of carbon monoxide poisoning or cyanide poisoning.
- C. Circulation - large burns will cause severe fluid loss. Note tachycardia, signs of volume depletion and hypotension.
- D. Neurological - carbon monoxide will cause cerebral anoxia. Check for headache, confusion or decreased level of consciousness.
- E. Skin- Identify severity of burns (superficial- erythema only; partial thickness- blistered areas; full thickness - scarred or leathery areas) and extent of burns (refer to the rule of nines).
- F. Associated trauma - Burns associated with explosion have great potential for other injuries. All unconscious patients have potential for cervical spine injury. Perform rapid trauma survey.

**TREATMENT:**

- A. Take scene safety precautions
- B. Airway - maintain patency, consider intubation
- C. Breathing - Oxygen 12-15 L/M with non-rebreather mask – do not rely on pulse oximeter, as it is unreliable in the setting of carbon monoxide exposure or cyanide exposure.
- D. If known cyanide exposure or smoke inhalation victim who shows clinical evidence of closed-space smoke exposure (soot in mouth or nose, sooty sputum) and is either comatose, in shock, or in cardiac arrest, consider Cyanokit (hydroxocobalamin 5 grams) I.V. over 15 minutes (Cat. A). **Not for Peds.**
- E. If patient is wheezing, consider Albuterol (CAT B)  
Adults (CAT B): 2.5mg (nebulized, rothaler, MDI w/spacer)  
**Pediatrics (CAT B): 2.5mg (nebulized, rothaler, MDI w/spacer)**
- F. Circulation-
  - IV, large bore, normal saline, in unaffected area at 250 cc/hr for burns over 20%, with at least partial thickness involvement, and the hospital arrival time will be in excess of 20 minutes  
**Pediatric patients: give NS 20cc/kg over 30 minutes, then reassess.**

**TREATMENT** (continued)

- IV, large bore, normal saline, in unaffected area at KVO rate for:
  - a. All electrical burns.
  - b. Significant chemical exposures.
  - c. All inhalation exposures.
  - d. Any patient with loss of consciousness.
  - e. Any patient with potential for other associated trauma.
  
- G. Cardiac monitor (essential if electrical exposure) -12 lead if available.
- H. Brush off dry chemicals if present on skin before flushing with large amounts of water.
- I. Liquid chemicals should be flushed with copious amounts of normal saline.
- J. Eyes may be irrigated with normal saline.
- K. Cover affected areas with a dry burn sheet..
- L. If patient has severe pain, consider Morphine Sulfate:
  - Adult (CAT A): 4 mg IV initial dose. Titrate to pain relief in 2 mg doses, every 3-5 minutes, up to 10mg MAX.
  - Adult (CAT B): If pain is not relieved after 10 mg you must call OLMD for further doses.
  - Pediatrics (CAT B): 0.1 mg/kg not to exceed 5 mg.**

**INDICATIONS TO ENTER PATIENT INTO THE TRAUMA SYSTEM AND TRANSPORT DIRECTLY TO A READY BURN CENTER IF WITHIN REGIONAL TRANSPORT TIME CRITERIA**

- A. Partial or full thickness burns >10% of the total body surface area
- B. Partial or full thickness burns of the face, hands, feet, genitalia, perineum, or major joints
- C. High voltage (1,000 volts or greater) electrical burns, including lightning injury
- D. Chemical burns with obvious partial or full thickness skin damage. Also any patient requiring decontamination in an industrial, agricultural, or law enforcement setting (Decontamination should be performed prior to transport)
- E. Inhalation injury from a thermal or chemical exposure in an enclosed area
- F. If in doubt, consult Medical Direction or the Trauma Communications Center

**SPECIFIC PRECAUTIONS:**

- A. Scene hazards - electrical wires, chemical fumes, carbon monoxide or fire. Do not attempt rescue in hazardous environment unless trained in this area.
- B. Airway involvement - Always consider the possibility of airway compromise. Airway swelling can occur rapidly. Be prepared to support patient or secure the airway if necessary via endotracheal intubation.
- C. Unconsciousness - always consider the possibility of occult head or cervical spine injury. Suspect the possibility of carbon monoxide exposure. Pulse oximeter is unreliable if carbon monoxide is present. If unconscious from smoke inhalation consider use of Cyanokit.
- D. Do not induce hypothermia by applying cold or moist dressing to burned areas as the body may lose excessive heat through burned skin. Maintaining a good core body temperature is essential

- E. Consider the possibility of abuse when certain burns are encountered. These include cigarette burns, iron burns, grill burns, and any burns in the elderly or children where the described mechanism of injury appears to be unlikely.
- F. Cardiac involvement - consider the potential for myocardial injury, ischemia and arrhythmia in any patient with electrical or inhalation injury.
- G. Avoid initiating IVs in burned areas except in extreme circumstances.
- H. Transport - Do not delay the transport of the seriously burned patient to administer volume boluses of fluid. Fluid loss occurs over the course of hours. Initiate fluids en route if burns are extensive, or the potential for airway compromise exists.

### RULE OF NINES

When it is necessary to estimate the percentage of Total Body Surface (TBS) burns, such as making the decision to transport directly to a burn center, the rule of nines is useful. **In children, relatively more area is taken up by the head and less by the lower extremities. Accordingly, the rule of nines is modified.**

ADULT Body Part	Percentage of Total Body Surface (TBS)
Arm (shoulder to fingertips)	9 %
Head and neck	9 %
Leg (groin to toes)	18 %
Anterior trunk	18 %
Posterior trunk	18 %
Perineum	1 %

Child Body Part	Percentage of Total Body Surface (TBS)
<b>Arm (shoulder to fingertips)</b>	<b>9 %</b>
<b>Head and neck</b>	<b>18 %</b>
<b>Leg (groin to toes)</b>	<b>14 %</b>
<b>Anterior trunk</b>	<b>18 %</b>
<b>Posterior trunk &amp; Buttocks</b>	<b>18 %</b>

Infant Body Part	Percentage of Total Body Surface (TBS)
<b>Arm (shoulder to fingertips)</b>	<b>9 %</b>
<b>Head and neck</b>	<b>14 %</b>
<b>Leg (groin to toes)</b>	<b>16 %</b>
<b>Anterior trunk</b>	<b>18 %</b>
<b>Posterior trunk</b>	<b>18 %</b>

#### SPECIAL NOTE:

An accurate description of the burn, including location and severity, should be provided to the receiving facility. The rule of nines is not intended to replace such a description.

**SPECIFIC INFORMATION:**

- A. History: Preceding symptoms, onset, and downtime without CPR.
- B. Past History: Diseases, medications, and allergies.
- C. Surrounding evidence of drug ingestion, penetrating, or blunt injury.
- D. Appropriateness of resuscitative efforts: In unexpected or unwitnessed cardiovascular collapse, proceed with the protocols unless obvious signs of death are present (rigor, etc.). In all others, begin treatment, and then request further information from family members. OLMD may also be of assistance. (See Administrative Protocol 2.1: Death in the Field). Once resuscitative efforts have been initiated, they should be continued until arrival at the receiving hospital, or until a joint decision has been made with Medical Direction or the attending physician, that resuscitation should cease. (See Administrative Protocol 2.1: Death in the Field).

**PHYSICAL ASSESSMENT:**

- A. Determine presence of arrest:
  - Unresponsive.
  - Absent or terminal respiration.
  - Absent pulses over major arteries.
  - Cardiac monitor for initial rhythm.

**REMEMBER TO TREAT THE PATIENT AND NOT THE MONITOR!**
- B. If signs of penetrating torso injury are present with cardiopulmonary arrest, the patient's only chance for survival is immediate transport.
  - Administer fluids per shock protocol while en route.
  - Ventilate, and transport rapidly to appropriate facility.
  - **CLOSED CHEST MASSAGE IS NOT INDICATED BEFORE TRANSPORT IN THESE CIRCUMSTANCES IF THIS MEANS A DELAY IN IMMEDIATE TRANSPORT.**
  - Once en route, contact OLMD to determine whether to continue resuscitative efforts. (See Administrative Protocol 8.1: Death in the Field).

**TREATMENT: ADULT VFIB/PULSELESS VTACH**

This sequence was developed to treat a broad range of patients with ventricular fibrillation or pulseless ventricular tachycardia. Some patients may require care not specified herein. This algorithm should not be construed as prohibiting such flexibility. Flow of algorithm presumes that VF/VT is continuing. If for any reason this protocol cannot be followed in treatment order or drug amounts, OLMD must be contacted.

- A. ABCs.
- B. Perform CPR until monitor/defibrillator is attached or until quick-look paddles are applied.
- C. Confirm VF/VT present on monitor.
- D. Defibrillate once at 360J.  
(If Biphasic Defibrillator – use the manufacturer’s recommended setting).
- E. Immediately resume CPR without checking pulse or rhythm.
- F. Reassess rhythm after five cycles of CPR.
- G. Continue CPR if still in VF/Pulseless VT.
- H. Intubate as soon as possible – ventilate at 10 breaths per minute with 100% oxygen (do not pause compressions for ventilations).
- I. Start a large bore I.V. with normal saline at a TKO rate.
- J. Epinephrine (CAT A)- 1 mg, 1:10,000 IV/IO every 3-5 minutes  
OR  
Vasopressin IV/IO (CAT A) - 40 units, single dose, one time only.
- K. Defibrillate 360J (or recommended Biphasic setting) AFTER EACH DOSE OF MEDICATION.
- L. After each defibrillation immediately resume CPR for five cycles before checking rhythm or pulse again.
- M. Lidocaine (CAT A)- 1.5 mg/kg, IV/IO.  
OR Amiodarone (CAT A)- 300 mg, IV/IO.
- N. If persistent, repeat Lidocaine (CAT A)- 0.75mg/kg IV/IO after 5 minutes of first dose.  
OR Repeat Amiodarone (CAT A) - 150 mg IV/IO 5 minutes after the first dose.
- O. If torsades de pointes consider loading dose of magnesium IV/IO (CAT B) - Mix 2 grams (4 cc) in 250 cc of NS and give IV/IO over 5 minutes.

**TREATMENT: ADULT ASYSTOLE & PULSELESS ELECTRICAL ACTIVITY**

This sequence was developed to assist treating a broad range of patients in asystole. Some patients may require care not specified herein. This algorithm should not be construed to prohibit such flexibility. The flow of the algorithm presumes asystole is continuing.

- A. Continue CPR.
- B. Intubate As Soon As Possible – ventilate with 100% oxygen.
- C. Start a large bore IV with normal saline at a TKO rate.
- D. Confirm asystole in more than one lead.  
(If rhythm remains unchanged - TREAT AS ASYSTOLE—DO NOT DEFIBRILLATE)
- E. Consider possible causes:

Possible Cause	Treatment
Hypovolemia	Fluid challenge, consider IO for Peds
Hypoxia	Airway, Oxygen, Stop bleeding
Hydrogen ion (acidosis)	Airway
Hypokalemia	Transport
Hyperkalemia (dialysis pt.)	Calcium Gluconate and Sodium Bicarbonate
Hypoglycemia	Glucose
Hypothermia	Warm cover/fluids/environment, transport
Toxins	See Poisoning & Overdose Protocol
Tamponade	Airway, Oxygen, transport
Tension Pneumothorax	Needle Decompression, Oxygen, Transport
Thrombosis	Airway, Oxygen, Transport
Trauma	Airway, Oxygen, SMR, Transport

- F. Epinephrine 1 mg, 1:10,000 IV/IO every 3-5 minutes or may give one dose of vasopressin 40 units IV/IO to replace first or second dose of epinephrine.
- G. Consider Atropine 1 mg. IV/IO or 2-3 mg ET for continued asystole or pulseless electrical activity (rate less than 60), repeat every 3-5 minutes (Maximum dose 3 mg).
- H. Consider Sodium Bicarbonate (CAT A): 1 mEq/kg. Repeat 0.5 mEq/kg q 10min.
- I. Consider Calcium Gluconate (CAT A): 1-2 grams (10-20 cc of the 10% solution)

**SPECIAL NOTES:**

- A. **Sodium Bicarbonate** (CAT A) is not recommended for routine cardiac arrest sequence. However, it will probably be helpful and should be used early in cardiac arrest if it is a known tricyclic antidepressant, cocaine, or aspirin overdose or renal failure patient with possible hyperkalemia (high potassium).
- B. **Calcium Gluconate** (CAT A) will probably be helpful and should be used early in cardiac arrest if possible hyperkalemia (usually seen in dialysis patients).

**TREATMENT: PEDIATRIC VFIB/PULSELESS VTACH**

This sequence was developed to treat a broad range of pediatric patients with ventricular fibrillation or pulseless ventricular tachycardia. Some patients may require care not specified herein. This algorithm should not be construed as prohibiting such flexibility. Flow of algorithm presumes that VF/VT is continuing. If for any reason this protocol cannot be followed in treatment order or drug amounts, OLMD must be contacted.

- A. ABCs.**
- B. Perform CPR until monitor/defibrillator is attached or until quick-look paddles are applied.**
- C. Confirm VF/VT is present on monitor.**
- D. Defibrillate once at 2J/kg.  
(If Biphasic Defibrillator – use the manufacturer’s recommended setting)**
- E. Immediately resume CPR for five cycles without checking pulse or rhythm.**
- F. Reassess rhythm - if no change in rhythm, immediately continue CPR.**
- G. Ventilate at appropriate rate with a bag-mask. Intubation is rarely needed.**
- H. Start a large bore IV, with normal saline at a TKO rate. Consider IO if IV cannot be started.**
- I. Epinephrine 0.01 mg/kg (0.1 cc/kg) of 1:10,000, IVP or IO.  
Repeat at 3-5 minute intervals.**
- J. Defibrillate 4J/kg (or Biphasic recommendation) AFTER EACH DOSE OF MEDICATION (do 30-60 seconds of CPR to circulate the drug first).**
- K. Give Lidocaine 1.0 mg/kg, IVP/IO or Amiodarone 5 mg/kg, IVP/IO.**

**TREATMENT: PEDIATRIC VENTRICULAR ASYSTOLE & PEA**

This sequence was developed to assist treating a broad range of patients in asystole and PEA. Some patients may require care not specified herein. This algorithm should not be construed to prohibit such flexibility. The flow of the algorithm presumes asystole is continuing.

- A. Continue CPR.**
- B. Ventilate at appropriate rate with bag-mask. Intubation is rarely needed.**
- C. Start large bore IV with normal saline at TKO rate. Consider IO if IV cannot be started.**
- D. Confirm asystole in more than one lead (If rhythm remains unchanged - TREAT AS ASYSTOLE—DO NOT DEFIBRILLATE).**
- E. Epinephrine 0.01 mg/kg (0.1 cc/kg) of 1:10,000, IVP or IO. Repeat at 3-5 minute intervals.**
- F. Consider and treat other possible causes:**

Possible Cause	Treatment
Hypovolemia	Fluid challenge, consider IO for Peds
Hypoxia	Airway, Oxygen, Stop bleeding
Hydrogen ion (acidosis)	Airway,
Hypo/hyperkalemia	Transport
Hypoglycemia	Glucose
Hypothermia	Warm cover/fluids/environment, transport
Toxins	See Poisoning & Overdose Protocol
Tamponade	Airway, Oxygen, transport
Tension Pneumothorax	Needle Decompression, Oxygen, Transport
Thrombosis	Airway, Oxygen, Transport
Trauma	Airway, Oxygen, SMR, Transport

**QUICK REFERENCE TO CARDIAC DRUGS**

**NEONATES (AGE: Birth to One Month)**

DRUG	INDICATION	DOSAGE
Atropine (CAT A)	Asystole	0.02 mg/kg (0.1 mg MIN)
Sodium Bicarbonate (CAT A)	Metabolic Acidosis	1 mEq/kg (dilute 50% with NS)
Dextrose-25% (CAT A)	Low blood glucose	2-4 cc/kg
Epinephrine (CAT A)	Bradycardia, Cardiac Arrest	0.01mg/kg, 1:10,000 IV, IO 0.1 mg/kg 1:1,000 ET
Magnesium sulfate (CAT B)	torsades de pointes	50 mg/kg up to 2 grams total IV over 10 - 20 minutes
Naloxone (CAT A)	Respiratory depression (Narcotic induced)	0.1mg/kg

**INFANTS AND CHILDREN (AGE: One month to eight years)**

DRUG	INDICATION	DOSAGE
Amiodarone (CAT B)	Pulseless VF/VT	5mg/kg IVP/IO
	Ventricular tachycardia	5mg/kg IV/IO over 20-60 minutes
Atropine sulfate (CAT A)	Bradycardia	.02mg/kg (minimum 0.1 mg) MAX single dose 0.5 mg
Dextrose - 25% (CAT A)	Low blood glucose	2-4 cc/kg
Dopamine HC1 (CAT B)	Cardiogenic shock, Low cardiac output	2-20 mcg/kg/min.
Epinephrine (CAT A)	Fine V-fib, low output, cardiac arrest	0.01mg/kg of 1:10,000 IV, IO 0.1 mg/kg of 1:1,000 ET
Lidocaine (CAT A)	Ventricular tachycardia, V-fibrillation	1.0 mg/kg bolus; 20-50 mcg/kg/min drip
Naloxone (CAT A)	Respiratory depression (Narcotic induced)	0.1mg/kg; For >5 years or 20 kg: 2 mg IV,SC,IM, ET
Sodium bicarbonate (CAT A)	Metabolic Acidosis	1 mEq/kg/dose (Dilute 50% with D5W)
Magnesium sulfate (CAT B)	torsades de pointes	25mg/kg IV/IO MAX Dose 2 Grams

**ADULTS (AGE: Eight years and above)**

DRUG	INDICATION	DOSAGE
Amiodarone (CAT A)	VFib/Pulseless VTach	300 mg IV Repeat 150 mg in 5 minutes if necessary
	Stable Ventricular Tachycardia	150 mg IV over 10 minutes
Atropine sulfate (CAT A)	Bradycardia	0.5 mg every 3-5 min, 3mg MAX
	Asystole	1 mg. initial, every 3-5 min, 3mg MAX
Calcium Gluconate (CAT A)	Hyperkalemia	1-2 grams IV
Dopamine (CAT B)	Cardiogenic shock	5-20 mcg/kg/min.
Epinephrine (CAT A)	Cardiac arrest	1 mg IVP q 3-5 min. of 1:10,000 IF UNABLE TO GET IV: 2-2.5 mg 1:1,000 with 10 cc sterile water, ET
Lidocaine (CAT A)	VFib/Pulseless VTach	1.5 mg/kg bolus initially then 0.75mg/kg q 5 min. to MAX of 3 mg/kg
Magnesium sulfate (CAT B)	torsades de pointes	2 grams IV over 5 minutes
Sodium bicarbonate (CAT A)	Acidosis	1 mEq/kg initially
	Hyperkalemia	0.5 mEq/kg q10 min.
Vasopressin (CAT A)	Adult shock resistant VFib/Pulseless VTach Adult Asystole/PEA	40 units IVP, one time only. Can replace the first or second dose of Epi.

**SPECIFIC INFORMATION:**

- A. “Discomfort,” pressure, pain: Place, Quality, Radiation, Severity, and Time began (PQRST).
- B. Associated symptoms: Nausea, vomiting, diaphoresis, and shortness of breath, usually not pleuritic.
- C. Past History: Cardiac or pulmonary events; medications; drug allergies, syncopal episodes.
- D. Risk Factors: Determine family history, smoking, obesity, age, and related diseases.

**PHYSICAL ASSESSMENT:**

- A. General appearance.
- B. Vital signs should be obtained and recorded not less than every 10 minutes, and after each drug administration and during transport. Symmetry of pulses should be recorded at least once.
- C. Observe for neck vein distention and peripheral edema, and if present, suspect Congestive Heart Failure.
- D. Breath and chest sounds: rales (crackles), rhonchi, and wheezes. If present suspect Congestive Heart Failure.
- E. Chest wall tenderness does not rule out cardiac ischemia.
- F. Examine abdomen.

**TREATMENT:**

- A. Reassure and place patient at rest in position of comfort.
- B. Airway - maintain patency.
- C. Breathing - Oxygen to maintain oxygen saturation (pulse oximeter) reading >95%.
- D. Circulation - attach monitoring equipment and treat dysrhythmias per Cardiac Dysrhythmia Protocol. A 12-lead ECG must be performed on the patient unless the ALS unit has no 12-lead device. The 12-lead ECG must be transmitted to the receiving hospital in advance of patient arrival unless transmission is not possible, in which case the 12-lead ECG should be delivered with the patient.
- E. If vital signs are stable, consider Saline lock IV.
- F. If vital signs are unstable, start IV (saline lock or large bore) with normal saline at TKO rate.
- G. Consider drawing appropriate tube of blood for hospital or prehospital analysis.
- H. Give nitroglycerin 0.4 mg if systolic blood pressure is greater than 90 mm/hg; repeat twice at five-minute intervals if pain persists. Nitroglycerin may be administered by tablet or spray sublingual. The EMT may assist patient in administration of his/her own nitroglycerin.
- I. Provide four chewable baby aspirin if the patient can swallow.  
Contraindications to administration of Aspirin:
  - An Allergy to aspirin.
  - Current G.I. Bleeding.
  - Already received 324 mg of aspirin (not just 81 mg) in last 24 hours.
- J. Consider Morphine Sulfate:  
Adult (CAT A): 4 mg IV initial dose. Titrate to pain relief in 2 mg doses, every 3-5 minutes, up to 10mg MAX.  
Adult (CAT B): If pain is not relieved after 10 mg you must call OLMC for further doses.
- K. Consider Nitrous Oxide if available. (CAT B)
- L. Consider Lidocaine. (CAT B)
- M. If cardiogenic shock syndrome presents in patients with chest pain—go to Shock Protocol (4.28).

**CARDIAC SYMPTOMS/ACUTE CORONARY SYNDROME (Continued) 4.10**

- N. Continue monitoring cardiac, vitals, etc. and record during transport.
- O. Complete the thrombolytic check list (Forms 10.1) during transport.

**SPECIFIC PRECAUTIONS:****A. Contact OLMD for suspected cardiac symptoms or chest pain in pediatric patients.**

- B. Suspicion of cardiac disease causing chest pain or discomfort is based on history obtained. Read monitor rhythm strip for rhythm only; ST segment changes are not reliable.
- C. Since time to thrombolytics is critical, minimize scene times when possible. Most interventions and treatments should be performed en route.
- D. Minimize needle sticks if thrombolytic therapy is possible.
- E. Lidocaine should NOT be given without OLMD (CAT B). Relative contraindications:
  - Heart rate is less than 50/min, OR
  - Periods of sinus arrest or 2nd or 3rd degree A-V block are present.
- F. Morphine Sulfate (CAT A) should be administered slowly. Titrate to effect.
  - May compromise respiration.
  - May cause hypotension in volume depleted patients.
  - May be reversed with naloxone.
- G. Nitroglycerin may cause hypotension in patients taking medication for erectile dysfunction.

**SPECIFIC INFORMATION:**

- A. Chief complaint, sudden or gradual onset; heart racing, skipping, pounding, etc
- B. Related symptoms: dizziness, angina, syncope, dyspnea, and palpitations
- C. Medications

**PHYSICAL ASSESSMENT:**

- A. Vital signs.
- B. Signs of low cardiac output:
  - Altered level of consciousness.
  - Presence of shock syndrome.
  - Signs of congestive heart failure.

**NOTE: DYSRHYTHMIAS MAY NOT REQUIRE TREATMENT IN THE FIELD IF THE PATIENT HAS NO SIGNS OF IMPAIRED PERFUSION (i.e., NO SIGN OF LOW CARDIAC OUTPUT.)**

**TREATMENT: ADULT PREMATURE VENTRICULAR COMPLEXES (PVC)**

- A. Airway - ensure patency.
- B. Breathing - Oxygen to maintain oxygen saturation (pulse oximeter) reading >95%.
- C. Circulation - attach cardiac monitor.
- D. IV
  - Vital signs stable- consider Saline lock IV.
  - Vital signs unstable- IV, Saline lock or large bore, normal saline, TKO.
- E. Contact receiving hospital with patient report as soon as possible during transport.

**SPECIFIC PRECAUTIONS:**

- A. Lidocaine should be reserved for patient with symptomatic ventricular ectopy that produces symptoms such as angina or hypotension. Lidocaine may be administered only after order by OLMD (CAT B). This therapeutic option is not well established by evidence but may be helpful and probably not harmful in patients with definite acute MI whenever the following “warning signs” occur:
  - Closely coupled PVCs (QR/QT or less than 0.85).
  - R-on-T phenomenon.
  - PVC couplets or runs of 3 or more (VT).
  - Multiform PVCs.
- B. Although once popular, the routine therapy to prevent PVCs is now disputed. Treatment is better directed at rapid identification and correction of electrolyte abnormalities, most notably hypokalemia and hypomagnesemia. Therefore, Lidocaine is CAT B.
- C. Dose of Lidocaine for PVCs: 1.0-1.5 mg/kg bolus.  
 If ectopy persists, give 0.5-0.75 mg/kg bolus every 5-10 minutes to a total dose of 3 mg/kg.  
 If ectopy is corrected, maintenance infusion of 2-4 mg/minute, titrated to clinical need.  
**WARNING:** Decrease maintenance dose by 50% if patient is in CHF, is over age 70, is in shock, or has liver disease (cirrhosis).

**TREATMENT: ADULT BRADYCARDIA**

Treatment only required with signs of hemodynamic compromise (chest pain, pulmonary edema, difficulty breathing, hypotension, and altered mental status)

- A. Airway - ensure patency.
- B. Breathing - Oxygen to maintain oxygen saturation (pulse oximeter) reading >95%.
- C. Circulation - cardiac monitoring.
- D. Start IV, Saline lock or large bore, with normal saline at TKO rate.
- E. Administer Atropine (CAT A) 0.5mg IVP, repeat every 5 minutes up to a total dose of 0.04 mg/kg (3 mg maximum) or heart rate greater than 60 and systolic pressure greater than 90.
- F. Provide external pacing (CAT B) if unresponsive to Atropine, if IV is difficult to establish, or if the patient has not improved after Atropine administration.
- G. Contact receiving hospital with patient report as soon as possible during transport.

**TREATMENT: ADULT TACHYCARDIA WITH PULSE**

- A. Airway - ensure patency.
- B. Breathing - Oxygen to maintain oxygen saturation (pulse oximeter) reading >95%.
- C. Circulation - cardiac monitoring with 12 lead if available.
- D. Identify and treat reversible causes.
- E. Patient determined in **HEMODYNAMICALLY STABLE** condition:
  - Establish IV access.
  - Obtain 12-lead ECG.

Narrow Complex- Regular Rhythm

- Attempt vagal maneuvers.
- Adenosine (CAT B) 6 mg RAPID IVP.
- If no response in 2 minutes, Adenosine(CAT B) 12 mg RAPID IVP.
- If no response in 2 minutes, consider Adenosine(CAT B) 12 mg RAPID IVP.
- If no response, CONTACT OLMD.

Narrow Complex- Irregular Rhythm

- CONTACT OLMD.

Wide Complex- Regular and Irregular Rhythm

- CONTACT OLMD.

- F. Patient determined in **HEMODYNAMICALLY UNSTABLE** condition: (altered mental status, ongoing chest pain, hypotension or other signs of shock)
  - Establish IV access.
  - Consider sedation- Contact OLMD.
  - Synchronous cardioversion (CAT B).
  - 50 joules, if no change, 100 joules, if no change, 200 joules, if no change, 360 joules. (If Biphasic Defibrillator – use the manufacturer’s recommended settings).
  - If no change- Contact OLMD.

**TREATMENT: PEDIATRIC BRADYCARDIA**

**Bradycardia in children is usually due to respiratory causes, not cardiac. Treatment only required with signs of cardio-respiratory compromise.**

- A. Airway - ensure patency.**
- B. Breathing - Oxygen 10-15 L/M, pediatric mask.**
- C. pulse oximeter, maintain oxygen saturation level > 95%.**
- D. Circulation - cardiac monitoring (12-Lead if available).**
- E. Start IV, saline lock or large bore, with normal saline (consider IO if needed), at TKO rate.**
- F. Perform chest compressions if, despite oxygenation and ventilation, the heart rate is below 60 in infant or child and is associated with poor systemic perfusion.**
- G. Epinephrine IV/IO: 0.01 mg/kg (1:10,000).  
If given ET, increase dose to 0.1 mg/kg (1:1,000)  
Repeat every 3-5 minutes at the same dose.**
- H. Administer Atropine 0.02 mg/kg.  
Minimum dose: 0.1 mg.  
May be repeated to a maximum total dose of 1 mg.**
- I. Consider external pacing if unresponsive to Atropine.**
- J. Contact receiving hospital with patient report as soon as possible during transport.**

**TREATMENT: PEDIATRIC TACHYCARDIA WITH PULSE**

- A. Airway - ensure patency.**
- B. Breathing - Oxygen to maintain oxygen saturation (pulse oximeter) reading >95%.**
- C. Circulation - cardiac monitoring.**
- D. Establish IV access.**
- E. Patient determined in HEMODYNAMICALLY STABLE ( narrow complex regular rhythm) condition.**

**Treatment (Category B)**

- 1. Consider Vagal maneuvers.**
- 2. Adenosine, 0.1 mg/kg (maximum first dose 6 mg.), Followed with 2-3 ml of saline bolus.**
- 3. If rhythm does not convert, contact OLMD.**

**Narrow Complex- Irregular Rhythm**

- CONTACT OLMD.**

**Wide Complex- Regular and Irregular Rhythm**

- CONTACT OLMD.**

- F. Patient determined in HEMODYNAMICALLY UNSTABLE condition: (altered mental status, ongoing chest pain, hypotension or other signs of shock)**
  - Establish IV access.**
  - Consider sedation- Contact OLMD.**
  - Synchronous cardioversion (CAT B).**
  - 0.5 joules/kg, (If Biphasic Defibrillator – use the manufacturer’s recommended setting).**
  - If no change- Contact OLMD.**

**SPECIFIC INFORMATION NEEDED:**

- A. History of pregnancy(s): Due date, bleeding (recent, within 1 week), swelling of face or extremities, and prior problems with pregnancy. Known multiple pregnancies? Ask patient if she feels as though she is delivering: i.e., rectal pressure.
- B. Current problems: If pain, where?, regular?, timing?, ruptured membranes?, urge to push?
- C. Medical history: Medications, medical problems, patient's age, and number of prior pregnancies.

**PHYSICAL ASSESSMENT:**

- A. Vital signs. Fetal heart rate, if possible.
- B. Swelling of face or extremities.
- C. Contractions and relaxation of uterus.
- D. Where privacy is possible, inspect perineum for:
  - Vaginal bleeding or fluid: Color?
  - Crowning (check during contraction).
  - Abnormal presentation (foot, arm, cord, or breech).

**TREATMENT:**

- A. Airway - ensure patency.
- B. Breathing - Oxygen to maintain oxygen saturation (pulse oximeter) reading >95%.
- C. Circulation – start IV, Saline lock or large bore, with normal saline at TKO rate.
- D. If signs of shock, proceed to SHOCK PROTOCOL (4.28).
- E. If not pushing or bleeding, transport left lateral recumbent position.
- F. Immediate transport category: previous cesarean section, known imminent multiple births, abnormal presenting parts, excessive bleeding, and premature birth.

**G. NORMAL DELIVERY:**

- ABCs (above).
- Clean or sterile technique.
- Guide and control delivery.
- Suction, mouth (not throat), then nose with bulb syringe after head delivers and before torso delivers.
- Check for cord around the neonate's neck when head is visible and after suctioning.
- Protect neonate from falls and temperature loss.
- Wrap in clean or sterile blanket.
- Check vitals: if compromised, initiate resuscitation.
- Clamp cord in two places approximately 8" - 10" from neonate.
- Cut cord between clamps.
- Give neonate to mother, allow to nurse (aids in contracting uterus).
- If excessive maternal bleeding, massage uterus gently and proceed to Shock Protocol.
- Transport, do not wait to deliver placenta.
- If placenta delivers spontaneously, bring to hospital.
- Determine APGAR score at birth and five minutes later.
- Monitor neonate and mother.
- Contact receiving hospital with patient report as soon as possible during transport.

**H. ABNORMAL DELIVERY:**

- ABCs (above).
- Oxygen, 15 L/M via non-rebreather mask.
- Place mother in Trendelenburg position or knee chest if prolapsed cord.
- Gently elevate presenting body part to relieve pressure on cord and keep cord moist with saline gauze if exposed.
- Contact OLMD for specific treatments.
- Immediate transport to appropriate facility.
- Start maternal IV: large bore, with normal saline at TKO rate.
- If thick meconium is present, aggressively suction and consider intubation of the neonate.
- Contact receiving hospital with patient report as soon as possible during transport.
- Contact OLMD if additional ALS intervention is necessary.

**GENERAL INFORMATION:**

**Follow Childbirth Protocol if neonate is not delivered prior to your arrival. If meconium stain present at birth, suction the neonate's mouth, then nose until clear (consider intubation to allow deep suctioning). If delivery has taken place and a transport unit has arrived, transport and treat en route. Do not wait for or attempt to deliver the placenta. If placenta delivers spontaneously, bring it to the hospital.**

**TREATMENT:**

- A. Airway - ensure patency, suction the neonate's mouth then nose with bulb syringe.**
- B. Evaluate neonate's ABCs as you:**
- **Clamp and cut the cord per the guidelines of the CHILDBIRTH PROTOCOL.**
  - **Perform tactile stimulation.**
  - **Dry neonate, and wrap in clean or sterile blanket.**
  - **Determine APGAR score:**

<b>APGAR SCORING</b>	<b>0 POINTS</b>	<b>1 POINT</b>	<b>2 POINTS</b>	<b>SCORES</b>
<b>HEART RATE</b>	<b>ABSENT</b>	<b>&lt; 100 BPM</b>	<b>&gt; 100 BPM</b>	
<b>RESPIRATORY EFFORT</b>	<b>ABSENT</b>	<b>WEAK CRY</b>	<b>STRONG CRY</b>	
<b>MUSCLE TONE</b>	<b>FLACCID</b>	<b>SOME FLEXION</b>	<b>ACTIVE MOTION</b>	
<b>REFLEX IRRITABILITY</b>	<b>NO RESPONSE</b>	<b>GRIMACE</b>	<b>VIGOROUS CRY</b>	
<b>COLOR</b>	<b>BLUE, PALE</b>	<b>BODY PINK, EXTREMITIES BLUE</b>	<b>BODY PINK, EXTREMITIES PINK</b>	
<b>TOTAL APGAR:</b>				

**G. If APGAR is 6 or below:**

- **Begin AHA BCLS Procedures.**
- **assisted ventilation with high concentration of Oxygen.**
- **chest compressions (rate 120) if heart rate below 60.**
- **consider intubation.**
- **Contact OLMD if additional ALS intervention is necessary.**

**H. Contact receiving hospital with patient report as soon as possible during transport.**

**I. Complete two patient care records (one for mother and one for newborn) and be sure to record time of delivery.**

**J. REPEAT APGAR SCORE AT ONE AND FIVE MINUTES.**

**SPECIFIC PRECAUTIONS:**

**Do not pull on cord and do not compress the cord.  
Bundle, keep head covered, and keep near mother to prevent heat loss.**

**SPECIFIC INFORMATION:**

- A. History: Acute insult or injury? Slow deterioration? Obtain careful history of fever, chills, and purulent sputum products.
- B. Past history: Chronic lung or heart problems (diagnosis?), medications or home oxygen?
- C. Associated symptoms: Chest pain; Paresthesias of mouth or hands.

**PHYSICAL ASSESSMENT:**

- A. Vital signs including pulse oximeter to maintain oxygen saturation >95%.
- B. Level of consciousness.
- C. Cyanosis.
- D. Signs of congestive failure: distended neck veins when upright, wet lung sounds, possible wheezing, possible blood-tinged sputum, and/or peripheral edema.

**TREATMENT:**

- A. Airway - ensure patency.
- B. Breathing - Oxygen 12-15 L/M, non-rebreather mask.
  - Be prepared to assist ventilations with bag-valve-mask.
  - Pulse oximeter, maintain oxygen saturation > 95%.
- C. Circulation - cardiac monitor
  - Consider 12-lead if available.
  - Start IV, Saline lock or large bore, with normal saline at a TKO rate.
  - If hemodynamically unstable, utilize Shock Protocol (4.28).
- D. If symmetrical crackles present (pulmonary edema):
  - Nitroglycerin (CAT B): 0.4 mg sublingual (tablet or spray) if systolic BP is >110.
  - Furosemide (CAT B): 20-40 mg IVP.
  - Morphine Sulfate (CAT B): 2-4 mg IV slowly. Watch for respiratory depression.
- E. If wheezing is present (cardiac asthma):
  - Inhalation therapy with Albuterol (CAT B): 2.5mg (nebulized, rothaler, MDI w/spacer).
  - You may assist patient with self administration of prescription bronchodilator.
- F. Consider use of CPAP if the following are present:
  - Dyspnea/hypoxemia secondary to congestive heart failure or acute cardiogenic pulmonary edema.
  - Patient is awake and oriented.
  - Patient has the ability to maintain an open airway.
  - Patient has a respiratory rate >25 breaths per minute with a SPO2 reading <95% and a blood pressure >90 mmHg.
  - Patient is using accessory muscles during respiration.
- G. Contact receiving hospital with patient report as soon as possible during transport.

**SPECIFIC INFORMATION NEEDED:**

- A. History: Last conscious, onset and progression of coma; prior symptoms such as headaches, seizures, confusion, and trauma clues. Are there medical or psychiatric problems (especially diabetes), epilepsy, CVA, or previous head injury. If multiple patients, suspect poisoning.
- B. Surroundings: Bring pill bottles, syringes, etc., with patient. Note odor in house.

**PHYSICAL ASSESSMENT:**

- A. Vital signs.
- B. Level of consciousness and neurological status. Glasgow Coma Scale Score.
- C. Look for signs of trauma (head, body), needle tracks, and medical alert tags.
- D. Odor on breath.

**TREATMENT:**

- A. Maintain cervical spine precautions if any chance of trauma.
- B. Airway - ensure patency. Consider intubation.
- C. Breathing - Oxygen 12-15 L/M, with non-rebreather mask. Assist ventilations with BVM as indicated, pulse oximeter, maintain oxygen saturation >95%.
- D. Circulation - attach cardiac monitor, 12 lead if available.
- E. If vitals are stable, consider IV, Saline lock or large bore, with normal saline at TKO rate.
- F. If vitals are unstable, start IV, large bore, with normal saline at TKO rate.
- G. Draw red top tube of blood (optional if local hospital will not accept)
- H. Glucometer- Adult: < 70 administer 25GM D50W IVP (CAT A)  
(Give thiamine, 100mg IVP [CAT A] before the D50W if there is any evidence of malnutrition or alcohol abuse).  
If the patient is comatose from hypoglycemia and you cannot get an IV line, consider thiamine 100mg IM (CAT A) and glucagon 1mg IM (CAT B).  
**Pediatric: Glucose <60 administer 2-4cc/kg D25W (CAT A)**  
**(Glucose <60 and can't get IV: consider glucagon 0.5mg IM for children under 44 lbs [CAT B]).**
- I. If shock is present, proceed to 4.28 Shock Protocol
- J. Naloxone (CAT A): Adult 2 mg, IVP, may be repeated at 3 minute intervals to total of 8 mg  
**Pediatric <5 years old or 20 kg: 0.1 mg/kg (not to exceed adult dose)**
- K. Maintain left lateral recumbent coma position unless trauma suspected. If trauma suspected, maintain spinal precautions while transporting.
- L. Monitor vitals during transport.
- M. Contact receiving hospital with patient report as soon as possible during transport.

**SPECIFIC PRECAUTIONS:**

- A. In cases of dangerous environment, safety of personnel on scene is paramount.
- B. Be particularly attentive to airway. Aspiration of secretions, vomiting and inadequate tidal volume are common. Transport in left lateral decubitus position when possible.
- C. Hypoglycemia may present as focal neurologic deficit or coma (stroke-like picture) in elderly persons. Repeated administration of dextrose may be needed. Consult with OLMD
- D. Naloxone is useful in any potential overdose situation. The preferred route of administration is IV for rapid onset of action.

Law enforcement may request EMTs to evaluate a victim of an electromuscular incapacitation device. These patients should be evaluated, stabilized as necessary, and transported to the nearest appropriate emergency department. The important point here is not removal of the barb but rather what caused the patient to be so combative that he/she had to be restrained using an electromuscular incapacitation device. Deaths have been recorded after use of these devices, however, it has always been due to the underlying cause of the combative behavior (psychosis, drugs, hypoglycemia, brain tumor, etc.).

**SPECIFIC INFORMATION NEEDED:**

- A. History: What was the patient doing that required use of the TASER®?
- B. Past History: Illicit drug use types and frequency. Medical problems and medications? Psychotropic or behavioral drugs. Previous psychiatric disorders?

**PHYSICAL ASSESSMENT:**

- A. If the device uses a barb (TASER®), are the barbs (2) still penetrating the skin?
- B. Are the barbs in a sensitive area such as the eye, eyelid, ear, nose, neck, female breast, or genitalia?
- C. Are the wires still attached to the barbs? Do not touch the barbs or wires. Do not step on the wires. You may safely touch the patient while the barbs and wires are attached.
- D. Take vital signs if safe and possible (patient cooperative). Note pupil size, symmetry, and reactivity.
- E. If safe and possible, apply cardiac monitor and document rhythm strip.
- F. Mental status. Document status each time vital signs are taken.
- G. Characteristic odor on breath?
- H. Medical alert tag?

**TREATMENT:**

- A. Airway - ensure patency.
- B. Breathing – Oxygen as needed to maintain oxygen saturation (Pulse Oximeter) reading >95%.
- C. Circulation –if abnormal vital signs, monitor heart and consider IV, Saline lock or large bore, with normal saline at a TKO rate.
- D. If altered mental status, use Glucometer- Adult: glucose < 70 administer 25GM D50W IVP (CAT A).  
(Give thiamine, 100mg IVP [CAT A] before the D50W if there is any evidence of malnutrition or alcohol abuse).  
If the patient is comatose from hypoglycemia and you cannot get an IV line, consider thiamine 100mg IM (CAT A) and glucagon 1mg IM (CAT B).
- E. If respiratory depression is present, consider naloxone (Narcan) 2 mg IVP, every 5 minutes up to a total of 8 mg.
- F. If continued patient restraint is necessary, see Patient Restraint procedure. If the patient is under arrest, law enforcement should accompany him/her to the hospital.

**REMOVAL OF BARBS:**

- A. Barbs should be treated as contaminated needles.
- B. Confirm that the TASER® has been shut off and the wires have been removed from the barbs.
- C. Remove one barb at the time.
- D. Grab barb firmly and pull straight out in a quick motion, using two fingers of your free hand on either side of the barb as a brace.
- E. Clean the area with betadine or alcohol and apply dressing.
- F. Dispose of the probe in a sharps container or, if requested, give to law enforcement personnel.
- G. Barbs in the eye, eyelid, ear, nose, neck, female breast, or genitalia, should be removed by the physician at the hospital.

**SPECIFIC PRECAUTION**

Be sure that law enforcement has cut or broken the wires to the barbs before you try to remove them.

**SPECIFIC INFORMATION NEEDED:**

History of trauma: Mechanism of injury.

**PHYSICAL ASSESSMENT:**

- A. Localized TIC (Tenderness, Instability, and Crepitation)
- B. PMS (Pulses, Motor function, and Sensation)
- C. Angulation, deep lacerations, and exposed bone fragments.

**TREATMENT:**

- A. Airway - ensure patency.
- B. Breathing – consider Oxygen 4-6 L/M, by nasal cannula.
- C. Pulse oximeter, maintain oxygen saturation >95%.
- D. Circulation-
  - If vitals are stable, consider IV, large bore, with normal saline at TKO rate.
  - If vitals are unstable (shock symptoms) - proceed to Shock Protocol (4.28).
- E. Consider spinal motion restriction.
- F. Examine for additional injuries. Elevate, and treat, if necessary, those with higher priority
- G. If a high index of suspicion of pelvic or femur shaft fractures, provide large bore IV with normal saline, and follow shock protocol as indicated.
- H. Apply sterile dressings to open fractures
- I. Splint and apply axial traction as needed
- J. Elevate simple fractures. Apply ice or cold packs if time and extent of other injuries allow.
- K. Transport as necessary. Monitor circulation (pulse and skin temperature), neurological, and motor function in affected extremity
- L. Contact hospital with patient report as soon as possible during transport.
- M. If the patient has severe incapacitating pain, consider Morphine:
  - Adult (CAT A): 4 mg IV initial dose. Titrate to pain relief in 2 mg doses, every 3-5 minutes, up to 10mg MAX.
  - Adult (CAT B): If pain is not relieved after 10 mg you must call OLMD for further doses.
  - Pediatrics (CAT B): 0.2 mg/kg not to exceed 5 mg.**
- N. Nitrous Oxide (CAT B): Do not use if a patient has undiagnosed abdominal pain or head injury - see contraindications.

**SPECIFIC PRECAUTIONS:**

- A. Fractures do not necessarily lead to deformity or loss of function, e.g., impacted fractures may cause pain but little or no deformity or loss of function.
- B. Extremity injuries benefit from appropriate care, but are of low priority in a patient with multiple injuries

**SPECIFIC INFORMATION NEEDED:**

- A. History: Mechanism of injury, LOC changes, record pertinent medical from patient or family.
- B. Protective devices: Helmet or seat belts.

**PHYSICAL ASSESSMENT:**

- A. Evaluate airway patency, breathing capability, and gross injuries to extremities and trunk.
- B. LOC exam accomplished. Document with Glasgow Coma Scale Score (Document all 3 component scores, as well as the total: Eyes, Verbal, and Motor).
- C. Pupil position and response to light stimulation.
- D. External evidence of head trauma, (e.g., blood from ears, or scalp lacerations).

**TREATMENT:**

- A. Airway - ensure patency. MAINTAIN NEUTRAL ALIGNMENT OF CERVICAL SPINE.
- B. Breathing - Oxygen 12-15 L/M, by non-rebreather mask.
- C. Intubate and provide ventilatory support (at a rate of 8 bpm) with bag valve device if GCS Score < 9 and you have a long transport time or cannot maintain oxygen saturation (pulse oximeter) reading >95% with other methods. DO NOT HYPERVENTILATE!
- D. Do not allow patient to become hypoxic! Keep oxygen saturation reading > 95%
- E. Circulation - closely monitor vitals, control external bleeding by direct pressure unless suspicion of skull fracture, and cardiac monitor
- F. Start IV, Saline lock or large bore, with normal saline at TKO rate.
- G. If shock syndrome present, proceed to Shock Protocol.
- H. Maintain a normal Blood Pressure.
- I. Glucometer- Adult: <70 administer 25GM D50W IVP (CAT A)  
(Give thiamine, 100mg IVP [CAT A] before the D50W if there is any evidence of malnutrition or alcohol abuse).  
If the patient is comatose from hypoglycemia and you cannot get an IV line, consider thiamine 100mg IM (CAT A) and glucagon 1mg IM (CAT B).  
**Pediatric: Glucose < 60 administer 2-4cc/kg D25W (CAT A)**  
**(Glucose <60 and can't get IV: consider glucagon 0.5mg IM for children under 44 lbs [CAT B]).**
- J. Continue to monitor vital signs and changes in LOC.
- K. Contact hospital with patient report as soon as possible during transport.

**SPECIFIC PRECAUTIONS:**

- A. Notify OLMD of changes in the patient's GCS score in relation to time intervals.
- B. Always consider cervical spine injury in all patients with head trauma.
- C. Shock syndrome findings do not occur in an isolated head injury. Look elsewhere for the cause of shock. However, head injury in infants can cause shock. Do not allow the patient to become hypotensive.
- D. Other causes of alteration of level of consciousness should be ruled out.
- E. Hypoventilation can cause cerebral edema. Maintain rate of 8 breaths per minute or, if using capnography, maintain CO<sub>2</sub> 35-45.
- F. Call OLMD if signs of cerebral herniation (extensor posturing, dilated or nonreactive pupils, or decrease in GCS of >2 if the initial was <9) Hyperventilation (rate 20 bpm) is CAT B.
- G. Air transport for a head injury patient is not contraindicated.

A patient should only be treated for hypertension (usually diastolic >115 mm Hg) if signs and symptoms of end organ damage are present. Signs and symptoms of end organ damage may be headache, blurred vision, or other abnormal neurological signs. Contact OLMD for guidance.

**SPECIAL NOTES:**

- A. Chest pain and/or congestive heart failure may also be manifestations of hypertensive emergencies.
- B. Patients who appear to be having a stroke (focal neurological signs) usually do not have their BP treated unless the Systolic BP is >220 mm Hg or the Diastolic BP is >120 mm Hg.
- C. Treat the patient not the BP reading. The appropriate protocol for the symptom presented should be used to treat the patient.
- D. Any hypertensive specific treatment is CAT B.

**SPECIFIC INFORMATION NEEDED:**

- A. Sudden collapse or gradual development?
- B. Exercise induced?
- C. Previous history of hyperthermia?
- D. Environmental conditions.

**PHYSICAL ASSESSMENT:**

- A. Vital signs: Oral temperature (if available) of 106 degrees (41 degrees C) or greater. If available, rectal temperature may be obtained.
- B. Skin hot and dry and usually no sweating.
- C. Suspect hyperthermia in patients with acute psychosis or seizures on a hot, humid day.

**TREATMENT:**

- A. Airway - ensure patency.
- B. Breathing - Oxygen 12-15 L/M, by non-rebreather mask.
- C. Pulse oximeter, maintain oxygen saturation >95%.
- D. Circulation - Start IV, large bore, with NS. Give 250cc bolus in adults, **20cc/kg bolus in pediatrics.**
- E. Attach cardiac monitor
- F. Cool patient by appropriate interventions. Call OLMD for guidance.
- G. If patient is actively seizing, administer Diazepam (See Seizure Protocol):  
Adults (CAT A): 5-10 mg IVP.  
**Pediatrics under 5 years of age (CAT B): 0.2-0.5 mg/kg slow IVP until seizure stops to maximum of 5 mg. Rectally (CAT B): 0.5 mg/kg**  
**Pediatrics over 5 years of age (CAT B): 1 mg slow IVP until seizure stops to a maximum of 5 mg.**
- H. Contact receiving hospital with patient report as soon as possible during transport.

**SPECIFIC PRECAUTIONS:**

- A. Heat stroke is a medical emergency. Differentiate from heat cramps (abdominal or leg) or heat exhaustion (hypovolemia of gradual fluid loss), however, be aware that heat exhaustion can progress to heat stroke. No progression through these stages is necessary for the diagnosis.
- B. Wet sheets over patient without good air flow will tend to increase temperature and should be avoided.
- C. Definitive cooling may require an ice water bath. **DO NOT LET COOLING IN THE FIELD DELAY YOUR TRANSPORT.** Cool patient if possible while en route.

**HYPOGLYCEMIA****4.21****SPECIFIC INFORMATION NEEDED:**

- A. Onset: Sudden or gradual? When was patient last well?
- B. History: Of recent stress, either emotional or physical, last meal, and presence/absence of hunger or thirst.
- C. Past history: Diabetes mellitus, medical alert tag, last insulin (time/amount), and/or oral hypoglycemic agents?

**PHYSICAL ASSESSMENT:**

- A. Vital signs.
- B. Rate and quality of respiration.
- C. Breath odor.
- D. Mental status.
- E. Skin: Color, temperature, and hydration.
- F. Signs of adrenaline effect, diaphoresis, tachycardia, tremor, and/or seizures.
- G. Medical alert tag.

**TREATMENT:**

- A. Airway - ensure patency.
- B. Breathing - Oxygen to maintain oxygen saturation (pulse oximeter) reading >95%.
- C. Circulation - attach cardiac monitor.
- D. If patient is unconscious or unable to effectively take oral glucose, start IV, Saline lock or large bore, with normal saline at a TKO rate.
- E. Draw a red top tube for hospital analysis (optional if local hospital will not accept).
- F. Glucometer- Adult: glucose <70 administer 25GM D50W IVP (CAT A)  
(Give thiamine, 100mg IVP [CAT A] before the D50W if there is any evidence of malnutrition or alcohol abuse).  
If the patient is comatose from hypoglycemia and you cannot get an IV line, consider thiamine 100mg IM (CAT A) and glucagon 1mg IM (CAT B).  
**Pediatric: Glucose <60 administer 2-4cc/kg D25W (CAT A)  
(Glucose <60 and can't get IV: consider glucagon 0.5mg IM for children under 44 lbs [CAT B]).**
- G. Contact receiving hospital with patient report as soon as possible during transport.

**SPECIFIC PRECAUTIONS:**

- A. The diabetic will frequently know what is needed - Listen to the patient, but remember hypoglycemia is often associated with mental confusion.
- B. Hypoglycemia can present as seizures, coma, behavior problems, intoxication, confusion or stroke-like picture with focal deficits (particularly in elderly patients).
- C. Patients who are elderly or who have been hypoglycemic for prolonged periods of time may be slower to awaken.
- D. If a glucometer is not available, the TREATMENT should be for HYPOGLYCEMIA for a patient who is unconscious or has an altered mental status.
- E. Hypoglycemia is not an indication for use of IO access except in extreme circumstances. All such uses of IO will be reviewed by state QI committee.

**SPECIFIC INFORMATION NEEDED:**

- A. Length of exposure?
- B. Environmental conditions?
- C. Past medical history? Medications?

**PHYSICAL ASSESSMENT:**

Define categories of accidental hypothermia by physical findings (patient will be categorized by lowest physiological variable):

- Apnea - Put metal or glass slide under nostrils for 30-45 seconds or use capnography.
- Pulse - Palpate carotid pulse for 30-45 seconds.
- ECG - Attach ECG leads and interpret rhythm.
- LOC - Determine LOC by verbal and motor responsiveness.

**A. MILD TO MODERATE HYPOTHERMIA (90°-95° F)**

Core body temperature (if available) is less than 95° F but greater than 90° F. Patient may present with a history of exposure to cold, altered mental status, shivering, stiffness of muscles, stumbling or staggering gait, cool or cold skin, or mottled/pale skin.

**B. SEVERE HYPOTHERMIA (less than 90° F)**

Core body temperature (if available) is less than 90° F. Patient may present with any of the above symptoms listed above except shivering, and they may also present with absent or difficult to detect respiratory effort, and/or peripheral pulses, respiratory and/or cardiac arrest.

**TREATMENT:****A. MILD/MODERATE HYPOTHERMIA**

1. Airway - ensure patency.
2. Breathing - warm humidified Oxygen 12-15 L/M.
3. Circulation - attach cardiac monitor.
4. Consider Saline lock or IV, large bore, with normal saline (warmed if possible), at 75 cc/hour for adult (**adjust rate for pediatric – consult OLMD**).
5. Remove wet garments.
6. Protect against heat loss and wind chill.
7. Maintain horizontal position.
8. Avoid rough movement and excess activity.
9. Add heat to patient's head, neck, chest, and groin.
10. Heat environment as much as possible.
11. If patient has normal mental status, you may give warm fluids to drink.
12. Contact receiving hospital with patient report as soon as possible during transport.

**B. SEVERE HYPOTHERMIA WITH VITAL SIGNS PRESENT**

Same as Mild/Moderate except:

1. Start IV, large bore, with normal saline (warmed if possible).  
Adult: 75 cc/hour.  
**Pediatric: Consult OLMD.**
2. Give nothing by mouth.

**C. SEVERE HYPOTHERMIA WITH ABSENCE OF VITAL SIGNS**

1. Notify OLMD immediately.
2. Airway - ensure patency, and consider intubation.
3. Breathing - warm, humidified Oxygen 12-15 L/M via bag-valve-mask.
4. Circulation - chest compressions per AHA BCLS guidelines
5. Cardiac monitor- if VFib, defibrillate:  
Adult: 360J.  
**Pediatric: 2J/kg.**  
(Biphasic defibrillators- use manufacturer's recommended settings),
6. Start IV, large bore, with normal saline (warmed if possible):  
Adult: 75 cc/hour,  
**Pediatric- Consult OLMD,**
7. Heat environment as much as possible.
8. Contact receiving hospital with patient report as soon as possible during transport.

**SPECIFIC PRECAUTIONS:**

- A. Handle patient gently - do not jostle.
- B. Do not force oral intubation.
- C. Do not intubate by nasotracheal route.
- D. Do chest compressions only if chest is compressible and patient has a disorganized rhythm.
- E. If terrain is difficult, evacuate patient first and treat second.
- F. OLMD must make decision about whether to give medications in hypothermic arrest.

**SPECIFIC INFORMATION NEEDED:**

- A. How long patient was submerged?
- B. Approximate temperature of water.
- C. Associated trauma. Did patient jump or dive into water? Was MVC involved?
- D. Was this a Scuba diving accident?

**PHYSICAL ASSESSMENT:**

- A. Vital signs.
- B. Neurologic status: Note, record, and monitor mental status.
- C. Initial presence of crackles or other signs of pulmonary edema, and/or respiratory distress.  
Monitor any changes during transport.

**TREATMENT:**

- A. If chance of spinal injury- **STABILIZE CERVICAL SPINE IMMEDIATELY.**
- B. Airway - clear upper airway, ensure patency, and consider intubation (vomiting precautions).
- C. Breathing - Oxygen 15 L/M, by non-rebreather mask, assist with BVM and suction as necessary.
- D. Circulation - attach cardiac monitor, perform 12-lead ECG if available.
- E. Start IV, Saline lock or large bore, with normal saline at a TKO rate.
- F. Glucometer- Adult: glucose < 70 administer 25GM D50W IVP (CAT A)  
(Give thiamine, 100mg IVP [CAT A] before the D50W if there is any evidence of malnutrition or alcohol abuse).  
If the patient is comatose from hypoglycemia and you cannot get an IV line, consider thiamine 100mg IM (CAT A) and glucagon 1mg IM (CAT B).  
**Pediatric: Glucose below 60 administer 2-4cc/kg D25W (CAT A)**  
**(Glucose <60 and can't get IV: consider glucagon 0.5mg IM for children under 44 lbs [CAT B]).**
- G. Consider body temperature - refer to Hypothermia Protocol (4.22).
- H. Contact receiving hospital with patient report as soon as possible during transport.

**SPECIFIC PRECAUTIONS:**

- A. If patient is still in water, rescue by trained, equipped personnel only.
- B. Patient will vomit, protect the airway!
- C. All NEAR-DROWNING SHOULD BE TRANSPORTED. Even if patients initially appear fine, they can deteriorate. Monitor closely. Pulmonary edema is likely.
- D. Hypothermia may be a problem. If suspected, refer to hypothermia protocol (4.22).
- E. It is a common error to underestimate injuries in near-drowning from diving, jumping, MVC, etc.

**SPECIFIC INFORMATION NEEDED:**

- A. Scene safety? Do not enter an area that is possibly contaminated with a hazardous material unless properly protected. Do not enter scene if physical danger is present. Wait for police and/or HazMat to clear or secure a dangerous scene.
- B. Type of ingestion: What, when and how much was ingested? Bring the poison, the container, and everything questionable in the area with the patient to the Emergency Department. Look for multiple patients with same signs and symptoms.
- C. Reason for ingestion: Screen for child neglect, and/or suicidal problem.
- D. Past history: Medications, diseases, psychiatric history, and/or drug abuse.
- E. Action taken by bystanders: Induced emesis: "antidote" given?

**PHYSICAL ASSESSMENT:**

- A. Vital signs.
- B. Level of consciousness.
- C. Breath odor.
- D. Neurologic status.
- E. Eye findings - pupil size, reactivity, and equality.
- F. Vomitus.
- G. Needle marks or tracks.
- H. SLUDGES? (Salivation, Lacrimation, Urination, Defecation, Gastric Emesis, and Sweating)

**TREATMENT:****A. EXTERNAL / INHALATION POISONING**

- 1. If local protocol does not exist, consider Hazardous Material Protocol.
- 2. Protect medical personnel.
- 3. Remove the patient from contaminated area or remove contaminant from the patient.
- 4. Remove contaminated clothing.
- 5. Flush contaminated skin and eyes with copious amounts of water.
- 6. Airway - ensure patency.
- 7. Breathing - Oxygen 15 L/M, by non-rebreather mask, maintain oxygen saturation (pulse oximeter) reading >95%, assist with BVM if necessary.
- 8. If suspicion of Carbon Monoxide poisoning, remember pulse oximeter is unreliable.
- 9. Circulation - cardiac monitor.
- 10. Start IV, Saline lock or large bore, with normal saline at TKO rate.
- 11. If shock syndrome present, proceed to Shock Protocol.
- 12. If cholinergic poisoning (organophosphate, SLUDGE), administer Atropine (CAT B)  
Adults (CAT B): 2mg IVP every 5 minutes, titrate to effect.  
**Pediatrics (CAT B): 0.02mg/kg IVP. MIN dose 0.1mg, MAX single dose is 0.5mg.**
- 13. Contact receiving hospital with patient report as soon as possible during transport.

**B. INTERNAL POISONING**

1. Airway - ensure patency (vomiting precautions).
2. Breathing - Oxygen 15 L/M, by non-rebreather mask, maintain oxygen saturation (pulse oximeter) reading >95%, assist with bag-valve-mask if necessary.
3. Circulation - attach cardiac monitor
4. Start IV, Saline lock or large bore, with normal saline at a TKO rate.
5. If shock syndrome present, proceed to Shock Protocol.
6. If depressed respirations/diminished responsiveness consider Naloxone (CAT A)  
Adult: 2 mg IVP every 3 minutes up to a total of 8 mg. If unable to get IV may give 4 mg by ET.

**Pediatrics: 0.1 mg/kg until age 5 years or 20kg; 2 mg for above age 5 years or above 20kg.**

7. Draw one red top tube for hospital analysis (optional if local hospital will not accept).
8. Glucometer- Adult: glucose <70 administer 25GM D50W IVP (CAT A).  
(Give thiamine, 100mg IVP [CAT A] before the D50W if there is any evidence of malnutrition or alcohol abuse).

If the patient is comatose from hypoglycemia and you cannot get an IV line, consider thiamine 100mg IM (CAT A) and glucagon 1mg IM (CAT B).

**Pediatric: Glucose < 60 administer 2-4cc/kg D25W (CAT A)  
(Glucose <60 and can't get IV: consider glucagon 0.5mg IM for children under 44 lbs [CAT B]).**

9. Consider administration of Activated Charcoal (CAT B) - Contact OLMD.
10. If tricyclic antidepressant (Include: amitriptyline, amoxapine, ascendin, desipramine, desyrel, elavil, endep, imipramine, ludiomil, norpramine, pamelor, sinequan, triavil, tofranil, and others):
  - Hyperventilate stuporous patients at a rate of at least 20/min. if possible.
  - Treat hypotension with volume replacement (dopamine or other vasoconstrictive drugs are contraindicated)
  - Administer 1 mEq/kg of Sodium Bicarbonate, slow IVP (CAT B).
11. If known beta blocker overdose consider glucagon (CAT B): adult 1mg IV.

**Peds 0.5mg IV for children under 44 lbs.**

12. If known calcium channel blocker overdose with hypotension consider:
  - Calcium gluconate (CAT B): adult 1-2 grams IV,  
**Peds 60mg/kg [0.6cc/kg] IV – maximum dose 1 gram**
  - Glucagon (CAT B). adult 1mg IV,  
**Peds 0.5 mg IV for children under 44 lbs.**

**NOTE: flush the line with saline between giving calcium and glucagon to prevent precipitation.**

13. If known cyanide exposure or smoke inhalation victim who shows clinical evidence of closed-space smoke exposure (soot in mouth or nose, sooty sputum) and is either comatose, in shock, or in cardiac arrest, consider Cyanokit (hydroxycobalamin 5 grams) I.V. over 15 minutes (Cat. A). **Not for Peds.**
14. If dysrhythmias present, proceed to Cardiac Dysrhythmia Protocol (4.11).
15. Contact OLMD if additional ALS intervention is necessary.
16. Contact receiving hospital with patient report as soon as possible during transport.

**SPECIFIC PRECAUTIONS:**

- A. Inhalation poisoning is particularly dangerous to rescuers. Recognize an environment with continuing contamination and extricate rapidly by properly trained and equipped personnel.
- B. Do not induce vomiting in patients who:
  - Have ingested strong acid, strong base, iodides, silver nitrate, strychnine, phenothiazine, hydrocarbons gasoline and other (petroleum products), camphor, tricyclics, INH, or short acting sedatives or any drug which may alter the patients level of consciousness..
  - Are unconscious, obtunded, seizing, or have no gag reflex.
  - Are in the third trimester of pregnancy.
- C. Do not try to neutralize acids with strong alkalis. Do not try to neutralize alkalis with acids.
- D. Activated charcoal is ineffective in some ingestions such as heavy metals, mineral acids, petroleum products or cyanide.
- E. Each OLMD physician is encouraged to involve the Poison Control Center in the decision making to determine treatment and whether transport is appropriate.

**SPECIFIC INFORMATION:**

- A. Disease of unknown origin.
- B. Field diagnosis based on findings of pregnancy, hypertension, and edema.
- C. Usually occurs after 20th week of gestation. May occur up to 2 weeks postpartum.
- D. Eclampsia occurs with the signs/symptoms of preeclampsia with seizures or coma.
- E. Audio and Visual sensations can increase chances of seizure.
- F. Prenatal care? (more common if no care.)
- G. History of seizure disorder? (seizure with no prior history is more likely to be eclampsia).
- H. History of headache, dizziness, confusion, seizures, coma, blurred vision, nausea, vomiting, and/or anuria.

**PHYSICAL EXAMINATION**

- A. ABCs.
- B. Vital Signs:
  - Blood pressure normally decreases during pregnancy.
  - BP of 140/90 is considered very high.
- C. Evidence of edema and hyperactive deep tendon reflexes.
- D. Seizure activity? (Seizure or coma marks difference between preeclampsia and eclampsia).

**TREATMENT:**

- A. Airway - ensure patency (vomiting precaution).
- B. Breathing - Oxygen 12-15 L/M, by non-rebreather mask,
- C. Pulse oximeter – maintain oxygen saturation >95%
- D. Circulation - attach cardiac monitor. Perform 12-lead ECG if available.
- E. Start IV, Saline lock or large bore, with normal saline at a TKO rate.
- F. Place patient in left lateral recumbent position.
- G. Handle the patient gently.
- H. Minimize patient's sensory stimulation.
- I. Anticipate seizures; if seizures develop (eclampsia) immediately give 4 grams of magnesium sulfate IV (CAT B). Mix 4 grams of magnesium sulfate (8cc of 50% solution) in 250 cc of NS and give over 20 minutes.
- J. Transport gently to appropriate hospital.
- K. Contact receiving hospital with patient report as soon as possible during transport.

**SPECIFIC PRECAUTIONS:**

- A. Transport without lights and sirens, unless the patient is suffering eclampsia.
- B. Remember pregnant patients are at risk for a pulmonary embolus.

**SPECIFIC INFORMATION:**

- A. History: Acute insult or injury, or slow deterioration. Obtain careful history of fever, chills, and purulent sputum products.
- B. Past history: Chronic lung or heart problems (diagnosis?); medications, home oxygen, past allergic reactions, or recent surgery.
- C. Associated symptoms: Chest pain, and/or paresthesias of mouth or hands.

**PHYSICAL ASSESSMENT:**

- A. Vital signs including pulse oximetry to maintain oxygen saturation >95%.
- B. TACHYPNEA:
  - **Birth to 6 months > 60 BPM.**
  - **7 months to 1 yr > 40 BPM.**
  - **2-4 years > 30 BPM.**
  - **Over 5 years > 20 BPM.**
- C. Level of consciousness.
- D. Cyanosis.
- E. Evidence of upper airway obstruction: Hoarseness, bucking, drooling, coughing, inspiratory stridor, irrational behavior, and/or poor cooperation.
- F. Evidence of lower airway obstructions: Breath sounds: Clear, crackles, wheezing, symmetrical, and/or labored. Abnormality on inspiration or expiration?
- G. Secondary findings. Signs of congestive failure: Distended neck veins when upright, wet lung sounds, and/or peripheral edema.
- H. Hives, and/or airway edema.
- I. Evidence of trauma.

**TREATMENT:**

- A. Airway - ensure patency.
  - If partial or complete obstruction: follow AHA's guidelines for management of conscious or unconscious obstructed airway.
  - **If croup or epiglottitis, calm the patient as much as possible. Have parent hold child in arms and give oxygen.**
  - Consider intubation **(not for epiglottitis or croup).**
- B. Consider allergic reaction. If present, treat per Allergic Reaction Protocol (Severe).
- C. Breathing - Oxygen 12-15 L/M, by non-rebreather mask, be prepared to assist ventilations with bag-valve-mask, pulse oximeter, to maintain oxygen saturation of >95%.
- D. Circulation - attach cardiac monitor. Perform 12 lead ECG if available.
  - If vital signs are stable consider IV, Saline lock or large bore, with normal saline at TKO rate.
  - If vital signs are unstable utilize Shock Protocol with IV, large bore, with normal saline at TKO rate and adjust to patient's needs.
- E. If wheezing is present (asthma, allergic reaction, or burns with wheezing): Inhalation therapy with Albuterol en route. Dosage for adults and **children** is 2.5 mg Albuterol administered by nebulization, rotohaler, or by metered dose inhaler with spacer.

**TREATMENT (continued):**

- G. If symmetrical crackles present (pulmonary edema): Treatment other than CPAP is CAT B- Contact OLMD:
- Nitroglycerin (CAT B): 0.4 mg sublingual (tablet or spray) if systolic BP>110mm Hg.
  - Furosemide (CAT B): 20-40 mg IVP.
  - Morphine Sulfate (CAT B): 2-4 mg slowly IV. Watch for respiratory depression.
  - Contact OLMD to consider Epinephrine.
- H. If pneumothorax is present - watch for signs of tension and transport immediately. If tension pneumothorax is suspected, contact OLMD about possible decompression.
- I. If symptoms and signs are consistent with asthma, COPD, pulmonary edema, CHF, or pneumonia and the patient continues to have SPO<sub>2</sub> reading <95% after oxygen therapy, consider CPAP (CAT A).
- J. Consider endotracheal intubation (CAT A) for those patients who have indications (See 6.1).
- K. Contact OLMD if additional ALS intervention is necessary.
- L. Contact receiving hospital with patient report as soon as possible during transport.

**BREATH SOUNDS IN RESPIRATORY DISTRESS**

<b>Characteristics</b>	<b>Possible Diagnosis</b>
Clear, symmetric	Hyperventilation, MI, metabolic, or pulmonary embolus
Crackles, symmetric	Pulmonary edema, extensive pneumonia
Wheezing, symmetric	Asthma, pulmonary edema, COPD, or allergic reaction
Clear, asymmetric or absent	Pneumothorax, pulmonary embolus, COPD
Crackles, asymmetric	Pneumonia, pulmonary edema
Wheezing, asymmetric	Foreign body, pulmonary embolus, COPD

**SPECIFIC PRECAUTIONS:**

- A. If you are unable to differentiate the cause of the respiratory distress, the proper course is to administer oxygen and transport. When in doubt and the patient is in severe distress, discuss your alternatives with OLMD.
- B. Wheezing in older persons is frequently due to pulmonary edema, not asthma. Your patient may make the wrong diagnosis. Consider also pulmonary embolus.
- C. Children with croup, epiglottitis, or laryngeal edema usually have respiratory arrest due to exhaustion or spasm. You will still be able to ventilate with mouth-to-mouth, pocket mask or bag/valve/mask technique. Do not attempt intubation. Note compliance.**
- D. Do not over diagnose “hyperventilation” in the field. Your patient could have a pulmonary embolus or other serious problem: give him/her the benefit of the doubt. Treatment with oxygen will not harm the person hyperventilating, and it will protect you from underestimating the problem.

**SPECIFIC INFORMATION NEEDED:**

- A. Seizure history: Onset, time interval, previous seizures, and type of seizure. Consider febrile seizures in children.
- B. Medical history: Medications and compliance, head trauma, diabetes, headaches, drugs, alcohol, and/or pregnancy. If the patient is pregnant, in the last trimester, and has hypertension and edema go to the Preeclampsia/Eclampsia protocol.

**PHYSICAL ASSESSMENT:**

- A. Vital signs including pulse oximetry to maintain oxygen saturation of >95%.
- B. Seizure activity. Determine focal or generalized and length.
- C. Level of consciousness.
- D. Head and facial trauma.
- E. Incontinence. (Urinary and/or fecal).
- F. Focal neurologic signs.
- G. Headache.

**TREATMENT:**

- A. Airway - ensure patency - nasopharyngeal airways may be useful.
- B. DO NOT FORCE ANYTHING BETWEEN THE TEETH.
- C. DO NOT USE BLIND INSERTION AIRWAY DEVICES.
- D. Breathing - Oxygen 12-15 L/M, by non-rebreather mask.
- E. Pulse oximeter – maintain oxygen saturation >95%, assist ventilations if necessary, and suction as needed.
- F. Circulation - attach cardiac monitor, Perform twelve lead if any suspicion of cardiac or stroke etiology.
- G. Consider Saline lock IV if patient is not continually seizing.
- H. If patient actively or continually seizing, start IV or IO, Saline lock or large bore, with NS at TKO rate.
- I. Glucometer- Adult: <70 administer 25GM D50W IVP (CAT A).  
(Give thiamine, 100mg IVP [CAT A] before the D50W if there is any evidence of malnutrition or alcohol abuse).  
If the patient is comatose from hypoglycemia and you cannot get an IV line, consider thiamine 100mg IM (CAT A) and glucagon 1mg IM (CAT B).  
**Pediatric: Glucose < 60 administer 2-4cc/kg D25W (CAT A)**  
**(Glucose <60 and can't get IV: consider glucagon 0.5mg IM for children under 44 lbs [CAT B]).**
- J. Administer diazepam (Adult CAT A, Pediatrics CAT B):  
Adults: 5-10 mg IV for continual grand mal seizure activity in adults.  
**Pediatrics (CAT B): Under 5 years of age slow IV push (0.2-0.5 mg/kg) until seizure stops to maximum of 5 mg; or rectally, 0.5 mg/kg. Over 5 years of age slow IV push 1 mg until seizure stops to a maximum of 5 mg.**
- K. Lorazepam (in place of diazepam):  
Adults: 1-2 mg IV slowly.  
**Pediatrics (CAT B): Neonates- 0.05 mg/kg slowly IV.**  
**Infants/Children-0.1 mg/kg slowly IV, Max dose 2 mg.**
- L. Left lateral recumbent position for transport.

- M. Contact receiving hospital with patient report as soon as possible during transport.
- N. Document patient's level of consciousness at time of transport.

**SPECIFIC PRECAUTIONS:**

- A. Move hazardous material away from patient. Restrain the patient only if needed to prevent injury. Protect patient's head.
- B. Trauma to tongue is unlikely to cause serious problems. Trauma to teeth may occur.
- C. Attempts to force an airway into the patient's mouth can completely obstruct his airway.
- D. Seizures in patients over the age of 50 are frequently caused by arrhythmias.
- E. Medical personnel are often called to assist epileptics who seize in public. If patient clears completely and does not request transport, is taking his medications, has his own physician and is experiencing his usual frequency of seizures, transport may be unnecessary. Document patient's mental status and have patient sign a refusal form.
- F. Don't forget to check for a pulse once a seizure terminates. Seizure activity may be the first sign of cerebral hypoxia from cardiac arrest.
- G. Focal motor seizures are generally not treated in the prehospital setting.
- H. Seizures in pediatric patients are commonly febrile seizures and are usually benign and short lived.**

**SHOCK SYNDROME** for purposes of these protocols is defined as inadequate organ perfusion. Signs and symptoms may include, but are not limited to:

- A. Pulse over 120 with systolic BP < 90 mmHg (adult) in conjunction with suspected blood loss.
- B. Skin cold and clammy. (May be absent in early septic shock).
- C. Mental status: Confusion, restlessness, and/or apathy.
- D. Other: Marked thirst.

**CLASSIFICATION OF SHOCK:**

Determine the type of shock, so that appropriate treatment may be started in the field.

- A. Hypovolemic Shock: Shock characterized by the loss of circulating blood volume. This may be due to direct hemorrhage or through loss of fluids from severe vomiting, diarrhea, burns and or peritonitis.
- B. Cardiogenic Shock: Pump failure.
- C. Distributive Shock: Characterized by abnormal vascular tone. Includes anaphylaxis, early sepsis, and neurogenic shock.
- D. Obstructive Shock: Mechanical obstruction to blood flow to or from the heart. Includes cardiac tamponade, tension pneumothorax, dissecting aneurysm, and pulmonary embolism.

**TREATMENT: HYPOVOLEMIC SHOCK**

- A. Airway - ensure patency.
- B. Breathing - Oxygen 12-15L/M, by non-rebreather mask, assist ventilations with BVM as needed.
- C. Pulse oximeter – maintain oxygen saturation >95%.
- D. Circulation - attach cardiac monitor, perform 12 lead ECG if available.
- E. Stop significant external hemorrhage, if present. Consider use of hemostatic agent if unable to stop severe bleeding with pressure or tourniquet.
- F. IV, with normal saline, large bore times two if sites permit (CAT A):  
Adults: Consider fluid challenge of 250cc bolus, reassess, and then titrate to a B/P high enough to provide adequate perfusion.  
Patients with history of hypertension, or with head injury, do not tolerate mild hypotension. In these cases, titrate to a systolic B/P of 120 mmHg.  
**Pediatrics: 20 cc/kg, reassess. May repeat up to 3 times.**
- G. Consider hypothermia—hypothermia due to major heat loss must be considered and treated even in warm weather—proceed to Hypothermia Protocol.
- H. DO NOT DELAY TRANSPORT. TREAT PATIENT ENROUTE.
- I. Contact receiving hospital with patient report as soon as possible during transport.

**TREATMENT: CARDIOGENIC SHOCK**

- A. Airway - ensure patency.
- B. Breathing - Oxygen 12-15 L/M, by non-rebreather mask, maintain oxygen saturation >95%.
- C. Circulation - attach cardiac monitor. Perform 12 lead ECG if available. If dysrhythmia identified, proceed to appropriate Cardiac Dysrhythmia Protocol.
- D. IV, Saline lock or large bore, with normal saline at TKO rate.
- E. Contact receiving hospital with patient report as soon as possible during transport.

- F. Consider Dopamine drip (CAT B):  
 Adult (CAT B): 2-5 mcg/kg/min. Titrate by 2-5 mcg/kg/min until 2-5 desired effect is achieved. Microdrip chamber only. See dosage chart.

**Pediatric (CAT B): Rate starts 2-5 mcg/kg/min. Titrate to effect.**

**TREATMENT: DISTRIBUTIVE SHOCK**

- A. Anaphylaxis - proceed to Allergic Reaction Protocol (Severe).
- B. Sepsis and Neurogenic:
- C. Airway - ensure patency.
- D. Breathing - Oxygen 12-15 L/M, by non-rebreather mask, (COPD caution).
- E. Pulse oximeter – to maintain oxygen saturation >95%.
- F. Assist ventilations if needed with bag-valve-mask.
- G. Consider intubation.
- H. Circulation- attach cardiac monitor.
- I. IV, large bore, with normal saline at TKO rate.
- J. If hypotensive, consider fluid challenge (20 cc/kg at 250 cc per bolus).
- K. Consider Dopamine drip (CAT B):  
 Adult (CAT B): 2-5 mcg/kg/min. Gradual increase by 2-5 mcg/kg/min until 2-5 desired effect is achieved. Microdrip chamber only. See dosage chart.  
**Pediatric (CAT B): Rate starts 2-5 mcg/kg/min. Titrate to effect.**
- L. Contact receiving hospital with patient report as soon as possible during transport.

**TREATMENT: OBSTRUCTIVE SHOCK**

- Cardiac Tamponade
  - Tension Pneumothorax
  - Dissecting Aneurysm
  - Pulmonary Embolism
- A. Airway - ensure patency
  - B. Breathing - Oxygen 15 L/M, by non-rebreather mask,
  - C. Pulse oximeter – to maintain oxygen saturation >95%.
  - D. Circulation - attach cardiac monitor.
  - E. Closely monitor vital signs.
  - F. IV, large bore, with normal saline at TKO rate.
  - G. If SEVERE HYPOTENSION, contact OLMD for appropriate fluid flow rate.
  - H. Consider Dopamine drip (CAT B):  
 Adult (CAT B): 2-5 mcg/kg/min. Gradual increase by 2-5 mcg/kg/min until 2-5 desired effect is achieved. Microdrip chamber only. See dosage chart.  
**Pediatric (CAT B): Rate starts 2-5 mcg/kg/min. Titrate to effect.**
  - I. Transport rapidly.
  - J. Contact receiving hospital with patient report as soon as possible during transport.
  - K. Contact OLMD if patient has a symptomatic tension pneumothorax

**SPECIFIC INFORMATION NEEDED**

- A. Last (clock) time patient was seen normal.
- B. Previous neurologic deficit?
- C. Preexisting risk factors (i.e., hypertension, diabetes, heart disease, or previous stroke)?
- D. Recent similar events?

**PHYSICAL ASSESSMENT**

- A. Vital signs: Glasgow Coma Scale Score.
- B. Stroke Scale Score (list name of stroke scale)
- C. Neurologic function: Note language function, and motor function.
- D. Medical alert tags.

**TREATMENT:**

- A. Airway - ensure patency, consider intubation if unconscious patient with no gag reflex.
- B. Breathing - Oxygen 12-15 L/M, by non-rebreather mask. Assist ventilations with bag-valve-mask if necessary. Pulse oximeter to maintain oxygen saturation >95%.
- C. Circulation - attach cardiac monitor, perform 12 lead ECG if available.
- D. Keep patient NPO
- E. Glucometer: Adult: <70 administer 25GM D50W IVP (CAT A)  
(Give thiamine, 100mg IVP [CAT A] before the D50W if there is any evidence of malnutrition or alcohol abuse).  
If the patient is comatose from hypoglycemia and you cannot get an IV line, consider thiamine 100mg IM (CAT A) and glucagon 1mg IM (CAT B).
- F. IV or Saline lock with large bore, with normal saline at TKO rate.
- G. Consider 10cc/kg fluid bolus to increase cerebral circulation.
- H. Place patient supine.
- I. Transport with frequent monitoring of neurological function.
- J. Complete the stroke checklist (Form10.2) on the patient.
- K. Contact receiving hospital with patient report as soon as possible during transport.

**SPECIAL PRECAUTIONS**

- A. High blood pressure during an acute stroke may be compensatory, do not attempt to lower it without consulting OLMD.
- B. Intravenous glucose may aggravate the effects of ischemia upon brain tissue. Do not administer glucose unless hypoglycemia is documented. Do not fail to treat hypoglycemia.
- C. About 1/3 of patients with stroke are dehydrated from being on diuretics. Administer fluid as noted above, unless there are obvious signs of acute heart failure. This will often improve cerebral circulation.
- D. Have the emergency department of the receiving hospital alert their in-house stroke team (if available) about the impending arrival.

This protocol is intended to provide the out-of-hospital provider with an approach to spinal motion restriction (SMR). Full SMR as an automatic response to trauma has come under scrutiny recently and may not always be in the patient's best interest.

Traditional approaches have relied on mechanism of injury as interpreted by the individual practitioner. This "gut instinct" has resulted in many patients being immobilized as a risk management measure while leaving others not having SMR based on a "minor" mechanism that may indeed have been severe enough to cause injury. Patients packaged on hard SMR devices may develop complications or problems due to laying on a spineboard. These complications or problems could potentially be avoided if a spinal assessment tool is utilized to reduce the number of patients unnecessarily placed on spine boards.

**SPECIFIC INFORMATION NEEDED:**

- A. Violent mechanism of injury (witness, scene, situation).
- B. High energy transfer (ejection, helmet damage, starred windshield, etc.).

**PROCEDURE:**

If any suspicion, maintain the spine in the neutral position until assessment is complete.

1. Airway- ensure patency and suction as necessary (vomiting precautions)
2. Breathing - Oxygen 10-15 L/M, by non-rebreather mask, maintain oxygen saturation >95%.
3. Circulation - if vital signs stable, consider Saline lock or IV, large bore, with normal saline at KVO rate.
4. If vital signs are unstable or hypotensive—proceed to Shock Protocol.
5. Assess for possible spinal injury and need for SMR.
6. A step-by-step assessment of the trauma patient is followed to determine if SMR is indicated. The assessment is designed to error on the side of SMR. A flow chart is provided and extensive training on this procedure is essential. (See end of protocol for chart).

**Step 1: Mechanism of Injury**

Elements that should increase suspicion for spine injury include axial loading (diving), blunt trauma to the head or neck, a motor vehicle crash (automobile, snow machine, ATV etc.), a fall over three feet, and/or an adult who falls from a standing height. This mechanism does not automatically require a collar and long board; rather, the mechanism should serve to alert medical providers to the need for spine injury screening. Some patients may be predisposed to spinal injury; people with conditions like arthritis of the spine, including ankylosing spondylitis, may have spinal injuries after minor trauma.

**Step 2: Patient Reliability**

The assessment can only be utilized if the patient is alert, calm, cooperative, and not intoxicated. If there is a communication barrier, including poor communications skills (as in young children) or a language barrier, the patient cannot be properly assessed and based on mechanism and any complaint of injury the patient should receive SMR.

**Step 3: Distracting Injury**

Any painful injury might distract the patient from the pain of a cervical spine injury. This is usually a long bone fracture but could be any fracture, skin injury, or internal injury. Both medical as well as traumatic causes for pain can be considered a distracting injury (e.g. the patient with chest pain who crashes his car while driving to the hospital). If the patient has an injury that seems to be causing enough pain to provide a distraction, the cervical spine cannot be cleared clinically.

**Step 4: Neurologic Evaluation (Abnormal Motor/Sensory Exam)**

A patient who is reliable and has no distracting injury should then be checked for any neurologic deficits. Perform the following assessments bilaterally in the upper and lower extremities. Responses should be symmetrical. Any abnormalities should prompt SMR.

**Motor:**

- Have the patient spread the fingers of his or her hand and resist as you try to squeeze them together. There should be some resistance as you squeeze.
- Ask the patient to hold his or her hand out with the palm facing down. While supporting the wrist, ask the patient to resist while you push down on the dorsal surface of the hand or fingers. The patient should be able to provide some resistance.
- “Gas pedal test”-Place your hand on the bottom of the patient’s foot at the great toe. Ask the patient to push down against resistance. The patient should be able to apply pressure to your hand.
- Move your hand to the top of the foot and ask the patient to pull their toe towards their nose against your resistance. The patient should be able to apply pressure to your hand.

**Sensory:**

- Assess for the ability to distinguish soft and sharp sensation in each hand and foot. Use a sharp object and a soft object. A corner of a gauze pad and a pencil may be used.
- Another option is to break a wooden shaft cotton-tipped applicator. Do not puncture the skin. The sensory exam should be considered positive if the patient complains of distal paresthesias or dysesthesias (abnormal sensations e.g. tingling, or painful sensations) even if they are able to “feel” their extremities.
- Alternately apply the soft and then the sharp object to each extremity. Do not let the patient know which one was used. Ask the patient whether the sensation is soft or sharp. Repeat soft and sharp in all extremities.
- The patient should be able to distinguish soft from sharp.

**Step 5: Complaints of Pain or Examination Tenderness**

- If a patient complains of pain anywhere in the spine, he or she must be treated as though a spinal injury has occurred.
- Palpate the entire spine. Any complaint of pain or tenderness to palpation along any part of the spine should be considered an indication that the patient requires full SMR.
- Ask the patient about sensations of numbness, tingling, shooting pain, or motor weakness in any extremity. Any positive response requires full SMR.
- Evaluate for other injury/ies that is/are so painful the patient may be distracted from awareness of neck pain.
- Determine if the patient has pain over the spine. If pain is elicited from palpation, apply SMR.
- Some components of the sensory examination are subjective. When in doubt, apply SMR.

**Step 6: SMR**

- SMR includes the use of a cervical collar, head immobilizer device, spinal motion restriction, padding where necessary, and adequate straps, so that the patient remains securely in place, even if the patient must be rolled in order to clear the airway. Other appropriate devices (KED, etc) may be needed, depending on patient situation.
- Follow the manufacturer's guidelines when utilizing any SMR devices.

7. Contact receiving hospital with patient report as soon as possible during transport.

**DOCUMENTATION:**

In any case where there is head and/or facial injury, or a mechanism of injury suggesting the possibility of a cervical spine injury, clear and concise documentation is absolutely essential. In the cases where the decision not to provide SMR is made, documentation must include the following information:

**Subjective:**

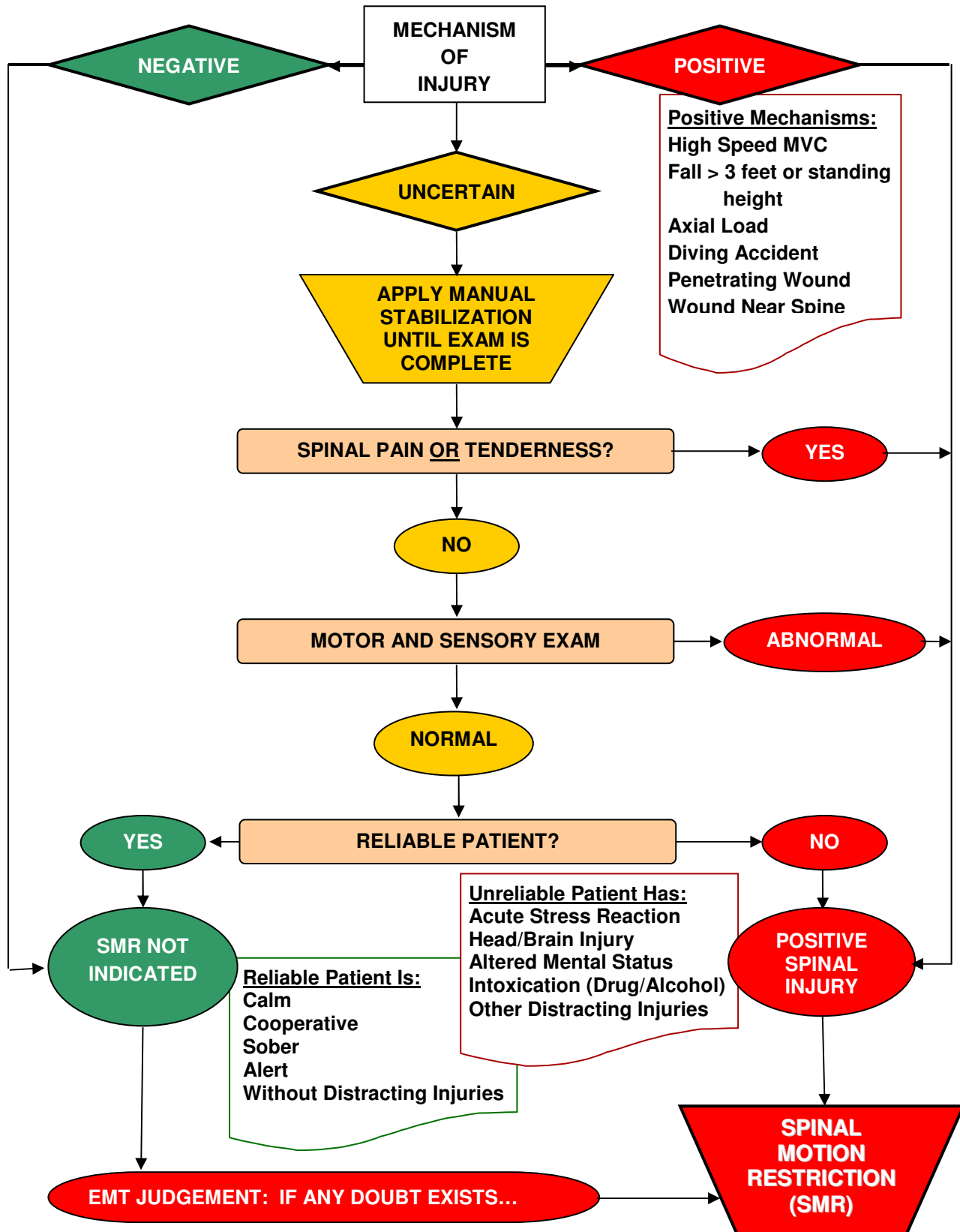
- The examination was performed on a reliable patient.
- The patient denies having any spinal pain.
- The patient denies having any extremity weakness or loss of movement.
- The patient denies having any tingling or feeling of pins and needles in the extremities.

**Objective:**

- There is no pain on palpation of the spine.
- Motor function is intact in all of the extremities.
- Sensation is intact in all extremities.

**SPECIFIC PRECAUTIONS:**

1. Use of a backboard for stabilization of some other injury than the spine, or to move the patient does not mean that SMR is indicated.
2. Use of cervical motion restriction in adults should always be followed with SMR. Do not secure the head to the backboard before securing the body (it can cause torsion on the neck).
3. SMR with a cervical collar and a vacuum mattress is a recommended technique. A vacuum mattress, when available, is preferred for all but short transports.
4. Vomiting should be expected in head injury patients. Therefore, the patient should be securely strapped to a long board to enable board and patient to be turned as a unit.
5. EMTs should be aware that additional help may be necessary during transport to turn patient and manage airway while maintaining cervical spine integrity.
6. Chin straps that could compromise the airway should be removed as the patient is secured to the long board. (Leg straps which may compromise cervical spine stabilization should also be removed.)
7. Most adult patients require 1 to 1 ½ inches of firm padding behind the head to assume standard neutral anatomic position, and some additional padding behind the neck is necessary for full support. **Most children require padding under the shoulders to maintain neutral spinal alignment.**
8. A rigid cervical collar, continuous manual in-line support during rapid extrication onto a long spine board, and rapid transport should be substituted for more time consuming methods in the severely traumatized patient requiring immediate life saving intervention.
9. Airway problems, respiratory difficulty, and shock are common in the traumatized patient. Alternate techniques for performing airway procedures should be used in spinal injured patients. To maintain proper control of the cervical spine during endotracheal intubation, in-line stabilization must be performed by two EMTs.
10. If any motion restriction techniques cause an increase in pain or neurologic deficit; the patient should be stabilized in position found or position of greatest comfort.
11. Geriatric patients (over 55) should raise a higher index of suspicion for the EMT due to physiologic aging changes; the EMT's awareness of the need to provide for cervical spine motion restriction should be more acute in these patients.



**SMR ASSESSMENT FLOW CHART**

**SPECIFIC INFORMATION NEEDED:**

- A. Present history: Onset, duration, seizure activity, precipitating factors. Was the patient sitting, standing or lying. Is the patient pregnant?
- B. Past history: Medications, diseases, or prior syncope.
- C. Symptoms: Vertigo, nausea, chest or abdominal pain.

**PHYSICAL ASSESSMENT:**

- A. Vital signs.
- B. Neurologic exam.
- C. Signs of head trauma.
- D. Consider blood glucose check.
- E. Obtain rhythm strip.

**TREATMENT:**

- A. Airway - ensure patency.
- B. Breathing - Oxygen 10-15 L/M, by non-rebreather mask.
- C. Pulse oximeter, maintain oxygen saturation >95%.
- D. Circulation - cardiac monitor, 12-lead if available
  - If vital signs are stable, consider IV, Saline lock or large bore, with normal saline at a TKO rate.
  - If vital signs are unstable or hypotensive—proceed to Shock Protocol.
- E. Glucometer- Adult: <70 administer 25GM D50W IVP (CAT A)  
(Give thiamine, 100mg IVP [CAT A] before the D50W if there is any evidence of malnutrition or alcohol abuse).  
If the patient is comatose from hypoglycemia and you cannot get an IV line, consider thiamine 100mg IM (CAT A) and glucagon 1mg IM (CAT B).  
**Pediatric: Glucose <60 administer 2-4cc/kg D25W (CAT A).  
(Glucose <60 and can't get IV: consider glucagon 0.5mg IM for children under 44 lbs [CAT B]).**

**SPECIFIC PRECAUTIONS:**

- A. Most syncope is vasovagal, not cardiac. Placing the patient in the recumbent position should be sufficient to restore vital signs and level of consciousness to normal. Other causes may be: Cardiac Arrhythmias, ischemia, hypertension, peripheral vascular disease, orthostatic, hypoglycemia, stroke, circulatory diseases, and transient ischemic attack.
- B. Syncope while in a recumbent position is almost always cardiac.
- C. Syncope of recent onset in middle-aged or elderly patients is often cardiac and deserves special concern.
- D. Occult GI Bleeds may also present with syncope as may dissecting aneurysms.
- E. Syncope by definition is a transient state of unconsciousness from which the patient has recovered. If the patient is still unconscious, the treatment should be as in the Coma Protocol or Shock Protocol as appropriate.

**SPECIFIC INFORMATION NEEDED:**

- A. Symptoms: Cramping, clots or tissue, dizziness, weakness, thirst, and number of pads used.
- B. Present history: Duration, amount, last menstrual period (normal), and birth control method.  
If pregnant: Due date. If postpartum: Time and place of delivery, and current medications.
- C. Past history: Bleeding problems and pregnancies.

**PHYSICAL ASSESSMENT:**

- A. Vital signs.
- B. Evidence of blood loss, clots or tissue fragments (bring tissue to hospital). Note color of blood.
- C. Other signs of hypovolemic shock.
- D. Fever.

**TREATMENT:**

- A. Airway - ensure patency.
- B. Breathing - Oxygen 10-15 L/M, by non-rebreather mask.
- C. Pulse oximeter – maintain oxygen saturation >95%.
- D. Circulation - if vital signs are stable, consider IV Saline lock or large bore, with normal saline at KVO rate. If vital signs are unstable—proceed to Shock Protocol.
- E. If late pregnancy or immediately postpartum - refer to Childbirth Protocol.
- F. Contact receiving hospital with patient report as soon as possible during transport.

**SPECIFIC PRECAUTIONS:**

- A. Amount of vaginal bleeding is difficult to estimate. Try to get an estimate of number of saturated pads in the previous 6 hours. Discreet inspection of the perineum may be useful to determine if clots or tissue are being passed.
- B. Patients in shock from vaginal bleeding should be treated as hypovolemic shock.
- C. Always consider pregnancy or ectopic pregnancy as the cause of the bleeding.

**SPECIFIC INFORMATION NEEDED:**

- A. When did symptoms begin?
- B. Is the cause of the vomiting known?
- C. Has the patient ingested any potential poison or spoiled food?
- D. Has there been blood or material like coffee grounds in the vomitus?
- E. Has the patient also had diarrhea?
- F. If female of child-bearing age, is the patient pregnant?
- G. Are there any associated symptoms (such as abdominal pain)?
- H. Does the patient have a head injury or severe headache?
- I. If headache, is there a history of migraine headaches?

**PHYSICAL ASSESSMENT:**

- A. Vital signs (are there signs of shock)?
- B. Skin: Are there signs of dehydration (poor skin turgor, dry mucous membranes)?
- C. Is jaundice present?
- D. Head: any sign of head trauma?
- E. Abdomen: Tenderness, rebound tenderness, guarding, rigidity, bowel sounds, and distention.
- F. Neurologic exam: LOC, pupils, and focal findings?

**TREATMENT**

ADULT (CAT A): Administer diphenhydramine 25 mg IV or IM

**PEDIATRIC (CAT B): Administer diphenhydramine 1mg/kg IV or IM not to exceed adult dose**

**PRECAUTIONS:**

- A. Do not give diphenhydramine to newborns, nursing mothers, or those allergic to the medication.
- B. Do not give diphenhydramine to patients with altered mental status.
- C. May cause excitation in young children.
- D. May cause hypotension. Do not give if patient has signs of shock.

# **Patient Care Protocols**

## **SECTION 5: MEDICATIONS**

**This section of the protocols is intended as information only. Medications may be administered only as defined by protocol unless online medical direction orders a deviation.**

**PHARMACOLOGY AND ACTIONS:**

Absorbs toxins by chemical binding and prevents GI absorption.

**INDICATIONS:**

Poisoning or overdose following emesis, or when emesis is contraindicated.

**CONTRAINDICATIONS:**

Patients who are unconscious or who may have a rapidly diminishing level of consciousness.

**PRECAUTIONS:**

- A. Activated Charcoal may be ineffective in ingestion of toxins such as heavy metals, mineral acids, petroleum products, or cyanide.
- B. Administration of Activated Charcoal can result in aspiration or significant particulate obstruction of the airway.

**ADMINISTRATION (CAT B):**

Adult (CAT B)-1.0 gm/kg.

Administer in aqueous based solution with Sorbitol (cathartic).

**Pediatric (CAT B) - 1.0 gm/kg.**

**Administer in aqueous based solution with Sorbitol (cathartic).**

**SIDE EFFECTS:**

Nausea and Vomiting.

**PHARMACOLOGY AND ACTIONS:**

Adenosine is a naturally occurring nucleoside that has the ability to slow conduction through the AV node. Since most cases of PSVT involve AV nodal reentry, adenosine is capable of interrupting the AV nodal circuit and stopping the tachycardia, restoring normal sinus rhythm. It is not associated with hypotension and can be used safely in both wide and narrow complex tachycardias. It is eliminated from the circulation rapidly, having a half life in the blood of less than 10 seconds. This allows for the use of repeated doses in rapid succession if needed.

**INDICATIONS:**

To convert symptomatic PSVT to normal sinus rhythm including PSVT that is associated with accessory bypass tracts (e.g., WPW).

**CONTRAINDICATIONS:**

- A. Second or third degree heart block.
- B. Sick sinus syndrome.
- C. Known hypersensitivity.
- D. Pregnancy (relative contraindication).
- E. Dipyridamole (a coronary vasodilator), Carbamazepine (Tegretol).

**PRECAUTIONS:**

- A. When doses larger than 12mg are given by infusion, there may be a decrease in blood pressure secondary to a decrease in the peripheral vascular resistance.
- B. The effects of adenosine are antagonized by the methylxanthines such as caffeine or theophylline. This would mean that larger doses of adenosine may be required in the presence of methylxanthines.
- C. IV adenosine has been shown to produce bronchospasm in asthmatic patients.
- D. If the patient becomes hemodynamically unstable, cardioversion should occur.

**ADMINISTRATION:**

Administer in less than 5 seconds via IV bolus, preferably through a large bore IV in an antecubital vein. The medication should be administered through an IV port as close to the patient as possible so it is not diluted in the tubing. Repeat doses may be administered if no response to initial treatment.

**Adult (CAT B):**

Initial- 6mg rapid, followed by rapid 20cc fluid bolus.

Second- 12mg rapid, 1-2 minutes after initial, followed by rapid 20cc fluid bolus.

Third- 12mg rapid, 1-2 minutes after second, followed by rapid 20cc fluid bolus.

**Pediatric (CAT B):**

**Initial- 0.1mg/kg rapid, followed by 2-3 ml of saline (MAX initial dose- 6mg).**

**Second- 0.2mg/kg rapid followed by 2-3 ml of saline (MAX second dose- 12mg).**

**SIDE EFFECTS:**

Dizziness, facial flushing, headache, nausea, and shortness of breath.

**PHARMACOLOGY AND ACTIONS:**

Albuterol sulfate is a potent, relatively selective beta2-adrenergic bronchodilator. The pharmacological effects are at least in part attributable to stimulation through beta- adrenergic receptors of intracellular adenyl cyclase which catalyzes the conversion of ATP to cyclic-AMP. Increased cyclic-AMP levels are associated with relaxation of bronchial smooth muscle and inhibition of release of mediators of immediate hypersensitivity from cells, especially mast cells. The onset of improvement in pulmonary function is within 2 to 15 minutes after the initiation of treatment and the duration of action is from 4-6 hours. As a beta2 agonist, albuterol induces bronchial dilation, but has occasional beta1 overlap with clinically significant cardiac effects.

**INDICATIONS:**

Bronchial asthma and reversible bronchial spasm that occur with chronic pulmonary disease.

**CONTRAINDICATIONS:**

Symptomatic tachycardia.

**PRECAUTIONS:**

Clinically significant arrhythmias may occur especially in patients with underlying cardiovascular disorders such as coronary insufficiency and hypertension. Patient's basic arrhythmia should be established and the patient's arrhythmia then monitored for any change.

A. Stop treatment if:

1. Pulse increases by 20 BPM.
2. Frequent PVC's develop.
3. Any tachyarrhythmias other than sinus tachycardia appear.

B. Paradoxical bronchospasm may occur with excessive administration.

**ADMINISTRATION:**

Respiratory Distress, Moderate & Severe Allergic Reaction (CAT A)  
CHF, Burns (CAT B).

Adult:

2.5 mg, nebulized.

Or 1-2 sprays from a rotohaler, 90mcg per spray.

Or 1-2 puffs from metered dose inhaler with spacer, 90mcg per puff.

**Pediatric:**

**2.5 mg, nebulized with 6LPM oxygen.**

**Or 1-2 sprays from a rotohaler, 90mcg per spray.**

**Or 1-2 puffs from metered dose inhaler with spacer, 90mcg per puff.**

Albuterol may be administered by any level EMT as a patient assisted medicine when the patient has her/his own medicine.

**SIDE EFFECTS:**

Dizziness, anxiety, palpitations, headache, sweating, skeletal muscle tremors are a common side effect.

**PHARMACOLOGY AND ACTIONS:**

Intravenous Amiodarone is a complex drug with effects on sodium, potassium, and calcium channels as well as alpha- and beta-adrenergic blocking properties.

**INDICATIONS:**

Life threatening cardiac arrhythmias such as ventricular fibrillation or pulseless ventricular tachycardia that persists after defibrillation.

**CONTRAINDICATIONS:**

Second or Third degree AV blocks.

**PRECAUTIONS:**

May cause bradycardia after conversion.

**ADMINISTRATION:**

Adult (CAT A):

Initial- 300 mg diluted in a volume of 20 or 30 cc of Normal Saline, rapid infusion.

Second dose- 150 mg diluted in 20 cc of Normal Saline, rapid infusion, after 5 minutes if VFib or pulseless VTach persists after defibrillation.

**Pediatrics (CAT A):**

**5 mg/kg diluted in 20 cc of Normal Saline, IVP/IO.**

**SIDE EFFECTS:**

Hypotension, nausea, tremors, ventricular ectopic beats.

**PHARMACOLOGY AND ACTIONS:**

Aspirin inhibits prostaglandin and disrupts platelet function. It is also a mild analgesic and anti-inflammatory.

**INDICATIONS:**

- A. Unstable angina.
- B. Acute myocardial infarction.
- C. Ischemic chest pain.

**CONTRAINDICATIONS:**

- A. Aspirin allergy or aspirin induced asthma.
- B. Active GI bleeding.
- C. If patient has taken 325mg within the last 24 hours

**PRECAUTIONS:**

Upset stomach.

**ADMINISTRATION:**

Cardiac Chest Pain (CAT A):  
Four chewable 81 mg baby aspirin.

**SIDE EFFECTS:**

Heartburn, nausea, vomiting, and wheezing.

**SPECIAL NOTES:**

In unstable angina and acute myocardial infarction, aspirin has been shown to lower mortality and is indicated in patients with ischemic chest pain.

**PHARMACOLOGY AND ACTIONS:**

Atropine is a muscarinic-cholinergic blocking agent. As such, it has the following effects:

- A. Increases heart rate (by blocking vagal influences).
- B. Increases conduction through A-V node (i.e., increases ventricular sensitivity to atrial impulses).
- C. Reduces motility and tone of GI tract.
- D. Reduces action and tone of the urinary bladder (may cause urinary retention).
- E. Dilates pupils.
- F. Blocks cholinergic (vagal) influences already present. If there is little cholinergic stimulation present, effects will be minimal.

**INDICATIONS:**

- A. To increase the heart rate in symptomatic bradycardias or pacemaker failure.
- B. To increase heart rate in PEA.
- C. To improve conduction in heart block.
- D. As an antidote for some insecticide exposures (anti-cholinesterases, e.g., organophosphate) and nerve gases.

**CONTRAINDICATIONS:**

- A. Contraindicated in atrial fibrillation and flutter because increased conduction may speed ventricular rate excessively.
- B. Contraindicated in patients with heart transplants (causes paradoxical bradycardia).

**PRECAUTIONS:**

- A. Bradycardias in the setting of an acute MI are common. Don't treat them unless there are signs of poor perfusion (low blood pressure, mental confusion).
- B. Chest pain could be due to an MI or to poor perfusion caused by the bradycardia itself. Consult OLMD before using.

**ADMINISTRATION (CAT A for cardiac dysrhythmias, CAT B for poisons/overdoses):**

Adults (CAT A):

ASYSTOLE: 1 MG IV/IO push. May repeat every 3 to 5 minutes (if asystole persists) to a maximum of 3 mg. Endotracheal administration: 2 to 3 mg diluted in 10 cc NS per ET tube.

BRADYCARDIA: 0.5 mg IV, repeated if needed at 3 to 5 min intervals (usually titrated to a ventricular rate of about 60/min) to a total dose of 0.04 mg/kg (3 mg maximum).

**Pediatrics (CAT A):**

**0.02 mg/kg IV. May be repeated once.**

**Minimum dose: 0.1 mg. Maximum total dose: 1 mg for child.**

Organophosphate Poisoning (CAT B):

Requires more of the drug: 2mg IV push over 10-15 seconds and titrate to effect.

**SIDE EFFECTS AND SPECIAL NOTES:**

2nd and 3rd degree block may be chronic and without symptoms. Symptoms occur mainly with acute change. Treat the patient, not the arrhythmia.

**PHARMACOLOGY AND ACTIONS:**

Glucose is the body's basic fuel. It produces most of the body's quick energy. Its use is regulated by insulin, which stimulates storage of excess glucose from the bloodstream and glucagon which mobilizes stored glucose into the bloodstream.

**INDICATIONS:**

- A. Hypoglycemic states (Blood Glucometer of <70 adults or <60 in children) associated with any focal or partial neurologic deficit or altered state of consciousness.
- B. The unconscious patient, when a history is unobtainable and glucometer malfunctions.

**CONTRAINDICATIONS:**

None in prehospital setting.

**PRECAUTIONS:**

- A. A blood glucometer should be utilized.
- B. In patients with any focal or partial neurologic deficit or altered state of consciousness, D50W should be used with caution unless you can document a blood glucose less than 70.
- C. Extravasation of 50% dextrose will cause necrosis of tissue. The IV should be secure and any return of blood into the syringe or tubing should be checked 2-3 times during administration. If extravasation does occur, immediately stop administration of drug.
- D. Report extravasation of the drug to receiving hospital personnel and document.

**ADMINISTRATION (CAT A):**

Draw one red-top tube prior to administration (optional if local hospital will not accept) and use a blood glucometer to determine blood glucose level.

**Adults:**

If patient unable to tolerate oral fluids, give 50 ml amp (1 ml/kg) IV into secure vein. Give solution orally (or glucose paste, sugared juice, honey, or Karo syrup), if the patient is awake and able to tolerate oral fluids.

**Pediatrics :**

**Dilute to Dextrose 25% in preschool children.  
2-4 ml/kg of D25W IV.**

**SIDE EFFECTS AND SPECIAL NOTES:**

- A. 50% dextrose should be used whenever documented hypoglycemia exists.
- B. Do not draw blood for glucose determination from site proximal to an IV containing glucose or dextrose.
- C. If there is any evidence of malnutrition or alcohol abuse, thiamine should precede the administration of D50W in any adult patient.

**PHARMACOLOGY AND ACTIONS:**

Diazepam acts as a tranquilizer, an anticonvulsant and a skeletal muscle relaxant.

**INDICATIONS:**

- A. Status seizures. In the field, this is a seizure which has lasted longer than 5 minutes or two consecutive seizures without regaining consciousness.
- B. Do not give unless patient is actively seizing.
- C. May be given prior to cardioversion. (CAT B).

**CONTRAINDICATIONS:**

Alcohol intoxication and CNS depression.

**PRECAUTIONS:**

- A. Since diazepam can cause respiratory depression and/or hypotension, the patient must be monitored closely. Very rarely cardiac arrest may occur.
- B. For the above reasons, diazepam should not be given without a good IV line in place and a bag valve mask ready.
- C. Impaired pulmonary function, elderly, and pediatrics.

**ADMINISTRATION (CAT A except CAT B in pediatrics and cardioversion):**

Adults: 5-10 mg slow IV push (each 5 mg over at least one minute).

**Pediatrics (CAT B):**

**Under 5 years of age- slow IV push (0.2-0.5 mg/kg) until seizure stops to MAX of 5 mg or 0.5 mg/kg if administered rectally.**

**Over 5 years of age- slow IV push 1 mg until seizure stops to a MAX of 5 mg.**

**SIDE EFFECTS AND SPECIAL NOTES:**

- A. Common side effects include drowsiness, dizziness, fatigue and ataxia. Paradoxical excitement or stimulation sometimes occurs.
- B. Should not be mixed with other agents or diluted with intravenous solutions. Turn off IV flow while administering, and give through the end of IV tubing closest to the vein.
- C. Most likely to produce respiratory depression in patients who have taken other depressant drugs, especially alcohol and barbiturates, or when given rapidly.
- D. Consider rectal administration 0.5 mg/kg (if unable to administer IV) in seizing children. Contact OLMD.
- E. Contact OLMD for cardioversion dosage.

**PHARMACOLOGY AND ACTIONS:**

- A. An antihistamine which blocks action of histamines released from cells during an allergic reaction.
- B. CNS effects, generally sedating in action (CNS depressant) except in children under six years of age in whom it is a CNS stimulant.
- C. Anticholinergic, anti-parkinsonism effect, which is used to treat acute dystonic reactions to antipsychotic drugs (e.g., Haldol, Thorazine, Compazine). These reactions include: oculogyric crisis, acute torticollis, and facial grimacing.
- D. Antiemetic effect.

**INDICATIONS:**

- A. The second-line drug in anaphylaxis and severe allergic reactions (after epinephrine).
- B. To counteract acute dystonic reactions to antipsychotic drugs.
- C. To treat nausea or vomiting.

**CONTRAINDICATIONS:**

Allergy to Diphenhydramine.

**Not for newborns.**

Nursing mothers (relative contraindication).

**PRECAUTIONS:**

- A. May have additive effect with alcohol or other CNS depressants.
- B. Although useful in acute dystonic reactions it is not an antidote to phenothiazine toxicity or overdose.
- C. May cause hypotension when given IV.

**ADMINISTRATION (CAT A, **CAT B for Pediatric Nausea and Vomiting**):**

Adults: 25 to 50 mg. deep IM or slow IV push.

**Pediatrics: 1 mg/kg IV, IM (not to exceed adult dose).**

**SIDE EFFECTS AND SPECIAL NOTES:**

- A. Diphenhydramine's antihistaminic reaction is effective in preventing and blocking the effects of histamine some time after its administration. However, since it is not immediately effective in the reversal of anaphylaxis, epinephrine is the drug of choice.
- B. Diphenhydramine is the drug of choice in acute dystonic reactions.
- C. May cause excitation in young children.**

**PHARMACOLOGY AND ACTIONS:**

Chemical precursor of nor-epinephrine which occurs naturally in man and which has both alpha- and beta-receptor and dopaminergic stimulating actions. Its actions differ with dosage given:

- A. 1-5 mcg/kg/min - dilates renal and mesenteric blood vessels (no effect on heart rate or blood pressure).
- B. 2-10 mcg/kg/min - beta effects on heart which usually increases cardiac output without greatly increasing heart rate or blood pressure.
- C. 10-20 mcg/kg/min - alpha peripheral effects cause peripheral vasoconstriction and increased blood pressure.
- D. 20-40 mcg/kg/min - alpha effects reverse dilatation of renal and mesenteric vessels with resultant decreased flow.

**INDICATIONS:**

- A. Primary indication is cardiogenic shock.
- B. Occasionally helpful in distributive shock (septic) except hypovolemic shock.

**CONTRAINDICATIONS:**

Dopamine is contraindicated for hypovolemic shock, especially with hypotension.

**PRECAUTIONS:**

- A. May induce tachyarrhythmias, in which case infusion should be decreased or stopped.
- B. High doses (10mcg/kg) may cause extreme peripheral vasoconstriction (increase BP and work load on heart).
- C. MAO Inhibitors potentiate the effects of this drug. Check for medications and contact OLMD if other medications are being used. Examples include Nardil, Parnate, Eutonyl, Marplan, etc.
- D. Should not be added to sodium bicarbonate or other alkaline solutions since dopamine will be inactivated in alkaline solutions.

**ADMINISTRATION (CAT B):**

Adult: Usually mix 800 mg in 500 ml normal saline to produce concentration of 1600 mcg/ml.

Infusion rate should start between 2-5 mcg/kg/min. IV.

Gradually increase by 2-5 mcg/kg/min until 2-5 desired effect is achieved. Use Microdrip chamber only. See dosage chart on next page.

**Pediatric: Usually mix 200 mg in 500 ml NS to produce concentration of 400 mcg/ml. Rate starts 2-5 mcg/kg/min IV. Titrate to effect.**

**INTROPIN®(DOPAMINE HCl) DOSAGE CHART**

For a Concentration of 1600 mcg Dopamine HCl/ml  
(800 mg Intropin Per 500 ml or 400 mg Intropin per 250 ml)

Gtts/ Min.	Body Weight															lbs kgs
	77 35	88 40	99 45	110 50	121 55	132 60	143 65	154 70	165 75	176 80	187 85	198 90	220 100	220 100	231 105	
<b>5</b>	3.8	3.4	2.9	2.6	2.4	2.2	2.0	1.9	1.8	1.6	1.55	1.5	1.3	1.3	1.25	1.2
<b>10</b>	7.6	6.7	5.9	5.3	4.9	4.5	4.1	3.8	3.6	3.3	3.1	3.0	2.7	2.7	2.5	2.4
<b>15</b>	11	10	8.9	8.0	7.3	6.6	6.1	5.7	5.3	5.0	4.7	4.4	4.0	4.0	3.8	3.6
<b>20</b>	15	13	12	11	9.7	8.9	8.2	7.6	7.1	6.7	6.3	5.9	5.3	5.3	5.1	4.9
<b>25</b>	19	17	15	13	12	11	10	9.5	8.9	8.4	7.8	7.4	6.6	6.6	6.3	6.0
<b>30</b>	23	20	18	16	15	13	12	11	11	10	9.4	8.9	8.0	8.0	7.6	7.3
<b>35</b>	27	23	21	19	17	16	14	13	12	12	11	10	9.3	9.3	8.9	8.5
<b>40</b>	31	27	24	21	19	18	17	16	15	14	13	13	11	11	10	9.7
<b>45</b>	34	30	27	24	22	20	18	17	16	15	14	13	12	12	11	11
<b>50</b>	38	33	30	27	24	22	21	19	18	17	16	15	13	13	13	12
<b>55</b>	42	37	33	29	27	24	23	21	20	18	17	16	15	15	14	13
<b>60</b>	46	40	36	32	29	27	25	25	21	20	19	18	16	16	15	15
<b>70</b>	53	47	42	37	34	31	29	27	25	23	22	21	19	19	18	17
<b>80</b>	61	53	47	43	39	36	33	31	28	27	25	24	21	21	20	19
<b>90</b>	69	60	53	48	44	40	37	34	32	30	28	27	24	24	23	22
<b>100</b>	76	67	59	53	49	45	41	38	36	33	31	30	28	27	25	24

Flow Rate in Drops Per Minute Based on a microdrip set with 60 drops per 1.0 mL.

Dosage = mcg Dopamine HCl/kg/min

Note: All dosages of 10 mcg/kg/min and above are rounded off to the nearest mcg/kg/min.

**SIDE EFFECTS AND SPECIAL NOTES:**

- A. The most common side effects include ectopic beats, nausea and vomiting. Angina has been reported following treatment. (Tachycardia and arrhythmias are less likely than with other catecholamines.)
- B. Can precipitate hypertensive crisis in susceptible individuals, i.e. patients on MAO inhibitors (parnate, nardil, marplan).
- C. Consider hypovolemia and treat this with appropriate fluids before administration of dopamine.
- D. Dopamine is best administered by an infusion pump to accurately regulate rate. It may be hazardous when used in the field without an infusion pump. Monitor closely.

**PHARMACOLOGY AND ACTIONS:**

- A. Catecholamine with alpha and beta effects.
- B. In general, the following increase in cardiovascular responses can be expected: Increased heart rate, myocardial contractile force, systemic vascular resistance, arterial blood pressure, myocardial oxygen consumption, and automaticity.
- C. Potent bronchodilator.

**INDICATIONS:**

- A. Cardiac Arrest (VFib, Pulseless VTach, Asystole, Pulseless Electrical Activity)
- B. Systemic allergic reactions.
- C. Asthma in patients under 40.

**CONTRAINDICATIONS:**

None.

**PRECAUTIONS:**

- A. Epinephrine increases cardiac work and can precipitate angina, myocardial infarction or major dysrhythmias in an individual with ischemic heart disease. A patient with wheezing should not always be considered to have asthma.
- B. The cause of wheezing in an elderly person must be differentiated. Wheezing in the elderly is most commonly a sign of conditions which do not require epinephrine such as: pneumonia, pulmonary embolism or pulmonary edema.

**ADMINISTRATION (CAT A except CAT B as noted below):**

Adult cardiac arrest: 1.0 mg (10 ml of 1:10,000 solution) IV every 3-5 minutes during arrest (If unable to obtain IV or IO line, give 2mg 1:1000 solution via ET with 10cc flush).

Adult allergic reaction (anaphylaxis): 0.3 mg 1:1,000 solution), preferably SQ, or equivalent of 1:10,000 solution IV.

Adult acute asthma (CAT B): 0.3-0.5 mg 1:1000, SQ.

Contact OLMD (CAT B) for patients who are elderly, or have hypertension or coronary artery disease.

**Pediatric cardiac arrest: 0.01 mg/kg (0.1 ml/kg of 1:10,000) IV/IO every 5 minutes during arrest. (May also be given via endotracheal tube 0.1 mg/kg).**

**Pediatric allergic reaction (anaphylaxis): 0.01 mg/kg to a MAX of 0.3 mg 1:1,000 solution, preferably SQ, or SL, or equivalent of 1:10,000 solution IV.**

**Pediatric acute asthma (CAT B): 0.01 mg/kg 1:1,000, SQ, MAX of 0.3 mg 1:1000 if under 8 years of age**

**SIDE EFFECTS AND SPECIAL NOTES:**

- A. Epinephrine given to a patient may precipitate an acute myocardial infarction.
- B. Anxiety, tremor, headache, angina, hypertension.
- C. Supraventricular Tachycardia, palpitations, PVCs.
- D. Can be administered as patient assisted medication (Epi-pen).

**PHARMACOLOGY AND ACTIONS:**

Potent diuretic with a rapid onset of action and short duration of effect. It acts primarily by inhibiting sodium re-absorption throughout the kidney. Increase in potassium excretion occurs along with the sodium excretion. As an IV bolus, causes immediate (3-4 min) increase in venous capacitance (dilation). This decreases venous backup and probably accounts for its positive effect in pulmonary edema. Peak effect: ½-1 hours after IV administration: duration about 2 hours. (Duration 6-8 hours if given orally, with a peak in 1-2 hours.)

**INDICATIONS:**

Acute pulmonary edema: To decrease extra cellular volume and reduce venous pressure on the lungs in cardiac failure.

**CONTRAINDICATIONS:**

- A. Contraindicated in hypovolemia or hypotension.
- B. Should not be used in children or pregnant women.

**PRECAUTIONS:**

Monitor closely; can lead to profound diuresis with resultant shock and electrolyte depletion.

**ADMINISTRATION (CAT B):**

20-40 mg IV given slowly over 2 minutes.  
May also be given IM.

**SIDE EFFECTS AND SPECIAL NOTES:**

- A. Hypovolemia, hypotension, hyponatremia, and hypokalemia are the main toxic effects. Other toxicity is not related to single dose use.
- B. The hypokalemia induced is of concern in digitalized patients and particularly those who have digitalis toxicity.

**GLUCAGON****5.13****PHARMACOLOGY AND ACTIONS:**

- A. Increases serum glucose by releasing glycogen stores from the liver. Will not work if patient is malnourished (alcoholics, adrenal insufficiency, etc.).
- B. Counteracts effects of Beta Blocker or Calcium Channel Blocker overdose.
- C. Stimulates release of catecholamines.

**INDICATIONS:**

- A. Hypoglycemic states (Glucometer reading <70 adults or <60 in children) associated with any focal or partial neurologic deficit or altered state of consciousness when an IV cannot be established.
- B. The unconscious patient, when a glucometer reading cannot be obtained and an IV cannot be established.
- C. Known Beta Blocker or Calcium Channel Blocker overdose with hypotension.

**CONTRAINDICATIONS:**

For hypoglycemia: Patients with established IVs and D50W availability.

**PRECAUTIONS:**

- A. Can cause tachycardia because of catecholamine release.
- B. Can cause nausea and vomiting.
- C. Only the diluent supplied by the manufacturer should be used to mix the glucagon.
- D. Thiamine (IM) should precede the administration of glucagon in any adult patient when there is evidence of alcoholism or malnutrition.

**ADMINISTRATION (CAT B):**

Symptomatic hypoglycemia with no IV: Adult: 1mg IM, may repeat once.

**Pediatric: >44 lbs 1mg IM  
< 44 lbs 0.5mg IM**

Beta blocker or calcium blocker overdose: Adult 1 mg IV

**Pediatric: >44 lbs 1mg IV  
< 44 lbs 0.5mg IV**

**SIDE EFFECTS:**

Nausea and vomiting.

**NOTE:**

Glucagon is not a first line drug and is to be used ONLY when you are unable to start an IV on a patient who has symptomatic hypoglycemia (altered mental status).

**PHARMACOLOGY AND ACTIONS:**

- A. Depresses automaticity of Purkinje fibers; therefore, raises stimulation threshold in the ventricular muscle fibers (makes ventricles less likely to fibrillate).
- B. CNS stimulation: tremor, restlessness and clonic convulsions followed by depression and respiratory failure at higher doses.
- C. Cardiovascular effect: decreased conduction rate and force of contraction, mainly at toxic levels.
- D. The effect of a single bolus on the heart disappears in 10-20 minutes due to redistribution in the body. Metabolic half-life is about 2 hours and, therefore, toxicity develops with repeated doses.

**INDICATIONS:**

- A. PVCs in a suspected ischemic event.
- B. Stable ventricular tachycardia or recurrent ventricular tachycardia if clinical condition is not rapidly deteriorating.
- C. Ventricular fibrillation or pulseless ventricular tachycardia that persists after defibrillation.
- D. Following successful defibrillation or cardioversion from ventricular tachycardia.

**CONTRAINDICATIONS:**

Heart rate less than 60.

**PRECAUTIONS:**

- A. Advanced AV block unless artificial pacemaker is in place.
- B. In atrial fibrillation or flutter, quinidine like effect may cause alarming ventricular acceleration.
- C. Diazepam should be available to treat convulsions if they occur.
- D. Lidocaine should NOT be given, except in cardiac arrest, without direct physician orders if:
  - 1. Heart rate is less than 60/min. OR
  - 2. Periods or sinus arrest of any A-V block are present.
- E. Drug is metabolized in the liver and, therefore, patients with hepatic disease, shock or congestive heart failure will have impaired metabolism. All Lidocaine doses (excluding loading doses) should be reduced by 50% in presence of decreased cardiac output (congestive heart failure, hypotension), hepatic dysfunction, or age more than 70. This rule does NOT apply to patients in cardiac arrest.

**ADMINISTRATION (CAT A for cardiac arrest, CAT B all other administrations):****Adult Cardiac Arrest (VFib or Pulseless VTach):**

Lidocaine bolus 1.5 mg/kg initial dose, may repeat with 0.75mg/kg every 5 minutes to total dose of 3mg/kg. Only bolus therapy should be used in the cardiac arrest setting (should the arrest be followed by successful resuscitation, a continuous infusion should be initiated at 2-4mg.min).

**Pediatric Cardiac Arrest (VFib or Pulseless VTach):**

**1.0 mg/kg, IVP/IO**

**Adult Ventricular Ectopy –PVC (CAT B):**

1.0-1.5 mg/kg bolus.

If ectopy persists, give 0.5-0.75 mg/kg bolus every 5-10 minutes to a total dose of 3 mg/kg.

If ectopy is corrected, maintenance infusion of 2-4 mg/minute, titrated to clinical need.

**Adult Primary Prophylaxis against VFib (CAT B):**

Lidocaine bolus 1mg/kg load, then 0.5 mg/kg every 5 minutes to total dose of 2mg/kg.

An infusion of 2mg/min should be started.

May be administered through endotracheal tube 2 mg/kg, not to exceed a total volume of 10cc.

**SIDE EFFECTS AND SPECIAL NOTES:**

- A. CNS disturbances: sleepiness, dizziness, disorientation, confusion, convulsions.
- B. Hypotension: decreased myocardial contractility and increased A-V block at toxic levels.
- C. Rare instances of sudden cardiovascular collapse and death.
- D. Toxicity is more likely in elderly patients.
- E. As high as 50% of patients who develop ventricular fibrillation in the setting of an acute myocardial infarction may have no warning arrhythmias.

**PHARMACOLOGY AND ACTIONS:**

Lorazepam (Ativan®) acts as a tranquilizer, an anticonvulsant and a skeletal muscle relaxant. Available in 1 ml vials containing 2 mg/ml. It must be diluted with an equal amount of normal saline before giving IV. It is used to replace Diazepam when Diazepam is not available.

**INDICATIONS:**

- A. Status seizures. In the field, this is a seizure which has lasted longer than 5 minutes, or two consecutive seizures without regaining consciousness. Do not give unless patient is actively seizing.
- B. May be given prior to cardioversion.

**CONTRAINDICATIONS:**

Should not be mixed with other agents.

**PRECAUTIONS:**

- A. Since Lorazepam can cause respiratory depression and/or hypotension, the patient must be monitored closely.
- B. Very rarely cardiac arrest may occur.
- C. For the above reasons, Lorazepam should not be given without a good IV line in place and a bag valve mask ready.

**ADMINISTRATION (CAT A except CAT B for pediatrics and cardioversion):**

Lorazepam must be diluted with an equal amount of normal saline before IV administration.

Adult: 1-2 mg slow IV push (give over 2 minutes or until seizure stops). Contact OLMD if more than 2 mg is needed (may give up to 4 mg).

**Neonates (CAT B): 0.05 mg/kg slow IV push or until seizure stops.**

**Infants/Children (CAT B): 0.1 mg/kg slow IV push (Max dose 4 mg) or until seizure stops.**

**SIDE EFFECTS AND SPECIAL NOTES:**

- A. Common side effects include drowsiness, dizziness, fatigue and ataxia. Paradoxical excitement or stimulation sometimes occurs.
- B. Most likely to produce respiratory depression in patients who have taken other depressant drugs, especially alcohol and barbiturates, or when given rapidly.
- C. Unrefrigerated shelf-life is 60 days.

**PHARMACOLOGY AND ACTIONS:**

Magnesium sulfate has both antihypertensive and anticonvulsant properties. Magnesium sulfate reduces striated muscle contractions and blocks peripheral neuromuscular transmission by reducing acetylcholine release at the myoneural junction.

**INDICATIONS:**

- A. Eclampsia.
- B. Torsades de pointes.

**CONTRAINDICATIONS:**

None in prehospital setting.

**PRECAUTIONS:**

Excessive amounts of magnesium sulfate can lead to hypotension and/or respiratory arrest.

**ADMINISTRATION (CAT B):**

For Eclampsia:

The medication comes in vials of a 50% solution (1 gram per 2 cc).

Mix 4 grams (8 cc) in 250 cc of Normal Saline and give IV over 20 minutes.

For torsades de pointes:

Mix 2 grams (4 cc) in 250 cc of Normal Saline and give IV over 5 minutes

**SIDE EFFECTS AND SPECIAL NOTES:**

- A. Hypotension.
- B. Respiratory arrest.

**PHARMACOLOGY AND ACTIONS:**

- A. Morphine Sulfate (MS) is a potent narcotic analgesic that induces drowsiness, mental clouding, and mood changes.
- B. MS increases venous capacitance, decreases venous blood return (reduces preload), and reduces systemic vascular resistance at the arteriolar level (reduces afterload) which may lead to decreases in myocardial oxygen demand.
- C. Onset of action (IV) is 2-3 minutes; peak effect at 7-10 minutes and lasts 3-5 hours.

**INDICATIONS:**

- A. Severe Pain of any etiology (CAT. A for Adults) (CAT. B for Peds)
- B. Congestive Heart Failure/Pulmonary Edema (adjunct therapy) (CAT B)

**CONTRAINDICATIONS:**

- A. Known allergy to morphine or sulfates (sulfa drugs are not sulfates).
- B. Blood pressure less than 90 mm/hg systolic in an adult.
- C. Respiratory rate less than 14 breaths per minute, oxygen saturation less than 90%, or significant respiratory depression. **For pediatric patients, vital signs should be maintained within the normal range for appropriate age.**

**PRECAUTIONS:**

- A. Morphine Sulfate causes respiratory depression that is reversible with naloxone. This respiratory depression is exacerbated by underlying lung disease (COPD, etc.) and other depressant drugs (Valium, Alcohol, Cyclic Antidepressants, etc). Respiratory support must be available when administering morphine.
- B. Check and document vital signs and patient response after each dose. Consult OLMD immediately if there is any deterioration.
- C. Morphine may cause nausea and/or vomiting. See Nausea and Vomiting protocol.

**ADMINISTRATION** (CAT A for adult pain management, **CAT B for Pediatric patients** and for pulmonary edema):

Administration is by IV which is also established to allow for fluid bolus therapy if the patient develops hypotension. Each mg ordered should be administered over a one-minute time frame.

Adult (CAT A): 4 mg IV initial dose. Titrate to pain relief in 2 mg doses, every 3-5 minutes, up to 10mg MAX.

Adult (CAT B): If pain is not relieved after 10 mg you must call OLMD for further doses.

**Severe Pain - Pediatrics (CAT B): 0.1 mg/kg IV not to exceed 5 mg**

CHF/Pulmonary Edema (CAT B): Per OLMD order. 2-4 mg is the usual initial dose.

Dosages may be repeated every 3 to 5 minutes.

OLMD may direct use of another drug, fluid bolus, or assisted respiration.

**SIDE EFFECTS/SPECIAL NOTES:**

- A. If hypotension develops, it is usually responsive to naloxone administration and fluid bolus (200cc). If hypotension persists, follow the Shock Protocol.
- B. Follow your agency policy for control and monitoring of use.
- C. The goal is not total elimination of pain, but reduction in perception of pain by the patient (patient comfort).
- D. Bradycardia, dry eyes, blurred vision, and vomiting are side effects.

**PHARMACOLOGY AND ACTIONS:**

Naloxone (Narcan®) is a narcotic antagonist which competitively binds to narcotic sites but which exhibits almost no pharmacological activity of its own. Duration of action: 1-4 hours.

**INDICATIONS:**

- A. Reversal of narcotic effects, particularly respiratory depression, due to narcotic drugs, either ingested, injected or administered in the course of treatment. Narcotic drugs include morphine, Demerol, heroin, Fentanyl, Dilaudid Percodan, Codeine, Lomotil, propoxyphene (Darvon) pentazocine (Talwin) Hydrocodone (Lortab Vicodan).
- B. May be used in coma of unknown etiology to rule out (or reverse) narcotic depression.

**CONTRAINDICATIONS:**

None

**PRECAUTIONS:**

- A. In patients physically dependent on narcotics, frank and occasionally violent withdrawal symptoms may be precipitated.
- B. Be prepared to restrain the patient. Patient may become violent as the Naloxone reverses the narcotic effect.

**ADMINISTRATION (CAT A):**

Adult: 2 mg slowly injected IV, IM, SQ, or 4 to 5 mg by ET.

**Pediatrics: 0.1 mg/kg until age 5 or 20 kg then 2 mg.**

IV administration is preferred.

If no response is observed, doses may be repeated at 3-5 min intervals up to four times in patients suspected of having narcotic overdose.

**SIDE EFFECTS AND SPECIAL NOTES:**

- A. This drug is remarkably safe and free from side effects. Do not hesitate to use it if indicated.
- B. The duration of some narcotics is longer than Naloxone and the patient must be monitored closely. Repeated doses of Naloxone may be required. Patients who have received this drug must be transported to the hospital because coma may reoccur when Naloxone wears off.
- C. May need large doses to reverse propoxyphene (Darvon®), Talwin, and Fentanyl overdoses.

**PHARMACOLOGY AND ACTIONS:**

Cardiovascular effects include:

Reduced venous tone—this causes pooling of blood in peripheral veins and decreased return of blood to the heart.

Decreased peripheral resistance.

Dilatation of coronary arteries (if not already at maximum).

General smooth muscle relaxation.

**INDICATIONS:**

1. Angina.
2. Chest, arm or neck pain thought possible to be related to coronary ischemia; may be used diagnostically as well as therapeutically.
3. Control of hypertension.
4. Pulmonary edema: to increase venous pooling, lowering cardiac preload and afterload.

**CONTRAINDICATIONS:**

**Children in the EMS setting.**

**PRECAUTIONS:**

1. Generalized vasodilatation may cause profound hypotension and reflex tachycardia.
2. Nitroglycerin loses potency easily, should be stored in dark glass container with tight lid and not exposed to heat.
3. Use with caution in hypotensive patients.
4. May cause hypotension in patients taking medication for erectile dysfunction.

**ADMINISTRATION (CAT A except CAT B for hypertensive emergency and/or respiratory distress):**

1. Cardiac Chest Pain:
  - a. 0.4 mg sublingual by tablet or spray if no previous use of nitroglycerin.
  - b. May be repeated every five (5) minutes to a total of 3 doses.
  - c. If patient chronically uses nitroglycerin, dose may be doubled.
  - d. The EMT-Basic and EMT-Intermediate may assist a patient in taking his/her own Nitroglycerin.**
2. Hypertensive Emergency or Respiratory Distress (CAT B): Contact OLMD.

**SIDE EFFECTS AND SPECIAL NOTES:**

1. Common side effects include throbbing headache, flushing, dizziness and burning under the tongue (if these side effects are noted, the pills may be assumed potent, not outdated).
2. Less common effect: marked hypotension, particularly orthostatic.
3. Therapeutic effect is enhanced but adverse effects are increased when patient is upright.
4. Because nitroglycerin causes generalized smooth muscle relaxation, it may be effective in relieving chest pain caused by esophageal spasm.

**PHARMACOLOGY AND ACTIONS:**

- A. Nitrous Oxide (Nitronox®) is a blended mixture of 50% nitrous oxide and 50% oxygen
- B. Has potent analgesic effects.
- C. The high concentration of oxygen delivered with the nitrous oxide will increase the oxygen tension in the blood, thus reducing hypoxia.

**INDICATIONS:**

- A. Pain from orthopedic trauma.
- B. Pain from burns.
- C. Suspected ischemic chest pain.
- D. States of severe anxiety.

**CONTRAINDICATIONS:**

Patients who:

- Cannot comprehend verbal instructions.
- Are intoxicated with alcohol or other drugs.
- Have a head injury sufficient to impair their mental status.
- Have thoracic injury suspicious of pneumothorax.
- Have abdominal pain and distention suggestive of bowel obstruction.
- Have COPD where the high oxygen concentration may depress respirations.

**PRECAUTIONS:**

It is essential that Nitrous Oxide be self-administered.

**ADMINISTRATION (CAT B):**

- A. Self-administer until the pain is significantly relieved or until patient drops the mask.
- B. The duration of administration should be documented.

**SIDE EFFECTS AND SPECIAL NOTES:**

May cause nausea and vomiting (should be anticipated).

**INDICATIONS:**

Normal Saline is indicated for replacement of fluid volume losses such as in trauma, burns, dehydration, or shock, and is the only IV authorized by these protocols.

**PRECAUTIONS:**

Normal Saline should be used with caution in patients with renal impairment (hyperkalemia), cardiac and respiratory disorders (fluid overload), or extremes of age.

**CONTRAINDICATIONS:**

None in prehospital setting

**ADMINISTRATION (CAT A):**

Rate of administration and amount to be given varies with the specific protocol.

**SPECIAL NOTES:**

- A. Where IVs are used to maintain venous access, a heparin or saline lock may be substituted. They must be properly maintained to prevent occlusion.
- B. Since Normal Saline is compatible with all prehospital medications, including blood products, they offer more than ringers lactate as a trauma resuscitation fluid.
- C. In patients in which fluid overload is a problem, Normal Saline may be used with a microdrip, and this microdrip may be used to administer prehospital medications. Also consider the use of a saline lock.

**PHARMACOLOGY AND ACTIONS:**

Tissue hypoxia causes cell damage and death. Oxygen added to the inspired air raises the amount of oxygen in the blood and, therefore, the amount delivered to the tissues.

**INDICATIONS:**

- A. Suspected hypoxemia or respiratory distress from any cause.
- B. Acute chest pain in which a myocardial infarction is suspected.
- C. Shock (decreased oxygenation of tissues) from any cause.
- D. Major trauma.
- E. Carbon monoxide poisoning.

**CONTRAINDICATIONS:**

None in prehospital setting

**PRECAUTIONS:**

- A. If the patient is not breathing adequately on his/her own, the treatment of choice includes ventilation, not just oxygen.
- B. A small percentage of patients with chronic lung disease breathe because they are hypoxic. Administration of oxygen may shut off their respiratory drive. Do not withhold oxygen because of this possibility, however, be prepared to assist ventilation. Monitor oxygen saturation with a pulse oximeter. Use just enough oxygen to maintain pulse oximeter reading of  $\geq 95\%$ . Capnography to monitor CO<sub>2</sub> levels is very useful here.

**ADMINISTRATION (CAT A):**

Dosage	Indications
Moderate flow (4-6 L/min)	Precautionary use for trauma, chest pain, etc.
High flow (10-15 L/min)	Respiratory distress (medical or traumatic)

Method	Flow Rate	O <sub>2</sub> % Inspired Air
Room air		21%
Nasal Cannula (prongs)	1 L/min	24%
	2 L/min	28%
Face Mask	6 L/min	44%
Oxygen reservoir (mask)	10-12 L/min	90%
Mouth to mask	10 L/min	50%
	15 L/min	80%
	30 L/min	100%
Bag-valve mask	Room air	21%
Bag-valve mask with 100% valve and reservoir	High flow regulated to inflate reservoir at proper rate	90%+

**SIDE EFFECTS AND SPECIAL NOTES:**

- A. Restlessness may be an important sign of hypoxia.
- B. Oxygen supports combustion.
- C. Most hypoxic patients will feel quite comfortable with an increase of inspired oxygen from 21% to 24%.

**PHARMACOLOGY AND ACTIONS:**

Acids are increased when body tissues become hypoxic due to cardiac or respiratory arrest. Acidosis depresses cardiac contractility, depresses the cardiac response to catecholamines and makes the heart more likely to fibrillate and less likely to defibrillate. Sodium bicarbonate is an alkaline solution which neutralizes acids found in the blood. It does not cross the cell membrane so can cause a paradoxical worsening of cellular acidosis.

**INDICATIONS:**

To control arrhythmias in Tricyclic Antidepressant overdose see Poisons and Overdose protocol and in certain cardiac arrest situations (see protocol).

**CONTRAINDICATIONS:**

None in prehospital setting.

**PRECAUTIONS:**

- A. Addition of too much  $\text{NaHCO}_3$  may result in alkalosis which is difficult to reverse and can cause as many problems in resuscitation as acidosis.
- B. May increase cerebral acidosis, especially in diabetics who are ketotic.

**ADMINISTRATION** (CAT A for Adult Cardiac Arrest, CAT B for Tricyclic Antidepressant overdose):

Adult Cardiac arrest: 1 mEq/kg initially (approximately 2 amps for adult).  
Then 0.5 mEq/kg or 1 amp every 10 min until pulse restored.

**Pediatric Cardiac arrest: 1 mEq/kg initially.  
Then 0.5 mEq/kg every 10 min until pulse restored.**

**SIDE EFFECTS AND SPECIAL NOTES:**

- A. Each amp of bicarbonate contains 44 or 50 mEq of  $\text{Na}^{++}$ . This may increase intravascular volume and hyperosmolarity conditions which result in cerebral impairment.
- B. In the presence of a respiratory arrest without cardiac arrest, the treatment of choice is ventilation to correct the respiratory acidosis.

**PHARMACOLOGY AND ACTIONS:**

Thiamine is an important vitamin commonly referred to as Vitamin B1. Thiamine is required for conversion of glucose into energy. Chronic alcohol intake interferes with the absorption, intake, and utilization of thiamine. Patients who are malnourished, or have chronic alcohol abuse, may develop Wernicke's encephalopathy if given IV glucose without concomitant administration of thiamine.

**INDICATIONS:**

Thiamine should precede the administration of D50W or glucagon in any adult patient if there is any evidence of malnutrition or alcohol abuse

**CONTRAINDICATIONS:**

None in prehospital setting.

**PRECAUTIONS:**

None in prehospital setting.

**ADMINISTRATION (CAT A):**

Adult: 100mg IVP (D50W) or IM (glucagon)

**SIDE EFFECTS AND SPECIAL NOTES:**

None in prehospital setting.

**PHARMACOLOGY AND ACTIONS:**

V1 effects (smooth muscle): causes vasoconstriction and shunts blood to heart and brain (for some reason Vasopressin has an affinity for the internal carotid arteries)

Vasopressin's effect is resistant to acidosis.

Vasopressin causes increased cerebral blood flow/cerebral perfusion pressure due to local nitric oxide release.

V2 effects (antidiuretic) controls the concentration of water in body fluids by controlling the rate of water excretion into the urine.

**INDICATIONS:**

Adult shock-refractory VFib or Pulseless VTach, Asystole, or PEA.

**CONTRAINDICATIONS:****A. Children.**

B. Not for use in conscious patients.

**PRECAUTIONS:**

Potent vasoconstrictor- can precipitate peripheral ischemia, cardiac ischemia, and angina

**ADMINISTRATION (CAT A):**

40 units IVP, one dose, one time only.

**SIDE EFFECTS AND SPECIAL NOTES:**

A. None in the prehospital setting.

B. Optional Drug.

**PHARMACOLOGY AND ACTIONS:**

Calcium is essential for maintenance of the functional integrity of nervous, muscular and skeletal systems and cell membrane and capillary permeability. It is also an important activator in many enzymatic reactions and is essential to a number of physiologic processes including transmission of nerve impulses; contraction of cardiac, smooth and skeletal muscles. Calcium increases threshold potential, thus restoring normal gradient between threshold potential and resting membrane potential, which is elevated abnormally in hyperkalemia.

**INDICATIONS:**

- A. Hyperkalemic Asystole (usually seen in dialysis patients).
- B. Calcium channel blocker overdose with hypotension.

**CONTRAINDICATIONS:**

Should not be used if danger of digitalis overdose.

**PRECAUTIONS:**

Call OLMD with name of drug the patient has taken as an overdose to confirm that it is a calcium channel blocker.

**ADMINISTRATION** (CAT A for hyperkalemic asystole, CAT B for Calcium Channel Blocker overdose):

Adult: 1-2 grams IVP (10-20cc of 10% solution) given over two minutes.

**Pediatric: for calcium blocker overdose, 60mg/kg (0.6cc/kg of 10% solution) – maximum dose 1 gram to be given over two minutes.**

**SIDE EFFECTS AND SPECIAL NOTES:**

None.

**HYDROXOCOBALAMIN (CYANOKIT)****5.27****PHARMACOLOGY AND ACTIONS:**

When given I.V., hydroxocobalamin binds cyanide ions to form Cyanocobalamin (vitamin B<sub>12</sub>) which is then excreted in the urine.

**INDICATIONS:**

- C. Known cyanide poisoning.
- D. Smoke inhalation victims who show clinical evidence of closed-space smoke exposure (soot in mouth or nose, sooty sputum) and are either comatose, in shock, or in cardiac arrest.

**CONTRAINDICATIONS:**

None.

**PRECAUTIONS:**

Can cause allergic reactions. May cause elevation of blood pressure ( $\geq 180$  mmHg systolic or  $\geq 110$  mmHg diastolic). The BP elevation is usually transient and returns to baseline within 4 hours. Since most patients with cyanide poisoning are hypotensive this is usually helpful.

**ADMINISTRATION (CAT A):**

Adult: If possible, draw a red top blood tube before administering the Cyanokit but do not delay administration of the kit. The 5 gram Cyanokit consists of 2 vials, each with 2.5 grams of hydroxocobalamin powder. Each vial must be reconstituted with 100 mL of Normal Saline (not included in the kit). Five grams (two vials) should be given IV over 15 minutes.

**Pediatric: Safety and effectiveness of Cyanokit has not been established in the pediatric population.**

**SIDE EFFECTS AND SPECIAL NOTES:**

Most patients receiving 5 grams of hydroxocobalamin will have red urine (for up to 5 weeks) and red skin (for up to 2 weeks). The red color of the blood serum and urine will interfere with many colorimetric laboratory tests for several days.

**Patient Care Protocols**  
**SECTION 6: Procedures**

**ENDOTRACHEAL INTUBATION****6.1**

Use of a bag valve mask and oropharyngeal airway is not considered sufficient to provide and maintain a protected airway except for limited time periods prior to intubation or during drug administration in the altered mental status protocol. Patients who are unconscious, do not have a gag reflex, and need positive pressure ventilation should be intubated by the endotracheal route as soon as indicated.

**INDICATION:**

- Cardiac arrest with ongoing chest compressions.
- Inability of a conscious patient to ventilate adequately.
- Inability of the patient to protect the airway (coma, loss of gag reflex, or cardiac arrest).
- Inability of the EMT to ventilate the unconscious patients with conventional methods.

**CONTRAINDICATIONS:**

- Responsive patients with an intact gag reflex.

**PRECAUTIONS:**

- Adequate ventilation and oxygenation must be provided between attempts.
- Pay careful attention. Improper use or lack of tube placement verification can lead to catastrophic results.
- If the patient regains consciousness, you must remove the ET tube as it will cause retching and vomiting.
- When the patient's position is altered after intubation, it is essential to verify that the tube position remains correct in the new patient position.

**PROCEDURE (ORAL-CAT A, NASAL- CAT B):**

1. Ventilation by Bag Valve Mask should always precede any attempt at intubation.
2. The maximum interruption of ventilation for endotracheal intubation should be 30 seconds.
3. Insert the endotracheal tube using the correct technique and special precautions for that device.
4. For difficult orotracheal intubations (Adults only) where you cannot see the cords or where the angle is such that it is very difficult to get the tube through the cords, a bougie can be very helpful. Insert the bougie through the cords and then slip the tube over the bougie and slide it down through the cords. Then remove and bougie and verify tube placement.
5. Verification of proper tube placement must be confirmed with Esophageal Detection Device (EDD- suction bulb or syringe) immediately after placing tube. (MANDATORY)
6. Following the EDD, the abdomen should be auscultated first, and then the chest checked for equal bilateral breath sounds and rise.
7. Monitor tube placement with qualitative CO<sub>2</sub> detector or preferably a quantitative CO<sub>2</sub> detector (Use of one or the other is MANDATORY)..
8. Monitor oxygenation with pulse oximeter. Maintain oxygen saturation reading >95%.

9. Ventilation at the appropriate rate as indicated by current AHA guidelines.

### **NASOTRACHEAL INTUBATION (ADULTS ONLY)**

This is a very difficult procedure because it must be done without viewing the pharynx and vocal cords. To be successful you must be able to appreciate the intensity of the breath sounds of spontaneously breathing patients.

#### **INDICATIONS**

The nasotracheal route of endotracheal intubation may be indicated when ventilatory assistance is needed but you cannot ventilate successfully with a bag-mask and you cannot open the adult patient's mouth because of clenched jaws.

#### **CONTRAINDICATIONS:**

- Apnea
- Suspected epiglottitis
- Age less than 12 years
- Major facial trauma to or instability of the nose or maxilla
- Patients taking warfarin or other anticoagulants
- Patients with known clotting disorders
- Suspected anterior basilar skull fracture (Raccoon Eyes)
- Foreign bodies or polyps in the nares.
- Recent nasal surgery.
- Epistaxis or history of frequent epistaxis.

#### **PRECAUTIONS:**

- Adequate ventilation and oxygenation must be provided between attempts.
- Pay careful attention. Improper use or lack of tube placement verification can lead to catastrophic results.
- When the patient's position is altered after intubation, it is essential to verify that the tube position remains correct in the new patient position.
- Quantitative capnography is the best method to monitor placement of the tube.

#### **PROCEDURE (NASOTRACHEAL-CAT B):**

1. Ventilation by Bag Valve Mask should always precede any attempt at intubation.
2. The maximum interruption of ventilation for nasotracheal intubation should be 30 seconds.
3. Insert the device using the correct technique and special precautions for that device. Some prefer the Endotrol endotracheal tube for this procedure.
4. Verification of proper tube placement must be confirmed with Esophageal Detection Device (EDD- suction bulb or syringe) immediately after placing tube. (MANDATORY)
5. Following the EDD, the abdomen should be auscultated first, and then the chest checked for equal bilateral breath sounds and rise.

**ENDOTRACHEAL INTUBATION (Continued)****6.1**

6. Monitor tube placement with the qualitative CO<sub>2</sub> detector or preferably a quantitative CO<sub>2</sub> detector. (Use of one or the other is MANDATORY)
7. Monitor oxygenation with pulse oximeter. Maintain oxygen saturation reading >95%.
8. Ventilation at the appropriate rate as indicated by current AHA guidelines.

## NOTES:

1. **Children are almost always best ventilated with a bag-mask. It is very rare to need to intubate a child.**
2. **Use of the bougie to facilitate intubation is contraindicated in children.**
3. Remember to deflate cuff prior to repositioning the tube. Movement of the tube with the cuff inflated could result in patient injury or damage to the cuff, requiring a tube change.
4. Once the endotracheal tube is in place, ventilation with the BVM need not be synchronized with chest compressions.
5. Transportation should not be delayed for multiple attempted intubations.

Introduced in the early 1970s, blind insertion airway devices (BIADs) were designed for use by EMS personnel who were not trained to intubate the trachea. These devices are also used as rescue airways when attempts at endotracheal intubation are unsuccessful. All of these devices are designed to be inserted into the pharynx without the need for a laryngoscope to visualize where the tube is going. These devices have their own dangers and require careful evaluation to be sure that they are in the correct position. None of the BIADs are equal to the endotracheal tube, which is the invasive airway of choice for EMT-Intermediate or EMT-Paramedic level providers.

**INDICATION:**

- BIADs are indicated to secure an airway in patients, who are unresponsive and without protective reflexes, when the EMT-Intermediate or EMT-Paramedic is unable to insert an endotracheal tube.

**CONTRAINDICATIONS:**

- Responsive patients with an intact gag reflex.
- Patients with known esophageal disease.
- Patients who have ingested caustic substances.
- Contraindications listed for each individual type of BIAD

**PRECAUTIONS:**

- Pay careful attention. Improper use or lack of tube placement verification can lead to catastrophic results.
- You must insert gently and without force.
- If the patient regains consciousness, you must remove the BIAD, as it will cause retching and vomiting.

**PROCEDURE (CAT A):**

- Each service must be trained to use the BIAD selected by their medical director (see Administrative Protocols 3.1) prior to using these devices in the field.
- Follow the manufacturer's user instructions for proper technique. The manufacturer's instruction sheet packaged with each BIAD should be read and understood by every user of the device.
- Monitor tube placement with an ETCO<sub>2</sub> detector.
- Monitor oxygenation with pulse oximetry maintaining oxygen saturation >95%.

**NOTES:**

Remember to deflate cuffs prior to repositioning the tube. Movement of the tube with the cuffs inflated could result in patient injury or damage to the cuffs, requiring a tube change.

**DEFINITION:**

**The placement of a soft, flexible catheter into the rectum for the purpose of administering diazepam. (Valium®).**

**INDICATION:**

**Treatment of Status Seizures in Pediatric patients where I.V. access is unobtainable.**

**PRECAUTIONS:**

- A. Do not force the catheter in. Catheter should advance with little or no resistance.**
- B. There is a risk of respiratory depression with the administration of diazepam.**
- C. The patient's airway should be observed closely for signs of respiratory depression.**
- D. This procedure may be performed en route to the hospital. It should not delay transport.**

**PROCEDURE (CAT B):**

- 1. Diazepam solution (0.5 mg/Kg) can be deposited into the rectal lumen using a male heparin adapter plug attached to an I.V. catheter that is 4-6 cm (2") in length.**
- 2. Remove the flexible catheter from an I.V. needle that is the appropriate length.**
- 3. Attach the flexible catheter to a male heparin adapter plug.**
- 4. Insert the diazepam syringe into the heparin adapter plug.**
- 5. Ensure that the needle attached to the diazepam syringe cannot advance through the flexible catheter and subsequently perforate the rectum.**
- 6. Advance the flexible catheter 4-6 cm into the rectum and administer the ordered dose.**
- 7. Flush the plug and catheter with 2-3 cc of AIR after administering the diazepam. Flushing with fluid will dilute the medication.**
- 8. Hold the buttocks together for 1-2 minutes to prevent any leakage of medication.**

**NOTE:**

- A. I.V. administration of diazepam is the recommended route.**
- B. Diazepam administration in pediatric patients is by OLMD order only.**
- C. The condition of the rectal mucosa, the presence of fecal mass and the metabolic status of the patient may affect absorption.**
- D. It is recommended that you prepare all of your equipment in advance of the procedure.**

**DEFINITION:**

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

**INDICATIONS:**

Bradycardia (heart rate <60) with evidence of inadequate perfusion, (e.g., hypotension BP <90), altered mental status, unresponsive to atropine therapy, pulmonary edema, chest pain, dyspnea).

**CONTRAINDICATIONS:**

External pacing should not be used in the following settings:

1. Asystole.
- 2. Patients < 14 years of age.**
3. Patients meeting death in the field criteria.
4. Patients with signs of penetrating or blunt trauma.

**EQUIPMENT:**

Combined defibrillator/pacemaker.

**PROCEDURE (CAT B):**

1. Ensure that the pacemaker leads are attached and the monitor is displaying a cardiac rhythm.
2. Attach pacing electrodes to anterior and posterior chest just to the left of the sternum and spinal column, respectively.
3. Begin pacing with a heart rate of 80 beats per minute at minimum current output. Increase current output until pulse rate captures to match rhythm strip.
4. Observe the patient for changes in mental status, pulse or blood pressure.
5. If patient is awake during pacing, decrease current output to a level just above capture threshold.
6. If the patient complains of pain during pacing despite reduced current output, consider morphine sulfate 2-4 mg IV (CAT A). Titrate to pain relief in 2 mg doses, every 3-5 minutes, up to 10mg MAX. .  
Adult (CAT B): If pain is not relieved after 10 mg you must call OLMD for further doses.
7. If the patient remains unconscious during pacing, assess capture by observing the monitor and evaluating pulse and blood pressure changes.
8. In the event of electrical capture and no pulses, follow PEA protocol.
9. If there is no response to Atropine and /or pacing, consult OLMD for further medication orders.
10. If a change in pacing rate is desired contact OLMD.

## **PEDIATRIC INTRASOSSEOUS INFUSION**

### **PURPOSE:**

**An alternative technique for establishing IV access in critical pediatric patients when peripheral IV access is unobtainable or too time consuming.**

### **INDICATIONS:**

- A. Intraosseous infusion is indicated after two unsuccessful IV attempts or 90 seconds, whichever comes first. Inability to locate an appropriate vein site in the patient is equivalent to an attempt. It is not necessary to actually penetrate the skin with a needle.**
- B. In the prehospital setting, intraosseous infusion is normally considered in critical situations such as cardiac arrest or shock with a decreased level of consciousness.**

### **CONTRAINDICATIONS:**

**General contraindications for intraosseous infusion include cellulitis or infected burns at the site of insertion and fractures of the bones proximal to the insertion site.**

### **PRECAUTIONS:**

- A. Potential complications of bone marrow infusion include osteomyelitis, grown plate injury, and extravasation of fluid with compression of popliteal vessels or the tibial nerve.**
- B. In all critical cases, the airway and breathing should be established first, since many drugs can be given via the endotracheal route (naloxone, atropine, epinephrine, and Lidocaine).**
- C. Two attempts (one in each tibia) MAX. The procedure should not delay transport time.**

**PROCEDURE (CAT A for cardiac arrest or shock with decreased level of consciousness. All other uses are CAT B):**

- 1. The proximal tibia is the only authorized site. Avoid using a leg which has been traumatized or infected.**
- 2. Palpate the landmarks and note the entry point, which is the anteromedial flat surface 1-3 cm below the tibial tuberosity. Then, prep the surface with betadine and dry with a sterile gauze pad.**
- 3. Insert the device using the correct technique and special precautions for that device.**
- 4. If extravasation should occur, further attempts at the site and extremity should be avoided.**
- 5. Although gravity drainage may suffice, pressurized infusions (blood pump or syringe and stopcock) may be needed during resuscitation.**

## **ADULT INTRASOSSEOUS INFUSION**

### **PURPOSE:**

An alternative technique for establishing intravenous access in critical adult patients when peripheral intravenous access is unobtainable or too time consuming and the patient's outcome will be compromised by no IV before arrival at the hospital.

### **INDICATIONS:**

A life-threatening condition exists such as cardiac arrest or shock with systolic Blood Pressure less than 90 mmHg and a peripheral IV cannot, or is unlikely to be established. For the critical adult patient, you should consider IO when you have made two IV attempts or you have spent 90 seconds trying to find a vein. Inability to locate an appropriate vein site is equivalent to an attempt. It is not necessary to actually penetrate the skin with a needle.

### **CONTRAINDICATIONS:**

- A. Cellulitis overlying the site.
- B. Fracture in the same bone or a proximal vascular injury.
- C. Severe pelvic trauma.
- D. A previous intraosseous attempt in the same bone.

### **PRECAUTIONS/COMPLICATIONS:**

- A. Sub-periosteal infusion due to incorrect placement.
- B. Extravasation due to prior attempt in same bone, or through-and-through puncture of the bone.
- C. Plugging of needle with bone or marrow.
- D. Growth plate damage.
- E. Osteomyelitis (more common with hypertonic or irritating solutions or medications).
- F. Extravasation with compression to popliteal vessels or the tibial nerve.
- G. Pulmonary embolism
- H. Fracture of the tibia
- I. In all critical cases, the airway and breathing should be established first, since numerous emergency medications can be given via the endotracheal route (naloxone, atropine, epinephrine, and lidocaine)
- J. This procedure should not delay transport time.
- K. This procedure should not be used for a precautionary IV.
- L. Hypoglycemia is not an indication for IO except in extreme circumstances. All use of IO for this will be reviewed by state QI committee.

**ADULT INTRAOSSEROUS INFUSION (continued)**

**PROCEDURE (CAT A Cardiac Arrest or shock with BP less than 90mmHg systolic**  
**(CAT B): All other uses of IO**)

**Intraosseous Needle Insertion Devices**

(NOTE: Your medical director will choose the device that your service will use (See Administrative Protocols 3.3). You must be trained in the use of the device before using it in the field.)

1. The proximal tibia is the only authorized site for all devices except the F.A.S.T.1, which is used only in the sternum. Avoid using a site which has been traumatized or infected.
2. Palpate the landmarks and note the entry point for the device you are using.
3. Prep the surface with betadine and dry with a sterile gauze pad.
4. Insert the device using the correct procedure, insertion point, and special precautions for that device.
5. If extravasation should occur, further attempts at the site and extremity should be avoided.
6. IO Fluid administration causes pain for conscious patients and is related to intramedullary pressure. If the adult patient is conscious, the Paramedic may slowly administer one or two cc (20 - 40 mg) of 2% Lidocaine IO (utilizing the Lidocaine pre-filled syringe) prior to the initial fluid bolus.
7. Although gravity drainage may suffice, pressurized infusions (blood pump or syringes and stopcock) may be needed during resuscitation.
8. When you leave the patient with the receiving hospital, be sure that they know how to remove the device and have any special equipment needed to accomplish this.

**DEFINITION:**

Intravenous therapy is the introduction of fluids and other substances into the venous side of the circulatory system.

**PURPOSE:**

To replace blood loss through hemorrhage, for electrolyte or fluid replacement, and for introduction of medications into the vascular system.

**INDICATIONS:**

Any time a medication or Normal Saline solution is administered as a continuous infusion.

**PROCEDURE (CAT A):**

1. IV access.
  - a. Establish intravenous access, and prepare Normal Saline.
  - b. Connect an extension set between the IV hub and the solution bag and tubing.
  - c. All IVs will be started using macrodrips, unless otherwise indicated.
2. IV access with an IV lock.
  - a. Establish IV access.
  - b. Connect a “small-bore” extension set between the IV hub and male adapter plug.
  - c. After placement, the line should be flushed with normal saline.
  - d. If the IV lock system is used for the administration of medication, the line must be flushed after each administration.
3. Establish IV access and prepare solution.
  - a. Connect the volutrol between the solution bag and the IV tubing.
  - b. Place one hour’s worth of solution into the volutrol and close the connection between the volutrol and the solution bag.
  - c. Begin infusing the solution at the appropriate rate.
  - d. If desired, additional solution may be placed in the volutrol. The volutrol should never contain more than one hour's worth of solution.
4. Using an infusion pump.
  - a. Establish IV access, and prepare solution.
  - b. Connect IV tubing to infusion pump according to manufacturer’s directions.
  - c. Begin infusing the solution at the appropriate rate.

**NOTES:**

1. At the time of transfer of care from one agency to another the patient care report should include the amount of solution currently infused and the rate at which the solution should be infused.
2. All infusions and patient response should be closely monitored and documented.
3. An extension set should be at least 10” long, contain one or more injection sites, a slide clamp, and have a volume capacity of not less than 6.0ml.
4. A “small-bore” extension set should be 3” long, and have a volume capacity of 0.15ml.
5. In addition to regular IV line(s), every trauma patient should have extension tubing attached between the IV hub and the solution bag.

Patient restraints (physical and/or chemical) should be utilized only when necessary and in those situations where the patient is exhibiting behavior that the EMT believes presents a danger to the patient and/or others. This procedure is not to be used on patients specifically refusing treatment unless they are placed under a police hold. This procedure also applies to patients being treated under implied consent. Agitated, anxious, and uncooperative patients can often be calmed adequately by eliminating threatening or forced activities, and by backing off. Attempt to gain the confidence of the patient.

**PHYSICAL RESTRAINT GUIDELINES**

1. Use the minimum physical restraint required to accomplish necessary patient care and ensure safe transportation. (Soft restraint may be sufficient). If law enforcement or additional manpower is needed, call for it prior to attempting restraint procedures. Do not endanger yourself or your crew.
2. Avoid placing restraints in such a way as to preclude evaluation of the patient's medical status (airway, breathing, and circulation). Consider whether placement of restraints will interfere with necessary patient care activities or will cause further harm.

**PROCEDURE (CAT B):**

1. Ensure sufficient manpower is present to control the patient while restraining him/her. **USE POLICE ASSISTANCE WHEN REQUIRED.**
2. Place patient face up on a long backboard. A Reeves Sleeve<sup>®</sup> is very useful here.
3. Secure ALL extremities to backboard. Try to restrain lower extremities first at both ankles and the knees. Next, restrain the patient's arms at his/her sides using one flex cuff or equivalent on each wrist.
4. If necessary, utilize cervical spine precautions (tape, foam bags, etc.) to control violent head or body movements.
5. Place padding under patient's head and wherever else needed to prevent the patient from further harming himself/herself, or restricting circulation.
6. If necessary, secure the backboard onto the gurney for transport using additional straps. Remember to secure additional straps to the upper part of the gurney to avoid restricting the wheeled carriage.
7. Document circulatory status of restrained extremities every 15 minutes.
8. Document the need for physical restraint to prevent possible harm to the patient or others.

**NOTES:**

Physical restraint (may be soft restraints) **MUST** be used any time a potentially violent or unstable patient (head injury, patient under the influence of intoxicants, or altered mental status for ANY other reason) is transported by air ambulance, even if the patient is sedated.

**GUIDELINES FOR USE**

Pulse Oximetry is a valuable adjunct in patient assessment, but does not replace clinical judgment. It may be particularly useful in determining poor oxygenation in patients who have not deteriorated to a point of showing clinical signs of hypoxia. Pulse Oximetry measures the percent of circulating oxyhemoglobin. The percent saturation of hemoglobin (SaO<sub>2</sub>) depicts the ratio of hemoglobin bound with oxygen to the total amount of hemoglobin molecules available. Normal readings are considered 95-99 SaO<sub>2</sub>. Poor oxygenation should be considered to be present when SaO<sub>2</sub> < 95%.

**INDICATIONS FOR USE:**

1. Any patient who is intubated or being ventilated with a BVM.
2. Patients receiving oxygen.
3. Presence of chest pain or cardiac dysrhythmias.
4. Respiratory Distress.
5. Altered mental status.
6. Poisons or overdoses.
7. Trauma patients, if time permits.

**PROCEDURE (CAT A):**

1. Choose correct sensor for patient size.
2. Use alcohol wipes to assure monitoring site is clean and dry.
3. Completely remove false fingernails and nail polish if finger monitoring.
4. Check for adequate proximal pulse for monitoring site.
5. Apply device assuring not too tight and affecting capillary refill.
6. Align sensors opposite each other on monitoring site.
7. Attach pulse oximeter sensor to patient cable.
8. Turn on device.
9. Read SaO<sub>2</sub> % on monitor screen. Desired readings are 99-100% SaO<sub>2</sub>.

**NOTES:**

1. Treatment of the patient should not be dictated by a high or normal SaO<sub>2</sub> reading.
2. Oxygen should not be withheld from patients when treatment protocol indicates use.
3. Patients with a SaO<sub>2</sub> reading <90% should receive immediate intervention with oxygen and ventilation.
4. Extreme caution must be used in treating patients with poor perfusion (shock syndrome) or hypothermia. These conditions may cause inaccurate or misleading readings on the monitor. Patients who are in shock or who are hypothermic should receive 100% oxygen no matter what the pulse oximetry reading.
5. The following may cause inaccurate SaO<sub>2</sub> readings or monitor failure: Motion of patient (shivering) or sensor, external ambient light, poor perfusion (shock), anemia, Fingernail polish, IV dyes, skin pigmentation, or any condition that restricts blood flow to the measuring site.
6. The pulse oximetry reading will be falsely normal in patients with Carbon Monoxide inhalation or Methemoglobinemia. Such patients should be given 100% oxygen no matter what the pulse oximeter reading.

A twelve-Lead ECG should be considered (if available) in any of the following:

1. All chest Pain, including blunt chest trauma, unless due to penetrating injury.
2. All cardiac dysrhythmias.
3. Patient with PVCs, unchanged by oxygen, and/or greater than 6/min.
4. Epigastric pain, unless evidence of G.I. bleeding.
5. Thoracic back pain without trauma.
6. Diaphoresis not explained by environment or fever.
7. Sudden onset of shortness of breath with clear lung sounds, or shortness of breath and no history of COPD.
8. Syncope, without seizure or obvious blood loss.
9. CHF/Pulmonary Edema.
10. The EMT has a suspicion that the patient is having an acute myocardial infarction despite none of the “normal” signs and symptoms being present.

**NOTES:**

- A. These criteria are not inclusive, nor does every patient with the above criteria require a twelve lead in the out-of-hospital setting. When in doubt, err in the patients best interest, perform a twelve lead ECG and immediately transmit it to your receiving hospital.
- B. A Twelve-Lead ECG Acquisition should never preempt definitive care for the patient. Acquisition should also not interfere with the prompt transport of the patient. Any patient provided a 12-lead ECG should be transported to a hospital unless OLMD states otherwise.

**PURPOSE:**

The emergency procedure of introducing a large-bore catheter/needle into the pleural space of the chest to provide temporary relief for the patient suffering from a symptomatic tension pneumothorax.

**PRIMARY INDICATIONS: ABSOLUTE REQUIREMENTS**

A patient who is assessed to have a life-threatening tension pneumothorax manifested by:

- A. Absent breath sounds on one side.
- B. Profound shock with a systolic blood pressure of 60 mmHg or less in an adult.
- C. Criteria for profound shock in a child must be determined by OLMD.**
- D. A patient with a flail chest severe enough to require endotracheal intubation for persistent hypoxia should have a precautionary needle decompression on the side of the injury.

**SECONDARY INDICATIONS** (Suggestive but not sufficient without the above)

- A. Distended neck veins (may not be present if there is associated severe hemorrhage, i.e., hypovolemic shock).
- B. Tracheal shift away from the affected side (very rare).
- C. Altered mental status (almost always present).
- D. Increased airway resistance to ventilation, especially if intubated.
- E. Tympany (hyperresonance) to percussion on the affected side.

**CONTRAINDICATIONS:**

- A. Patient has only simple pneumothorax (loss of breath sounds on one side but normal systolic blood pressure is not an indication for decompression).
- B. Patient with a symptomatic tension pneumothorax that can be relieved by the removal of an occlusive dressing from an open chest wound.

**POTENTIAL ADVERSE EFFECTS OR COMPLICATIONS**

- A. Catheter becomes kinked or pulls out allowing tension pneumothorax to reoccur.
- B. Intercostal vascular or nerve injury from incorrect placement.
- C. Pneumothorax or hemothorax.
- D. Direct injury to the lung.
- E. Pericardial/cardiac injury from incorrect placement or catheter that is too long.
- F. Infection.

**PROCEDURE (CAT A for traumatic cardiac arrest, otherwise CAT B):**

1. Give the patient 100% oxygen and ventilatory assistance.
2. Determine that the patient has a symptomatic tension pneumothorax that requires decompression and call OLMD for permission to perform.
3. Identify the second or third intercostal space on the anterior chest at the midclavicular line on the same side as the tension pneumothorax. This may be done by feeling for the “angle of Louis,” the bump located on the sternum about a quarter of the way from the suprasternal notch. Follow the interspace just below this bump to the midclavicular line to insert the catheter.
4. Quickly prepare the area with an antiseptic.

**NEEDLE DECOMPRESSION** (Continued)**6.10****PROCEDURE Continued:**

5. Remove the plastic cap from a 2.5 inch (6.0 to 7.0 cm) large-bore (12 or 14 gauge) over-the-needle catheter. This allows air to exit the needle as it passes into the pleural space. Insert the needle into the skin over the superior border of the third rib, midclavicular line, and direct it into the intercostal space at a 90-degree angle to the rib. Direction of the bevel is irrelevant to successful results. As the needle enters the pleural space there will be a “pop.” If a tension pneumothorax is present, there will be a hiss of air as the pneumothorax is decompressed. Advance the catheter all the way to the hub and remove the needle. The catheter hub must be stabilized to the chest with tape.
6. Attach a one-way valve (such as an Asherman Chest Seal) if possible.
7. Leave the catheter in place until it is replaced by a chest tube at the hospital. Monitor the catheter to be sure it remains patent.

**NOTES:**

A copy of the patient care report, the Chest Decompression Report (Form 10.3) and the name of the receiving physician must be submitted to the Regional Medical and Office of EMS and Trauma (OEMST) Medical Director for review within 10 working days.

Continuous Positive Airway Pressure (CPAP) has been shown to rapidly improve vital signs, gas exchange, and the work of breathing. It also decreases the sense of dyspnea, and decreases the need for endotracheal intubation in the patients who suffer from shortness of breath from congestive heart failure (CHF) and/or acute cardiogenic pulmonary edema (APE). CPAP is also shown to improve dyspnea associated with pneumonia as well as asthma, bronchitis, and emphysema. CPAP improves hemodynamics of patients with chronic obstructive pulmonary disease (COPD), by reducing preload and afterload.

**Indications:**

Dyspnea / Hypoxemia secondary to congestive heart failure, acute cardiogenic pulmonary edema, pneumonia, chronic obstructive pulmonary disease, asthma, bronchitis and emphysema and all the following are present:

- A. Patient has no contraindications to CPAP.
- B. Is awake and oriented.
- C. Has the ability to maintain an open airway (GSC>10).
- D. Has a respiratory rate greater than 25 breaths per minute with a SpO<sub>2</sub> reading of <95%.
- E. Has a systolic blood pressure above 90 mmHg.
- F. Is using accessory muscles during respirations.
- G. Has signs and symptoms consistent with asthma, COPD, pulmonary edema, CHF, or pneumonia.
- H. Is over 12 years of age, and is able to be fitted with the CPAP mask.

**Contraindications (any or all):**

- A. Pneumothorax.
- B. Respiratory arrest.
- C. Agonal respirations.
- D. Unconscious.
- E. Shock associated with cardiac insufficiency.
- F. Penetrating chest trauma.
- G. Persistent nausea/vomiting.
- H. Facial abnormalities / stroke obtundation / facial trauma.
- I. Has active upper GI bleeding or history of recent gastric surgery.

**Procedure (CAT A):**

1. Make sure the patient does not have a pneumothorax! Confirm breath sounds in **ALL** lung fields.
2. Place patient in a sitting position.
3. Attach cardiac monitor and pulse oximeter.
4. Assess vital signs and SpO<sub>2</sub>, q5 min

## Procedure

# CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP) (Continued) 6.11

### Procedure (continued):

5. If BP <90 mmHg systolic, contact Medical Direction prior to beginning CPAP, OLMD may override this contraindication.
6. Use maximum 10cmH<sub>2</sub>O pressure.
7. Explain the procedure to the patient.
  - a. Patient requires “verbal sedation” to be used effectively. Example: “you are going to feel some pressure from the mask. but this will help you breathe easier.”
  - b. Place delivery device over mouth and nose, and set oxygen flow at 15 l/m with no pressure. Ask the patient to hold the mask in place.
  - c. Instruct patient to breathe through his/her nose slowly, and exhale through their mouth as long as possible (count slowly and aloud to four, and then instruct to inhale slowly). It is better not to strap the mask in place but to continue to have the patient hold the mask in place (with your help). This makes it easier to recognize if the patient is tiring, or if the patient's level of consciousness is decreasing.
8. Check for air leaks, and correct if necessary. Then begin to advance the O<sub>2</sub> pressure with the device. Do not adjust the device beyond the pressure required to begin to see positive changes in the patient’s condition, such as improving SPO<sub>2</sub>, decreased level of anxiety, improved heart rate, and improved ECG. Slowly titrate the pressure to:
  - a. CHF/ APE to a maximum of 10 CM H<sub>2</sub>O (if needed).
  - b. All other SOB / Dyspnea, 5 CM H<sub>2</sub>O.
9. Treatment should be given continuously throughout transport to ED.
10. Continue to coach patient to keep mask in place and re-adjust as needed.
11. If respiratory status or level of consciousness deteriorates, remove device, and consider bag valve mask ventilation and/or endotracheal intubation (see intubation protocol).
12. Documentation on the patient care record should include:
  - a. CPAP level – (5 or 10cm H<sub>2</sub>O).
  - b. FiO<sub>2</sub> – (100%).
  - c. SpO<sub>2</sub> q5 minutes.
  - d. Vital sign q 5 minutes.
  - e. Response to treatment.
  - f. Any adverse reaction.

### NOTES:

- A. CPAP should not be used in children under 12 years of age.
- B. Advise receiving hospital as soon as possible, so they can prepare for the patient’s arrival.
- C. Do not remove CPAP until hospital therapy is ready to be placed on the patient.
- D. Monitor patient for gastric distension, which may lead to vomiting.
- E. Use nitroglycerine tablets to avoid nitroglycerine spray from being dispersed on patient / EMS crew.

Uncontrolled hemorrhage is the leading cause of preventable combat-related deaths. It is much less common among civilians but does occur rarely. Hemostatic agents can be used to control exsanguinating hemorrhage when pressure and tourniquets fail.

**Indications:**

Exsanguinating hemorrhage that cannot be controlled by direct pressure or by tourniquet. This is most likely to involve wounds of axilla, groin, neck, face, or scalp.

**Contraindications :**

- A. Minor bleeding.
- B. Bleeding that can be controlled by direct pressure.
- C. Bleeding that can be controlled by application of a tourniquet.
- D. Open abdominal or chest wounds.

**Procedure (CAT A):**

1. Each service must be trained to use the hemostatic agent selected by their medical director. (See list of acceptable agents in Administrative Protocols 9.2).
2. Follow the manufacturer's user instructions for proper technique.
3. Pack the wound with the chosen hemostatic agent.
4. Apply direct pressure over the wound for a minimum of 3 minutes or until bleeding stops.
5. Apply pressure dressing over wound and hemostatic agent.

**DEFINITION:**

Appropriate restraint of children is critical during all transportation in moving vehicles. Ambulances are no exception to this.

**PURPOSE:**

To prevent a serious or potentially fatal injury of pediatric patients being transported on ambulances. The greatest potential for injury occurs when an unrestrained child becomes a projectile object upon a sudden stop or crash.

**INDICATIONS:**

Any time a child is transported in a prehospital vehicle.

**PROCEDURE:**

4. Whenever possible, all pediatric patients should be safely and appropriately restrained during transport. Safe and appropriate transport does not include having a child held by another person who is riding or strapped to the gurney.
5. Available child restraint systems should be used for all pediatric patients. These systems should include those specifically produced for secure transport on an ambulance stretcher that includes an integrated five-point harness. A child's own car seat, appropriately secured to the stretcher, often proves to be an excellent source of a restraint system.
6. Children who are not patients should not routinely be transported in the ambulance. There may be extenuating circumstances that require such transport. In those cases, the child should be placed in an appropriate child restraint seat, in the appropriate position, in either the passenger area or patient area of the ambulance.
  - e. < 1 year old and < 20 lbs.: rear facing infant seat
  - f. < 4 year old and < 40 lbs.: forward facing toddler seat
  - g. 4-8 year old and 40 lbs.: booster seats with lap/shoulder belt
  - h. < 12 year old: back seat, restrained
5. While it is not recommended using a child's own car seat for transportation post accident, such may be better than no restraint during transport. In addition, it is recognized that the very nature of emergency circumstances may require some compromises of best practices. (If a child is found in a child restraint that is still visually intact, it may be better to move the child in that restraint to the ambulance for transport, than to transfer the child to a different restraint). If there is a question, this should be discussed with the OLMD.

**NOTES:**

6. It is recognized that in certain cases there may be more children to be transported than there are restraint devices available in which to place them.
7. If the ambulance is equipped with passenger side airbags, children under the age of 12 years should not be transported in the passenger seat.
8. These guidelines are not intended as an endorsement for any child restraint manufacturers.
9. These guidelines may not be consistent with the official instructions for use of a child restraint in a passenger vehicle.
10. These guidelines assume that the ambulance is equipped with a cot and fastener system that has been successfully tested under vehicle crash conditions.

# **Patient Care Protocols**

## **SECTION 7: Operations Guidelines**

These operations guidelines are intended to direct the actions of EMS personnel when there are no duly authorized local operations guidelines utilized by an EMS service or agency.

When there is conflict between the local operational standards and those listed in this document, then the local standards take precedence.

It is expected that if a scene conflict or jurisdictional disagreement occurs, OLMD will be consulted and his/her directions followed.

1. Medical professionals at the scene of an emergency may provide assistance and shall be treated with professional courtesy.
2. Medical professionals who offer their assistance at the scene should be asked to identify themselves and their level of training. If the medical professional wishes to assist with care given to the patient after arrival of the EMS unit, the senior EMT should inform him/her that it is ADPH/EMS policy that the medical professional provide proof of his/her identity.
3. The authority for medical direction of Paramedic procedures rests with the written treatment protocols adopted by the Alabama Department of Public Health, the provider's physician advisor, and OLMD.
4. A physician-on-the-scene, who is caring for a patient prior to the arrival of an EMS unit, may retain medical responsibility for the patient if he/she so desires. The EMT should tell the physician who wishes to supervise or direct patient care, that the physician must accompany the patient to the hospital to maintain continuity of patient care. The physician-on-the-scene shall have made available to him/her the services and equipment of the EMS unit, if requested. There should be full documentation of these events, including the physician's name.
5. If a conflict arises about patient care or treatment protocols, the EMT should contact the OLMD or receiving hospital for assistance.

**PURPOSE:**

The first unit on the scene or dispatch may recommend that other responding units slow down or discontinue their response. It is recognized that it is in the best interest of patient care and the public to slow or cancel units responding with lights and siren to calls, when it is determined by competent personnel that the situation does not require such a rapid response.

**PROCEDURE:**

1. BLS units and rapid responders may recommend ALS units to slow to non-emergency traffic when a patient does not appear in their opinion to require advanced life support. They may cancel ALS units when there is no patient, or a patient refuses care or transport.
2. ALS units may recommend slowing or canceling other responders once the patient has been evaluated at the scene and a determination is made that no other units are required, or no other units are required emergency.
3. Advanced Life Support for the purpose of this policy is IV administration, drug therapy, advanced airway management, cardiac monitoring, or cardiac defibrillation.
4. Decision on slow down and cancellations shall be solely based on medical or trauma criteria.

**PURPOSE:**

The safety of EMS personnel and emergency care for the victim remain the primary goals in all crime scene operations, however, preservation of the scene remains the most important secondary goal. Never compromise patient care to preserve a crime scene. If you are part of an organized Tactical EMS arrangement with law enforcement units, such as SWAT teams, you will follow those operational guidelines, as approved by your Medical Director.

**PROCEDURE:**

1. EMS responders should not approach any scene suspected of involving violence, unless law enforcement officers are on the scene and the scene is reasonably secure. EMS responders should not approach any crime scene in which law enforcement personnel are not present, in which law enforcement personnel are in defensive positions, or when weapons are being presented by law enforcement personnel.
2. EMS responders should approach every call with caution while being observant. This is particularly true of scenes that may involve a crime against person or property. Noise and light discipline should be used with emergency warning equipment shut down some distance from the incident, and EMS personnel observant upon approach.
  - a. A portable radio to call for assistance is recommended. EMS personnel should not approach any scene that appears suspicious without law enforcement personnel present.
  - b. Use caution when approaching buildings, and never stand directly in front of doors when knocking for entry.
  - c. If a weapon is involved, try to secure the weapon unless the weapon is still in the assailant's possession. The weapon should be secured in such a way that it does not jeopardize the patient's life or your life. The weapon is potential evidence should not be compromised if at all possible.
  - d. If your life is in danger, it may be necessary to leave your patient behind. Always have a planned escape route.
3. All information regarding a call should be gathered. Calls involving crimes in progress, the use of weapons, or any suspicious call in high crime areas, should be treated with caution. It is recommended that EMS personnel wear soft body armor on calls of this nature and while operating in high crime areas.
4. When approaching a crime scene with law enforcement present, ask for the best route to approach and avoid destroying what may be valuable evidence. Use only one route in and out of scene, and disturb only what is absolutely necessary.
  - a. Avoid disturbing tire tracks or foot prints, and avoid blood on surfaces.
  - b. Do not disturb items on the scene unless absolutely necessary.
  - c. Do not cut or treat through holes made by projectiles or other objects in clothing.
  - d. Remove any medical items brought into the scene.

When possible, place any victim(s) to be transported on a clean sheet. When the victim is removed at the hospital, retain this sheet and any others for law enforcement investigators. This is particularly important in crimes in which trace evidence may be transferred from the suspect to victim. Retain, preferably wrapped in a clean sheet or placed in an unused paper bag, any clothing of other items removed by EMS personnel

**PROCEDURE (continued)**

- while in the ambulance. Do not place blood-contaminated items in a plastic bag, as this may ruin their value as evidence.
- e. Do not touch or handle items, particularly weapons, found at a crime scene unless absolutely necessary. Do not handle expended bullets or casing with metal forceps if they should be found in clothing or on a sheet. Retain them in the sheet or clothing in which they are found, and notify law enforcement investigators.
5. It is required that EMS personnel enter a crime scene to confirm obvious death. However, this procedure can be accomplished with minimal scene disturbance. Coordinate with law enforcement personnel in preserving the crime scene to the greatest extent possible.
  6. Be aware of any statements made by victims, suspects or others present at a crime scene. Make certain to scan the scene, noting how it appears upon your arrival, particularly the victim, and remember any changes made to the crime scene during patient assessment and/or treatment.
  7. Following the incident, record detailed notes regarding actions and observations made during the incident. Any statements made outside the presence of law enforcement personnel by the victim or suspect should be carefully recorded, and a copy given to law enforcement investigators.
  8. If a scene appears suspicious, then await the arrival of law enforcement personnel before approaching.

**DOCUMENTATION:**

A detailed report that covers all aspects of your involvement at the crime scene is important in case you are later called to testify in court. These narratives should cover your observations and conversations with the family or person present at the scene, location of response vehicles and equipment, who was present, furniture, weapons, or clothing that has been moved, items that were handled by EMS responders, and your route to the victim. This narrative should be a separate report from your Patient Care Form.

**PURPOSE:**

To describe how EMS personnel should resolve disputes with each other or other medical professionals at emergency scenes.

**PROCEDURE:**

1. Disagreements about care should be handled in a professional manner so as not to detract from patient care.
2. The Patient Care Protocols should be followed whenever possible, and should be the basis for resolving disputes.
3. If there is a dispute between EMS personnel or medical professionals concerning the care of a patient, the OLMD should be contacted in order to resolve the dispute.
4. Written reports should be prepared concerning any dispute arising at the scene, with a copy sent to the Off-line Medical Director of each service and pertinent regional EMS agency or ADPH-OEMST.

**PURPOSE:**

1. EMS personnel may be first on the scene of a hazardous materials situation. This protocol is intended to guide EMS personnel who do not normally function in hazardous materials scenes, and are trained only to the awareness level. This protocol is intended to compliment any existing hazardous materials guidelines of fire agencies. If the two protocols are in conflict, the existing fire department protocol takes precedence.
2. Based on information from dispatch, if the scene to which you are responding is a known or suspected hazardous materials situation, stage and wait for the hazardous materials personnel.
3. When you arrive at the scene, and your scene size-up suggests that hazardous materials are involved, stage and wait for the hazardous materials personnel.
4. All scenes (MVC, Industrial, etc.) should be considered as being a potential hazardous materials situation. The following approach procedure should be used:

**PROCEDURE:****Approach**

1. Utilize a cautionary approach at all times.
2. The reported location may be inaccurate, and response into a contaminated area might occur.
3. Approach upwind and upgrade if possible. If unable to approach from upwind/upgrade, approach at 90 degrees to wind/grade, if possible, with safety in mind.
4. Position vehicle well away from problem and headed away from incident.
5. Communicate your actions or intended actions to EMS Dispatch.
6. Remember: Contaminated and/or exposed response personnel may add to the overall problem and reduce their effectiveness to help.
7. If you are the first responder on-scene, confirm that fire and police have been notified.
8. The agency responsible for hazardous materials response may respond with different levels of personnel and equipment based upon the information received. Do not always expect a hazardous materials team to respond.
9. If you are the first responder on-scene, your first priority is scene isolation. **KEEP OTHERS AWAY! KEEP UNNECESSARY EQUIPMENT FROM BECOMING CONTAMINATED.**
10. If you believe that you or your vehicle are contaminated, stage in an isolated area.

**Person in Charge (PIC)**

1. If the EMT is the first medical person on the scene, he/she should assume the role of PIC of medical care (not necessarily scene control) until a hazardous materials trained EMT arrives. Everyone should work as a team.
2. The EMT will direct all patient care.
3. The EMT, in concert with the incident commander, will determine the method of transport of the exposed patient (air vs. ground).
4. The EMT will determine who will provide care during transport.

**Patient Care for the Contaminated Patient**

1. Types of incidents which may require decontamination of the patient:
  - a. Radiation.
  - b. Biological hazards.
  - c. Chemical.
  - d. Toxic substances.
2. Contamination can occur through:
  - a. Smoke.
  - b. Direct contact.
  - c. Vapor.
  - d. Run-off.
3. Transporting contaminated patients should be a serious concern to those involved. Patients who have been in contact with, or who are even suspected of having been in contact with, hazardous substance, should be transported for evaluation.
4. The hazardous materials team must be contacted about removal of contaminated clothing and packaging of the patient with regard to your and the patient's protection.
5. Determine the hazardous substance involved, and provide treatment as directed by the EMT in charge.

**Ambulance Preparation**

1. The EMT shall determine the process needed for ambulance preparation.
2. Remove any supplies and equipment that would not be needed for patient care, i.e. extra medical kits, etc.
3. Seal cabinets, and drape interior, including floor and squad bench, with plastic or visqueen (if available from hazardous materials team).
4. Prepare stretcher by removing foam pad and placing down long backboard. Cover with plastic and tape in place, if needed (if available from hazardous materials team).

**Transport and Arrival at the Hospital.**

1. If an ambulance has transported a patient from an incident that is subsequently determined to involve hazardous materials exposure, scene personnel must immediately relay all relevant information to the transporting unit(s) and/or receiving facility(s) involved.
2. OLMD and the receiving hospital should be contacted as soon as possible. The EMT should communicate the material involved, degree of exposure, decontamination procedures used, and patient condition.
3. The ambulance should park in an area away from the emergency room, or go directly to a decontamination center or area.
4. Patient(s) should not be brought into the emergency department before the EMTs receive permission from the hospital staff.
5. Once the patient(s) has been released to the hospital, follow the EMTs direction and, if necessary, double bag the plastic sheeting used to cover the gurney and the floor into plastic bags. Double bag any equipment that is believed to have become contaminated.

**Transport and Arrival at the Hospital (continued)**

6. After unloading patient from ambulance, check with the fire department incident commander to see where the ambulance can be safely decontaminated, and whether or not there is equipment available for this purpose. Do not begin decontamination until after consultation with the Hazardous Materials Team Leader.
7. Following decontamination recommendation from the hazardous materials team, decontaminate the ambulance and personnel before returning to the incident scene. If returning to the incident scene, bring bags containing contaminated materials, equipment, clothing, etc., and turn them over to the hazardous materials team.

**EMT Exposure**

1. If an EMT is exposed, or is concerned with the possibility of exposure, medical help should be sought immediately.
2. Report all exposures to the hazardous materials team, Poison Center, and your risk manager or supervisor.
3. Do not return to service until cleared to do so by the fire department.

**PURPOSE:**

To assist in describing who is in charge of patient care at the scene of an emergency.

**PROCEDURE:**

1. The first arriving EMT-Intermediate or EMT-Paramedic on an ALS unit will assume responsibility for directing overall patient care upon their arrival at the scene, and will continue this function unless relieved by the responding jurisdiction's personnel. The responding jurisdiction's personnel must be authorized such responsibilities by local, city, county, district ordinances or legislative acts, or must have been dispatched by the recognized dispatch agency. These personnel must be of equal or higher EMT license level.
2. An EMT-Basic shall yield patient care responsibilities to an EMT licensed at the EMT-Intermediate or EMT-Paramedic level when directed to do so by the EMT licensed at the higher level. An EMT-Intermediate or EMT-Paramedic who is providing ALS care to a patient may be relieved by any other licensed EMT-Intermediate or EMT-Paramedic authorized to provide the necessary level of care if the relieving EMT is willing to assume patient care duties.
3. The responsibilities of the EMT-Intermediate or EMT-Paramedic directing overall patient care include:
  - a. Avoiding direct patient care activities if enough personnel are available. This EMT must watch over the entire patient care scene activities and be sure that the patient care activities are being accomplished in a rapid, efficient, appropriate, and timely manner. If there are only two EMTs at the scene, this senior EMT must do those patient care activities (i.e., start IV) which will allow him/her to watch over the whole scene easily.
  - b. Assigning other EMTs to provide patient care.
  - c. Establishing the appropriate time to be spent at the scene for doing patient care, according to the protocol for "Time at the Scene."
  - d. Determining when transportation of the patient is to occur.
  - e. Performing medical coordination with all agencies and personnel.
4. The EMT directing overall patient care will be held responsible for general patient care activities performed at the scene, and he/she will be so identified on all patient care reports.
5. If a patient requires transport, and the Person-In-Charge (PIC) is from a non transporting agency, direction of patient care will be turned over to the transporting EMTs when (1) the patient is placed on the transporting unit's gurney, unless PIC agency personnel accompany transport, or (2) at a time agreed upon by both EMTs. Continued patient care will then become the responsibility of the transporting unit. The approximate time of transfer will be noted on all patient care forms. It is expected that an orderly transfer of information and a cooperative management of patient needs will occur. When there are two agencies responding to a call, and a transfer of care occurs, there will be two PICs noted on all patient care forms: the first arriving PIC and the transporting PIC.
6. If a patient is transported to a hospital, the highest level EMT shall continue to provide care until relieved by appropriate hospital medical personnel.
7. Any disputes about patient care should be referred immediately to and resolved by the OLMD physician.
8. Patient care may be transferred to a Flight Nurse or Physician for air transportation.
9. Patient care may also be transferred to a Physician at the scene (see protocol for "Medical Professional at the Scene").

**PURPOSE:**

Any time a patient refuses care or transport, the EMT will evaluate the rationality of decision, and document the exam results. If the patient refuses care or transport, and the EMT determines on the basis of the exam, history, or other contributing factors, that care is needed, OLMD will be called.

**PROCEDURE:**

1. For the alert, conscious ill patient who requests no transport or treatment. The EMT shall:
  - a. Contact your on-line hospital and try to establish communication between the patient and the medical direction physician. If communication cannot be established, the EMT shall explain the risks and benefits of transport and treatment, but the EMT shall accept the right of the competent adult patient to refuse treatment and transport.
  - b. In all events the EMT shall follow the patient's directions regarding transport and treatment.
  - c. In all events, the EMT shall document the patient status. This process must include patient competence.
2. For the ill patient who is unable to control his or her own decision, (unconscious, incapacitated, etc.) and where care is refused:
  - a. If physically possible, BLS care at the EMT-B level will be followed during attempts to establish communication.
  - b. The EMT will contact the Medical Direction hospital and establish contact among the EMT, the family, and the OLMD physician. After this contact has been made, the EMT will follow the orders of the OLMD physician.
  - c. In all events, the EMT shall document this process (to include patient competence).

**PURPOSE:**

To establish guidelines for the response of private and public EMS responders to incidents which involve violence, or are anticipated to be potentially violent in nature.

**PROCEDURE:**

1. When to stage:
  - a. Any time dispatch directs them to do so.
  - b. Any time a violent incident might expose EMS personnel to danger.
  - c. Any call at the EMS unit's discretion.
  
2. How to stage:
  - a. Stage approximately two blocks from the incident address and out of the line of sight.
  - b. Announce arrival in staging and location.
  - c. Additional responding EMS units will respond to the same staging location if possible (avoid traveling past incident address).
  - d. Unless traffic hazard, turn off headlights and all warning devices.
  - e. Turn on four-way flashers.
  - f. Once staged, EMS units will not enter the scene until the scene is declared secure by police or dispatch.

**NOTE:**

1. It shall not be assumed that the mere presence of police on scene means that medical responders may now proceed safely into the call location. If police are on scene, call dispatch to request verification that EMS units may proceed onto the scene or stage.
2. This may be modified depending on local situations.

<b>GUIDELINES FOR EARLY ACTIVATION OF HELICOPTER EMERGENCY MEDICAL SERVICES</b>	<b>7.9</b>
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**PURPOSE:** Helicopter EMS services (HEMS) offer speed of transport and ALS personnel experienced in managing critical patients. These guidelines are to assist EMS responders in determining when early activation of HEMS would likely be in the critical patient's best interest. Early Activation means initiation of a helicopter response prior to arrival of the EMS responders to the scene. Early Activation may be based on pre-arrival information regarding the incident or a suspicion by EMS that specialty care may be needed. Early Activation is initiated at the request of the first responding EMS providers or in conjunction with Dispatch and the EMS service. It is recognized that pre-arrival information may be misleading and the activated HEMS may be cancelled. The HEMS service that can respond to the scene in the shortest time should be called. If a HEMS service cannot answer a call and a second service is requested, the requesting agency must notify the second service that the call has already been refused and why.

Situations in which Early Activation of HEMS may be needed includes, but are not limited to:

1. Report of severe collision involving one or more vehicles
2. Multiple victim incidents with severe illness or injuries
3. Report of person being ejected from a vehicle
4. Pedestrian vs. vehicle with reported injuries
5. MVC with reported death and other injured persons
6. Report of severe burns
7. An unbroken fall of twenty feet or more onto a hard surface
8. Penetrating injury to head, neck, torso, or groin
9. Report of injury with paralysis
10. Sickness with new onset focal weakness or paralysis (suspected stroke)
11. Severe chest pain thought to be of cardiac etiology
12. Near drowning
13. Report of amputation proximal to wrist or ankle
14. Report of serious injury in a patient whose location would be difficult to access by ground ambulance but is more accessible by helicopter
15. Severe shortness of breath or airway problems
16. There is no available ground ambulance to respond
17. Report of patient with symptoms of shock
18. Report of patient with history of trauma and altered mental status
19. Discretion of Medical Direction or responding EMS personnel

HEMS are most appropriately used when their use would **SIGNIFICANTLY** reduce the time required to get the patient to the appropriate hospital or when potentially lifesaving prehospital interventions may be needed that cannot be provided by the responding EMS service. The Regional Aeromedical Plan must be followed when approved. Quality Improvement monitoring is important and is best done in partnership with the responding helicopter service.

**GUIDELINES FOR HELICOPTER TRANSPORT  
OF TRAUMA SYSTEM PATIENTS****7.10****Purpose**

Helicopter EMS services (HEMS) offer speed of transport and ALS personnel experienced in managing critical patients. The purpose of this Air Evacuation Protocol is to provide EMS personnel who are on scene, with guidelines for utilizing HEMS for transporting trauma system patients.

**Process**

Several factors must be considered before summoning HEMS for a trauma scene response. Stable patients who are accessible by ground vehicles and are within a reasonable distance from the designated trauma center are best transported by ground vehicles. Often, patients can be transported by ground ambulance and delivered to the appropriate trauma center before a helicopter can reach the scene. You must follow your Regional Aeromedical Plan when approved. If a question exists as to whether HEMS transport would be appropriate, Medical Direction should be consulted before summoning a helicopter for a scene response.

HEMS are best used to transport critical trauma patients such as those entered into the trauma system because of physiologic or anatomic criteria. Those patients entered into the trauma system because of mechanism of injury or EMT discretion criteria are often more appropriately transported by ground ambulance.

**The primary determinant should be to get the patient to the most appropriate facility in the shortest amount of time.**

Emergency Medical Services personnel should request HEMS when transportation by air will SIGNIFICANTLY reduce actual transport time to the receiving facility and/or the patient needs potentially lifesaving prehospital interventions that cannot be provided by the responding EMS service. The following are some criteria when HEMS transport should be considered.

1. Transport time to the designated trauma center by ground ambulance is significantly greater than the response time and transport to the designated Trauma Center by air.
2. Ambulance access to the scene or away from the scene is significantly impeded by road conditions and/or traffic.
3. Prolonged patient extrication when a Level I facility is needed. Understand that some extricated patients are not injured and/or have sustained minor injuries and may not need HEMS.
4. Multi-system blunt or penetrating trauma with unstable vital signs.
5. Severe burns that require transport to a burn center (See Protocol 4.7).
6. Patients with severe respiratory distress or airway problems.
7. Multiple patient incidents that exceed ground ambulance service resources.

**GUIDELINES FOR HELICOPTER TRANSPORT  
OF TRAUMA SYSTEM PATIENTS (Continued)****7.10**

8. No ambulance available to transport the patient and/or no ALS service (if needed) within 30 minutes.
9. Discretion of Medical Direction or the on-scene EMS personnel.

When use of HEMS is not specifically defined by the protocol, the on-scene EMS personnel can establish communication with Medical Direction for advice.

Once the decision is made to use HEMS for a trauma patient, the service that can respond to the scene in the shortest time should be called. Because helicopters must go through a preflight protocol before lift-off, the shortest response time should be obtained by calling the HEMS first and then calling the TCC to decide on the proper destination hospital. When a decision is made on a destination hospital, the helicopter service should be immediately notified so they may develop their flight plan. If Early Activation was utilized, the responding HEMS service should be notified of the patient destination as soon as possible. If a HEMS service is unable to answer a call and a second service is requested, the requesting agency must notify the second service that the call has already been refused and why.

An EMS service should not wait on the scene or unduly delay transport waiting for HEMS to arrive. If the patient is packaged and ready for transport, the EMS service should reassign the landing zone to a mutually agreeable site that is closer to the hospital, and should initiate transport. The helicopter may intercept an ambulance at an agreed upon alternate landing site.

**Cancellation**

When EMS personnel arrive on scene, they should assess the situation. If HEMS has already been called and it is the professional judgment of the **HIGHEST LEVEL LICENSED EMS PERSONNEL ON THE SCENE** that the helicopter will not provide a significant benefit, it should be cancelled as soon as possible. A HEMS request by a BLS agency may be cancelled by the responding ALS agency only after an appropriate patient assessment has been conducted. A HEMS request by an ALS agency may be cancelled only by the agency making the initial request. If HEMS cancels a flight, they must inform the requesting agency ASAP.

If HEMS arrives on scene and determines that the patient does not meet criteria for helicopter transport or that patient, weather, or aircraft issues preclude use of the helicopter for transport, they may request ground transport of that patient. The request for ground transport does not preclude the HEMS crew from boarding the ground ambulance and continuing to provide advanced care as would be provided in flight. In situations where the HEMS crew determines that the patient does not have a medical need for HEMS transport, the transfer of this patient to a ground ambulance shall not constitute abandonment as defined by EMS regulations.

**Quality Assurance/Improvement**

As with all EMS responses in which HEMS is utilized, there should be QA/QI done in partnership with the responding helicopter service. Follow the Regional Aeromedical Plan when approved.

**GUIDELINES FOR HELICOPTER TRANSPORT  
OF TRAUMA SYSTEM PATIENTS (Continued)**

**7.10**

**THIS IS A GUIDELINE AND IS NOT ALL INCLUSIVE. EMS PERSONNEL SHOULD USE GOOD CLINICAL JUDGEMENT AT ALL TIMES. IF THERE ARE ANY QUESTIONS, OLMD SHOULD BE CONSULTED.**

**GUIDELINES FOR HELICOPTER UTILIZATION FOR  
SCENE RESPONSE OTHER THAN TRAUMA SYSTEM****7.11****PURPOSE:**

Helicopter EMS services (HEMS) offers speed of transport and ALS personnel experienced in managing critical patients. The purpose of this Air Evacuation Protocol is to provide prehospital care providers with guidelines for utilizing HEMS for patients other than those entered into the trauma system.

**Process**

Several factors must be considered before summoning HEMS for a scene response. Stable patients who are accessible by ground vehicles are best transported by ground vehicles. Often, patients can be transported by ground and delivered to the appropriate hospital before a helicopter can reach the scene. You must follow your Regional Aeromedical Plan. If a question exists, Medical Direction should be contacted before summoning a helicopter for a scene response. The following criteria are consistent with national HEMS utilization criteria.

**The primary determinant should be to get the patient to the most appropriate facility in the shortest amount of time.**

**CRITERIA:**

1. The helicopter is an air ambulance and an essential part of the EMS system. It may be considered in situations where:
  - A. The use of the helicopter would significantly speed patient(s) arrival to the hospital capable of providing definitive care, and the time savings is felt to potentially have a significant positive impact on patient outcome.
  - B. If specialized services offered by the air medical service would benefit the patient prior to arrival at the hospital.
2. The following criteria should be used when considering use of HEMS:
  - A. The patient's condition is a "life or limb" threatening situation demanding intensive multidisciplinary treatment and care. This may include but not be limited to:
    1. Patients entered into the trauma system (see protocols 4.7 and 7.10)
    2. Amputation distal to wrist or ankle and reimplantation is a possibility
    3. Critically ill medical patients requiring care at a specialized center to include, but not be limited to:
      1. Suspected acute stroke
        - A. Positive Prehospital Stroke Scale
        - B. Total prehospital time (time from when the patient's symptoms and/or signs first began to when the patient is expected to arrive at the appropriate hospital) is less than two (2) hours.
      2. Suspected Acute Coronary Syndrome
        - A. Chest pain, Shortness of breath or other symptoms typical of a cardiac event.
        - B. EKG findings of ST elevation 1mm or more in 2 or more contiguous leads OR LBBB (QRS duration >.12msec and Q wave in V1 or V2).
        - C. New onset congestive heart failure.
  4. Near drowning

<b>GUIDELINES FOR HELICOPTER UTILIZATION FOR SCENE RESPONSE OTHER THAN TRAUMA SYSTEM (Continued)</b>	<b>7.11</b>
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5. Patients in non-traumatic cardiac arrest who are not hypothermic should be excluded from these criteria. See Death in the Field protocol.
6. On scene personnel may request HEMS to respond to the scene when:
  - A. ALS personnel request the helicopter.
  - B. BLS personnel request the helicopter, when ALS is delayed or unavailable.
  - C. In the absence of an EMS agency, any first responder may request the helicopter, if it is felt to be medically necessary.

When use of HEMS is not specifically defined by the protocol, the on scene EMS personnel can establish communication with Medical Direction to discuss the situation.

When the decision is made to use HEMS for patient transport, the service that can respond to the scene in the shortest time should be called. If Early Activation was utilized, the responding HEMS service should be notified of patient destination as soon as possible. . If a HEMS service is unable to answer a call and a second service is requested, the requesting agency must notify the second service that the call has already been refused and why.

An EMS service should not wait on the scene or unduly delay transport waiting for HEMS to arrive. If the patient is packaged and ready for transport, the EMS service should reassign the landing zone to a mutually agreeable site that is closer to the hospital and initiate transport. The helicopter may intercept an ambulance at an agreed upon alternate landing site.

### **Cancellation**

When EMS personnel arrive on scene, they should assess the situation. If HEMS has already been called and it is the professional judgment of the **HIGHEST LEVEL LICENSED EMS PERSONNEL ON THE SCENE** that the helicopter will not provide a significant benefit, it should be cancelled as soon as possible. A HEMS request by a BLS agency may be cancelled by the responding ALS agency only after an appropriate patient assessment has been conducted. A HEMS request by an ALS agency may be cancelled only by the agency making the initial request. If HEMS cancels a flight, they must inform the requesting agency ASAP.

If HEMS arrives on scene and determines that the patient does not meet criteria for helicopter transport or that patient, weather, or aircraft issues preclude use of the helicopter for transport, they may request ground transport of that patient. The request for ground transport does not preclude the HEMS crew from boarding the ground ambulance and continuing to provide advanced care as would be provided in flight. In situations where the HEMS crew determines that the patient does not have a medical need for HEMS transport, the transfer of this patient to a ground ambulance shall not constitute abandonment as defined by EMS regulations.

### **Quality Assurance/Improvement**

As with all EMS responses in which HEMS is utilized, there should be QA/QI done in partnership with the responding helicopter service. Follow the Regional Aeromedical Plan when approved.

**GUIDELINES FOR HELICOPTER UTILIZATION FOR  
SCENE RESPONSE OTHER THAN TRAUMA SYSTEM (Continued)**

**7.11**

**THIS IS A GUIDELINE AND IS NOT ALL INCLUSIVE. EMS PERSONNEL SHOULD USE GOOD CLINICAL JUDGEMENT AT ALL TIMES. IF THERE ARE ANY QUESTIONS, OLMD SHOULD BE CONSULTED.**

**Patient Care Protocols**  
**SECTION 8: Administrative Protocols**

**Withholding Resuscitative Efforts:**

1. Determining death in the field (DIF) without initiating resuscitative efforts should be considered under any of the following conditions:
  - a. Decapitation.
  - b. Massive crush injury or evisceration of the heart, lung, or brain.
  - c. Incineration.
  - d. Rigor Mortis in a warm environment.
  - e. Venous pooling in dependent body parts (dependent lividity).
  - f. Decomposition.
  - g. Patient qualifies as a “DNAR” patient (see DNAR Protocol).
  - h. A pulseless, apneic patient in a mass casualty incident, multiple-patient scene, where the resources of the system are required for the stabilization of living patients.
2. OLMD must be contacted, and must confirm the withholding of resuscitative efforts.
3. If the patient is declared dead on scene, the body must not be moved until the proper authority (such as law enforcement agencies, the coroner, the medical examiner, or their designee), has been notified (if not already on scene), and they agree to the movement of the body.

**Traumatic Cardiac Arrest**

1. In addition to the conditions listed above under Withholding Resuscitative Efforts, a victim of trauma should be determined to be dead at the scene if:
  - a. The patient is a victim of Blunt Trauma and has no vital signs in the field (pulseless, apneic, with dilated, fixed pupils).
  - b. This patient should not be transported unless so directed by the coroner, medical examiner, or medical direction physician
2. In deaths from blunt trauma, a monitor is not necessary to use in initial assessment of the patient unless the paramedic doubts death has occurred. If the monitor is used, only a recognizable QRS of at least eighty (80) per minute should be considered compatible with life in these trauma patients.
3. OLMD must be contacted, and must confirm the withholding of resuscitative efforts.
4. If the patient is declared dead on scene, the body must not be moved until the proper authority (such as law enforcement agencies, the coroner, the medical examiner, or their designee), has been notified (if not already on scene), and they agree to the movement of the body.
5. The patient who is a victim of penetrating torso injury and has no vital signs in the field (pulseless, apneic, with dilated, fixed pupils), should be immediately transported and treated by the hypovolemic shock protocol until OLMD can be contacted. OLMD may determine whether to continue resuscitative efforts.

**Determining Death in Cardiac Medical Arrest:**

1. Cardiopulmonary resuscitation and advanced life support may be terminated by prehospital personnel if all of the following criteria are met:
  - a. Patient is in cardiac arrest at the time of arrival of advanced life support.
  - b. Appropriate full advanced life support procedures, including intubation, are performed for twenty minutes with no spontaneous pulse, and no evidence of neurologic function, unless earlier termination is appropriate as determined by OLMD.
  - c. OLMD approves termination of efforts.
  - d. If OLMD stops resuscitation during transport, the patient must be taken to that OLMD physician to be pronounced dead.
  - e. If the patient is declared dead on scene, the body must not be moved until the proper authority (such as law enforcement agencies, the coroner, the medical examiner, or their designee), has been notified (if not already on scene), and they agree to the movement of the body.
2. All patients in Ventricular Fibrillation should, in general, have full resuscitation continued and be transported, except when DNAR or other withholding resuscitative efforts apply. If in doubt, contact the OLMD hospital.
3. Termination will not be considered in any of the following circumstances:
  - a. Patients with persistent ventricular fibrillation or pulseless ventricular tachycardia.
  - b. Patients who have return of spontaneous pulse at any time during the resuscitative effort.
  - c. Patients who exhibit neurologic function.
  - d. Patients who arrest after the arrival of advanced life support.

**Documentation:**

1. All patient care provided should be documented with procedure and time.
2. In non-traumatic deaths, all non-resuscitation or stopped resuscitation cases should have an ECG rhythm strip that shows calibration of the ECG machine, and the patient's rhythm.
3. All conversations with physicians should be fully documented with physician's name, times and instructions.
4. If resuscitation is withheld on scene, and the coroner or medical examiner is not coming to the scene, if possible, obtain name and address of the deceased, name, address and phone number of a family member, and name and phone number of patient's private physician.

**Precautions:**

1. Most victims of electrocution, lightning, and drowning should have resuscitative efforts begun and be transported to the hospital.
2. Hypothermic patients should be treated per the hypothermia protocol.
3. Consider the needs of survivors when discontinuing resuscitation.

**PURPOSE:**

To delineate on-scene time limitations.

**PROCEDURE:**

1. If at any time an EMT cannot provide or protect a patient airway within 5 minutes after patient encounter and initiating emergency medical care, he/she is required to transport the patient immediately.
2. If at any time an EMT predicts that he/she will be on the scene, or has been on the scene for 30 minutes after patient encounter and initiating emergency medical care, he/she is required to contact the OLMD hospital.
  - a. Communicate pertinent patient history.
  - b. Communicate treatment given.
  - c. Ask whether the patient should be transported immediately or other care should be given.
  - d. Anticipate answering the question: "What further needs to be done?"
3. For cases involving significant trauma, time spent on the scene should be ten (10) minutes or less where extrication has been accomplished, and the patient can be moved away from the site.

**PURPOSE:**

The goal is to provide comfort and emotional support with the highest quality medical care to patients in conformity with the highest ethical and medical standards. Unless a “DNAR” order is issued, any patient who sustains a cardiopulmonary arrest will receive full cardiopulmonary resuscitation with the objective of restoring life. If a DNAR order has been issued, the family may countermand that order and request that resuscitation be attempted.

**Definitions:**

1. A DNAR (Do Not Attempt Resuscitate) Order is an order issued by a physician directing that in the event the patient suffers a cardiopulmonary arrest, cardiopulmonary resuscitation will not be administered. Also see Transport of Ill Patient for the patient who is still breathing and has a pulse.
2. Resuscitation includes attempts to restore failed cardiac and/or ventilatory function by procedures such as endotracheal intubation, mechanical ventilation, closed chest massage, defibrillation, and administration of drugs.
3. Comfort care is defined as intravenous fluids, oxygen, suction, control of bleeding, administration of pain medications (if provided by properly licensed and authorized personnel), and the provision of support and comfort to patients, family members, friends, and other individuals.

**PROCEDURE:**

1. The following procedures **SHALL NOT** be performed on a patient who is the subject of a confirmed DNAR order and who is PULSELESS AND NONBREATHING:
  - a. CPR.
  - b. Endotracheal intubation.
  - c. Defibrillation.
  - d. Assistance with respiratory efforts (i.e., “Bagging”).
  - e. Oral/nasal airways.
  - f. Suctioning.
  - g. IV lines.
  - h. Fluids.
  - i. Medications, including oxygen.
  - j. EKG monitoring.
2. If there is any question about a DNAR order, contact OLMD.

**PURPOSE:**

To describe what documentation is required on any EMS response.

**PROCEDURE:**

1. Each EMS provider shall ensure that an accurate and complete patient care report, or such other report as may be approved by the State Health Officer in the future, is prepared for each instance in which:
  - a. A patient was assessed.
  - b. Medical care was rendered.
  - c. A patient was transported.
  - d. A patient was pronounced dead at the scene.
  - e. A patient was transferred to another licensed service.
  - f. A patient was transferred from one medical facility to another.
  - g. The person or persons for whom EMS was dispatched refused treatment, transport or both.
2. Documentation should include at least:
  - a. Patient problem presented.
  - b. Vital signs, with time.
  - c. Treatment provided and time.
  - d. ECG strip, if monitored.
  - e. Any change in condition of patient.
  - f. OLMD contact.
  - g. Any deviation from protocol.
3. If a patient refuses treatment or transport, documentation should include at least:
  - a. Name of patient.
  - b. Reason for response.
  - c. Reason for patient refusal.
  - d. Vital signs and time.
  - e. Any other physical signs or symptoms.
  - f. Competency of patient, to include the patient's orientation, any mind altering chemicals which may affect judgment, and the explanation which the EMT made concerning the complications the patient may encounter by refusing care.
  - g. Level of consciousness - detailed.
  - h. Any witnesses.
4. An accurate and complete patient care report, as required by the EMS rules, shall be provided to the patient receiving facility upon delivery of the patient or as soon as practicable. In no instance should delivery of the patient care report exceed twenty-four hours.
5. As of January 1, 2008, patient care reports must be completed in the electronic format and transmitted to the Office of EMS and Trauma within twenty-four hours of the provided medical care.

**PURPOSE:**

The following are criteria for entering a patient into the Alabama Trauma System.

**Physiological criteria:**

1. A systolic BP < 90 mm/Hg in an adult **or < 80 mm/Hg in a child five or younger.**
2. Respiratory distress - rate < 10 or >29 in adults, **or < 20 or > 40 in a child one year or younger.**
3. Head trauma with Glasgow Coma Scale score of 13 or less.

**Anatomical Criteria:**

1. The patient has a flail chest.
2. The patient has two or more obvious proximal long bone fractures (humerus, femur).
3. The patient has a penetrating injury of the head, neck, torso, or groin, associated with an energy transfer.
4. The patient has in the same body area a combination of trauma and burns (partial and full thickness) of fifteen percent or greater.
5. The patient has an amputation proximal to the wrist or ankle.
6. The patient has one or more limbs which are paralyzed.
7. The patient has a pelvic fracture, as evidenced by a positive "pelvic movement" exam.

**Mechanism of the patient injury:**

1. A patient with the same method of restraint and in the same seating area as a dead victim.
2. Ejection of the patient from an enclosed vehicle.
3. Motorcycle/bicycle/ATV crash with the patient being thrown at least ten feet from the motorcycle/bicycle/ATV.
4. Auto versus pedestrian with significant impact, with the patient thrown, or run over by a vehicle.
5. An unbroken fall of twenty feet or more onto a hard surface.

**EMT Discretion:**

1. If the EMT is convinced the patient could have a severe injury which is not yet obvious, the patient should be entered into the trauma system.
2. The EMT's suspicion of severity of trauma/injury may be raised by the following factors:
  - a. Age > 55
  - b. **Age < five**
  - c. Environment (hot/cold)
  - d. Patient's previous medical history
    - i. Insulin dependent diabetes
    - ii. Cardiac condition
    - iii. Immunodeficiency disorder
    - iv. Bleeding disorder
    - v. COPD/Emphysema
  - e. Pregnancy

- f. Extrication time > 20 minutes, with heavy tools utilized
- g. Motorcycle crash
- h. Head trauma with history of more than momentary loss of consciousness

**ENTERING A PATIENT INTO THE TRAUMA SYSTEM:****1. Regions that are not yet operating under the Alabama Trauma System**

Patients should be transported to a hospital with a trauma response program if such is available in the region, per the region's Medical Control and Accountability Plan.

**2. Regions that are currently operating under the Alabama Trauma System should call the Alabama Trauma Communications Center (ATCC) to determine patient destination:**

ATCC contact numbers:

Toll-Free Emergency: 1-800-359-0123, or

Southern LINC EMS Fleet 55: Talkgroup 10/Private 55\*380, or

Nextel: 154\*132431\*4

After assessing a trauma situation and making the determination the patient should be entered into the Trauma System, the EMT licensed at the highest level should contact the Alabama Trauma Communications Center (ATCC) at the earliest time which is practical, and provide the following:

1. Identify yourself and your agency by name, unit number and county. If on-line medical direction is necessary, the receiving trauma center becomes medical direction. ATCC will help coordinate on-line medical direction with a physician immediately.
2. Give your geographic location.
3. Give age and sex of patient (patient name is not necessary).
4. Assign patient number if more than one patient.
5. Give criteria for entry into Trauma System.
6. Give vital signs: Blood Pressure, Pulse rate, Respiratory rate, GCS
7. ATCC Communicator will offer available trauma centers based on information given above.
8. Give unit number of transporting unit, mode of transport, and time of transport from the scene.
9. You will be given a unique identification number that must be entered into the chart when you generate your e-PCR. The Office of EMS and Trauma will use this to identify the charts for quality improvement studies.

The receiving trauma center should be updated by the transporting unit 5-10 minutes out. This update need only consist of any patient changes and patient's current condition. A repeat of information used to enter the patient into the Trauma System is not necessary since this information will be relayed by the ATCC to the receiving trauma center.

After the patient is delivered to the trauma center, the transporting provider should call the ATCC with the Patient Care Report times.

NOTE: If you are requesting helicopter transport of the trauma patient you should follow Protocol 7.10: Guidelines for Helicopter Transport of Trauma Patients

# **Patient Care Protocols**

## **SECTION 9: Acceptable EMS Equipment and Devices**

Additions may be made to this section by submitting a request in writing to Dr. John Campbell, EMS Medical Director, Office of EMS and Trauma:

John Campbell, M.D.  
Office of EMS and Trauma  
Suite 750  
Alabama Department of Public Health  
P.O. Box 30310  
Montgomery, AL 36130-3017

or [johncampbell@adph.state.al.us](mailto:johncampbell@adph.state.al.us)

1. Combitube
2. King LT-D and LTS-D Airways
3. Laryngeal Mask Airway
4. Pharyngotracheal Lumen Airway
5. Rusch EasyTube

**Hemostatic Agents****9.2**

1. WoundStat (granular combination of smectite mineral and polymer)
2. Celox (Chitosan based)
3. QuikClot 1st Response (Mineral Zeolite based)
4. HemCon Dressing (Chitosan based)

1. Vidacare EZ-IO Driver Device
2. Performance Systems Bone Injection Gun
3. Pyng Medical Corporation, F.A.S.T. 1 intraosseous infusion system (for use in sternum only)
4. Manual I/O Needles

**Continuous Positive Airway Pressure Devices****9.4**

1. PortO<sub>2</sub>Vent CPAP Device by Emergent Respiratory Products
2. WhisperFlow Fixed Low Flow CPAP Generator by Respironics
3. O<sub>2</sub>-RESQ single use system by Pulmodyne
4. Boussignac single use system by Vitaid

**Devices to Perform Chest Decompression**

**9.5**

1. Any Over-the-Needle catheter of at least 6 cm in length and at least 14 gauge
2. Cook Emergency Pneumothorax Set

**Patient Care Protocols**  
**SECTION 10: Forms**

Date: \_\_\_\_\_ Incident #: \_\_\_\_\_ Time: \_\_\_\_\_

Destination: \_\_\_\_\_

Patient Name: \_\_\_\_\_ D.O.B. \_\_\_\_\_

Chief Complaint/Reason for 12 lead: \_\_\_\_\_

12 Lead Acquired: Yes \_\_\_\_\_ No \_\_\_\_\_ 12 Lead Transmitted: Yes \_\_\_\_\_ No \_\_\_\_\_

# of Transmission Attempts: \_\_\_\_\_ Mode of Transmission: Cellular \_\_\_\_\_ Land \_\_\_\_\_

Note: Always attempt to transmit ECG. Paramedics Assessment of 12 lead (if any): \_\_\_\_\_

**Yes No Does the patient have:**

- \_\_\_ \_\_\_ 1. Chest pain, or equivalent characteristic of myocardial ischemia, for at least 30 minutes. Pain has not lapsed and is not relieved by NTG or position changes.
- \_\_\_ \_\_\_ 2. ECG ST segment elevation of at least 1 mm in at least two contiguous leads reflecting a single myocardial region (Q waves are not a contraindication).
- \_\_\_ \_\_\_ 3. Elapsed time from onset of ischemia to evaluation less than twelve hours.

**Yes No Exclusion Criteria. Potential Absolute Contraindications:**

- \_\_\_ \_\_\_ 1. Active internal bleeding.
- \_\_\_ \_\_\_ 2. History of any CVA, intracranial neoplasm, arteriovenous malformations or aneurysm.
- \_\_\_ \_\_\_ 3. Recent (within 2 months) intracranial or intraspinal surgery or trauma.
- \_\_\_ \_\_\_ 4. Intracranial neoplasm, arteriovenous malformation, or aneurysm.
- \_\_\_ \_\_\_ 5. Past or present bleeding disorder.
- \_\_\_ \_\_\_ 6. Uncontrolled hypertension - systolic > 180 mm Hg, diastolic > 110 mm Hg.
- \_\_\_ \_\_\_ 7. Pregnancy.

**Yes No Potential Relative Contraindications:**

- \_\_\_ \_\_\_ 1. Diabetic hemorrhagic retinopathy or other hemorrhagic ophthalmic conditions.
- \_\_\_ \_\_\_ 2. Prolonged CPR (longer than 10 minutes).
- \_\_\_ \_\_\_ 3. Recent (within 10 days) major surgery at noncompressable site (e.g. CABG).
- \_\_\_ \_\_\_ 4. Documented cerebrovascular disease.
- \_\_\_ \_\_\_ 5. Recent (within 7 days) gastrointestinal or genitourinary bleeding.
- \_\_\_ \_\_\_ 6. Significant liver dysfunction.
- \_\_\_ \_\_\_ 7. PHYSICALLY advanced age (>75 years with multiple disease states beyond AMI).
- \_\_\_ \_\_\_ 8. Patients currently receiving oral anticoagulants, e.g. warfarin sodium.
- \_\_\_ \_\_\_ 9. Previous thrombolytic therapy?
- \_\_\_ \_\_\_ 10. Trauma to the head in the last two weeks.?
- \_\_\_ \_\_\_ 11. Surgery in the last two weeks?
- \_\_\_ \_\_\_ 12. Any trauma in the last two weeks?

**STROKE CHECKLIST****10.2**

Date: \_\_\_\_\_ PCR#: \_\_\_\_\_ Time: \_\_\_\_\_ AM PM

Destination \_\_\_\_\_

Patient Name: \_\_\_\_\_ D.O.B. \_\_\_\_\_

Stroke Scale Score \_\_\_\_\_

Stroke Scale used: \_\_SOS \_\_Cincinnati \_\_LA

Last time seen normal: \_\_\_\_\_ Exact time \_\_3 hours or less \_\_3-6 hours \_\_&gt; than 6 hours

<b>Patient Signs and Symptoms (mark all that apply):</b>		<b>YES</b>	<b>NO</b>			<b>YES</b>	<b>NO</b>
1. Patient is alert		___	___	6. Active internal bleeding.		___	___
2. Arm/Leg movement normal		___	___	7. History of past: stroke, intracranial neoplasm, arteriovenous malformations or aneurysm.		___	___
3. Speech is understandable		___	___	8. Recent (within 2 months) intracranial or intraspinal surgery or trauma.		___	___
4. Current glucometer reading _____				9. Past or present bleeding disorder.		___	___
5. Coumadin (if taken):				10. Pregnant		___	___
Prescribed dose _____							
Last taken _____							

- |  | <b>YES</b> | <b>NO</b> |
|--|------------|-----------|
| 11. Recent (within 10 days) major surgery at <u>non-compressible</u> site (eg. CABG) | ___        | ___       |
| 12. Recent (within 7 days) gastrointestinal or genitourinary bleeding                | ___        | ___       |
| 13. Previous thrombolytic therapy?   | ___        | ___       |
| 14. Trauma to the head in the last two weeks?  | ___        | ___       |
| 15. Surgery in the last two weeks?   | ___        | ___       |

- ✓ **TO BE COMPLETED ON ALL PATIENTS TREATED WITH THE STROKE PROTOCOL**
- ✓ **A COPY SHOULD BE LEFT WITH PCR AT THE RECEIVING HOSPITAL**

**Agency:** \_\_\_\_\_

**Today's Date:** \_\_\_\_\_

**Date of Procedure:** \_\_\_\_\_

**Receiving Hospital:** \_\_\_\_\_

**OLMD Ordering Procedure:** \_\_\_\_\_

**OLMD / MCP ID #:** \_\_\_\_\_

**Patient**

**Outcome:** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Problems, issues,  
comments:** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Fax this form and a copy of the PCR to the Office of EMS & Trauma at 334-206-5260 and to your Regional EMS Office:**

- |                             |                          |
|-----------------------------|--------------------------|
| <b>Region 1 (North)</b>     | <b>Fax #256-518-2248</b> |
| <b>Region 2 (East)</b>      | <b>Fax #205-763-8402</b> |
| <b>Region 3 (BREMSS)</b>    | <b>Fax #205-934-2621</b> |
| <b>Region 4 (West)</b>      | <b>Fax #205-330-7879</b> |
| <b>Region 5 (Southeast)</b> | <b>Fax #334-671-1685</b> |
| <b>Region 6 (Gulf)</b>      | <b>Fax #251-431-6525</b> |

**EMS TRANSPORT PROVIDER: Mark one or more of the following if patient transport involves the hospital divert system.**

- Patient transported to a hospital that was on "divert."
- Patient or patient's family was informed and voiced understanding that an extended wait or transfer to another hospital is possible.
- Patient was diverted to this hospital because \_\_\_\_\_ hospital was on Emergency Department, Critical Care, Med/Surg, Psych, CT, Labor & Delivery divert (circle one)

**If the patient or patient's family insists on transport to the hospital that is on divert, ask them to sign this statement:**

As a patient, (or family member) I was told \_\_\_\_\_ hospital is on divert, and that I (or the patient) may have an extended wait to see the doctor, get a bed, or may need to be transferred to another hospital. I (or the patient) still wish to be transported to this hospital.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

Patient     Family Member

Witness (optional)

\_\_\_\_\_  
Signature