



**American Medical Response
Emergency Medical Services
dba
Collin County EMS**

Clinical Operating Guidelines (COG's)

Revised: March 2010

TABLE OF CONTENTS

INTRODUCTION & GENERAL POLICIES PROTOCOLS

1.	DYSRHYTHMIAS	10
1.1	Asystole	11
1.2	Atrial Fibrillation	13
1.3	Atrial Flutter	15
1.4	Bradydysrhythmias	17
1.5	Premature Ventricular Contractions	19
1.6	Pulseless Electrical Activity	21
1.7	Supraventricular Tachycardia	23
1.8	Ventricular Fibrillation/ Pulseless Ventricular Tachycardia	25
1.9	Ventricular Tachycardia with Pulses	27
1.10	Post-Resuscitation Care	29
2.	ENVIRONMENTAL EMERGENCIES	31
2.1	Drowning and Near-Drowning Emergencies	32
2.2	Electrocution / Lightning Injuries	34
2.3	Hyperthermia / Heat Emergencies	36
2.4	Hypothermia / Cold Emergencies	38
2.5	Radiation Injuries	40
2.6	Snakebite	41
3.	MEDICAL EMERGENCIES	42
3.1	Abdominal Pain	43
3.2	Allergic Reactions / Anaphylaxis	45
3.3	Altered Mental Status	47
3.4	Psychiatric Emergencies	49
3.5	Bronchospasm	50
3.6	Chest Pain	52
3.7	CHF / Pulmonary Edema	54
3.8	Eye Emergencies	56
3.9	Hypertensive Emergencies	59
3.10	CVA / Stroke	61
3.11	Hypoglycemia / Insulin Shock	62
3.12	Diabetic Coma / Hyperglycemia	63
3.11	Obstetrical Emergencies	64
3.12	Seizures	73
3.13	Shock (Hypoperfusion) of Unknown Etiology	75
3.14	Syncope of Unknown Etiology	77
3.15	Toxicology / Substance Abuse / Overdose	79
3.16	Sexual Assault	81

4.	TRAUMA EMERGENCIES	82
4.1	Abdominal / Pelvic Trauma	83
4.2	Burns / Inhalation Injuries	85
4.3	Head Trauma / Injury	88
4.4	Intercranial Bleed / Head Injury	90
4.5	Musculoskeletal Injuries	91
4.6	Multi-System Trauma	93
4.7	Soft Tissue / Crush Injuries	95
4.8	Spinal Column / Cord Injuries	97
4.9	Thoracic Trauma	99
4.10	Aortic Aneurysm / Dissection	101
4.11	Traumatic Cardiopulmonary Arrest	102
4.12	Traumatic Amputation	103
5.	PEDIATRIC EMERGENCIES	106
5.1	Newborn Resuscitation	107
5.2	Pediatric Anaphylaxis	109
5.3	Pediatric Bradydysrhythmias	111
5.4	Pediatric Bronchospasm	113
5.5	Pediatric Cardiopulmonary Arrest	115
5.6	Pediatric Coma / Altered Mental Status	117
5.7	Pediatric Seizures	119
5.8	Pediatric Shock	121
5.9	Pediatric Supraventricular Tachycardia	123
5.10	Pediatric Trauma & Traumatic Arrest	125
5.11	Pediatric Upper Airway Obstruction	128
5.12	Pediatric Ventricular Fibrillation / Pulseless Ventricular Tachycardia	129
APPENDICES		132
A	General Guideline for Protocol Usage	133
B	IV Therapy	134
C	IO Therapy / EZ-IO	135
D	Burn Chart	138
E	Nasogastric Tube	140
F	Nebulized Bronchodilators	141
G	Endotracheal Intubation	142
H	Do Not Resuscitate	143
I	Guidelines for Helicopter Transport	145
J	Routine Care	146
K	Multiple Casualty Incident	147
L	Mucosal Atomizer Deliver Device (MADD)	149
M	Initiation of Termination of Cardiopulmonary Resuscitation (CPR)	150

SPECIAL SITUATIONS **152**

A	Hazardous Materials Incident	153
B	Impaled Objects	154
C	Patient Refusal	155
D	Process for Deviation from Treatment	159
E	Radio Communications	160
F	Vital Signs by Age and Weight	161
G	Renal Dialysis Patient	162
H	CCT vs. ALS	165

DRUG FORMULARY – Listed as Trade Name (Generic) **166**

Adenocard (Adenosine)	167
Albuterol (Ventolin, Proventil)	168
(Amiodarone Hydrochloride) Cordarone	169
Aspirin	170
Atropine Sulfate	171
Atrovent (Ipratropium Bromide)	172
Benadryl (Diphenhydramine)	173
Calcium Chloride	174
Dextrose 50%	175
Dopamine	176
Epinephrine 1:1000	177
Epinephrine 1:10000	178
Glucagen (Glucagon)	179
Haldol (Haloperidol)	180
Labetalol (Normodyne, Trandate)	181
Lasix (Furosemide)	182
Lidocaine	183
Magnesium Sulfate	184
Morphine Sulfate	185
Narcan (Naloxone)	186
Nitroglycerin	187
Oxygen	188
Sodium Bicarbonate	189
Solumedrol (Methylpredisolone)	190
Thiamine (Vitamin B1)	191
Valium (Diazepam)	192
Zofran (Ondansetron)	193

INVENTORY ITEMS **194**

GEOGRAPHICAL AREA / DUTY STATUS

Geographical Area:

These protocols shall only be utilized under my medical direction in American Medical Response 911 service area, mutual aid areas and when on transfers.

Duty Status:

American Medical Response Dallas/Collin County/ Fairview personnel shall utilize these protocols under my Medical Direction only when acting in their official capacity (on the clock) when representing American Medical Response Dallas/Collin/Fairview No employee is authorized to use the protocols while volunteering or when working with another agency.

A handwritten signature in black ink, reading "Robert E. Suter". The signature is written in a cursive style with a large, looping initial "R".

Robert E. Suter, D.O., M.H.A., FACEP

INTRODUCTION TO TREATMENT PROTOCOLS

The goal of any Emergency Medical Services System is to provide the finest pre-hospital care to all the patients, family and facility staff in a timely and efficient manner. In this regard, the EMS system clearly functions with the intent to prevent and limit further complications from illness or injury during the critical time prior to arrival in the Receiving Facility. The treatment protocols found in this book are designed to immediately and definitively manage emergent patient illnesses and injuries such that rapid intervention will alleviate patient suffering and ultimately allow the patient to be delivered at the Receiving Facility in an already improved clinical state whenever possible. In addition, the bias of these protocols is to maximize use of standing orders, leaving on-line control only in confusing or complicated cases.

The intent of these Treatment Protocols is to establish an accepted standard for managing patient injury and illness. In this regard, a great deal of attention has been paid to the format of the protocols and the clinical correctness of the protocols by utilizing the knowledge and background of the System Medical Director in addition to multiple textbooks and Standards of Care.

A number of safety checks were utilized to ensure clinical accuracy for each protocol. The narrative format was utilized to ensure completeness and attention to detail such that the protocols may serve as a reference text by crews when needed.

STRUCTURE OF INDIVIDUAL PROTOCOL

Each protocol begins with a section of the protocol that emphasizes the assessment and treatment priorities for each illness or injury being addressed. This section clearly stated those treatment measures surrounding a particular illness or injury that may be the most important aspects of patient management. Again, this allows a quick reference for the EMT or Paramedic.

ROLES/RESPONSIBILITIES OF EMS PROVIDERS

Personnel and Training

EMT's and Paramedics are trained to provide pre-hospital care by utilizing equipment and procedures designed in cooperation with physicians' experience in pre-hospital care. EMTs and Paramedics maintain an on-going education program to develop their expertise in the treatment of pre-hospital and inter-facility injury and illness.

Responsibilities of EMS Providers

EMT's providing patient care for American Medical Response have an obligation to understand the EMS System in which they provide service. Proper use of adequate communications equipment is essential to effective system operation--early, accurate, brief Responsibilities of EMS Providers and well-organized radio communication and notification with the Receiving Facility is required for each transport. A properly completed Run Form for each patient management situation is mandatory. A minimum Pre-Hospital Data set for each transport should be entered on the Run Form such that systems-wide improvement can be undertaken by identifying issues important to the pre-hospital management of patients. EMTs at all levels, Basic to Paramedic, may request Physician Medical Direction on ANY call in order to facilitate patient care. Early and concise reports to Receiving Facility are strongly recommended in all EMS systems. Physician Medical Direction must be obtained for all procedures outside the established Standing Orders. An Estimated Time of Arrival should be communicated on all calls to Receiving Facility.

CATEGORIZATION OF GUIDELINES

The treatment protocols have been divided into groups for ease of utilization. The categories have been indexed such that any future change in a particular protocol may be rendered without difficulty. The format developed will also facilitate organization and rapid access to the correct protocol for a given situation. Moreover, as new treatment modalities are developed for all levels of EMT (including entirely new curricula for EMT-Basic to Paramedic), additions and deletions will be made and communicated. The treatment categories are the following:

Dysrhythmias
Environmental Emergencies
Medical Emergencies
Traumatic Emergencies
Pediatric Emergencies

The development of several separate Pediatric Emergencies protocols was deemed necessary by the Medical Services Committee due to the unique nature of management of certain Pediatric clinical disorders.

TREATMENT FACILITY/POINT OF ENTRY

In general, the following policy should be followed in regards to the transport of patients during an emergent situation: Patients should be transported to the nearest appropriate facility which can provide the care needed by the patient under the clinical circumstances. If a patient needs care that the ambulance crew believes cannot be provided at the closest hospital, the patient will be transported to the nearest facility capable of providing that care.

There will be times when it is necessary to deviate from established Point-of-Entry guidelines due to the receiving facility being on RED DIVERT (no beds available) or YELLOW DIVERT (no ICU beds available). All incidents that arise requiring the transporting crew to deviate from these guidelines must be documented within the Patient Care Report.

GENERAL PROTOCOL POLICIES

1. Each and every protocol has, as its first procedural directive, the following words: "Maintain universal blood and body fluid precautions." Assuring scene safety in all patient encounters must also be considered as a primary procedural directive. The importance of these directives cannot be over-emphasized. New Federal laws require the proper management of patients such that the provider and the patient are protected from undue exposure to communicable diseases. A reporting mechanism has been established under the Ryan White Law and must be adhered to at all times by EMT providers and provider services.
2. Each and every protocol emphasizes the importance of rapid transport to the nearest appropriate Treatment Facility. Delayed transport should never occur in a properly functioning EMS system. However, in rare circumstances, delayed transport may occur when treatment cannot be performed during transport.
3. Each and every protocol implies the roles and responsibilities of hospital personnel to the EMT and provider services:

Personnel who communicate via an established communication system with EMT field providers must have a working knowledge of the EMS system and be fully aware of the skills and capabilities of the EMT providers with whom they are communicating.

Hospital personnel providing Medical Direction must be familiar with the communication system and its usage and, therefore, must also know the treatment guidelines established in this document for each level of EMT.

Hospital personnel and EMS providers must respect patient confidentiality.

Medical Directors for provider services must take an active role in reviewing EMT performance in the delivery of patient care. Medical Directors must establish an ongoing Quality Assurance program, whereby proper Morbidity and Mortality review takes place and assures that the system performs in an overall improved fashion whenever the need is identified.

CONCLUSION

The protocols established in this text are designed to facilitate and, hopefully, standardize pre-hospital treatment modalities within the American Medical Response-Dallas service area. They are not a substitute

for a textbook or a training curriculum. The use of the narrative format is designed for completeness and readability. As new treatment and patient management modalities are developed, they will be reviewed and placed in the Protocol Manual as they are identified.

Remember: the Protocols as promulgated in this manual are considered to be the most complete at this time. Protocols become Standards only if they are deemed to be the best management tools in place at the time and under the circumstances identified.

This is a true and correct copy of the
Paramedic Pre-Hospital Medical Protocols and Standing Orders
Of
American Medical Response --- Dallas / Collin County / Fairview

A handwritten signature in black ink, reading "Robert E. Suter". The signature is written in a cursive style with a large, looping initial "R".

Robert E. Suter, D.O., M.H.A., FACEP

Medical Director

January 1, 2010

MEDICAL CONTROL PLAN

Philosophy: The off and on-line Medical Control Philosophy is to maximize patient care delivery while respecting that the pre hospital phase is only a part of a care continuum which will be decided by the patient subsequent physicians or other caregivers. Therefore, involving accepting physicians in the pre-hospital decision making process ensures the best coordination of care and satisfaction with our care. All patient care is initiated using off-line medical direction by protocol. Off-line medical control should allow crews to address 95% of patient care issues.

If it is necessary to activate on-line medical control:

1. Contact the Receiving Hospital ED for further orders. (If on-line medical control is needed for a transfer from a facility, attempt to contact patient's private physician.)
2. If the Receiving Hospital ED or patients physician are unhelpful, or issues remain, contact on-duty AMR Medical Director through Dispatch.

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DYSRHYTHMIAS

1.1 ASYSTOLE

Asystole is defined as the complete absence of electrical activity in the myocardium. Usually this represents extensive myocardial ischemia due to prolonged periods of inadequate myocardial perfusion with a very grim prognosis. Most often, asystole represents a confirmation of death as opposed to a dysrhythmia requiring treatment. However, once asystole has been recognized, the team leader must consider the differential diagnosis while beginning and maintaining CPR, Endotracheal Intubation, Epinephrine and Atropine as one would treat PEA.

In general, atropine is given to all asystolic patients but only to those patients with PEA who have bradydysrhythmias. Routine “shocking” of asystole should be discouraged. Rescuers should confirm asystole when faced with a “flat line” on the monitor. The use of transcutaneous pacing should be considered in those patients where the device can be applied very early in the course of the patient’s management: the most common salvageable situations with the use of TCP include the following: bradysystolic arrest, Stokes-Adams attacks, asystole due to vagal discharge, or myocardial “stunning” following prompt defibrillation. One should always consider the possible causes of asystole and manage accordingly: drug overdose, hypokalemia, hypoxemia, hypothermia, pre-existing acidosis.

Note: See Appendix regarding DNR ORDER VERIFICATION PROTOCOL if applicable.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Assess for possible spinal injury and consider full immobilization.
3. Determine unresponsiveness, absence of breathing and pulselessness.
4. Maintain an open airway; remove secretions, vomitus, and initiate CPR with supplemental high concentration of oxygen.
5. Continually assess Level of Consciousness, ABCs and Vital Signs.
6. Obtain appropriate history related to event, including recent and Past Medical History, Medications, Drug Allergies and Substance Abuse including possible ingestion or overdose of medications, specifically calcium channel blockers, beta-blockers and / or digoxin preparations.
7. Every effort should be made to determine the possible causes of asystole in the patient.

NOTE: Inasmuch as Basic & Intermediate-EMTs are not expected to recognize the presence of Asystole, check patient for pulselessness and manage according to the following protocol:

BASIC TREATMENT PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Determine unresponsiveness and cardiopulmonary arrest.
- c. Insert oral or nasal pharyngeal airway and initiate CPR.
- d. Administer high concentration of oxygen with assisted ventilations

INTERMEDIATE PROCEDURES

- e. Activate Paramedic Unit, if deemed necessary and if available.
- f. Resume CPR when appropriate.
- g. Attach AED and follow prompts.
- h. Initiate transport as soon as possible with or without ALS.
- i. Initiate IV Normal Saline KVO.

PARAMEDIC PROCEDURES

- j. Initiate transport as soon as possible with or without ALS.
- k. Attach cardiac monitor and confirm asystole in 2 leads.
- l. Consider immediate Transcutaneous Pacing if available at 80 bpm.
- m. Epinephrine (1:10,000) 1 mg IV, EJ or IO after 2 peripheral attempts push every 3-5 minutes. Consider 3-5 mg if arrest is from beta blocker overdose or anaphylaxis.

- n. Sodium Bicarbonate 1mEq/kg IV, EJ or IO.
- o. After two peripheral attempts After 15 minutes of BLS resuscitation. Flush IV line prior to administering.
- p. Obtain a 12-Lead ECG, if pulse return and patient condition allows.
- q. Initiate transport as soon as possible.
- r. If patient has end stage renal disease, give 10 ml of Calcium Chloride IV push after first Epinephrine.
- s. Special Considerations (OPTIONAL):
 - 300 cc Normal Saline fluid bolus.
 - Insert Nasal Gastric tube to prevent gastric distention.
 - Hypothermia management per protocol.
 - Drug overdose management per protocol.
 - Altered mental status per protocol.

Contact MEDICAL CONTROL for additional orders outside this protocol.
Notify receiving Hospital.

1.2 ATRIAL FIBRILLATION

Atrial fibrillation is a totally chaotic activity of the atrial muscle fibers manifested by an irregularly irregular rate. In addition, since the atria are fibrillating, there is incomplete (or non-existent) emptying of these chambers and a loss of as much as 20% of the cardiac output. The rate can be variable, itself a problem, but in addition the loss of the "atrial kick" may, in and of itself, result in hypotension or other signs of cardiovascular compromise. Atrial Fibrillation is often the result of Acute Myocardial Infarction, hypoxia, pulmonary embolus, electrolyte abnormalities, toxic effects due to medication (particularly digoxin or quinidine), and thyrotoxicosis. New onset Atrial Fibrillation can indicate a silent ischemic event, particularly in the elderly.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Determine patient's hemodynamic stability and symptoms. Assess Level of Consciousness, ABCs, and Vital Signs.
3. Maintain open airway and assist ventilations as needed.
4. Administer oxygen by nasal cannula or mask based upon patient's condition.
5. Obtain appropriate history related to event, including Past Medical History, Medications, Drug Allergies, and Substance abuse.
6. Monitor patient's EKG and vital signs.
7. Most patients tolerate Atrial Fibrillation well; however, some patients may require emergent treatment. Emergent treatment should be administered when the Atrial Fibrillation results in an unstable condition. Signs and symptoms may include: chest pain, shortness of breath, decreased level of consciousness, systolic BLOOD PRESSURE less than 90, HEART RATE greater than 150, pulmonary congestion, congestive heart failure and acute myocardial infarction.

NOTE: Inasmuch as Basic and Intermediate EMTs are not expected to recognize the presence of Atrial Fibrillation, check patient for a rapid and /or irregular pulse and possible complaint of palpitations. If present, treat according to the following Chest Pain protocol.

BASIC TREATMENT PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway and assist ventilations as needed.
- c. Administer oxygen by nasal cannula or mask based upon patient's condition.
- d. Attach AED and follow prompts.
- e. Activate Paramedic intercept, if deemed necessary and if available.
- f. Initiate transport as soon as possible with or without ALS.

INTERMEDIATE TREATMENT PROCEDURES

- g. Provide advanced airway management if indicated (patient's condition deteriorates).
- h. Initiate IV Normal Saline (KVO) enroute to hospital.
- i. Initiate transport as soon as possible with or without Paramedics.
- j. Initiate IV Normal Saline (KVO).

PARAMEDIC TREATMENT PROCEDURES

- k. Vagal Maneuvers: Valsalva's and/or cough.
- l. If the patient's Systolic BLOOD PRESSURE is unstable (less than 90) and PULSE RATE is greater than 150: Synchronized cardioversion at 100J 200J 300J 360 J. Check rhythm and pulse between each attempted cardioversion.
- m. If Cardioversion is warranted, consider administration of either of the following for sedation: Valium: if patient < 70 kg: 2.5 mg SLOW IV Push, if patient > 70 kg: may repeat as tolerated or Morphine Sulfate 2 mg SLOW IV Push; repeat dose up to 10 mg as tolerated.
- n. Initiate transport as soon as possible.

Notify receiving hospital; advise if new onset vs. greater than 48 hours.

Contact MEDICAL CONTROL. The following may be ordered.

- Administer IV Normal Saline 250cc bolus (es) or titrate IV to patient's hemodynamic status.
- Labetalol (Trandate) 15 mg slow I.V.P. over 2 minutes.
- Synchronized cardioversion at 360 J. Check rhythm and pulse between each attempted cardioversion.
- If Cardioversion is warranted, consider administration of either of the following for sedation:
 - ❖ **Valium: if patient < 70 kg: 2.5 mg SLOW IV Push, if patient > 70 kg: may repeat as tolerated:**
or
 - ❖ **Morphine Sulfate 2 mg SLOW IV Push; repeat dose up to 10 mg total as tolerated.**

1.3 ATRIAL FLUTTER

Atrial Flutter is an "unstable" rhythm that will almost always deteriorate into Atrial Fibrillation or return to sinus rhythm or another form of supraventricular tachycardia. For this reason, Atrial Flutter demands close clinical attention, especially in patients with ischemic heart disease. Atrial Flutter may produce a very rapid ventricular response. The rate can be variable and may result in hypotension or other signs of cardiovascular compromise. Atrial Flutter is often the result of Acute Myocardial Infarction, hypoxia, pulmonary embolus, electrolyte abnormalities, toxic effects due to medication (particularly digoxin or quinidine), and thyrotoxicosis. New onset Atrial Flutter can indicate a silent ischemic event, particularly in the elderly.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Determine patient's hemodynamic stability and symptoms. Assess Level of Consciousness, ABCs, and Vital Signs.
3. Maintain open airway and assist ventilations as needed.
4. Administer oxygen by nasal cannula or mask based upon patient's condition.
5. Obtain appropriate history related to event, including Past Medical History, Medications, Drug Allergies, and Substance abuse.
6. Monitor patient's EKG and vital signs.
7. Most patients tolerate Atrial Flutter well; however, some patients may require emergent treatment. Emergent treatment should be administered when the Atrial Flutter results in an unstable condition. Signs and symptoms may include: chest pain, shortness of breath, decreased level of consciousness, systolic BLOOD PRESSURE less than 90, HEART RATE greater than 150, pulmonary congestion, congestive heart failure and acute myocardial infarction.

NOTE: Inasmuch as Basic and Intermediate EMTs are not expected to recognize the presence of Atrial Fibrillation, check patient for a rapid and /or irregular pulse and possible complaint of palpitations. If present, treat according to the following Chest Pain protocol.

BASIC TREATMENT PROCEDURES

- o. Maintain universal blood and body fluid precautions.
- p. Maintain an open airway and assist ventilations as needed.
- q. Administer oxygen by nasal cannula or mask based upon patient's condition.
- r. Attach AED and follow prompts.
- s. Activate Paramedic intercept, if deemed necessary and if available.
- t. Initiate transport as soon as possible with or without ALS.

INTERMEDIATE TREATMENT PROCEDURES

- u. Provide advanced airway management if indicated (patient's condition deteriorates).
- v. Initiate IV Normal Saline (KVO) enroute to hospital.
- w. Initiate transport as soon as possible with or without Paramedics.
- x. Initiate IV Normal Saline (KVO).

PARAMEDIC TREATMENT PROCEDURES

- y. Vagal Maneuvers: Valsalva's and/or cough.
- z. If the patient's Systolic BLOOD PRESSURE is unstable (less than 90) and PULSE RATE is greater than 150: Synchronized cardioversion at 100J 200J 300J 360 J. Check rhythm and pulse between each attempted cardioversion.
- aa. If Cardioversion is warranted, consider administration of either of the following for sedation: Valium: if patient < 70 kg: 2.5 mg SLOW IV Push, if patient > 70 kg: may repeat as tolerated or Morphine Sulfate 2 mg SLOW IV Push; repeat dose up to 10 mg as tolerated.
- bb. Initiate transport as soon as possible.

Notify receiving hospital; advise if new onset vs. greater than 48 hours.

Contact MEDICAL CONTROL. The following may be ordered.

- Administer IV Normal Saline 250cc bolus(es) or titrate IV to patient's hemodynamic status.
- Labetalol(Trandate) 15 mg slow I.V.P. over 2 minutes.
- Synchronized cardioversion at 360 J. Check rhythm and pulse between each attempted cardioversion.
- If Cardioversion is warranted, consider administration of either of the following for sedation:
 - ❖ **Valium: if patient < 70 kg: 2.5 mg SLOW IV Push, if patient > 70 kg: may repeat as tolerated:**
or
 - ❖ **Morphine Sulfate 2 mg SLOW IV Push; repeat dose up to 10 mg total as tolerated.**

1.4 BRADYDYSRHYTHMIAS

Pathologically slow heart rates usually result from hypoxemia, acidosis, hypothermia and late shock. The following can all result in Bradycardia: vagal stimulation, intrinsic cardiac conduction system disease, acute myocardial infarction resulting in heart rates from sinus bradycardia to complete, "third degree" heart blocks. Bradycardia may be a late finding in cases of raised intracranial pressure (ICP) due to head trauma, infection, hyperglycemia and previous neurosurgery. Rarely, ingestion can cause bradycardia. Pre-hospital treatment is directed to the symptomatic patient only. In treating bradycardia, as in treating tachycardia the admonition "treat the patient, not the monitor" should be emphasized. REMINDER: EMS providers must be aware of the concept of "relative" bradycardia, i.e., the patient's pulse rate in relation to the patient's BLOOD PRESSURE and clinical condition.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway; remove secretions, vomitus, and assist ventilations as needed.
3. Administer oxygen by nasal cannula or mask based upon patient's condition.
4. Determine patient's hemodynamic stability and symptoms. Continually assess level of Consciousness, ABCs and Vital Signs including capillary refill.
5. Obtain appropriate history related to event, including recent and Past Medical History, Medications,
6. Drug Allergies and Substance Abuse including possible ingestion or overdose of medications, specifically calcium channel blockers, beta-blockers, and digoxin preparations.
7. Symptomatic patients will have abnormally slow heart rates accompanied by decreased level of consciousness, weak and thready pulses, delayed capillary refill, or hypotension (systolic BLOOD PRESSURE less than 90).

NOTE: Inasmuch as Basic and Intermediate EMTs are not expected to recognize the presence of Bradydysrhythmias, check patient for a slow and /or irregular pulse. If present, treat according to the following Chest Pain protocol.

BASIC TREATMENT PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway. This may include repositioning of the airway, suctioning to remove secretions and/or vomitus, or use of airway adjuncts as indicated. Assist ventilations as needed.
- c. Administer oxygen by nasal cannula or by non-rebreather mask.
- d. If pulse <60 and patient is symptomatic, place patient supine and elevate legs.
- e. Attach AED and follow prompts.
- f. Activate Paramedic intercept, if deemed necessary and if available.
- g. Initiate transport as soon as possible with or without ALS.

INTERMEDIATE PROCEDURES

- h. Advanced Airway Management if indicated.
- i. IV Normal Saline (KVO)
- j. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- k. IV Normal Saline (KVO). If hypovolemia is suspected, administer a 250 cc Normal saline Bolus and titrate IV accordingly.

If patient is symptomatic as defined in assessment priorities:

- l. Atropine sulfate 0.5 mg to 1.0 mg IV Push every three (3) to five (5) minutes up to total dose of 3 mg.
- m. Transcutaneous Pacing (TCP) if indicated at an initial rate of 80 bpm as first line-therapy.

n. Dopamine 5mcg/kg to 20mcg/kg per minute.

If TCP is warranted, consider administration of either of the following for sedation:

- ❖ **Valium 2.5 mg SLOW IV Push, repeat as tolerated.**
- ❖ **Morphine Sulfate 2 mg SLOW IV Push repeated up to 10 mg as tolerated.**

Contact MEDICAL CONTROL. The following may be ordered:

- ❖ Additional Valium or Morphine Sulfate for sedation, 2 mg increments
- ❖ Additional Fluid Boluses of Normal Saline as indicated.
- ❖ Glucagon 1.0 to 2.0 mg IM, IV for suspected beta-blocker toxicity.

1.5 PREMATURE VENTRICULAR COMPLEXES (PVCs)

Premature ventricular contractions (PVC's) are depolarization's that arise in either ventricle prior to the next expected sinus beat. The subsequent rhythm is irregular with a shorter than normal R-R interval separating the PVC from the preceding normal beat. P waves are absent before the PVC, and the QRS complex is distorted, wide and often bizarre in appearance. PVC's can lead to ventricular tachycardia and ventricular fibrillation. They are of particular concern in patients with chest pain of cardiac etiology.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed.
3. Administer oxygen by nasal cannula or mask based upon patient's condition.
4. Obtain appropriate history related to event, including Past Medical History, Medications, Drug Allergies and Substance Abuse.
5. Monitor patient's ECG and vital signs.

NOTE: Inasmuch as Basic and Intermediate EMTs are not expected to recognize the presence of PVCs: check patient for an irregular pulse and possible complaint of palpitations. If present, treat according to the following Chest Pain protocol.

BASIC / TREATMENT PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway and assist ventilations as needed.
- c. Administer oxygen by nasal cannula or mask based upon patient's condition.
- d. Attach AED and follow prompts.
- e. Activate ALS intercept, if deemed necessary and if available.
- f. Initiate transport as soon as possible with or without ALS.

INTERMEDIATE TREATMENT PROCEDURES

- g. Provide advanced airway management if indicated (patient's condition deteriorates).
- h. Initiate IV Normal Saline (KVO) enroute to hospital.
- i. Initiate transport as soon as possible with or without Paramedics.
- j. Attach cardiac monitor / dysrhythmia Recognition.

PARAMEDIC TREATMENT PROCEDURES

- k. Initiate IV Normal Saline (KVO).
- l. Determine if PVCs are present and if patient is **symptomatic**:
- m. related to an ongoing cardiac ischemic event (i.e., chest pain, syncope, coronary artery disease) Frequent (> 6/min.) multifocal exhibiting the R on T phenomenon occurring in patterns (e.g., bigeminy, trigeminy, etc.).
- n. If the heart rate is less than 50/min. and accompanied by a systolic BLOOD PRESSURE less than 90 and/or other associated signs of shock or ischemia are present, administer Amiodarone 150 mg over 10 min repeat 150 mg in 5 min.
- o. If patient is symptomatic and is not bradycardic, the administration of Lidocaine may be considered. Lidocaine 0.5 mg/kg-1.0 mg/kg IV push; may repeat to a total dose of 3 mg/kg. NOTE: Lidocaine is not recommended as a prophylactic therapy. Reduce dosage by 50% if patient > 70 years of age or has known liver disease.
- p. Lidocaine Maintenance Infusion 2 mg/min. - 4 mg/min.

MEDICAL CONTROL may order:

- ❖ Lidocaine 0.5 mg/kg-1.0 mg/kg IV push; may repeat to a total dose of 3 mg/kg. (if not performed on standing orders)
- ❖ Lidocaine Infusion 2 mg/min.- 4 mg/min. (if not performed on standing orders)
- ❖ Amiodorone may repeat at 150 mg in 5 min.

Initiate transport as soon as possible.
Notify receiving hospital.

1.6 PULSELESS ELECTRICAL ACTIVITY

Pulseless Electrical Activity (PEA) incorporates the following rhythm disturbances: electro-mechanical dissociation (EMD), pseudo-EMD, idioventricular rhythms, ventricular escape rhythms, post defibrillation idioventricular rhythms, and bradysystolic rhythms. The absence of a detectable pulse and the presence of some type of electrical activity other than Ventricular Tachycardia or Ventricular Fibrillation define this group of dysrhythmias. These rhythms can represent the last electrical activity of a dying myocardium, or they may indicate specific critical rhythm disturbances. Broad complex PEA can appear as a result of severe hyperkalemia, hypothermia, hypoxia, or preexisting acidosis. Overdoses of tricyclic antidepressant, beta-blockers, calcium channel blockers and digitalis can produce PEA with specific interventions possible. The one major action that must be taken in the presence of PEA is to search for possible causes especially when you suspect the following conditions resulting in electrical activity without measurable BLOOD PRESSURE: hypovolemia, cardiac tamponade, tension pneumothorax, massive pulmonary embolism.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Determine unresponsiveness, absence of breathing and pulselessness.
3. Maintain an open airway; remove secretions, vomitus, and initiate CPR with supplemental high concentration of oxygen.
4. Continually assess Level of Consciousness, ABCs and Vital Signs including capillary refill.
5. Obtain appropriate history related to event, including recent and Past Medical History, Medications, Drug Allergies, Substance Abuse including possible ingestion or overdose of medications, specifically calcium channel blockers, beta-blockers, and digoxin preparations.
6. Every effort should be made to determine the possible cause(s) for PEA including medical and/or traumatic etiologies.

BASIC TREATMENT PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Determine unresponsiveness and cardiopulmonary arrest.
- c. Initiate CPR
- d. Administer high concentration of oxygen with assisted ventilations.
- e. Attach AED and follow prompts.
- f. Activate ALS intercept, if deemed necessary and if available.
- g. Initiate transport as soon as possible with or without ALS

INTERMEDIATE TREATMENT PROCEDURES

- h. Provide advanced airway management.
- i. Initiate IV Normal Saline (KVO) enroute to hospital.
- j. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC TREATMENT PROCEDURES

- k. Initiate IV, EJ or IO after 2 peripheral attempts, Normal Saline. If hypovolemia component is suspected, administer 250 cc fluid bolus and titrate IV accordingly.

Consider underlying causes for PEA:

Hypoxia	Tablets
Hydrogen Ion (Acidosis)	Tamponade
Hypovolemia	Tension Pneumothorax
Hypothermia	Thrombus (MI)
Hypokalemia	Thrombus (PE)
Hypoglycemia	Trauma

hypothermia: initiate 2 large bore IVs (warm) normal saline

drug overdose: see specific toxicology protocol

pneumothorax: perform needle chest decompression

hyperkalemia: if patient has known end stage renal disease administer 10 ml calcium chloride IV push.

If cause is unknown and PEA persists:

- i. Epinephrine 1:10,000 1 mg IV, EJ or IO after 2 peripheral attempts Push every 3-5 minutes. Consider 3-5 mg if arrest is from beta blocker overdose or anaphylaxis repeat every 3-5 minutes as long as patient remains pulseless
- m. If absolute bradycardia (less than 60 Beats per minute) or relative bradycardia, administer Atropine 1 mg IV, EJ or IO after 2 peripheral attempts. Push every 3-5 minutes to a total of 3mg.
- n. 250 cc Normal Saline fluid bolus.

Special Considerations (OPTIONAL):

- If situation is a CPR, consider inserting a nasal gastric tube to prevent gastric distention.
- Consider transcutaneous cardiac pacing if available.
- RAPID SUPRAVENTRICULAR RHYTHM >150 BPM WITHOUT DETECTABLE PULSE: Immediate synchronized cardioversion at 100J 200J 300J 360 J.
- Contact Medical Control for further orders or therapies.

Initiate transport as soon as possible.
Notify receiving hospital.

1.7 SUPRAVENTRICULAR TACHYCARDIA

Supraventricular Tachycardia (SVT) applies to all tachyarrhythmias in which the pacemaker site is originating above the ventricles. Examples of these are Paroxysmal Supraventricular Tachycardia (PSVT), Atrial Fibrillation, and Atrial Flutter with a rapid ventricular response and Junctional Tachycardia with a rapid ventricular response. Generally these groups of tachycardias identify narrow complex rhythm disturbances and should not be confused with Sinus Tachycardia, which is treated quite differently. Narrow complex SVT with heart rates greater than 150/min. require immediate intervention under most circumstances.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain open airway and assist ventilations as needed.
3. Determine patient's hemodynamic stability and symptoms. Assess Level of Consciousness, ABCs, and Vital signs.
4. Administer oxygen by nasal cannula or mask based upon patient's condition
5. Obtain appropriate history related to event, including Past Medical History, Medications, Drug Allergies, and Substance abuse.
6. Monitor patient's EKG and vital signs.
7. Most patients tolerate SVT well; however, some patients may require emergent treatment. Emergent treatment should be administered when the SVT results in an unstable condition. Signs and symptoms may include: chest pain, shortness of breath, decreased level of consciousness, systolic BLOOD PRESSURE less than 90, HEART RATE greater than 150, pulmonary congestion, congestive heart failure and acute myocardial infarction.

NOTE: Inasmuch as Basic and Intermediate EMTs are not expected to recognize the presence of SVT, check patient for a rapid and /or irregular pulse and possible complaint of palpitations. If present, treat according to the following Chest Pain protocol.

BASIC TREATMENT PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway and assist ventilations as needed.
- c. Administer oxygen by nasal cannula or mask based upon patient's condition.
- d. Attach AED and follow prompts.
- e. Activate Paramedic intercept, if deemed necessary and if available.
- f. Initiate transport as soon as possible with or without ALS.

INTERMEDIATE PROCEDURES

- g. Provide advanced airway management if indicated (patient's condition deteriorates).
- h. Initiate IV Normal Saline (KVO) enroute to hospital.
- i. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- j. Cardiac monitor / dysrhythmia recognition.
- k. Initiate IV Normal Saline (KVO). If hypovolemia component is suspected, administer 250 cc fluid bolus (es) and titrate IV accordingly.
- l. Vagal Maneuvers: Valsalva's and/or cough. If no response to Vagal maneuvers
- m. Adenosine 12 mg rapid IV push followed by a rapid 10 mL flush of NS
- n. Second dose of Adenosine 12 mg may be administered in 1-2 minutes
- o. If Vagal maneuvers and maximal Adenosine doses fail to convert SVT, the following may be administered as indicated
- p. If Systolic BLOOD PRESSURE is unstable (less than 90): Synchronized cardioversion at 100J 200J 300J 360 J. Check rhythm and pulse between each attempted cardioversion.
- q. If cardioversion is warranted, consider administration of any of the following for sedation:

- Valium: if patient < 70 kg: 2.5 mg SLOW IV Push, if patient > 70 kg: may repeat as tolerated or
- Morphine Sulfate 2 mg slow IV push may repeat up to total of 10 mg as tolerated

Contact MEDICAL CONTROL

- Administer IV Normal Saline 250 cc bolus (es) or titrate IV to patient's hemodynamic status.
- Labetalol(Trandate) 15 mg slow I.V.P over 2 minutes
- Amiodarone 150 mg over 10 min.
- Synchronized cardioversion at 100J 200J 300J 360 J. Check rhythm and pulse between each attempted cardioversion.
- If Cardioversion is warranted, consider administration of either of the following for sedation:
 - ❖ **Valium: if patient < 70 kg: 2.5 mg SLOW IV Push, if patient > 70 kg: may repeat as tolerated or**
 - ❖ **Morphine Sulfate 2mg SLOW IV PUSH, may repeat up to total 10 mg as tolerated.**

Initiate transport as soon as possible.
Notify receiving hospital.

1.8 VENTRICULAR FIBRILLATION / PULSELESS VENTRICULAR TACHYCARDIA

The need for early defibrillation is clear and should have the highest priority. Since these patients will all be in cardiopulmonary arrest, adjunctive equipment should not divert attention or effort from Basic Cardiac Life Support (BCLS) resuscitative measures, early defibrillation and Advanced Cardiac Life Support (ACLS). Remember: rapid defibrillation and early ACLS is the major determinant of survival.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Determine unresponsiveness, absence of breathing and pulselessness.
3. Consider all potential non-cardiac causes (i.e. electric shock and remove from danger).
4. Begin CPR and assist ventilations while awaiting defibrillator.
5. Basic and/or Intermediate providers should activate a paramedic intercept system (ACLS) as soon as possible, if available.

NOTE: Inasmuch as Basic & Intermediate-EMTs are not expected to recognize the presence of V-Fib and Pulseless V-Tach, check patient for pulselessness and manage according to the following protocol:

BASIC TREATMENT PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Determine unresponsiveness and cardiopulmonary arrest.
- c. Initiate CPR
- d. Administer high concentration of oxygen with assisted ventilations using an appropriate BLS airway adjunct.
- e. Attach AED and follow prompts.
- f. Activate Paramedic Unit, if deemed necessary and if available.
- g. Perform CPR
- h. Initiate transport as soon as possible with or without ALS.

INTERMEDIATE PROCEDURES:

- i. Provide advanced airway management.
- j. Initiate IV Normal Saline KVO.
- k. Initiate transport as soon as possible with or without ALS.

PARAMEDIC PROCEDURES:

- l. Initiate CPR unless immediate defibrillation is available.
- m. Defibrillate at 360 J as indicated.
- n. Resume CPR if indicated.
- o. Provide advanced airway management.
- p. Initiate IV, EJ or IO after 2 peripheral attempts Normal Saline KVO.
- q. Administer Epinephrine (1:10,000) 1 mg IV, EJ or IO push; repeat every 3 - 5 minutes.
- r. Defibrillate at 360J within 30-60 seconds if VENTRICULAR FIBRILLATION/ VENTRICULAR TACHYCARDIA is persistent:
- s. Resume CPR.
- t. Administer Lidocaine 1.5 mg/kg; subsequent dosage: 0.5 to 0.75 mg/kg every 3 - 5 minutes to a total dose of 3 mg/kg. OR Amiodorone 300 mg IV. May repeat at 150mg in 5 min. OR Magnesium sulfate 50% 1-2 g slow IV at 1 g/min. May repeat same dose every 5 minutes until a maximum of 4g is reached.
- u. Defibrillate 30-60 seconds after each dose of medication (pattern should be drug-shock, drug-shock). If VENTRICULAR FIBRILLATION/VENTRICULAR TACHYCARDIA is persistent:
- v. Defibrillate at 360 J.
- w. Resume CPR. If VENTRICULAR FIBRILLATION/VENTRICULAR TACHYCARDIA is persistent: repeat dose of epinephrine and defibrillate.
- x. If dysrhythmia is successfully converted with Lidocaine consider IV infusion of Lidocaine 2-4 mg/min and follow Post-Resuscitation Care protocol.

Special Considerations (OPTIONAL):

- If situation is a CPR, consider inserting a nasal gastric tube to prevent gastric distention.
- Hypothermia management per protocol.
- Drug overdose management per protocol.

MEDICAL CONTROL for additional orders outside this protocol.

If dysrhythmia is successfully converted with Amiodarone contact Medical Control for infusion rate of .5 mg/min.

Initiate transport as soon as possible.
Notify receiving hospital.

1.9 VENTRICULAR TACHYCARDIA WITH PULSES

Ventricular tachycardia (VENTRICULAR TACHYCARDIA) represents a grave, life threatening situation in which the patient requires immediate treatment. The diagnosis is suggested anytime three or more premature ventricular beats occur in succession. With ventricular tachycardia, cardiac output may drop dramatically or be absent altogether and progress into ventricular fibrillation. In VENTRICULAR TACHYCARDIA, the patient is considered to be either:

1. PULSELESS: in essence in Cardiopulmonary Arrest.
2. Stable: presents with pulses, conscious, without chest pain, Systolic BLOOD PRESSURE greater than 90.
3. Unstable: presents with pulses, but is symptomatic: chest pain, palpitations, shortness of breath (SOB), possible signs and symptoms of congestive heart failure (CHF), hypotension (systolic BLOOD PRESSURE less than 90), decreasing level of consciousness (LOC) or unresponsive.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Determine patient's hemodynamic stability and symptoms. Assess LOC, ABCs and Vital Signs.
3. Maintain an open airway and assist ventilations as needed.
4. Administer high concentration of oxygen by non-rebreather mask.
5. Obtain appropriate history related to event, including Past Medical History, Medications, Drug Allergies and Substance Abuse.

NOTE: In as much as Basic and Intermediate EMTs are not expected to recognize the presence of Ventricular Tachycardia: check patient for a rapid and /or irregular pulse and possible complaint of palpitations. If present, treat according to the following Chest Pain protocol.

BASIC TREATMENT PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway. This may include repositioning of the airway, suctioning, or use of airway adjuncts (oropharyngeal airway, nasopharyngeal airway) as indicated and assist ventilations as needed.
- c. Administer high concentration of oxygen.
- d. Attach AED and follow prompts.
- e. Activate Paramedic intercept, if deemed necessary and if available.

INTERMEDIATE TREATMENT PROCEDURES

- f. Initiate transport as soon as possible with or without ALS.
- g. Provide advanced airway management if indicated (patient's condition deteriorates).
- h. Initiate IV Normal Saline (KVO) enroute to hospital.
- i. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC TREATMENT PROCEDURES

- j. Initiate IV Normal Saline (KVO)
- k. If Systolic BLOOD PRESSURE is unstable (less than 90): Synchronized cardioversion at 100J 200J 300J 360 J. Check rhythm and pulse between each attempted cardioversion.

If cardioversion is warranted, consider administration of any of the following for sedation:

- Valium: if patient < 70 kg: 2.5 mg SLOW IV Push, if patient > 70 kg: may repeat as tolerated or
 - Morphine Sulfate 2 mg IV Push may repeat up to 10 mg as tolerated.
- l. Administration of Lidocaine 1-1.5 mg/kg IV push

- m. Repeat Lidocaine administration 0.5 -1.5 mg/kg IV push every 5-10 minutes, to a maximum total dose 3 mg/kg. OR
- n. Amiodorone 150 mg IV push over 10 minutes.
- o. Magnesium sulfate 50% 1-2 g slow IV at 1 g/min. May repeat same dose every 5 minutes until a maximum of 4 g is reached.

Contact MEDICAL CONTROL. The following may be ordered.

- **Further attempts at cardioversion as indicated.**

Initiate transport as soon as possible.
Notify receiving hospital.

1.10 POST-RESUSCITATION CARE

The immediate goals of post resuscitation care are to (1) provide cardio respiratory support to optimize tissue perfusion, especially to the brain; (2) transport the patient to the hospital emergency department and then to an appropriately equipped critical care unit; (3) attempt to identify the precipitating causes of the arrest and (4) institute measures such as anti-arrhythmic therapy to prevent recurrence. Determine patient's hemodynamic stability and symptoms. Cool the patient by whatever means, cold IV fluids, axillary and groin ice packs. A patient's response to resuscitation can vary widely. They may range from being alert with adequate spontaneous respirations and hemodynamic stability to remaining comatose and apneic and/or having unstable circulation. Mandatory careful and frequent repeated assessments to establish cardiovascular, respiratory and neurological status are required.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Determine patient's hemodynamic stability and symptoms. Assess Level of Consciousness, ABCs and Vital Signs.
3. Maintain an open airway and assist ventilations as needed.
4. Administer high concentration of oxygen by non-rebreather mask.
5. Obtain appropriate history related to the event, including Past Medical History, Medications, Drug Allergies and Substance Abuse.
6. Monitor patient's EKG and vital signs.
7. Identification of complications, such as rib fractures, hemo-pneumothorax, pericardial tamponade, intra-abdominal trauma and improperly placed endotracheal tube.

BASIC TREATMENT PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway, assist ventilations as needed.
- c. Administer high concentration of oxygen by non-rebreather mask or bag-valve-mask based upon patient's condition.
- d. Consider potential need for further CPR and/or defibrillation with AED for recurrent V-Fib/Ventricular Tachycardia.
- e. Activate Paramedic intercept, if available.
- f. Initiate transport as soon as possible, with or without ALS.

INTERMEDIATE TREATMENT PROCEDURES

- g. Provide advanced airway management if indicated.
- h. Initiate/maintain IV Normal Saline (KVO).
- i. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC TREATMENT PROCEDURES

- j. Attach cardiac monitor / dysrhythmia Recognition. Manage dysrhythmias according to specific protocols.
- k. Consider the potential need for further CPR and/or defibrillation.
- l. If the cardiac arrest was the result of Ventricular Fibrillation or Ventricular Tachycardia and no anti-arrhythmic treatment was given, administer a Lidocaine bolus of 1.0 -1.5 mg/kg followed by maintenance infusion of 2 mg-4 mg/minute unless contraindicated.
- m. If conversion from Lidocaine begin continuous infusion of 2-4 mg/min.
- n. If conversion was from Magnesium Sulfate, administer Lidocaine as outlined above
- o. After 15 minutes of BLS resuscitation administer Sodium Bicarbonate 1 mEq/kg.
- p. If conversion was from Amiodarone, contact Medical Control.
- q. Dopamine 5-20 mcg/kg/min IV infusion for hypoperfusion, titrated to maintain a stable BP >100 mmHg.
- r. Ice packs placed in axilla and groin, and around IV fluid bags

All other standing order treatment modalities as indicated per protocol for specific potential cause of initial cardiopulmonary arrest.

Initiate transport as soon as possible.

Continue to monitor vital signs.

Notify receiving hospital.

REMEMBER: This is an extremely unstable period. The patient should be monitored closely and frequently. Recurrent dysrhythmias, hypotension and re-arrest are not uncommon occurrences.

ENVIRONMENTAL EMERGENCIES

2.1 DROWNING AND NEAR- DROWNING EMERGENCIES

Drowning is defined as death that is the result of asphyxia due to airway obstruction secondary to laryngospasm and/or aspiration of liquid into the lungs after submersion and occurs within twenty-four (24) hours after submersion. Near-Drowning is defined as a submersion episode that results in survival (full or partial recovery) or temporary survival that ultimately leads to death after a period of twenty-four (24) hours.

Drowning begins with accidental or intentional submersion in any liquid, however, fresh and salt water drowning are the most common. Fresh-water drowning/near-drowning and salt-water drowning/near-drowning have different physiologic mechanisms leading to asphyxia, however, pre-hospital management of these patients is the same: treatment must be directed toward correcting severe hypoxia.

Factors affecting survival include the patient's age, length of time of submersion, general health of the victim, type and cleanliness of liquid medium and water temperature that may contribute to the effectiveness of the mammalian diving reflex. (decreased respirations, decreased heart rate and vasoconstriction with maintenance of blood flow to the brain, heart and kidneys)

SPECIAL CONSIDERATIONS:

- A. The cold water drowning/near-drowning victim is not dead until he/she is warm and dead unless the patient has been submerged greater than one (1) hour. Near-drowning victims may exhibit delayed pulmonary complications up to 24- 36 hours after the submersion incident. This is especially true concerning salt-water exposure. Patients who have had a true near-drowning exposure should seek/receive medical attention and be informed as to the potential delayed complications.
- B. All drowning/near-drowning victims with suspected barotrauma / decompression sickness should be transported in the left lateral Trendelenburg position to prevent any emboli in the ventricles from migrating to the arterial system. These patients also should be candidates for hyperbaric chamber therapy.

ASSESSMENT / TREATMENT PRIORITIES

1. Assure scene and rescuer safety. Call appropriate public service agencies: fire, rescue, or police teams, including scuba teams to properly stabilize the scene and safely rescue the victim(s) from the source of submersion.
2. Maintain universal blood and body fluid precautions.
3. Maintain an open airway immediately upon obtaining access to patient. Assure spinal stabilization and immobilization if indicated (i.e., unwitnessed event, unconscious patient, or mechanism of injury). Assist ventilations as needed.
4. Once the patient is rescued and is placed in a safe environment, rescuers may administer specific emergency care such as: suctioning the airway and use of airway adjuncts as indicated and the administration of high flow oxygen by non-rebreather mask or bag valve mask as determined by patient's condition.
5. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs. Treat all life threatening conditions as they become identified. Initiate CPR when appropriate.
6. Obtain appropriate history related to event (length of exposure, temperature of liquid medium, potential for injury), including Past Medical History, Medications, Drug Allergies, and Substance abuse.
7. If suspected hypothermia: see Hypothermia / Cold Emergencies protocol.
8. If near drowning incident involves a scuba diver, suggesting barotrauma, consider utilization of hyperbaric treatment facility and follow regional point-of-entry protocol.
9. If the scene time and/or transport time will be prolonged, and a landing site is available, consider transport by air ambulance from the scene to an appropriate Trauma Center. See HELICOPTER protocol.

TREATMENT / BASIC PROCEDURES

- a. Assure scene and rescuer safety. Call appropriate public service agencies: fire, rescue, or police teams, including scuba teams to properly stabilize the scene and safely rescue the victim(s) from the source of submersion.
- b. Maintain universal blood and body fluid precautions.
- c. Maintain an open airway immediately upon obtaining access to patient. Assure spinal stabilization and immobilization if indicated (i.e., unwitnessed event, unconscious patient, or mechanism of injury). Assist ventilations as needed.
- d. Once the patient is rescued and is placed in a safe environment, rescuers may administer specific emergency care such as: suctioning the airway and use of airway adjuncts as indicated and the administration of high flow oxygen by non-rebreather mask or bag valve mask as determined by patient's condition.
- e. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs. Treat all life threatening conditions as they become identified. Initiate CPR when appropriate.
- f. Obtain appropriate history related to event (length of exposure, temperature of liquid medium, potential for injury), including Past Medical History, Medications, Drug Allergies, and Substance abuse.
- g. If suspected hypothermia: see Hypothermia / Cold Emergencies protocol.
- h. Activate Paramedic intercept, if deemed necessary and if available.
- i. Albuterol 2.5-7.5 mg (2.5 mg max increments) nebulized for bronchospasm wheezing until symptoms subside. Patient respiratory status must be reassessed after each 2.5 mg to determine need for additional dosing

INTERMEDIATE PROCEDURES

- j. Provide advanced airway management if indicated.
- k. Initiate IV Normal Saline (KVO) in non-traumatic drowning/near drowning. If suspected hypovolemia, (i.e., and associated injury) titrate IV to patient's hemodynamic status.
- l. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- m. Cardiac Monitor / dysrhythmia recognition: manage per specific protocols.
- n. Dopamine 5-20 mcg/kg.min IV infusion for hypoperfusion, titrated to maintain SBP of >100 mmHg
- o. MEDICAL CONTROL for additional orders outside this protocol.
- p. Initiate transport as soon as possible.

Notify receiving hospital.

Note: If near drowning incident involves a scuba diver, suggesting barotrauma, consider utilization of hyperbaric treatment facility Presbyterian Hospital Dallas, HCA Medical City Dallas, and follow regional point-of-entry protocol.

If situation is a CPR, consider inserting a nasal gastric tube to prevent gastric distention.

2.2 ELECTROCUTION / LIGHTNING INJURIES

Electrical injuries are a relatively common, complex and potentially devastating form of trauma. The manifestations and severity of electrical trauma encompass a wide spectrum, ranging from a transient unpleasant sensation due to brief contact with low-intensity household current to instantaneous death and massive injury from high-voltage electrocution/lightning injury. Unlike thermal burns, electrical injuries commonly involve multiple body systems with the potential to pose difficult challenges regarding accurate assessment and proper management. Therefore, injury due to electricity may include burns to the skin and deeper tissues, cardiac rhythm disturbances and associated injuries from falls and other trauma. The amperage, voltage, type of current (AC vs. DC) duration of contact, tissue resistance and current pathway through the body will determine the type and extent of injury. Higher voltage, greater current, longer contact and flow through the heart are associated with worse injury and worse outcome. In general, lightning exposure/contact may result in the most severe form of electrical injury.

ASSESSMENT / TREATMENT PRIORITIES

1. Assure scene safety, i.e. by ascertaining that the source of electricity is removed from the patient and the rescue area. Call appropriate public service agencies for assistance if needed.
2. Maintain universal blood and body fluid precautions.
3. Maintain an open airway and assist ventilations as needed. Assume spinal and other potential traumatic injuries when appropriate and treat accordingly.
4. Administer high flow oxygen by non-rebreather mask or bag valve mask as determined by patient's condition.
5. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs. Treat all life threatening conditions as they become identified.
6. Obtain appropriate history related to event (voltage source, time of contact, path of flow through body and unresponsiveness or seizures). Assess patient for entry and exit wounds, particularly under rings or other metal objects. Obtain Past Medical History, Medications, Drug Allergies, and Substance abuse.

TREATMENT / BASIC PROCEDURES

- a. Assure scene safety, i.e. by ascertaining that the source of electricity is removed from the patient and the rescue area. Call appropriate public service agencies for assistance if needed.
- b. Maintain universal blood and body fluid precautions.
- c. Maintain an open airway and assist ventilations as needed. Assume spinal and other potential traumatic injuries when appropriate and treat accordingly.
- d. Administer high flow oxygen by non-rebreather mask or bag valve mask as determined by patient's condition.
- e. Control/stop any identified life threatening hemorrhage (direct pressure, pressure points, etc.)
- f. Activate Paramedic intercept, if deemed necessary and appropriate.

If patient is in cardiopulmonary arrest:

Perform CPR: Initiate transport as soon as possible with or without ALS.

INTERMEDIATE PROCEDURES

- g. Provide advanced airway management, if indicated.
- h. Initiate IV Normal Saline KVO.
- i. Initiate transport as soon as possible with or without ALS.

PARAMEDIC PROCEDURES

- j. Cardiac Monitor: manage dysrhythmia(s) per protocol.
- k. Manage burn injuries and or entrance and exit wounds as indicated. If extensive burns (moderate to severe) noted, manage patient according to Burn Protocol.
- l. Initiate transport as soon as possible.

Notify receiving hospital.

2.3 HYPERTHERMIA / HEAT EMERGENCIES

Heat emergencies result from one of two primary causes: environmental (exogenous heat load when the temperature exceeds 32° C or 90° F) or excessive exercise in moderate to extreme environmental conditions (endogenous heat load). Regardless of the cause, hyperthermic conditions can lead to the following conditions: Heat Cramps, Heat Exhaustion, or Heat Stroke.

Heat Cramps most commonly occur in the patient who exercises and sweats profusely, and subsequently consumes water without adequate salt. Heat cramps most commonly involve the most heavily exercised muscles. These patients may present with normal temperature but hot sweaty skin with mild tachycardia and normal blood pressure.

Heat Exhaustion presents with minor mental status changes, dizziness, nausea, headache, tachycardia and mild hypotension. Body temperature is less than 103° F. Rapid recovery generally follows saline administration.

Heat Stroke occurs when the patient's thermoregulatory mechanisms break down completely. Body temperature is elevated to extreme levels resulting in multi-system tissue damage, including altered mental status and physiological collapse. Heat stroke usually affects the elderly patient with underlying medical disorders. Patients with heat stroke usually have dry skin; however, up to 50% of patients with exertional heat stroke may exhibit persistent sweating. Therefore, the presence of sweating does not preclude the diagnosis. This is a true medical emergency.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed.
3. Administer high concentration oxygen via non-rebreather mask.
4. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs.
5. Obtain appropriate history related to event, including Past Medical History, Medications, Drug Allergies, Substance abuse or Trauma.
6. In general, rapid recognition of heat illness is required and rapid cooling of the patient is the priority.
7. Loosen or remove all nonessential clothing. Move patient to a cool environment.
8. For Heat Cramps and Heat exhaustion, administer water or oral re-hydration-electrolyte solution if patient is alert, swallows easily and does not exhibit signs/symptoms of nausea and/or vomiting.
9. If evidence of Heat Stroke, see protocol below.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated.
- c. Administer high concentration of oxygen by non-rebreather mask.
- d. Provide rapid cooling as soon as possible.

CAUTION: Do not over- chill patient; observe for shivering.

- e. Remove patient to cool area and place patient in a supine position.
- f. Loosen or remove all unnecessary clothing
- g. Use evaporation techniques if possible (fans, open windows).
- h. For Heat Cramps and/or Heat Exhaustion: administer water or oral re-hydration-electrolyte solution if patient is alert, has a normal gag reflex and does not exhibit signs/symptoms of nausea and/or vomiting and can swallow easily.
- i. Activate Paramedic intercept, if deemed necessary and if available.

INTERMEDIATE PROCEDURES

- j. Provide advanced airway management (if indicated).
- k. Initiate IV Normal Saline while in transport. If there is no history of CHF run fluids wide open 1000cc. If history of CHF, administer 250 cc-500 cc fluid bolus and reassess before repeating.
- l. Initiate transport as soon as possible with or without Paramedics

PARAMEDIC PROCEDURES

- m. Cardiac monitor: manage dysrhythmia(s) per protocol.
- n. If patient is nauseous or vomiting, consider administration of Zofran, 2-4 mg IV or 4 mg deep IM.
- o. Initiate transport as soon as possible.

Notify receiving hospital.

2.4 HYPOTHERMIA / COLD EMERGENCIES

Cold Emergencies include conditions such as mild frostbite to severe accidental hypothermia. Frostbite is defined as a localized injury resulting from freezing of body tissues and can be categorized from mild (frostnip) to severe (deep frostbite). Frostbite most commonly involves the lower extremities and less commonly in the upper extremities, it may also affect ears, nose, and other unprotected body areas. Hypothermia is the result of a decrease in heat production (often seen in patients with metabolic, neurologic and infectious illnesses), increased heat loss (traumatic, environmental and toxic), or a combination of the two factors. Hypothermia is defined as a core temperature below 95°F (35°C). Mild hypothermia presents often as altered mental status. Shivering may or may not be present. Moderate to severe hypothermia will not only have altered mental status, but may show decreased pulse, respiratory rate and blood pressure. Failure to recognize and properly treat hypothermia can lead to significant morbidity and mortality. REMEMBER: A patient in cardiopulmonary arrest with suspected severe hypothermia is not considered dead until all attempts at active re-warming have been completed in a hospital setting and resuscitation efforts remain unsuccessful.

ASSESSMENT / TREATMENT PRIORITIES

NOTE: Hypothermic patients must be handled gently as jarring movements may cause cardiac arrest.

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed. Assume spinal injury when appropriate and treat accordingly.
3. Administer high concentration oxygen
4. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs.
5. Obtain appropriate history related to event, including Past Medical History, Medications, Drug Allergies, Substance abuse or Trauma.
6. Remove wet clothing (by cutting clothing to limit patient movement).
7. Prevent heat loss with use of blankets. If available, place heat sources at patient's neck, armpits, flanks and groin

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated.
- c. In cases of suspected head/neck injury, assure cervical spine immobilization.
- d. Determine patient's hemodynamic status: Assess pulse and respiratory rates for a period of 60 seconds to determine pulselessness or profound bradycardia, for which CPR would be required.

If patient is in cardiopulmonary arrest:

- ❖ **Initiate CPR with supplemental oxygen**
- ❖ **Initiate transport as soon as possible with or without ALS.**

- e. Activate Paramedic intercept, if necessary and deemed appropriate.

INTERMEDIATE PROCEDURES

- f. Provide advanced airway management, if indicated.
- g. Initiate IV Normal Saline and determine Blood Glucose level:
- h. If glucose is less than 50mg/dL, administer 25 gm of 50% Dextrose solution IV push.
- i. Initiate transport as soon as possible with or without ALS.

PARAMEDIC PROCEDURES

- j. Administer Narcan 0.4 mg - 2.0 mg IV Push or MADD, IM OR IO after 2 peripheral attempts if suspected narcotic overdose.
- k. Cardiac Monitor: manage dysrhythmia(s) per protocol.

- l. Note: In general, IV administration of other drugs to the severely hypothermic patient requires change in frequency of administration and should be given with medical control consult.
- m. Whenever possible, use warmed humidified oxygen (104°F - 107°F, 40°C - 42°C) during resuscitation procedures for hypothermic patients.
- n. Remove wet clothing (by cutting clothing to limit patient movement) and prevent further heat loss with use of blankets.
- o. Initiate transport as soon as possible with or without Paramedics.

Notify receiving hospital.

COLD EMERGENCY / FROSTBITE

- Follow Hypothermia protocol as indicated above.
- Avoid trauma to injured areas (do not rub; do not break blisters)
- Apply dry sterile dressings as padding over injured areas and splint as needed; avoid pressure or constriction. Do not allow victim to use injured part(s).
- Do not attempt rapid re-warming of the frozen part in Pre-hospital setting. Keep frozen part(s) from direct heat while warming the patient.

2.5 RADIATION INJURIES

Exposure to radiation can occur through two mechanisms: the first mechanism is from a strong radioactive source such as uranium; the second mechanism is contamination by dust, debris and fluid that contain radioactive material. Factors that determine severity of exposure include: duration of time exposure, distance from radioactive source, and shielding from radioactive exposure. The three types of radiation exposure include alpha, beta and gamma. The most severe exposure is gamma (x-ray radiation).

In general, radiation exposure does not present with any immediate side effects unless exposure is severe. Most commonly, serious medical problems occur years after the exposure. Acute symptoms include nausea, vomiting and malaise. Severe exposure may present with burns, severe illness and death (beta or gamma).

Scene safety is of utmost importance for the patient(s), bystander(s) and rescuers.

ASSESSMENT / TREATMENT PRIORITIES

Assure scene safety, i.e. by ascertaining that the source of radiation is removed from the patient and the rescue area. Call appropriate public service agencies in order to properly stabilize the scene and rescue any victims that may be in the "hot zone". The patient will need to be removed from scene and properly decontaminated (radioactive liquid and/or dust). Rescuers will need to place patient in a safe environment so the rescuers may administer care.

Maintain universal blood and body fluid precautions.

Maintain an open airway and assist ventilations as needed. Assume spinal and other potential traumatic injuries when appropriate and treat accordingly.

Administer high flow oxygen by non-rebreather mask or bag valve mask as determined by patient's condition.

Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs. Treat all life threatening conditions as they become identified.

Obtain appropriate history related to event (alpha, beta and gamma exposure, duration of time exposure, distance from radioactive source and shielding from radioactive exposure). Obtain Past Medical History, Medications, Drug Allergies, and Substance abuse.

TREATMENT / BASIC PROCEDURES

- a. Assure scene safety, i.e. by ascertaining that the source of radiation is removed from the patient and the rescue area. Call appropriate public service agencies (HAZMAT TEAM) in order to properly stabilize the scene and rescue any victims that may be in the "hot zone". The patient will need to be removed from scene and decontaminated by appropriate personnel with the necessary protective gear. The patient then will need to be brought to a safe environment so the rescuers may administer care.
- b. Maintain universal blood and body fluid precautions.
- c. Maintain an open airway and assist ventilations as needed. Assume spinal and other potential traumatic injuries when appropriate and treat accordingly.
- d. Administer high flow oxygen by non-rebreather mask or bag valve mask as determined by patient's condition.
- e. Manage burn injuries as indicated in the severely exposed patient.
- f. Activate Paramedic intercept, if deemed necessary and available.
- g. Initiate transport as soon as possible with or without ALS.

INTERMEDIATE & PARAMEDIC PROCEDURES

- h. Provide advanced airway management, if indicated.
- i. Initiate IV Normal Saline (KVO) Titrate IV to patient's hemodynamic status as necessary.
- j. Initiate transport as soon as possible with or without ALS.
- k. Notify receiving hospital. If severe radiation burns are noted, consider appropriate Point-of-Entry as defined by Regional capabilities, i.e., Burn Center.

2.6 SNAKEBITE

TREATMENT STANDING ORDERS

Provide advanced airway management, if indicated.

Initiate IV Normal Saline (KVO). Titrate IV to patient's hemodynamic status (Systolic Blood Pressure 90mmHg – 110mmHg) as necessary.

Immobilize affected extremity in a dependent position. Place constricting band proximal to the bite. Assure arterial pulses before and after application of constricting band. If no pulse, loosen until pulse returns. Evaluate pulse every 5 minutes.

Remove watches, rings and other jewelry from affected limb.

Initiate transport as soon as possible to appropriate facility with anti-venom for treatment. Notify receiving hospital.

GENERAL INFORMATION

Pit Vipers – Rattlesnake, water moccasin and copperhead typically cause puncture wounds. There may be ecchymosis at site, localized pain, swelling, weakness, tachycardia, nausea, vomiting, dyspnea, dim vision, or shock.

Coral Snakes – Usually a chewed wound. There may be slight burning pain, mild swelling, blurred vision, drooping eyelids, slurred speech, drowsiness, salivation and sweating, nausea, vomiting, shock, respiratory difficulty, convulsions, paralysis and coma.

MEDICAL EMERGENCIES

3.1 ABDOMINAL PAIN (non-traumatic)

Acute abdominal pain may have a sudden onset and may present as mild to severe in nature. Abdominal pain may be the result of hemorrhagic etiologies (e.g., gastrointestinal ulcers, abdominal aortic aneurysm, ectopic pregnancy and esophageal varices) that may have immediate life threatening complications or non-hemorrhagic etiologies (i.e., herniation, obstructive and inflammatory conditions). Abdominal emergencies may be classified into three (3) primary categories: Gastrointestinal (upper & lower bowel hemorrhage, pancreatitis, cholecystitis, hepatitis, tumors, appendicitis, diverticulitis, perforated viscus and bowel obstruction), Genitourinary (kidney stones, urinary tract infections, pyelonephritis and acute & chronic renal failure) and Reproductive (female: pelvic inflammatory disease, ruptured ovarian cyst, dysfunctional uterine bleeding, endometriosis, tumors, and ectopic pregnancy; male: testicular torsion, epididymitis and prostatitis).

The acute abdomen refers to the relatively sudden onset of severe abdominal pain (although gradual onset of pain leading to an acute abdomen does occur) signifying a potential abdominal catastrophe. It is often associated with nausea, vomiting, guarding, rebound tenderness and abdominal distention. Prompt evaluation and management along with rapid transport can reduce morbidity and mortality.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway. This may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated. Assist ventilations as needed.
3. Administer high concentration oxygen by non-rebreather mask as determined by patient's condition.
4. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs. Treat all life threatening conditions as they become identified.
5. Obtain appropriate history related to event, (Provocation, Quality, Region, Radiation, Referred, Severity, and Time), including Past Medical History (surgery, LMP, prior episodes), Medications, Drug Allergies, Substance abuse.
6. Allow the patient to assume a comfortable position, unless contraindicated. Flexion of the knees and hips may help reduce pain.

NOTE: It is unnecessary to attempt auscultation and percussion of the abdomen in the pre-hospital setting.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway. This may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated. Assist ventilations as needed.
- c. Administer high concentration oxygen by non-rebreather mask as determined by patient's condition.
- d. Place patient in supine position. However, you may allow the patient to assume a comfortable position, unless contraindicated. Flexion of the knees and hips may help reduce pain.
- e. Activate Paramedic intercept, if deemed necessary and if available.

INTERMEDIATE PROCEDURES

- f. Provide advanced airway management (if indicated).
- g. Initiate 1-2 IVs Normal Saline. If suspect hypovolemic etiology and no history of CHF administer 250 cc-500 cc fluid bolus and titrate IV to patient's hemodynamic status.
- h. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- i. Cardiac monitor: manage dysrhythmia(s) per protocol.
- j. If you are able to rule out an Acute Abdomen consider Morphine 2-4 mg IV Push.
- k. Initiate transport as soon as possible.

Notify receiving hospital.

3.2 ALLERGIC REACTION / ANAPHYLAXIS

Anaphylaxis is an acute, generalized, and violent antigen-antibody reaction that can be rapidly fatal. An Anaphylactic Reaction may present as a mild to severe response; management is based upon severity. There are multiple causes of anaphylaxis: most commonly these causes are injected substances or drugs such as: penicillin, cephalosporins, sulfonamides, iron, and thiamine. Other causes include food sensitivities, vaccines, contrast dyes, insect sting(s) and other environmental allergens. Most reactions occur within thirty minutes following allergen exposure, although the onset of symptoms can vary from several seconds to hours.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed.
3. Administer high concentration oxygen by non-rebreather mask.
4. Determine patient's hemodynamic stability and symptoms. Continually assess Level of consciousness, ABCs and Vital Signs.
5. Obtain appropriate history related to event, Past Medical History including anaphylaxis, Medications, Drug Allergies and Substance Abuse.
6. Determine if patient is in mild or severe distress:

Mild Distress: itching, isolated urticaria, nausea, no respiratory distress.

Moderate Distress: itching, urticaria, nausea, and mild respiratory distress.

Severe Distress: stridor, bronchospasm, severe abdominal pain, respiratory distress, tachycardia, shock (systolic BLOOD PRESSURE <90), observe for edema of lips, tongue or face and generalized urticaria.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway. This may include repositioning of the airway, suctioning, or use of airway adjuncts (oropharyngeal airway/ nasopharyngeal airway) as indicated. Assist ventilations as needed.
- c. Administer high concentration of oxygen by non-rebreather mask.
- d. Activate ALS intercept, if deemed necessary and if available.
- e. Monitor and record vital signs every 5 minutes.

SEVERE REACTION:

- f. Epipen (.3 mg) IM for severe respiratory distress and/or shock from anaphylaxis
- g. Albuterol 2.5-7.5 mg (2.5 mg max increments) via nebulization for bronchospasm/wheezing until symptoms subside
- h. Patient respiratory status must be reassessed after each 2.5 mg to determine need for additional dosing
- i. Additional doses with Medical Control Only
- j. Initiate transport as soon as possible with or without Paramedics.

INTERMEDIATE PROCEDURES

- k. Provide advanced airway management.
- l. Initiate IV Normal Saline titrated to BLOOD PRESSURE < 90 while en route.

MODERATE REACTION:

- m. Diphenhydramine 12.5 mg to a max of 50 mg IV (preferred) or IM for moderate to severe allergic reaction or anaphylaxis

SEVERE REACTION:

- n. Epinephrine (1:1000) 0.3 mg SQ for patient in extremis or anaphylaxis. May be repeated every 20 minutes X 3 doses

- o. Albuterol 2.5 mg nebulized for bronchospasm/wheezing
- p. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

MILD DISTRESS:

- q. Monitor for signs of moderate severe distress.

MODERATE DISTRESS:

- r. Benadryl 25 mg- 50 mg SLOW IV push or deep IM. IF BLOOD PRESSURE IS > 90 GIVE A FLUID BOLUS OF 250-500 CC and Epinephrine (1:1,000) 0.3mg SQ.
- s. Albuterol 0.5% (0.5 ml mixed with 3 ml of Normal Saline) via nebulizer.
- t. Ipratropium Bromide 0.5 mg mixed with Albuterol 2.5 mg nebulized for bronchospasm/wheezing refractory to Albuterol treatment

SEVERE DISTRESS:

- u. Epinephrine (1:1,000) 0.3 mg - 0.5 mg SQ, repeat once in 5 minutes if needed
- v. Large Bore IV normal saline, titrate to BLOOD PRESSURE >90
- w. Epinephrine 1-4 mcg/min IV infusion titrated to effect for anaphylaxis refractory to SQ Epinephrine and Diphenhydramine
- x. To mix: 2 mg Epinephrine (1:1000) in 500 mL NS (4 mcg/ml)
- y. Methylprednisolone 125 mg IV over 1 minute
- z. Magnesium Sulfate 50% 2 g IV added to 100 mL NS infused wide open for patients with severe bronchospasm refractory to other treatments and SBP >100 mmHg or peripheral pulses present
- aa. Continuous ECG & EtCO₂ monitoring
- bb. Obtain 12-lead ECG if time and patient condition permits
- cc. Initiate Transport as soon as possible.

Notify receiving hospital.

Contact MEDICAL CONTROL. The following may be ordered:

Lidocaine 2% 40-60 mg (2-3 mL) added to Albuterol for adult patients with "cough variant asthma" when severe coughing inhibits respiratory function (with or without audible wheezes)

Dopamine infusion 2 - 20 μ g/Kg minute (Rate determined by physician)

3.3 ALTERED MENTAL STATUS

An alteration in mental status is the hallmark of central nervous system (CNS) injury or illness. Any alteration in mental status is abnormal and warrants further examination. Altered mental status may be due to many factors. A common grouping of causes for altered mental status is the following: AEIOU-TIPS: Alcoholism, Epilepsy, Insulin, Overdose, Underdose, Trauma, Infection, Psychiatric and Stroke. Altered mental status may present as mild confusion or complete unconsciousness (coma). The level of consciousness is evaluated based upon the Glasgow Coma Scale (see appendix) and/or the following:

A- alert

V- responds to verbal stimuli

P- responds to painful stimuli

U- unresponsive

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed. Assume spinal injury when appropriate and treat accordingly.
3. Administer high concentration oxygen via non-rebreather mask.
4. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs.
5. Obtain appropriate history related to event, including Past Medical History, Medications, and Drug Allergies, Substance abuse or Trauma.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway. This may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated. Assist ventilations as needed.
- c. Administer high concentration of oxygen by non-rebreather mask.
- d. In cases of suspected head/neck injury, assure cervical spine immobilization.
- e. Activate Paramedic intercept, if deemed necessary and if available.
- f. Determine Blood Glucose level. If glucose is less than 50 mg/dL or symptomatic and the patient is conscious and can speak and swallow, give oral glucose or other sugar source as tolerated. CAUTION: Do NOT administer anything orally if the patient does not have a reasonable Level of Consciousness and normal gag reflex.
- g. Initiate transport as soon as possible with or without Paramedics.

INTERMEDIATE PROCEDURES

- h. Provide advanced airway management (if indicated).
- i. Initiate IV Normal Saline (KVO). If suspect hypovolemic etiology, titrate IV to patient's hemodynamic status.

PARAMEDIC PROCEDURES

- j. If obvious narcotic overdose: Narcan 0.4-2.0 mg IV Push or MADD, IM, SQ. Additional Narcan (0.4-2.0 mg) may be administered as necessary – titrate to respiratory status.
- k. Determine Blood Glucose level: If glucose is less than 50 mg/dL, or symptomatic administer Dextrose 50%, 12.5 - 25 grams IV Push. Additional Dextrose 50% may be administered as necessary.

CAUTION: If cerebrovascular accident is suspected, contact Medical Control prior to administration.

- l. If no IV access, administer Glucagon 1 mg IM or MADD for suspected hypoglycemia.
- m. Initiate transport as soon as possible monitor and manage dysrhythmias per protocol.

Notify receiving hospital.

MEDICAL CONTROL may order additional:

- Dextrose 50%, 25 gm IV Push
- Narcan 0.4-2.0 mg IV Push or IM, MADD
- Further Normal Saline bolus.
- Dependent upon conditions for suspected substance abuse, overdose, and toxic exposure: refer to specific protocols.
- Continuous ECG & EtCO₂ monitoring

3.4 PSYCHIATRIC EMERGENCIES

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain calm, reassuring conversational tone with patient
2. Perform Primary Survey to extent possible without escalating situation
3. Perform Secondary Survey to extent possible without escalating situation
4. Evaluate possible Medical or Traumatic causes for patient's behavior
5. Note Mental Status and changes
6. Obtain History to include Drug usage, Alcohol usage, and previous Psychiatric history.

The following may be considered for treatment at the crew's option:

TREATMENT / BASIC PROCEDURES

- a. Administer High Flow Oxygen as permitted by patient

INTERMEDIATE PROCEDURES

- b. Initiate Normal Saline IV (KVO) or Saline Lock.

PARAMEDIC PROCEDURES

- c. Determine Blood Glucose level: If glucose is less than 50 mg /dL, or symptomatic administer Dextrose 50%, 25 grams IV Push.
- d. Determine oxygen saturation level.
- e. Administer oxygen if <95%.
- f. CAUTION: If cerebrovascular accident is suspected, give Dextrose 50% only if glucose < 50 mg/dL. If > 50 mg /dL but less than 50 mg /dL contact Medical Control prior to administration.

Chemical Restraint may be considered:

- g. Diazepam: 2.5-10 mg (2.5 mg max increments) IV OR- 5 mg IM
- h. Haloperidol (Haldol) 5-10 mg IV or IM may be repeated with doubling the last dose every 20 minutes.
If cocaine overdose is suspected do not use Haldol: Substitute Valium 2 mg IV Push may repeat as tolerated.

Physical Restraint may be considered:

- i. Use soft restraints (leather, nylon straps, and bandaging gauze) to control patient extremities. Ensure ability to remove in rapid fashion in emergency.
- j. Use of hard restraints (handcuffs, plastic flex cuffs) requires accompaniment by law enforcement or handcuff key to remove in an emergency.
- k. Continuous ECG & EtCO₂ monitoring
- l. Obtain 12-lead ECG time and patient condition permits
- m. Initiate transport

Notify receiving hospital

3.5 BRONCHOSPASM

Bronchospasm is defined as spasmodic narrowing (contraction) of the lumen (bronchial muscle) of a bronchus for whatever reason resulting in restricted airflow. This results in hypoventilation of the alveoli leading to hypoxemia. The causes of acute bronchospasm may not always be easily discernible. Asthma is the most common disorder to present with bronchospasm. However, there are many other conditions that may present with bronchospasm. Other causes include: allergic reaction, respiratory infection, changes in environmental conditions (humidity or temperature), inhalation of caustic gases (smoke, chlorine gas etc.), emotional stress, exercise, and medications (aspirin or similar non-steroidal anti-inflammatory agents). Patients may present with mild to severe distress and management is based upon severity.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain open airway and assist ventilation as needed.
3. Administer high concentration of oxygen by non-rebreather mask.
4. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and vital signs.
5. Obtain appropriate history related to event, including Past Medical History (prior asthma, anaphylaxis, and allergies), Medications, Drug Allergies and Substance Abuse. NOTE: exposures to foreign body, foods, medicines, chemicals or envenomation.
6. Determine if patient is in mild or severe distress:

Mild Distress: Slight wheezing and/or mild cough. Able to move air without difficulty.

Severe Distress: Evidenced by poor air movement, speech dyspnea, use of accessory muscles, tachypnea and tachycardia.

NOTE: Severe bronchospasms may present without wheezes indicating minimal air movement.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway. This may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated. Assist ventilations as needed.
- c. Administer high concentration of oxygen by non-rebreather mask. (Humidified O₂ is acceptable)
- d. Encourage and/or assist patient to self-administer his or her own prescribed inhaler medication if indicated or if not already done.
- e. Activate Paramedic intercept, if deemed necessary and if available.
- f. Initiate Transport as soon as possible with or without Paramedics.
- g. Administer high concentration of oxygen by non-rebreather mask.
- h. Albuterol 2.5-7.5 mg (2.5 mg max increments) via nebulization for bronchospasm/wheezing until symptoms subside. Patient respiratory status must be reassessed after each 2.5 mg to determine need for additional dosing

INTERMEDIATE PROCEDURES

- i. Provide advanced airway management if indicated.
- j. Albuterol 2.5 mg nebulized for bronchospasm/wheezing
- k. Consider IV Normal Saline (while enroute) if in severe distress
- l. Initiate Transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- m. Cardiac monitoring / dysrhythmia recognition. Treat according to arrhythmia protocols.
- n. Ipratropium Bromide 0.5 mg mixed with Albuterol 2.5 mg nebulized for bronchospasm/wheezing refractory to Albuterol treatment

Severe Distress:

- o. Methylprednisolone 125 mg IV over 1 minute for Bronchospasm
- p. Magnesium Sulfate 50% 2g IV added to 100 mL NS infused wide open for patients with severe Bronchospasm refractory to other treatments and SBP >100 mmHg or peripheral pulses present.
- q. Continuous ECG & EtCO₂ monitoring
- r. Obtain 12-lead ECG if time and patient condition permits
- s. Initiate transport as soon as possible.

Notify receiving hospital.

Contact MEDICAL CONTROL. The following additional treatments may be ordered:

- Epinephrine 1:1,000 0.3 mg-0.5 mg subcutaneously*. (May be repeated q 15 min.)
- Epinephrine 1:10,000 0.1 mg-0.5 mg IV push* * if impending cardiac arrest

**** CAUTION: The use of Epinephrine in patients over the age of 40, patients with a cardiac history, and patients who have already taken high dosage of inhalant bronchodilator medications may result in cardiac complications. Contact Medical Control prior to administration of SQ Epinephrine in any patient at risk for cardiac disease.**

3.6 CHEST PAIN

Chest pain is often the presenting complaint of patients experiencing a myocardial infarction or an ischemic event of other etiology. All chest pain patients should be carefully monitored until a definitive diagnosis can be made at the hospital. All patients with chest pain of a non-traumatic etiology should be considered to be of cardiac origin until proven otherwise.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed.
3. Administer high concentration of oxygen by non-rebreather mask.
4. Obtain appropriate history related to event. Determine time of onset, duration, intensity, character, location, associated symptoms, radiation and/or activities that change (worsen or improve) pain, and patient's activity during onset.
5. Obtain appropriate history related to event, including Past Medical History, Medications, Drug Allergies and Substance Abuse, ED Meds.
6. Monitor ECG and vital signs.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway and assist ventilations as needed.
- c. Administer high concentration of oxygen by non-rebreather mask.
- d. Activate Paramedic intercept, if deemed necessary and if available.
- e. Initiate transport as soon as possible with or without ALS.
- f. Assist patient with prescribed nitroglycerin SL every 5 minutes, up to 3 doses, as long as symptoms persist and SBP >100 mmHg. Do not administer nitroglycerin if patient (male or female) has taken erectile dysfunction medications within 24 hours or patient presentation and history suggestive of MI, early notification and rapid transport to the appropriate facility with a functioning cardiac cath lab.
- g. Assist pt with their own ASA: 324 mg baby aspirin PO if patient is >18 years old and no reported allergies to aspirin. Administer even if patient takes a daily dose.

INTERMEDIATE PROCEDURES

- h. Provide advanced airway management if indicated (i.e., patient's condition deteriorates).
- i. Initiate IV Normal Saline (KVO).

NOTE: A second IV line may be indicated for a high-risk patient.

- j. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- k. Obtain 12-lead ECG. If ST segment elevation and history suggestive of MI, early notification and rapid transport to the appropriate facility with a functioning cardiac cath lab. When possible, obtain 12-lead prior to nitroglycerin therapy.
- l. If cardiac disorder is suspected, administer Nitroglycerine 0.4 mg (1/150) SL tablet or spray if BLOOD PRESSURE is greater than 100 systolic; may repeat in 5 minute intervals x two (2) if BLOOD PRESSURE remains greater than 100 systolic (total of 3 doses).
- m. If patient's BLOOD PRESSURE drops below 100 systolic: place patient supine and elevate legs and administer a 250 cc bolus of IV Normal Saline.
- n. Initiate transport as soon as possible.
- o. If patient is high risk for Acute Myocardial Infarction Administer aspirin 324 mg baby aspirin or one regular aspirin) by mouth if patient is alert and oriented and not aspirin allergic.
- p. If patient has taken his/her NTG prior to your arrival, and you have determined that the pharmacologic potency of their NTG was normal (based upon standard side effects of NTG, i.e., headache/tingling sensation) without pain relief.

- q. Morphine Sulfate 2-20 mg (4 mg max increments) IV titrated to effect for persistent pain following nitroglycerin therapy if SBP remains >100 mmHg
- r. Diazepam 5-10 mg (5 mg max increments) IV titrated to effect for significant anxiety unrelieved by Morphine if SBP >100 mmHg or ACS and hypersympathetic state from amphetamine, cocaine or PCP use: Usually presents with sustained HR > 120 bpm and HTN
- s. Consider Zofran 2-4 mg IV titrated to effect if SBP > 100 or peripheral pulses present.

Notify receiving hospital.

Contact MEDICAL CONTROL. The following additional may be ordered:

- NTG 0.4 mg SL tablets or spray.
- Morphine Sulfate 2 - 4 mg increments IV push over 10 minutes.
- If patient's BLOOD PRESSURE remains below 100 systolic in response to NTG or Morphine Sulfate, may order further IV Normal Saline.

3.7 CONGESTIVE HEART FAILURE / PULMONARY EDEMA

Severe congestive heart failure (CHF) and/or acute pulmonary edema are caused by acute left ventricular failure resulting in pulmonary congestion. Most commonly these conditions are the result of myocardial infarction, diffuse infection, opiate poisoning, inhalation of toxic gases and severe over-hydration. It is characterized by intense shortness of breath, cough, anxiety, cyanosis, diaphoresis, rales and/or wheezing. In extreme cases, patients will exhibit diaphoresis, restlessness, apprehension and may cough up pink frothy sputum.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions
2. Maintain an open airway and assist ventilations as needed.
3. Administer high concentration oxygen via non-rebreather mask.
4. Place patient in full sitting position as tolerated.
5. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs assess temperature for differential diagnosis to rule out pneumonia.
6. Obtain appropriate history related to event, including Past Medical History, Medications, and Drug Allergies, Substance abuse or Trauma (recent head injury/fracture).

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway. This may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated. Assist ventilations as needed.
- c. Administer high concentration of oxygen by non-rebreather mask.
- d. Place patient in full sitting position as tolerated.
- e. Assist with administration of prescribed metered dose inhaler or nebulized medication per dosing instructions.
- f. Albuterol 2.5-7.5 mg (2.5 mg max increments) via nebulization for bronchospasm/wheezing until symptoms subside. Patient respiratory status must be reassessed after each 2.5 mg to determine need for additional dosing
- g. Activate ALS intercept, if deemed necessary and if available.
- h. Initiate transport as soon as possible with or without ALS.

INTERMEDIATE PROCEDURES

- i. Provide advanced airway management (endotracheal intubation), if indicated.
- j. Initiate IV Normal Saline (KVO) or Saline Lock while in transport.
- k. Initiate transport as soon as possible with or without paramedics.

PARAMEDIC PROCEDURES

- l. Cardiac monitoring / dysrhythmia recognition. Treat according to arrhythmia protocols.
- m. Ipratropium Bromide 0.5 mg mixed with Albuterol 2.5 mg nebulized for bronchospasm/wheezing refractory to Albuterol treatment
- n. Initiate IV Normal Saline (KVO) or Saline Lock.
- o. Administer Nitroglycerin (NTG) SL tablet; 0.4 mg (1/150 gr.) or NTG spray if systolic BLOOD PRESSURE is greater than 100. NTG may be repeated in five (5) minute intervals times two (2) as dictated by patient's Blood Pressure.
- p. CPAP or BIPAP if available
- q. Morphine Sulfate 2-20 mg (4 mg max increments) IV titrated to effect for persistent pain following nitroglycerin therapy if SBP remains >200 mmHg.
- r. Furosemide (Lasix): 20-40 mg IV push if not currently on diuretics, 40-80 mg IV push if patient is on diuretics.
- s. Methylprednisolone 125 mg IV over 1 minute for bronchospasms if COPD present.
- t. Continuous ECG & EtCO₂ monitoring

- u. Obtain 12-lead ECG if time and patient condition permits
- v. Initiate transport as soon as possible.
- w. If systolic BP < 100mmHg, consider Dopamine at 2-20 mcg/kg/min to maintain systolic > 100 mmHg.

Notify receiving hospital.

Contact MEDICAL CONTROL. The following may be ordered:

- Repeat doses of Nitroglycerin SL or spray.
- Dopamine infusion: 2-20 μ g/kg/minute - Infusion rates determined by Medical Control.

3.8 EYE EMERGENCIES

Eye emergencies can be either medical or traumatic. In general they are not life threatening. However, they present serious potential difficulties for the patient. The primary medical emergency involving the eye is glaucoma. Sudden painless loss of vision secondary to arterial embolus is another treatable medical emergency. Eye injuries can be chemical or thermal burns, penetrating or blunt trauma which can result in permanent disfigurement and/or blindness. In addition small foreign particles landing on the surface of the eye can also result in ocular emergencies. Established regional point-of-entry protocols may determine transport to appropriate facility.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning, or use of airway adjuncts as indicated.
3. If eye injury is the result of blunt and/or penetrating trauma, assume spinal injury and manage appropriately.
4. Obtain appropriate history related to event, including Past Medical History, Medications, Drug Allergies, Substance Abuse or Trauma (i.e., recent head trauma).
5. Depending upon mechanism of injury, the following procedures should be followed:

Chemical irritants or foreign body sensation: Bring chemical container, MSDS, or name of chemical with patient to the Emergency Department.

Blunt Trauma: Both Eyes should be patched and protected.

Penetrating Trauma / Puncture Wound with no impaled object: Both eyes should be patched and protected. If object impaled in the eye. **NOTE: Objects penetrating the eye globe should only be removed in-hospital.**

Thermal Burns: Both eyes should be patched and protected.

6. If patient is unable to close eyelids, moisten eyes with sterile Normal Saline (exception: chemical irritants which need continuous irrigation) to maintain eye integrity. The eye(s) may then be irrigated and covered with moistened gauze pads.
7. Obtain visual history, including use of contact lenses, corrective lenses (glass/plastic), safety goggles.

NOTE: As a general rule, EMTs should not attempt to remove contact lenses in patients with eye injuries. However, in certain chemical burn cases, MEDICAL CONTROL may instruct removal of the lenses if patient is unable to do so. **

TREATMENT/ BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning, or use of airway adjuncts as indicated.
- c. If eye injury is the result of blunt and/or penetrating trauma, assume spinal injury and manage appropriately.
- d. Obtain appropriate history related to event, including Past Medical History, Medications, Drug Allergies, Substance Abuse or Trauma (i.e., recent head trauma).
- e. Depending upon mechanism of injury, the following procedures should be followed:
- f. Chemical irritants: Flush eyes for approximately 15 minutes with Normal Saline.
- g. Bring chemical container, MSDS, or name of chemical with patient to the Emergency Department.
- h. Blunt Trauma: Both Eyes should be patched and protected.

- i. Penetrating Trauma / Puncture Wound with no impaled object: Both eyes should be patched and protected. ***If object impaled in the eye. NOTE: Objects penetrating the eye globe should only be removed in-hospital.**
- j. Thermal Burns: Both eyes should be patched and protected.
- k. If patient is unable to close eyelids, moisten eyes with sterile Normal Saline (exception: chemical irritants which need continuous irrigation) to maintain eye integrity. The eye(s) may then be irrigated and covered with moistened gauze pads.
- l. Obtain visual history, including use of contact lenses, corrective lenses (glass/plastic), safety goggles.

NOTE: As a general rule, EMTs should not attempt to remove contact lenses in patients with eye injuries. However, in certain chemical burn cases, MEDICAL CONTROL may instruct removal of the lenses if patient is unable to do so. **

- m. Initiate transport as soon as possible with or without ALS.

Notify receiving hospital.

Contact MEDICAL CONTROL. Medical Control may order:

- Special consideration: Sudden painless loss of vision: If suspect central retinal artery occlusion in patient with acute non-traumatic, painless loss of vision in one eye (most common in elderly patient): apply vigorous pressure using heel of hand (massage) to affected eye for three (3) to five (5) seconds, then release. The patient may perform this procedure. Repeat as necessary.

NOTE: Cardiac (EKG) monitor is required for this procedure (i.e., vagal stimulus: bradycardia).

GUIDELINES FOR SECURING IMPALED OBJECT IN AN EYE

1. Place a roll of gauze bandage or folded gauze pads on either side of the impaled object, along the vertical axis of the head. These rolls or pads should be placed so they stabilize the object.
2. Fit a paper or Styrofoam cup or other protective cup/cone etc. over the impaled object. The protective cup should not touch the impaled object and it must rest upon the rolls of gauze or gauze pads.
3. Secure the dressings and cup in place with self-adherent roller bandage or wrapping of gauze. DO NOT secure bandage over the top of the cup.
4. Patch and bandage the uninjured eye to reduce eye movements.

GUIDELINES FOR REMOVAL OF CONTACT LENSES

CATEGORY A: Removal of soft contact lenses.

1. Pull down the lower eyelid.
2. Gently slide the lens down onto the conjunctiva.
3. Compress the lens between the thumb and index finger using a pinching motion.
4. Remove the lens.
5. Store lens in a container with water or normal saline and label appropriately (i.e., left/right eye and patient's name).

CATEGORY B: Removal of rigid and hard gas permeable lenses.

1. Separate the eyelids such that the lid margins are beyond the top and bottom edges of the lens.
2. Gently press the eyelids down and forward to the edges of the lens.
3. Move the eyelids toward each other, thereby forcing the lens to slide out between them.
4. Store lens in a container with water or normal saline and label appropriately (i.e., left/right eye and patient's name).
5. If lens removal proves difficult: gently move the lens downward from the cornea to the conjunctiva overlying the sclera until arrival in the ED.

3.9 HYPERTENSIVE EMERGENCIES

A hypertensive emergency is characterized by a rapid and severe elevation of a patient's diastolic BLOOD PRESSURE (greater than 115 mm Hg-130 mm Hg) which is causing significant, irreversible end-organ damage within hours if not treated. The brain, heart and kidneys are at risk. The patient may also present with restlessness, confusion, blurred vision, nausea and vomiting. Elevated blood pressure by itself, no matter how high is not a hypertensive emergency if the patient has no symptoms. These patients do, however need to be seen by a physician.

Hypertensive emergencies may include any of the following conditions in the presence of a diastolic BLOOD PRESSURE greater than 115-130: myocardial ischemia, aortic dissection, pulmonary edema, hypertensive intracranial hemorrhage, toxemia of pregnancy and hypertensive encephalopathy.

Hypertensive encephalopathy is a true emergency and is the direct result of untreated hypertension. It is characterized by severe headache, vomiting, visual disturbances (including transient blindness), paralysis, seizures, stupor, and coma. This condition may lead to pulmonary edema, left ventricular failure or cardiovascular accident (CVA).

The goal of therapy for hypertensive emergencies is to reduce the BLOOD PRESSURE, on average, approximately 10% - 20% or until patient's clinical presentation is improved. Caution should be taken to reduce the BLOOD PRESSURE in a controlled fashion as opposed to rapid reduction.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed.
3. Administer high concentration oxygen via non-rebreather mask.
4. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs.
5. Obtain appropriate history related to event, including Past Medical History, Medications, and Drug Allergies, Substance abuse or Trauma (recent head injury).

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway. This may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated. Assist ventilations as needed.
- c. Administer high concentration of oxygen by non-rebreather mask.
- d. Activate ALS intercept, if deemed necessary and if available.

INTERMEDIATE PROCEDURES

- e. Provide advanced airway management (endotracheal intubation), if indicated.
- f. Initiate IV Normal Saline (KVO) or Saline Lock.
- g. Initiate transport as soon as possible with or without ALS.

PARAMEDIC PROCEDURES

- h. Cardiac monitor / dysrhythmia recognition: manage per protocol.
- i. Administer Nitroglycerine (NTG) 0.4 mg (1/150 gr.) tablet or spray SL if diastolic BLOOD PRESSURE is greater than 115 to 130 mmHg. NTG may be repeated in five (5) minute intervals twice as dictated by patient's BLOOD PRESSURE.
- j. Morphine Sulfate 2-20 mg (4 mg max increments) IV titrated to effect for persistent pain following nitroglycerin therapy if SBP remains >200 mmHg.
- k. Furosemide (Lasix): 20-40 mg IV push if not currently on diuretics, 40-80 mg IV push if patient is on diuretics.
- l. Initiate transport as soon as possible.

Notify receiving hospital.

Contact MEDICAL CONTROL. For additional orders:

3.10 CVA/STROKE

TREATMENT STANDING ORDERS

- a. Provide advanced airway management if indicated (patient's condition deteriorates).
- b. Initiate IV Normal Saline (KVO).

NOTE: A second IV line may be indicated for high risk patient.

- c. If a dysrhythmia is identified, treat per protocol.
- d. Determine Blood Glucose level:
If glucose is less than 50 mg/dL, or symptomatic administer Dextrose 50%, 25 grams IV Push. Additional Dextrose 50% may be administered as necessary.

If glucose is greater than 50 mg/dL and less than 80 mg/dL, Contact Medical Control.
CAUTION: If cerebrovascular accident is suspected, give Dextrose 50% only if glucose < 50 mg /dL.

If > 50 mg /dL but less than 80 mg /dL contact Medical Control prior to administration.

Note: Closely observe Systolic Blood Pressure during fluid administration

The following may be considered for treatment at the crew's option:

- e. Elevate head of stretcher to 30 degrees, if possible. Otherwise place patient in recovery position not on affected side.
- f. Control agitation with Diazepam (Valium) 2 mg IV push. May be repeated in 2 mg increments to maximum dose of 10 mg.
- g. Initiate transport as soon as possible to appropriate facility, with consideration of stroke center destination if symptoms less than 3 hours in duration.

Notify receiving hospital

3.11 HYPOGLYCEMIA / INSULIN SHOCK

TREATMENT STANDING ORDERS

1. Provide advanced airway management (if indicated).
2. Initiate IV Normal Saline (KVO). If suspect hypovolemic etiology, titrate IV to patient's hemodynamic status (Systolic Blood Pressure 90 - 100 mmHg).
3. Cardiac Monitor: manage dysrhythmias per protocol.

BASIC

- a. Determine Blood Glucose level:
- b. Glucose less than 50mg/dL administer 15 grams if patient is able to swallow
- c. Reassess in 10 min.

PARAMEDIC

- d. If glucose is less than 50 mg/dL, or symptomatic administer Dextrose 50%, 25 grams IV Push. Additional Dextrose 50% may be administered as necessary.

Note: Closely observe Systolic Blood Pressure during fluid administration

The following may be considered for treatment at the crew's option:

- e. Normal Saline IV KVO
- f. Glucagon 1 mg IM or MADD if unable to obtain IV access.
- g. Repeat Blood Glucose level at 5 minutes:
- h. If glucose is less than 50 mg/dL and no change in mental status, administer second dose Dextrose 50%, 25 grams IV Push.
- i. Initiate transport as soon as possible.

Notify receiving hospital

3.12 DIABETIC COMA / HYPERGLYCEMIA

TREATMENT STANDING ORDERS (within scope of certification)

- a. Provide advanced airway management (if indicated).
- b. Initiate IV Normal Saline (KVO). If suspect hypovolemic etiology, titrate IV to patient's hemodynamic status (Systolic Blood Pressure 90 - 100 mmHg).
- c. Cardiac Monitor: manage dysrhythmias per protocol.
- d. Determine Blood Glucose level:
- e. If glucose is greater than 250 mg/dL, Normal Saline 250 ml fluid bolus.

Note: Closely observe Systolic Blood Pressure during fluid administration

The following may be considered for treatment at the crew's option:

- f. If no evidence of CHF: IV Normal Saline 250 ml – 500 ml, to maintain Systolic Blood Pressure 90 - 100 mmHg. Additional fluid bolus may be necessary.
- g. Thiamine 100 mg IV push, if alcohol induced hyperglycemia suspected.
- h. Repeat Blood Glucose level at 5 minutes:
- i. If glucose is greater than 250 mg/dL and changes in mental status, Kussmaul respiration patterns, dehydration and/or ketotic breath; administer Normal Saline at wide-open rate. Unless patient has history of CHF. If patient has history of CHF, administer 250 cc bolus of normal saline and contact Medical Control.
- j. Initiate transport as soon as possible.

Notify receiving hospital

3.13 OBSTETRICAL EMERGENCIES

There are a significant number of problems that may be classified as Obstetrical Emergencies. These emergencies include, but are not limited to the following: abortion, (spontaneous, threatened, inevitable, incomplete, criminal, therapeutic and elective), trauma, ectopic pregnancy, pre-eclampsia, eclampsia, abnormal deliveries (breech, prolapsed cord, limb presentation, and multiple births), bleeding during any trimester, complications of labor and delivery (antepartum hemorrhage, abruptio placenta, placenta previa, uterine rupture, uterine inversion, toxemia of pregnancy, pulmonary embolism and post-partum hemorrhage).

Pre-existing medical conditions can lead to obstetrical complications. The primary concerns are diabetes, hypertension, heart disease and substance abuse. All of these conditions may adversely affect the developing fetus and therefore, may complicate the delivery of the fetus and compromise the health of the mother and child.

All obstetrical emergencies resulting in bleeding disorders should be managed as though the patient is at risk for hypovolemic shock and should be considered an acute emergency requiring efficient management and transport per the Shock Protocol. The Obstetrical Emergencies protocol relates to complications of birth and their pre-hospital management.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated.
3. Administer high concentration oxygen by non-rebreather mask as determined by patient's condition.
4. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs. Treat all life threatening conditions as they become identified.
5. Obtain appropriate history related to event, (gravity, parity, length of gestation, estimated date of delivery, prior C-sections, prior obstetrical or gynecological complications, bleeding, pain, vaginal discharge, LMP), Past Medical History, Medications, Drug Allergies, and Substance abuse.
6. Management of unscheduled field delivery with or without obstetrical complications as they are identified: (see appropriate procedures in this protocol)
 - Vaginal Bleeding
 - Supine-Hypotensive Syndrome
 - Abruptio Placenta
 - Pre-Eclampsia and Eclampsia
 - Placenta Previa
 - Uterine Inversion
 - Postpartum Hemorrhage
7. Obstetrical emergencies that result in shock should be managed according to the Shock Protocol.
8. Obstetrical emergencies due to trauma should be managed according to the Abdominal Trauma Protocol: Special Considerations.
9. Transport patient to the nearest appropriate facility as defined by regional point-of-entry protocols.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated.
- c. Administer high concentration oxygen by non-rebreather mask as determined by patient's condition.
- d. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs. Treat all life threatening conditions as they become identified.
- e. See specific management protocols below and follow appropriate treatment procedures.
- f. Activate ALS intercept, if deemed necessary and if available

INTERMEDIATE PROCEDURES

- g. Provide advanced airway management (if indicated).
- h. Initiate IV Normal Saline while in transport. If suspect hypovolemic etiology, patient is in shock or exhibits signs and symptoms of shock: administer a 250 cc-500 cc bolus and titrate IV to patient's hemodynamic status.
- i. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- j. Cardiac monitor/dysrhythmia recognition.
- k. Magnesium Sulfate 50% 4 g added to 100 mL Normal Saline infused wide open for active seizures secondary to presumed eclampsia until seizure stops or 4 g is reached. May consider use with symptomatic pre-eclampsia. Continually assess the patient's reflexes and neuro function.
- l. Valium 5 -10 mg (5 mg max increments, titrated to effect) IV for active seizures non-responsive to magnesium therapy or for patients with seizure history not related to pregnancy and SBP >100 mmHG or peripheral pulses present.
- m. Initiate transport as soon as possible.

Notify receiving hospital.

Contact MEDICAL CONTROL. Medical Control may order:

- Administration of additional IV Normal Saline.
- Administration of additional Valium.
- If Magnesium Sulfate toxicity is suspected consider Calcium Chloride .2 mL/kg.

SPECIAL CONSIDERATIONS FOR OBSTETRICAL EMERGENCIES

When administering emergency care for any of the following conditions, remember that you are treating a primary patient who may be embarrassed, apprehensive and frightened for herself and her unborn child. Therefore, it is important for you to treat her with respect and kindness and to provide her with emotional support. However, in actuality, you are treating two (2) patients.

VAGINAL BLEEDING

Vaginal bleeding during any given time during pregnancy is not normal and is always of concern. Though the exact etiology of the bleeding cannot be determined in the pre-hospital setting, the onset of bleeding may provide clues to indicate the etiology. For example, bleeding early in the pregnancy may suggest an ectopic pregnancy or spontaneous abortion. Third-trimester bleeding is often the result of an abruptio placenta or placenta previa but, it also may be the result of trauma. Due to the variable mechanisms for bleeding, the amount of blood loss will vary anywhere from spotting to extensive hemorrhage that will require aggressive resuscitation measures.

NOTE: The amount of visualized vaginal blood loss is NOT a reliable indicator as to the actual amount of blood loss occurring. Visualized blood loss will most likely be out of proportion to the degree of shock, inasmuch as several of the bleeding etiologies may conceal the actual blood loss.

TREATMENT: Follow general treatment guidelines as indicated in protocols. Treat for shock; administer high concentration of oxygen, keep patient warm and place patient in a left lateral recumbent position. Advanced procedures should include 1-2 IVs of Normal Saline (recommended during transport) followed by a 250 cc - 500 cc fluid bolus of Normal Saline. Titrate IV flow rate to patient's hemodynamic status.

ABRUPTIO PLACENTA

This presentation is usually during the third trimester or after twenty (20) weeks of gestation and is a partial or complete separation of the placenta from the wall of the uterus. This condition may present with blood loss ranging from none at all to severe. The patient will most likely complain of severe pain characterized as a severe "tearing" sensation. The more extensive the abruption (tear), the more likely there will be a greater severity of pain and blood loss.

NOTE: Vaginal examinations should not be performed in suspected abruptio placenta since it may cause a rupture in the placenta resulting in severe life threatening hemorrhage and may precipitate labor.

TREATMENT: Follow general treatment guidelines as indicated in Obstetrical protocol. Treat for shock; administer high concentration of oxygen, keep patient warm and place patient in a left lateral recumbent position. Advanced procedures should include 1-2 IVs of Normal Saline followed with a 250 cc - 500 cc bolus of Normal Saline. Titrate IV flow rate to patient's hemodynamic status.

PLACENTA PREVIA

Condition when the placenta attaches to the lower portion of the uterus such that it partially or completely covers the cervical opening. The implantation of the placenta occurs early in the pregnancy. However, it is usually not discovered or manifest complications until the third trimester. Common signs and symptoms include "painless" bright red vaginal bleeding. As a general rule, all incidents of painless vaginal bleeding during pregnancy are considered to be placenta previa until proven otherwise. Another complication of a placenta previa is that the placenta may be the presenting part during delivery, thus will require an emergency cesarean delivery in hospital. NOTE: Vaginal examinations should not be performed in suspected placenta previa since it may cause a rupture in the placenta resulting in severe life threatening hemorrhage and may precipitate labor.

TREATMENT: Follow general treatment guidelines as indicated in the Obstetrical Emergencies protocol. Treat for shock; administer high concentration of oxygen, keep patient warm and place patient in a left

lateral recumbent position. Advanced procedures should include 1-2 IVs of Normal Saline followed with a 250 cc - 500 cc bolus of Normal Saline. Titrate IV flow rate to patient's hemodynamic status.

SUPINE-HYPOTENSION SYNDROME

This condition usually occurs during the third trimester of pregnancy and while the pregnant patient is in a supine position. The increased mass and weight of the fetus and the uterus compress the inferior vena cava resulting in a marked decrease in blood return to the heart reducing cardiac output which results in a drop in BLOOD PRESSURE: hypotension. Precipitating factors to this syndrome may be the result of dehydration or a reduced circulating blood volume. Therefore, an attempt should be made to determine whether or not there is any evidence of dehydration and/or blood loss.

TREATMENT: Follow general treatment guidelines as indicated in the Obstetrical Emergencies protocol. If it appears to only be Supine-Hypotension Syndrome, reposition the patient to a left lateral recumbent position. If there is evidence of dehydration and/or blood loss, you should also treat for shock; administer high concentration of oxygen, keep patient warm. Advanced procedures should include 1-2 IVs of Normal Saline followed with a 250 cc - 500 cc bolus of Normal Saline. Titrate IV flow rate to patient's condition.

HYPERTENSIVE DISORDERS OF PREGNANCY

PRE-ECLAMPSIA and ECLAMPSIA

These disorders occur in approximately 3%-5% of pregnancies. Formerly known as "toxemia of pregnancy," these disorders are characterized by hypertension, weight gain, edema, protein in urine, and in late stages, seizures. **Pre-eclampsia**, in addition to the signs and symptoms just noted, is characterized by headaches and visual disturbances. **Eclampsia** is further complicated by seizure disorders with resultant high morbidity/mortality for both mother and child.

TREATMENT: Follow general treatment guidelines as indicated in Obstetrical protocol. Administer high concentration of oxygen and place patient in a left lateral recumbent position. Advanced procedures should include EKG/cardiac monitoring, IV of Normal Saline (KVO). Magnesium Sulfate 50% 4 g added to 100 mL NS infused wide open for active seizures secondary to presumed eclampsia until seizure stops or 4 g is reached

Consider Valium 5 -10 mg (5 mg max increments, titrated to effect) IV for active seizures non-responsive to magnesium therapy or for patients with seizure history not related to pregnancy and SBP >100 mmHG or peripheral pulses present.

NORMAL DELIVERY / COMPLICATIONS OF LABOR

Labor is divided into three (3) stages: The first stage begins with the onset of uterine contractions and ends with complete dilation of the cervix. The second stage begins with the complete dilation of the cervix and ends with delivery of the fetus. The third stage begins with the delivery of the fetus and ends with delivery of the placenta.

In general, the most important decision to be made with a patient in labor is whether to attempt delivery of the infant at the scene or transport the patient to the hospital. Factors that effect this decision include: frequency of contractions, prior vaginal deliveries, maternal urge to push, and the presence of crowning. The maternal urge to push and/or the presence of crowning indicate that delivery is imminent. In such cases, the infant should be delivered at the scene or in the ambulance.

Those conditions that prompt immediate transport, despite the threat of delivery, include: prolonged membrane rupture, breech presentation, cord presentation, extremity presentation, evidence of meconium staining, and nuchal cord (cord around infants neck).

UNSCHEDULED NORMAL FIELD DELIVERY

1. Maintain universal blood and body fluid precautions.
2. Follow general treatment guidelines as indicated in Obstetrical Emergencies protocol.
3. Document pertinent gestational/labor history:
 - history of hypertension, diabetes, edema or other pertinent medical/surgical history
 - history of previous obstetrical complications
 - history of previous pregnancies/deliveries
 - identify expected date of delivery
 - identify possibility of multiple births
 - identify length of time between contractions
 - identify presence/absence of membrane rupture
 - identify presence/absence of vaginal bleeding
4. Determine need for imminent delivery or need for immediate transport
5. Position mother for delivery.
6. Whenever possible, use sterile or aseptic technique
7. Coach mother to breathe deeply between contractions and to push with contractions.
8. As the head crowns control with gentle pressure and support the head during delivery and examine neck for the presence of a looped (nuchal) umbilical cord. If cord is looped around neck, gently slip it over the infant's head (If unable to do so, clamp cord in two places and cut between clamps to release the cord).
9. Suction mouth, then nose of the infant as soon as possible.
10. Support the infant's head as it rotates for shoulder presentation.
11. With gentle pressure, guide the infant's head downward to deliver the anterior shoulder and then upward to release the posterior shoulder. Complete the delivery of the infant.
12. Hold infant firmly with head dependent to facilitate drainage of secretions. Clear infant's airway of any secretions with sterile gauze and repeat suction of infant's mouth, then nose using bulb syringe.
13. Apply two clamps to umbilical cord (if not already done due to Nuchal cord): the first one is placed approximately ten (10) inches from the infant and the second is placed 2"-3" proximal to the first clamp (7"-8" from infant's abdomen). Cut cord between clamps and check for umbilical cord bleeding. If umbilical cord bleeding is evident apply additional clamp(s) as needed.
14. Dry infant and wrap in warm towels/blanket (cover infant's head).
15. Place infant on mother's abdomen for mother to hold and support.
16. Note and record infant's gender and time of birth.
17. If infant resuscitation is not necessary, record APGAR score at 1 minute and 5 minutes post-delivery.
18. If infant resuscitation is necessary, follow neonatal resuscitation protocol.
19. Delivery of the Placenta: (do not delay transport)

20. Initiate transport as soon as possible.
21. As the placenta delivers, the mother should be encouraged to push with contractions.
22. Hold placenta with both hands, place in plastic bag or other container and transport with mother to receiving hospital. NEVER "pull on" umbilical cord to assist placenta delivery.
23. Evaluate perineum for tears. If present, apply sanitary napkins to the area while maintaining direct pressure.

Notify receiving hospital.

COMPLICATIONS OF LABOR

BREECH PRESENTATION

The largest part of the fetus (head) is delivered last. In general, breech presentations include buttocks presentation and/or extremity presentation. An infant in a breech presentation is best delivered in the hospital setting since an emergency cesarean section is often necessary. However, if it is necessary to perform a breech delivery in a pre-hospital setting, the following procedures should be performed:

1. Maintain universal blood and body fluid precautions.
2. Follow general treatment guidelines as indicated in Obstetrical Emergencies protocol.
3. Document pertinent gestational/labor history
 - history of hypertension, diabetes, edema or other pertinent medical/surgical history
 - history of previous obstetrical complications
 - history of previous pregnancies/deliveries
 - identify expected date of delivery
 - identify possibility of multiple births
 - identify length of time between contractions
 - identify presence/absence of membrane rupture
 - identify presence/absence of vaginal bleeding
4. Determine need for imminent delivery or need for immediate transport
5. Position mother for delivery.
6. Whenever possible, use sterile or aseptic technique
7. Allow the fetus to deliver spontaneously up to the level of the umbilicus. If the fetus is in a front presentation, gently, extract the legs downward after the buttocks are delivered.
8. After the infant's legs are clear, support the baby's body with the palm of the hand and the volar surface of the arm.
9. After the umbilicus is visualized, gently extract a 4"-6" loop of umbilical cord to allow for delivery without excessive traction on the cord. Gently rotate the fetus to align the shoulder in an anterior-posterior position. Continue with gentle traction until the axilla is visible.
10. Gently guide the infant upward to allow delivery of the posterior shoulder.
11. Gently guide the infant downward to deliver the anterior shoulder.
12. During a breech delivery, avoid having the fetal face or abdomen toward the maternal symphysis.
13. The head is often delivered without difficulty. However, be careful to avoid excessive head and spine manipulation or traction.
14. If the head does not deliver immediately, action must be taken to prevent suffocation of the infant.
15. Place a gloved hand in the vagina with the palm toward the baby's face.
16. With the index and middle fingers, form a "V" on either side of the infant's nose.
17. Gently push the vaginal wall away from the infant's face until the head is delivered.
18. If unable to deliver infant's head within three (3) minutes, maintain the infant's airway with the "V" formation and rapidly transport to the hospital.

SHOULDER DYSTOCIA

This occurs when the fetal shoulders impact against the maternal symphysis, blocking shoulder delivery. Delivery entails dislodging one shoulder and rotating the fetal shoulder girdle into the wider oblique pelvic diameter. The anterior shoulder should be delivered immediately after the head:

1. Maintain universal blood and body fluid precautions.
2. Position mother on her left side in a dorsal-knee-chest position to increase the diameter of the pelvis.
3. Attempt to guide the infant's head downward to allow the anterior shoulder to slip under the symphysis pubis.
4. Gently rotate the fetal shoulder girdle into the wider oblique pelvic diameter. The posterior shoulder usually delivers without resistance.
5. Complete the delivery as above.

PROLAPSED UMBILICAL CORD

This occurs when the cord slips down into the vagina or presents externally after the amniotic membranes have ruptured. Fetal asphyxia may rapidly ensue if circulation through the cord is not re-established and maintained until delivery. If umbilical cord is seen in the vagina, insert two fingers of a gloved hand to raise the presenting part of the fetus off of the cord.

1. Maintain universal blood and body fluid precautions.
2. Position the mother in Trendelenburg or knee-chest-position to relieve pressure on the cord.
3. Instruct the mother to "pant" with each contraction to prevent her from bearing down
4. Insert two gloved fingers into the vagina and gently elevate the presenting part to relieve pressure on the cord and restore umbilical pulse. DO NOT attempt to reposition or push the cord back into the uterus.
5. If assistance is available, apply moist sterile dressings to the exposed cord.
6. Maintain hand position during rapid transport to the receiving hospital. The definitive treatment is an emergency cesarean section.

UTERINE INVERSION

This is a turning "inside out" of the uterus. Signs and symptoms include postpartum hemorrhage with sudden and severe abdominal pain. Hypovolemic shock may develop rapidly.

1. Maintain universal blood and body fluid precautions.
2. Follow standard hemorrhagic shock protocol.
3. Do not attempt to detach the placenta or pull on the cord.
4. Make one (1) attempt to reposition the uterus:
5. Apply pressure with the fingertips and palm of a gloved hand and push the uterine fundus upward and through the vaginal canal.
6. If procedure is ineffective, cover all protruding tissues with moist sterile dressings and rapidly transport to hospital.

POSTPARTUM HEMORRHAGE

This is defined as the loss of 500 ml or more of blood in the first twenty-four (24) hours following delivery. The most common cause is the lack of uterine muscle tone and is most frequently seen in the multigravida and/or multiple birth mothers. However, any other obstetrical malady may cause hemorrhage.

Follow general treatment guidelines as indicated in protocols. Treat for shock; administer high concentration of oxygen. Advanced procedures should include 1-2 IVs of Normal Saline (recommended during transport) followed by a 250 cc - 500 cc fluid bolus of Normal Saline. Titrate IV flow rate to patient's hemodynamic status.

3.14 SEIZURES

A seizure is a temporary alteration in behavior due to the massive electrical discharge of one or more groups of neurons in the brain. Seizures can present in several different forms: generalized or grand mal seizure, partial/ simple, partial/complex or petit mal seizure. The single most common cause of seizure disorder is idiopathic epilepsy. However, there are multiple other causes: alcohol abuse, hypoglycemia, head trauma, vascular disorders, cerebrovascular accidents, overdose, infection, psychiatric, electrolyte abnormalities, eclampsia, hypoxemia, toxic exposure, drug withdrawal and structural brain disorders such as tumors. The seizure may be followed by a post-ictal state or complete coma depending upon cause.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed. Consider nasopharyngeal airway. Protect patient from injury and secure airway as opportunity arises.
3. Administer high concentration of oxygen via non-rebreather mask once seizure has abated. Be certain that the oropharynx is clear of secretions and/or vomitus.
4. Obtain appropriate history related to event, including Past Medical History, Medications, Drug allergies, Substance abuse or Trauma. Question all witnesses or bystanders as to actual event.
5. The majority of seizures are self-limiting, followed by a gradual awakening. However, prolonged or recurrent seizures may indicate status epilepticus. (See below)

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. In cases of suspected head/neck injury, assure cervical spine immobilization.
- c. Maintain an open airway and assist ventilations as needed. Consider nasopharyngeal airway. Protect patient from injury and secure airway as opportunity arises.
- d. Administer high concentration of oxygen via non-rebreather mask once seizure has abated. Be certain that the oropharynx is clear of secretions and/or vomitus.
- e. Activate Paramedic intercept, if deemed necessary and if available.
- f. If patient is a known diabetic, determine Blood Glucose level. If glucose is less than 50 mg/dL or symptomatic and the patient is conscious and can speak and swallow, give oral glucose or other sugar source as tolerated. CAUTION: Do NOT administer anything orally if the patient does not have a reasonable Level of Consciousness and normal gag reflex.
- g. Initiate transport as soon as possible with or without Paramedics.

INTERMEDIATE PROCEDURES

- h. Provide advanced airway management (if indicated).
- i. Determine Blood Glucose level:
- j. If glucose is less than 50 mg/dL, or symptomatic administer Dextrose 50%, 25 grams IV Push. Additional Dextrose 50% may be administered as necessary.

CAUTION: If cerebrovascular accident is suspected, contact Medical Control prior to administration.

- k. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- l. If suspected narcotic overdose: Narcan 0.4 – 2.0 mg IV Push or IM, MADD, SQ. Additional Narcan (0.4 – 2.0 mg) may be administered as necessary – titrate to respiratory status.
- m. Thiamine 100 mg IV or IM (if suspected alcohol abuse or malnutrition)
- n. Suspected hypoglycemia if no IV access administer Glucagon 1 mg IM or MADD.
- o. Cardiac Monitor: manage dysrhythmias per protocol.
- p. If patient is in status epilepticus, administer Valium (Diazepam) 2 mg slow IV push.
- q. May be repeated if necessary up to 20 mg.
- r. If patient is still actively seizing, secure airway with endotracheal tube.
- s. Initiate transport as soon as possible.

Notify receiving hospital.

MEDICAL CONTROL may order:

- Additional Dextrose 50%, 25 gm IV Push
- Additional Narcan 0.4-2.0 mg IV Push or IM, or MADD.
- Additional Valium (Diazepam) 5 mg - 10 mg slow IV push.
- Magnesium Sulfate 2g no faster than 1 g/min.
- Further Normal Saline bolus.
- Dependent upon conditions for suspected substance abuse, overdose, and toxic exposure: refer to specific protocols.

3.15 SHOCK (HYOPERFUSION) OF UNKNOWN ETIOLOGY

Shock is defined as a condition of inadequate tissue perfusion and oxygenation resulting in abnormal tissue metabolism at the cellular level. Multiple causes of shock exist and include hypovolemia (hemorrhage, burns, dehydration, and anaphylaxis); cardiogenic (myocardial infarction, congestive heart failure, dysrhythmias); obstructive (pericardial tamponade, pulmonary embolism, aortic dissection); distributive (infection, sepsis, poisonings, and spinal cord injuries).

The patient with severe decompensated shock will present with hypotension and changes in mental status (agitation, restlessness) eventually leading to confusion and coma.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed. Assume spinal injury when appropriate and treat accordingly.
3. Administer high concentration oxygen via non-rebreather mask.
4. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs.
5. Obtain appropriate history related to event, including Past Medical History, Medications, and Drug Allergies, Substance abuse or Trauma.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway. This may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated. Assist ventilations as needed.
- c. Administer high concentration of oxygen by non-rebreather mask.
- d. In cases of suspected head/neck injury, assure cervical spine stabilization/immobilization.
- e. Control/stop any identified life threatening hemorrhage (direct pressure, pressure points, etc.)
- f. Place patient in supine position with legs elevated unless suspected respiratory compromise.
- g. Activate ALS intercept, if deemed necessary and if available.
- h. Initiate transport as soon as possible with or without ALS.

INTERMEDIATE PROCEDURES

- i. Provide advanced airway management (if indicated).
- j. Initiate IV Normal Saline while in transport. Administer a 250 cc bolus and contact medical control for further fluid boluses.
- k. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- l. Initiate IV Normal Saline. Administer 250-500 cc fluid bolus and titrate to systolic BLOOD PRESSURE >90.
- m. Establish IO after 2 peripheral attempts, if indicated.
- n. Cardiac Monitor: manage dysrhythmias per protocol.
- o. Dopamine infusion: 2-20 mcg/kg/minute –Infusion rates titrated to SBP > 100 or improved mental status.
- p. Notify receiving hospital.

Attempt to identify the cause of shock and contact MEDICAL CONTROL: The following may be ordered:

- Repeat fluid bolus (es).
- Establish a second IV of Normal Saline.

NOTE: Vasopressor medications are not indicated for patients in hypovolemic shock. Primary efforts must be directed toward replacing circulatory volume and improving oxygenation.

3.16 SYNCOPE OF UNKNOWN ETIOLOGY

Syncope is a brief loss of consciousness caused by inadequate perfusion of the brain. If the patient remains unconscious, they should be treated according to the "Altered Mental Status" protocol. Syncope may be caused by any mechanism that results in decreased blood flow to the brain: vasovagal (simple faint, hypovolemia (orthostatic), cerebrovascular disease (TIA/CVA), cardiac dysrhythmia, pulmonary embolism, carotid sinus sensitivity, metabolic causes (intoxication, COPD, suffocation, hypoglycemia), neuropsychologic (seizure, hyperventilation, hysteria), and medications (nitroglycerin, thorazine, quinidine, isosorbide dinitrate, and captopril).

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed. Assume spinal injury when appropriate and treat accordingly.
3. Administer high concentration oxygen via non-rebreather mask.
4. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs.
5. Obtain appropriate history related to event, including Past Medical History, Medications, and Drug Allergies, Substance abuse or Trauma. Question all witnesses or bystanders as to the actual event.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway. This may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated. Assist ventilations as needed.
- c. Administer high concentration of oxygen by non-rebreather mask.
- d. In cases of suspected head/neck injury, assure cervical spine stabilization/immobilization.
- e. If suspected hypovolemia etiology (i.e. GI bleed, ectopic pregnancy) place patient supine and elevate legs.
- f. Determine Blood Glucose level. If glucose is less than 50 mg/dL or symptomatic and the patient is conscious and can speak and swallow, give oral glucose or other sugar source as tolerated. CAUTION: Do NOT administer anything orally if the patient does not have a reasonable Level of Consciousness and normal gag reflex.
- g. Initiate transport as soon as possible with or without Paramedics.

INTERMEDIATE PROCEDURES

- h. Provide advanced airway management (if indicated).
- i. Initiate IV Normal Saline (KVO). If suspect hypovolemic etiology, titrate IV to patient's hemodynamic status.
- j. Determine Blood Glucose level: If glucose is less than 50 mg/dL, or symptomatic administer Dextrose 50%, 25 grams IV Push. Additional Dextrose 50% may be administered as necessary.

CAUTION: If cerebrovascular accident is suspected, contact Medical Control prior to administration.

- k. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- l. Cardiac Monitor: manage dysrhythmias per protocol.
- m. If suspected narcotic overdose: Narcan 0.4-2.0 mg IV Push or IM, MADD, SQ. Additional Narcan (0.4-2.0 mg) may be administered as necessary – titrate to respiratory status.
- n. Thiamine 100 mg IV or IM (unless patient is clearly suffering from hypoglycemia due to insulin shock)
- o. If no IV access, administer Glucagon 1mg IM or MADD for hypoglycemia.
- p. Initiate transport as soon as possible.

Notify receiving hospital.

MEDICAL CONTROL Additional orders may include

- Further Normal Saline bolus.
- Glucagon 1.0 mg IM, IV or MADD for suspected beta-blocker toxicity.
- Dependent upon conditions for suspected substance abuse, overdose, toxic
- Exposure: refer to specific protocols.

3.17 TOXICOLOGY / SUBSTANCE ABUSE / OVERDOSE

Poison Control: 1-800-222-1222

All toxicologic emergencies or "poisonings" involve some form of voluntary or accidental exposure to toxic substances (chemicals) or pharmacological substances. Poisoning may be the result of exposure to toxic substances from ingestion, inhalation, injection or skin absorption. The most common poisoning emergencies include, but are not limited to: corrosive agents (acids/alkalis), hydrocarbons (gasoline, oil, pesticides, paints, turpentine, kerosene, lighter fluids, benzene, and pine-oil products), methanol (wood alcohol), ethylene glycol (anti-freeze), isopropyl alcohol, cyanide, food poisonings (bacterial, viral, and non-infectious) and plant poisonings. Envenomations are also managed as clinical poisonings. The primary goal of physical assessment of the poisoned patient is to identify effects on the three vital organ systems most likely to produce immediate morbidity and/or mortality: respiratory system, cardiovascular system and central nervous system. Major toxicity due to serious poisoning is evident in five (5) clinical signs: coma, cardiac dysrhythmia, gastrointestinal disturbance, respiratory depression, and hypotension or hypertension. Therefore, clinical management should be directed toward managing these system disorders.

An "overdose" is the result of an individual's intentional/accidental exposure to a pharmacological substance(s). The most common drugs of abuse resulting in overdose are: narcotics, central nervous system depressants, central nervous system stimulants and hallucinogens.

General management principles should be directed towards patient's clinical status and suspected cause for their clinical condition. ALS personnel must constantly be aware of immediate need for potential antidote (e.g., Narcan for narcotic overdose). Due to the complex nature of poisonings and substance abuse emergencies, it is strongly recommended that Medical Control/Poison Control Center be utilized in the initial management of these patients. The following protocol is a general treatment / management protocol.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal precautions for toxic chemicals and blood and body fluids (gloves, face mask etc.).
2. Assure scene safety, i.e. by ascertaining the source and type of poisoning. This is especially important when responding to industrial and/or farm accidents. Call appropriate public service agencies: fire, rescue, or HAZMAT teams to properly stabilize the scene and rescue the victim(s) from the source of contamination. The patient will need to be removed from point of exposure and must be properly decontaminated. Rescuers will need to place patient in a safe environment such that the EMTs and/or Paramedics may administer emergency care.
3. Maintain an open airway and assist ventilations as needed. Assure spinal stabilization/immobilization if indicated. Airway may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated.
4. Administer high concentration oxygen by non-rebreather mask as determined by patient's condition.
5. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs.
6. Obtain appropriate history related to event, including Past Medical History, Medications, and Drug Allergies, Substance abuse or Trauma.
7. General management principles should be directed towards patient's clinical status and suspected cause for their clinical condition.
8. Envenomations: immobilize the extremity in a dependent position. May utilize cold packs and/or constricting bands, as indicated.

TREATMENT / BASIC PROCEDURES

- a. Maintain scene safety and universal precautions for toxic chemicals and blood and body fluids (gloves, face mask etc.). If patient presents as an IV drug abuse/overdose, be cautious for needles and other drug paraphernalia and dispose of appropriately (legal implications may require EMS providers to give the drug paraphernalia to law enforcement authorities). Never place your hands in patient's pockets.

- b. Maintain an open airway and assist ventilations as needed. Airway may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated.
- c. Administer high concentration of oxygen by non-rebreather mask.
- d. Identify offending agent and route of exposure.
- e. If patient is a known diabetic, determine Blood Glucose level. If glucose is less than 50 mg/dL or symptomatic and the patient is conscious and can speak and swallow, give oral glucose or other sugar source as tolerated. CAUTION: Do NOT administer anything orally if the patient does not have a reasonable Level of Consciousness and normal gag reflex.
- f. Initiate transport as soon as possible with or without Paramedics.

INTERMEDIATE PROCEDURES

- g. Provide advanced airway management (if indicated).
- h. Initiate IV Normal Saline (KVO). If suspect
- i. Hypovolemic etiology, titrate IV to patient's hemodynamic status.
- j. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- k. Cardiac Monitor: manage dysrhythmias per protocol.
- l. If suspected narcotic overdose: Narcan 0.4-2.0 mg IV Push or MADD, IM, SQ. Additional Narcan (0.4-2.0 mg) may be administered as necessary – titrate to respiratory status.
- m. If glucose is less than 50 mg/dL, or symptomatic administer Dextrose 50%, 25 grams IV Push.
- n. Additional Dextrose 50 % may be administered as necessary.
- o. Thiamine 100 mg IV or IM (if suspected alcohol abuse or malnutrition)
- p. If no IV access, administer Glucagon 1 mg IM or MADD, for hypoglycemia.
- q. Initiate transport as soon as possible.

Notify receiving hospital.

Contact MEDICAL CONTROL for orders which may include.

- Dextrose 50%, 25 gm IV Push
- Narcan 0.4-2.0 mg IV Push or IM, MADD
- Further Normal Saline bolus.
- Atropine 2.0- 5.0 mg I V Push. (i.e., organophosphate poisoning management)
- Albuterol 0.5% (i.e., bronchospasm management)
- Valium (Diazepam) 5 mg-10 mg slow IV push.
- Glucagon 0.5 - 1 mg IM, IV MADD, for known or suspected beta-blocker overdose; (Pediatric dosage: 0.1 mg/kg IV, IO, IM up to 1 mg).
- Sodium Bicarbonate for TCA overdose.

3.18 SEXUAL ASSAULT

TREATMENT STANDING ORDERS:

- a. Maintain universal blood and body fluid precautions.
- b. Provide advanced medical intervention as required.
- c. Provide emotional support and reassurance. (Female crewmember if possible)
- d. Treat all injured found, preferably with a relative or female law enforcement officer present.
- e. Preserve all evidence for collection. Do not allow patient to go to the bathroom, shower or change clothes
- f. Transport patient to hospital equipped to perform sexual assault examinations.
- g. Notify receiving hospital

Initiate transport to appropriate receiving hospital

- Dallas County – Parkland
- Tarrant County – John Peter Smith
- Collin County – Medical Center McKinney, Medical Center Plano, Children’s Hospital Dallas

TRAUMA EMERGENCIES

4.1 ABDOMINAL/PELVIC TRAUMA

Abdominal injuries are the result of blunt trauma, penetrating trauma or both and most commonly result from motor vehicle crashes, blast injuries, falls from heights, blows to the abdomen, abdominal compression, gunshot and stab wounds. Abdominal injuries include skeletal, renal, splenic, hepatic, bladder, gastrointestinal, vascular, pancreatic and diaphragmatic. A number of potentially lethal injuries can occur with significant abdominal trauma. In general, these patients are managed under the multi-systems trauma protocol in most circumstances.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed. Assume spinal injury when appropriate and treat accordingly.
3. Administer high flow oxygen by non-rebreather mask or bag valve mask as determined by patient's condition.
4. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs.
5. Treat all life threatening conditions as they become identified.
6. When multiple patients are involved, they need to be appropriately triaged.
7. Obtain appropriate history related to event, including Past Medical History, Medications, Drug Allergies, and Substance abuse.
8. Patient care activities must not unnecessarily delay patient transport to an appropriate facility.
9. If the scene time and/or transport time will be prolonged, and a landing site is available, consider transport by Helicopter from the scene to an appropriate Trauma Center. See Helicopter protocol.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway and assist ventilations as needed. In cases of suspected head/neck injury, assure cervical spine stabilization/immobilization. Airway may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated.
- c. Administer high concentration oxygen by non-rebreather mask as determined by patient's condition.
- d. Treat all life threatening conditions as they become identified.
- e. Cover eviscerations with sterile non-adherent material (saline moistened)
- f. If applicable, stabilize any impaled object(s).
- g. Activate Paramedic intercept, if deemed necessary and if available.
- h. Patient care activities must not unnecessarily delay patient transport to an appropriate facility.
- i. For both blunt and penetrating trauma with or without hemodynamic instability:
- j. Place patient in supine position with legs elevated, with flexion at hips and knees (unless suspected respiratory compromise).

INTERMEDIATE / PARAMEDIC PROCEDURES

- k. Provide advanced airway management if indicated.
- l. Initiate IV Normal Saline. If SBP <90 or AMS, administer 250-500 cc fluid bolus and titrate IV to patient's hemodynamic status.
- m. Initiate transport as soon as possible with or without Paramedics.

Notify receiving hospital.

Contact MEDICAL CONTROL. Medical control may order:

- Additional IV Normal Saline bolus(es) 250 cc - 500 cc bolus or wide open titrated to patient's condition.

SPECIAL CONSIDERATION: The pregnant patient

Pregnant victims involved in major trauma to the abdomen are more susceptible to life-threatening injuries. In general, the fluid-filled gravid uterus protects the fetus from blunt trauma. However, direct trauma may result in premature separation of the placenta from the uterine wall, premature labor, uterine rupture, abortion and fetal death. **Therefore, immediate transport to the appropriate emergency facility is of highest priority.**

Abdominal trauma during pregnancy:

- Follow all procedures identified above.
- Place patient in left lateral recumbent position (non-spinal injured patient).
- If suspected spinal injury: completely immobilize the patient on a long board and place the patient on her left side (while immobilized).

Notify appropriate facility immediately.

4.2 BURNS / INHALATION INJURIES

A burn injury is caused by an interaction between energy (thermal, chemical, electrical* or radiation*) and biological matter. Thermal burns (flames, scolds, contact with hot substances or objects, including steam) account for the majority of burns. Chemical burns are caused by acids, alkalis and organic compounds (phenols, creosote, and petroleum products) commonly found in industrial and household environments.

Burn severity should be assessed and classified by degree. The first-degree burn involves only the upper layers of the epidermis and dermis. The second-degree burn penetrates slightly deeper and produces blistering of the skin. First- and second- degree burns are considered partial thickness burns. Third-degree or full thickness burns penetrate the entire dermis. These burns may involve injury to blood vessels, nerves, muscle tissue, bone, or internal organs. Burn surface area should be assessed by the rule of nines.

Inhalation injury and fire toxicology (Carbon Monoxide, Hydrogen Chloride, Phosgene, Nitrogen Dioxide, Ammonia, Cyanide, Sulfur Dioxide, Methane, and Argon) frequently accompany burn injuries. This is especially true if injury occurred in a closed space and/or patient presents with facial burns, singed nasal hairs, beard or mustache, sooty or bloody sputum, difficulty breathing, or brassy cough. The signs and symptoms of inhalation injuries may not be noted until several hours after inhalation.

*** NOTE: see specific protocols**

ASSESSMENT / TREATMENT PRIORITIES

1. Assure scene safety, including safety for the patient(s) and rescuer(s). Call appropriate public service agencies FIRE/RESCUE/HAZMAT for assistance if needed. Take appropriate personal protective measures against airborne dust or toxic fumes and any other potential chemical agents.
2. Maintain universal blood and body fluid precautions.
3. Maintain an open airway and assist ventilations as needed. Assume spinal and other potential traumatic injuries when appropriate and treat accordingly.
4. Administer high flow oxygen by non-rebreather mask or bag valve mask as determined by patient's condition (humidified oxygen is recommended).
5. Early endotracheal intubation must be considered for all patients with suspected inhalation injuries and/or present in respiratory distress.
6. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs.
7. Treat all life threatening conditions as they become identified.
8. Obtain appropriate history related to event (determine mechanism and time of exposure, assess patient for evidence of inhalation injury including potential for toxic inhalation exposure) Obtain Past Medical History, Medications, Drug Allergies, Substance abuse.
9. Appropriately manage all Thermal/Chemical burns.
10. If suspect severe Carbon Monoxide Poisoning, consider appropriate Point-of-Entry as defined by Regional capabilities, i.e., Burn Center and/or Hyperbaric chamber availability.

TREATMENT / BASIC PROCEDURES

- a. Assure scene safety, including safety for the patient(s) and rescuer(s). Call appropriate public service agencies FIRE/RESCUE/HAZMAT for assistance if needed. Take appropriate personal protective measures against airborne dust or toxic fumes and any other potential chemical agents.
- b. Maintain universal blood and body fluid precautions.
- c. Maintain an open airway and assist ventilations as needed. Assume spinal and other potential traumatic injuries when appropriate and treat accordingly.
- d. Administer high flow oxygen by non-rebreather mask or bag valve mask as determined by patient's condition (humidified oxygen is recommended).
- e. Treat all life threatening conditions as they become identified.
- f. Appropriately manage all Thermal/Chemical burns.

THERMAL:

Stop burning process

Remove smoldering, non-adherent clothing and jewelry. DO NOT pull off skin or tissue.

With burns of less than 10% body surface area (BSA) apply moist saline dressings.

With burns greater than 10% BSA apply sterile burn dressings and/or burn sheets.

CHEMICAL

Determine offending agent(s) if possible. Consider HAZMAT intervention if indicated.

Wash with copious amounts of clean water and/or sterile normal saline unless contraindicated by chemical agent (i.e., Sodium, Potassium and Lithium metals) CAUTION: Dry Lime/Lye and Phenol exposure: water irrigation is not recommended as primary treatment since water exposure may produce further chemical reactions. It is advised to contact MEDICAL CONTROL for further advice.

- g. Activate ALS intercept if deemed necessary and if available.

INTERMEDIATE PROCEDURES

- h. Provide advanced airway management, if indicated.
i. Initiate IV Normal Saline in unaffected limb. If suspected hypovolemia, refer to Parkland Burn Formula ($\text{kg} \times \text{BSA} / 4 = \text{fluid bolus over 60 minutes.}$)
j. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- k. Cardiac monitor/ Dysrhythmia recognition. Manage according to protocol.
l. Consider Morphine Sulfate 2 mg IV Push for pain. May repeat dose up to 10 mg.
m. Initiate transport as soon as possible

Notify receiving hospital.** If suspect severe Carbon Monoxide Poisoning, consider appropriate Point-of-Entry as defined by Regional capabilities, i.e., Burn Center and/or Hyperbaric chamber availability (Presbyterian Hospital Dallas, Medical City Dallas.)

Contact MEDICAL CONTROL. Medical Control may order:

- Additional Normal Saline 250 cc - 500 cc bolus(es), wide open or titrated to patient's hemodynamic status
- Additional Morphine Sulfate 2 mg IV PUSH. May repeat up to 10 mg.

**** Many EMS systems develop point of entry protocols to determine which patients need transport to specialized burn centers. According to the Committee on Trauma of the American College of Surgeons (ACS) and the American Burn Association (ABA), burn injuries usually requiring referral to a burn center include the following guidelines:**

- Second- and third-degree burns that in combination cover more than ten percent (10%) of the body surface area in patients under ten (10) or over fifty (50) years of age.
- Second- and third-degree burns that in combination cover more than twenty percent (20%) of the body surface area of patients in the other age groups.
- Second- and third-degree burns that involve the face, hands, feet, genitalia, or perineum or those that involve skin overlying major joints.
- Third-degree burns over more than five percent (5%) body surface area in any age group.
- Significant electrical burns, including lightning injury.
- Significant chemical burns.
- Inhalation injury.
- Burn injury in patients with preexisting illnesses that could complicate management, prolong recovery, or affect mortality.
- Burns in any patient in whom concomitant trauma poses an increased risk of morbidity or mortality and who may be initially treated in a trauma center until stable before transfer to a burn center.

- Burns in children seen in hospitals without qualified personnel or equipment for their care should be transferred to a burn center with these capabilities.
- Burn injuries in patients who require special social and emotional or long-term rehabilitation support, including cases involving suspected child abuse and neglect.

AMERICAN BURN ASSOCIATION CATEGORIZATION OF BURNS

MAJOR BURN

- 25% of BSA or greater
- Functionally significant involvement of hands, face, feet, or perineum
- Electrical or Inhalation Injury
- Concomitant Injury or severe preexisting medical problems

MODERATE BURN

- 15-25% BSA
- No complications or involvement of hands, face, feet, or perineum
- No electrical injury, inhalation injury, concomitant injury
- No severe preexisting medical problem

MINOR BURN

- 5% or less BSA
- No involvement of hands, face, feet, or perineum.
- No electrical burns, inhalation injury, severe preexisting medical problems, or complications

4.3 HEAD TRAUMA / INJURIES

Head (brain) injury is the most frequent cause of vehicular death. Injury to the head occurs as a result of blunt or penetrating trauma. The primary concern in the pre-hospital setting is awareness of the potential for brain injury and recognition of the signs and symptoms of head, neck and spinal injury early in patient assessment. These signs and symptoms may include but are not limited to the following: agitation, loss of consciousness, bradycardia and hypertension, seizures, paralysis, vomiting and airway occlusion.

Head trauma can be categorized into the following elements: Superficial injury involving scalp, fascia, and skull; Internal injury involving brain and spinal cord; Sensory organ injury involving the eye and the ear; Neck injury involving skeletal and soft tissue structures. For this reason, all these conditions must be considered when managing patients with head injury. Therefore, cervical spine injury may accompany head injury; intubation may be required to secure the airway as protective gag reflexes may be lost; sudden death may result from brain herniation; severe bleeding from scalp wounds may occur; severe facial trauma may make airway management difficult, etc. Hyperventilation may help brain injury by reducing intracranial pressure. Due to all these factors, the treatment of head injury may require specialty care at a designated trauma center.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed. Assume spinal injury and treat accordingly.
3. Administer high flow oxygen by non-rebreather mask or bag valve mask as determined by patient's condition.
4. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness (AVPU/Glasgow Coma Scale), ABCs, disability and Vital Signs. Examine head for presence of lacerations, depressions, swelling Battle Sign, Cerebrospinal Fluid (CSF) from ears/nose, and foreign (impaled) objects.
5. Treat all life threatening conditions as they become identified.
6. When multiple patients are involved, they need to be appropriately triaged.
7. Obtain appropriate history related to event, mechanism of injury, including Past Medical History, Medications, Drug Allergies, and Substance abuse.

NOTE: Family and friends may be useful during the assessment to determine normal or abnormal mental status.

Patient care activities must not unnecessarily delay patient transport to an appropriate facility. If the scene time and/or transport time will be prolonged, and a landing site is available, consider transport by Helicopter from the scene to an appropriate Trauma Center. See Helicopter protocol.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway and assist ventilations as needed. Assure cervical spine stabilization and immobilization. Airway management may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated.
- c. Administer high concentration oxygen by non-rebreather mask as determined by patient's condition.
- d. Control/stop any identified life threatening hemorrhage (direct pressure, pressure points, etc.)
- e. Activate ALS intercept, if deemed necessary and if available.
- f. Patient care activities must not unnecessarily delay patient transport to an appropriate facility.
- g. Initiate transport as soon as possible with or without ALS.

INTERMEDIATE PROCEDURES

- h. Provide advanced airway management if indicated.
- i. Ventilate with 100% oxygen.
- j. Initiate IV Normal Saline (KVO).

k. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- l. 1-1.5 mg/kg Lidocaine IV push prior to intubation, if intubation is indicated.
- m. Initiate transport as soon as possible.

Contact receiving hospital of patient's status. (AVPU / Glasgow Coma Scale)

4.4 INTRACEREBRAL BLEED / HEAD INJURY

TREATMENT STANDING ORDERS:

- a. Provide advanced airway management (if indicated).
- b. Initiate IV Normal Saline (KVO). If suspect hypovolemic etiology, titrate IV to patient's hemodynamic status (Systolic Blood Pressure >90 mmHg).
- c. Cardiac Monitor: manage dysrhythmias per protocol.

The following may be considered for treatment at the crew's option:

- d. Protect airway via ET tube and maintain ventilatory rate of 12 - 14 breaths per minute using B-V-M or B-V-ET. Do not hyperventilate
- e. Initiate transport as soon as practical. Consider cervical immobilization in patients not radiologically cleared.

Notify receiving hospital.

4.5 MUSCULOSKELETAL INJURIES

Musculoskeletal injuries can occur from both blunt and penetrating trauma. Injuries may include contusions, cramps, dislocations, fractures, spasm, sprains, strains and subluxations. Early proper treatment of these injuries may prevent long term morbidity and disability. Major injuries to the musculoskeletal system (e.g., pelvic fractures and hip dislocations) may cause shock due to hemorrhage, injury to adjacent nerves and blood vessels and infection due to the presence of an open fracture. Fractures of the humerus, pelvis or femur take priority over other musculoskeletal injuries as do fractures or dislocations involving circulatory or neurologic deficits.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed. Assume spinal injury when appropriate and treat accordingly.
3. Administer oxygen by nasal cannula or mask as determined by patient's condition.
4. Determine patient's hemodynamic stability and symptoms. If indicated, continually assess Level of Consciousness, ABCs and Vital Signs.
5. Assess the neurovascular status (motor, sensory and circulation) distal to the injury before and after proper immobilization.
6. If no palpable, distal pulse apply gentle traction along the axis of the extremity distal to the injury until the distal pulse is palpable and immobilize in place.
Note: This does not apply to dislocations.
7. Immobilize fractures and/or dislocations involving joints in the position found. Joints adjacent to each end of the injured bone must be fully immobilized as well as supporting and immobilizing the injured bone.
8. All jewelry should be removed from an injured extremity.
9. Obtain appropriate history related to event, including Past Medical History, Medications, and Drug Allergies, Substance abuse or Trauma.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway and assist ventilations as needed. In cases of suspected head/neck injury, assure cervical spine stabilization/immobilization. Airway may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated.
- c. Administer oxygen by nasal cannula or mask as determined by patient's condition.
- d. Control/stop any identified life threatening hemorrhage (direct pressure, pressure points, etc.)
- e. Assess the neurovascular status (motor, sensory and circulation) distal to the injury before and after proper immobilization.
- f. If no palpable, distal pulse apply gentle traction along the axis of the extremity distal to the injury until the distal pulse is palpable and immobilize in place.
Note: This does not apply to dislocations.
- g. Immobilize fractures and/or dislocations involving joints in the position found. Joints adjacent to each end of the injured bone must be fully immobilized as well as supporting and immobilizing the injured bone.
- h. All jewelry should be removed from an injured extremity.

INTERMEDIATE PROCEDURES

- i. Provide advanced airway management (if indicated).
- j. Initiate IV Normal Saline while in transport. (If indicated).
- k. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- l. Initiate IV Normal Saline, titrate IV infusion rate to patient's hemodynamic status.

- m. For pain control, Morphine Sulfate 2 mg IV Push q 5 min to a max of 10 mg in 1 hrs for pain control related to long bone or muscle injury. Doses exceeding 10 mg at discretion of Medical Control. Contraindicated in multisystem trauma.
- n. Initiate transport as soon as possible.

Notify receiving hospital.

Contact MEDICAL CONTROL for further orders.

4.6 MULTI-SYSTEMS TRAUMA

Multi-systems trauma is a leading cause of death and disability. Trauma victims require definitive surgical intervention to repair and/or stabilize their injuries in order to enhance survival and reduce complications. Successful management of trauma victims will require rapid assessment, stabilization and transportation to an appropriate trauma center as defined by regional point of entry guidelines. Activate air transport services as appropriate.

Multiple trauma victims are identified by the history of the incident in which serious injury can occur as well as the physiologic alterations that an individual suffers. Many injuries are occult and one must be careful not to be fooled by obvious external injuries which ultimately prove to be less serious than hidden internal disorders. Physiologic alterations may not occur immediately post-injury. However, once they develop, they may lead to shock and death within a few minutes. About one liter of further blood loss converts a stage II hemorrhage with minimal abnormalities of vital signs to a stage IV hemorrhage with refractory shock and inevitable death. Proper, timely interventions may well prevent this occurrence.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed. Assume spinal injury when appropriate and treat accordingly.
3. Administer high flow oxygen by non-rebreather mask or bag valve mask as determined by patient's condition.
4. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs. Treat all life threatening conditions as they become identified.
5. When multiple patients are involved, they need to be appropriately triaged.
6. Obtain appropriate history related to event, including Past Medical History, Medications, Drug Allergies, and Substance abuse.
7. Patient care activities must not unnecessarily delay patient transport to an appropriate facility. If the scene time and/or transport time will be prolonged, and a landing site is available, consider transport by Helicopter from the scene to an appropriate Trauma Center. See Helicopter protocol.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway. In cases of suspected head/neck injury, assure cervical spine stabilization/immobilization. Airway may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated. Assist ventilations as needed.
- c. Administer high concentration oxygen by non-rebreather mask as determined by patient's condition.
- d. Control/stop any identified life threatening hemorrhage (direct pressure, pressure points, etc.)
- e. Activate ALS intercept, if deemed necessary and if available.
- f. Patient care activities must not unnecessarily delay patient transport to an appropriate facility.
- g. Initiate transport as soon as possible with or without ALS.

INTERMEDIATE PROCEDURES

- h. Provide advanced airway management if indicated.
- i. Initiate 1-2 IVs Normal Saline while in transport (titrated to patient's condition), or during extrication procedures.
- j. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- k. Cardiac Monitor: manage dysrhythmias per protocol.
- l. Specific procedures as indicated (i.e. chest decompression, needle cricothyroidotomy)
- m. Initiate transport as soon as possible.

Contact MEDICAL CONTROL for further orders.

4.7 SOFT TISSUE / CRUSH INJURIES

Trauma to the skin may include abrasions, lacerations, hematomas, punctures, avulsions, contusions, incisions, amputations, crush injuries and compartment syndromes. In general, such injuries rarely threaten life. However, soft tissue injuries may damage blood vessels, nerves, connective tissue and other internal structures. Crush and compartments syndromes can be devastating to the patient. Early recognition and prompt therapy are essential to achieve a favorable outcome. Delay in diagnosis and treatment can result in permanent and severe disability.

Crush injury is associated with severe trauma and most commonly occurs in multiple casualty disasters, such as bombings, earthquakes, building collapse, train accidents and mining accidents. It is the result of prolonged compression or pressure on various parts or all of the human body. Crush injuries may result in fatal injury or severe metabolic abnormalities that may result in death. Careful monitoring of these patients is essential.

Compartment syndrome is usually due to a crush injury and is a surgical emergency. It occurs most commonly in the forearm and leg, gluteal region, thigh, and lumbar paraspinal muscles. Compartment syndrome may result in ischemic swelling, muscle infarction, nerve injury and permanent loss of extremity function.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Assure scene safety, including safety for the patient(s) and rescuer(s), if indicated.
3. Maintain an open airway and assist ventilations as needed. Assume spinal injury when appropriate and treat accordingly.
4. Administer high flow oxygen by non-rebreather mask or bag valve mask as determined by patient's condition.
5. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs.
6. Treat all life threatening conditions as they become identified.
7. Assess the function of the injured area above and below the injury site: check pulses, sensation, and motor function distal to the injury. Splint/immobilize injured areas as indicated.
8. When multiple patients are involved, they need to be appropriately triaged.
9. Obtain appropriate history related to event, including Past Medical History, Medications, Drug Allergies, and Substance Abuse.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway and assist ventilations as needed. In cases of suspected head/neck injury, assure cervical spine stabilization/immobilization. Airway may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated.
- c. Administer high concentration oxygen by non-rebreather mask as determined by patient's condition.
- d. Control/stop any identified life threatening hemorrhage (direct pressure, pressure points, etc.)
- e. Place dry sterile dressing on all open wounds and bandage as needed:
- f. If wound is grossly contaminated irrigate with normal saline.
- g. Stabilize all protruding foreign bodies (impaled objects) if noted.
- h. If suspect severe crushing injury/compartment syndrome:
 - i. Remove all restrictive dressings.
 - j. Close monitoring of distal pulse, sensation, and motor function (CSM).
 - k. Splint/immobilize injured areas as indicated.
 - l. Activate ALS intercept, if deemed necessary and if available.
 - m. Initiate transport as soon as possible with or without ALS.

INTERMEDIATE PROCEDURES

- n. Provide advanced airway management if indicated.

- o. Initiate 1-2 IVs Normal Saline while in transport (titrated to patient's condition), or during extrication procedures.
- p. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- q. Cardiac Monitor: manage dysrhythmias per protocol.
- r. Specific procedures as indicated (i.e. chest decompression, needle cricothyroidotomy)
- s. Sodium Bicarbonate 1mEq/kg in 500mL NS infusing wide open for 4 hours or greater duration.
- t. Initiate transport as soon as possible.

Notify receiving hospital.

Contact MEDICAL CONTROL for further orders.

4.8 SPINAL COLUMN / CORD INJURIES

Spinal cord injury may be the result of direct blunt and/or penetrating trauma, compression forces (axial loading), abnormal motion (hyperflexion, hyperextension, hyperrotation, lateral bending and distraction, i.e., hanging). Most spinal injuries result from motor vehicle crashes, falls, firearms, and recreational activities.

Spinal injuries may be classified into sprains, strains, fractures, dislocations and actual cord injuries. Spinal cord injuries are classified as complete or incomplete and may be the result of pressure, contusion or laceration of the cord. One should assume the presence of spine injury and/or unstable spinal column in the following circumstances: grand mal seizure activity, significant trauma and use of intoxicating substances, complaint of pain and/or paresthesia, unconsciousness subsequent to head injury, injury above the clavicle, a significant fall, a fall resulting in apparent fracture of both heels, neck tenderness and/or deformity, injury due to high speed motor vehicle crash, or electrocution, and all non-extremity penetrating injuries. Management of the patient with spinal column / cord injuries includes assessment of the patient's airway, breathing and circulation. Priority must be given to preserving spinal cord function and avoiding secondary injury to the spinal cord.

REMEMBER: Patients that may have a spinal column / cord injury may be difficult to assess as they may not present with pain or other signs and symptoms of injury. Therefore, treatment (spinal immobilization) is recommended based upon the mechanism of injury alone.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway using spinal precautions and assist ventilations as needed. Assume spinal injury and provide spinal immobilize accordingly.
3. Administer high flow oxygen by non-rebreather mask or bag valve mask as determined by patient's condition.
4. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness (AVPU/Glasgow Coma Scale), ABCs, disability and Vital Signs. Examine head for presence of lacerations, depressions, swelling, Battle's Sign, Cerebrospinal Fluid (CSF) from ears/nose, and foreign (impaled) objects. Treat all life threatening conditions as they become identified.
5. When multiple patients are involved, they need to be appropriately triaged.
6. Obtain appropriate history related to event, mechanism of injury, including Past Medical History, Medications, Drug Allergies, and Substance abuse. NOTE: Family and friends may be useful during the assessment to determine normal or abnormal mental status.
7. Patient care activities must not unnecessarily delay patient transport to an appropriate facility.
8. If the scene time and/or transport time will be prolonged, and a landing site is available, consider transport by Helicopter from the scene to an appropriate Trauma Center. See Helicopter protocol.

TREATMENT/ BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway and assist ventilations as needed. Assure spinal stabilization/immobilization.* Airway may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated.
- c. Administer high concentration oxygen by non-rebreather mask as determined by patient's condition.
- d. Control/stop any identified life threatening hemorrhage (direct pressure, pressure points, etc.)
- e. Determine presence or absence of significant neurologic signs and symptoms: motor function, sensory function, reflex responses, visual inspection, bradycardia, priapism, and hypotension, loss of sweating or shivering and loss of bladder/bowel control.
- f. Activate ALS intercept, if airway compromise and available.
- g. Patient care activities must not unnecessarily delay patient transport to an appropriate facility.
- h. Initiate transport as soon as possible with or without ALS.

INTERMEDIATE PROCEDURES

- i. Provide advanced airway management if indicated.
- j. Initiate IV Normal Saline (KVO). If hypotensive, administer a 250 cc - 500 cc bolus of Normal Saline and titrate IV to patient's hemodynamic status.
- k. CAUTION: DO NOT over-hydrate patient with suspected neurogenic shock.
- l. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- m. Cardiac monitor/dysrhythmia recognition. Manage per protocol.
- n. NOTE: Bradycardias are commonly seen in high level spinal injuries.
- o. Specific procedures as indicated (i.e. chest decompression, needle cricothyroidotomy)
- p. For suspected neurogenic shock (without hypovolemia):
- q. Dopamine (Intropin) 2-20 μ g/kg/minute. Titrate to patient's hemodynamic status.
- r. Methylprednisolone 125- 250 mg IV Push
- s. Initiate transport as soon as possible.

Notify receiving hospital of patient's status.

***SPINAL STABILIZATION / IMMOBILIZATION SUMMARY**

- Provide manual in-line immobilization
- Evaluate patient's responsiveness, ABCs, need for immediate resuscitation and check motor, sensory and circulation in all four extremities.
- Examine the patient's neck and apply cervical collar
- Immobilize the patient's torso to the selected immobilization device such that the torso cannot move up, down, left or right.
- Evaluate torso straps and adjust as needed.
- Place an appropriate amount of padding behind head if needed for adult patients and under the thorax for pediatric patients (age 7 years or under) to maintain in-line spinal immobilization.
- Immobilize the patient's head.
- Once patient is immobilized, secure patient's arms and legs to the board or immobilization device.
- Reevaluate patient's responsiveness, ABCs, need for immediate resuscitation and check motor, sensory and circulation in all four extremities.

4.9 THORACIC TRAUMA

Chest injuries are the result of blunt trauma, penetrating trauma or both and most commonly result from motor vehicle crashes, blast injuries, falls from heights, blows to the chest, chest compression, gunshot and stab wounds. Thoracic injuries include skeletal, pulmonary, heart, great vessels and diaphragm. A number of potentially lethal injuries can occur with significant chest trauma. These include flail chest, hemothorax, pneumothorax, tension pneumothorax, myocardial contusion, sucking chest wound, cardiac tamponade, aortic rupture and diaphragmatic rupture. In general these patients are managed under the multisystems trauma protocol in most circumstances. However, Advanced Life Support intervention may be life saving for the conditions noted above.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain an open airway and assist ventilations as needed. Assume spinal injury when appropriate and treat accordingly.
2. Administer high flow oxygen by non-rebreather mask or bag valve mask as determined by patient's condition.
3. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs. Treat all life threatening conditions (tension pneumothorax, open pneumothorax, flail chest) as they become identified.
4. When multiple patients are involved, they need to be appropriately triaged.
5. Obtain appropriate history related to event, including Past Medical History, Medications, Drug Allergies, and Substance abuse.
6. Patient care activities must not unnecessarily delay patient transport to an appropriate facility.
7. If the scene time and/or transport time will be prolonged, and a landing site is available, consider transport by Helicopter from the scene to an appropriate Trauma Center. See Helicopter protocol.

TREATMENT / BASIC PROCEDURES

- a. Maintain an open airway. In cases of suspected head/neck injury, assure cervical spine stabilization/immobilization. Airway may include repositioning of the airway, suctioning or use of airway adjuncts (oropharyngeal airway / nasopharyngeal airway) as indicated. Assist ventilations as needed.
- b. Administer high concentration oxygen by non-rebreather mask as determined by patient's condition.
- c. Provide appropriate management for identified thoracic injuries:

Open pneumothorax:

immediately apply an occlusive dressing sealing 3 sides
monitor patient closely for evidence of developing tension pneumothorax

Tension pneumothorax:

(increasing ventilatory impairment, distended neck veins, unilateral decreased breath sounds, and tracheal deviation away from the side without breath sounds.)

If present following closure of open pneumothorax, release occlusive dressing temporarily, and then reseal.

Activate paramedic level ALS intercept if available for pleural decompression.

Flail chest:

(paradoxical movement of portion of chest wall)

position patient with injured side down, unless contraindicated
provide manual stabilization of the flail segment; or splint as needed.

NOTE: Assisted positive pressure ventilations using a bag-valve-mask device may be indicated and may also serve as an "internal splinting" of the flail segment due to lung expansion.

- d. Control/stop any identified life threatening hemorrhage (direct pressure, pressure points, etc.)
- e. Activate ALS intercept, if deemed necessary and if available.
- f. Patient care activities must not unnecessarily delay patient transport to an appropriate facility.
- g. Initiate transport as soon as possible with or without ALS.

INTERMEDIATE PROCEDURES

- h. Provide advanced airway management (if indicated).
- i. Initiate 1-2 IVs of Normal Saline while in transport or during extrication procedures. If SBP <90 or altered mental status, administer 250 cc - 500 cc fluid bolus and titrate IV to patients' hemodynamic status.
- j. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- k. Cardiac Monitor: manage dysrhythmias per protocol.
- l. Pleural thoracotomy (needle chest decompression) if signs of tension pneumothorax and not already performed.
- m. Specific procedures as indicated (i.e. chest decompression, needle cricothyroidotomy)
- n. Additional Normal Saline 250 cc - 500 cc bolus (es), wide open or titrate to patient's hemodynamic status.
- o. Initiate transport as soon as possible.

Notify receiving hospital.

4.10 AORTIC ANEURYSM / DISSECTION

TREATMENT STANDING ORDERS:

- a. If patient in severe pain, administer Morphine Sulfate 2 mg IV push if Blood Pressure is greater than 100 mmHg systolic; may repeat in 3 minute intervals if Blood Pressure remains greater than 100 mmHg systolic (maximum of 10 mg).
- b. If patient's Blood Pressure drops below 100 mmHg systolic: place patient supine and administer a 250 ml bolus of IV Normal Saline.
- c. If patient's Blood Pressure exceeds 120 mmHg diastolic or 180 mmHg systolic:
- d. Administer Nitroglycerine 0.4 mg (1/150 gr.) tablet or spray SL if patient is demonstrating end organ perfusion changes. NTG may be repeated in five (5) minute intervals x two (2) as dictated by patient's condition.
- e. Initiate transport as soon as possible
- f. Advanced airway management if indicated (patient's condition deteriorates).
- g. Initiate two (2) IVs of Normal Saline (KVO). Maintain Systolic Blood Pressure greater than 90 mmHg.
- h. If a dysrhythmia is identified, treat per protocol.

The following may be considered for treatment at the crew's option:

Notify receiving hospital

4.11 TRAUMATIC CARDIOPULMONARY ARREST

Cardiopulmonary arrest due to trauma may be reversible with prompt aggressive therapy. In the traumatic arrest patient, rapid transport to the nearest trauma center has shown to be the most critical element in patient survivability. This is more likely to be possible with penetrating as opposed to blunt trauma. Patients found in arrest, without any signs of life, by first- arriving EMS personnel have little probability of survival. Therefore, resuscitation of these patients should be considered only in situations where witnessed signs of life shortly before EMS arrival were noted or in exceptional circumstances (penetrating trauma, hypothermia, etc.). Successful management of these patients will require rapid assessment, stabilization and transportation to an appropriate Trauma Center as defined by regional point-of-entry guidelines. Activate air transport services as appropriate.

NOTE: The use of a cardiac monitor device should be considered in those situations of traumatic arrest wherein time allows for this procedure without compromising patient care and time of transport. (Rare instances exist of cardiac arrest secondary to trauma to the chest wall (commotio cordis) and should be appropriately managed per VF or V-Tach protocol).

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Determine unresponsiveness, absence of breathing and pulselessness.
3. Initiate cardiopulmonary resuscitation (CPR)
4. Consider all potential non-traumatic causes (hypothermia, overdose, underlying medical conditions etc.)
5. Maintain an open airway and ventilate the patient. Assume spinal injury and treat accordingly.
6. Administer 100% high flow oxygen by bag valve mask.
7. As patient's condition suggests, continually assess Level of Consciousness, ABCs and Vital Signs.
8. Treat all life threatening conditions as they become identified.
9. When multiple patients are involved, they need to be appropriately triaged.
10. Obtain appropriate history related to event, including Past Medical History, Medications, Drug Allergies, and Substance abuse.
11. Patient care activities must not unnecessarily delay patient transport to the nearest appropriate facility.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Determine unresponsiveness, absence of breathing and pulselessness.
- c. Initiate Cardiopulmonary Resuscitation (CPR)
- d. Consider all potential non-traumatic causes (hypothermia, overdose, underlying medical conditions etc.)
- e. Maintain an open airway and ventilate the patient. Assume spinal injury and treat accordingly.
- f. Administer 100% high flow oxygen by bag valve mask.
- g. As patient's condition suggests, continually assess Level of Consciousness, ABCs and Vital Signs.
- h. Treat all life threatening conditions as they become identified (i.e., life threatening hemorrhage)
- i. Activate ALS intercept and/or Helicopter transport, if deemed necessary and if available.
- j. Patient care activities must not unnecessarily delay patient transport to the nearest appropriate facility.

INTERMEDIATE PROCEDURES

- k. Provide advanced airway management.
- l. Initiate 1-2 IVs Normal Saline. Administer 250 cc -500 cc bolus, wide open or titrated to patient's mental status.
- m. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- n. Cardiac Monitor: manage dysrhythmias per protocol.

- o. Specific procedures as indicated (i.e. chest decompression, needle cricothyroidotomy)
- p. Provide appropriate management for identified injuries:
 - Head Injuries (see protocol)
 - Thoracic Injuries (see protocol)
 - Abdominal Injuries (see protocol)
- q. Initiate transport as soon as possible.

Notify receiving hospital

4.12 TRAUMATIC AMPUTATIONS

The partial or complete severance of a digit or limb is most commonly the result of an industrial/machine operation accident. It often results in the complete loss of the digit/limb. The amputated part or the skin of the amputated part may be utilized by the reimplantation surgical team. Major limb amputations may result in death due to uncontrolled hemorrhage. Careful management of the patient and their amputated part(s) will reduce the possibility of infection and increase the likelihood of successful reimplantation.

ASSESSMENT / TREATMENT PRIORITIES

Maintain universal blood and body fluid precautions.

Maintain an open airway and assist ventilations as needed. Assume spinal injury when appropriate and treat accordingly.

Administer high flow oxygen by non-rebreather mask or bag valve mask as determined by patient's condition.

Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs.

Treat all life threatening conditions as they become identified.

Obtain appropriate history related to event, including Past Medical History, Medications, Drug Allergies, and Substance abuse.

Patient transport must not be unnecessarily delayed in an effort to find avulsed tissue and/or body parts if they are not readily available. These tissues and/or body parts may be transported to receiving facility by other EMS/law enforcement providers at a later time.

TREATMENT/ BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway and assist ventilations as needed. In cases of suspected head/neck injury, assure cervical spine stabilization/immobilization.
- c. Administer oxygen as determined by patient's condition.
- d. Control/stop any identified life threatening hemorrhage (direct pressure, pressure points, etc.)
Tourniquets should be avoided if at all possible, except when absolutely required to prevent death due to life-threatening hemorrhage.
- e. Management of injured tissue:

Tissue still attached to body (i.e., avulsion):

clean wound surface with sterile Normal Saline

gently return skin to normal position if possible

control bleeding and bandage wound with bulky pressure dressings

Complete amputation:

clean wound surface with sterile Normal Saline

control bleeding and bandage wound with bulky pressure dressing

retrieve amputated tissue/part(s) if possible

wrap amputated tissue/part(s) in sterile gauze moistened with sterile Normal Saline

place amputated tissue/part(s) in a plastic bag

place sealed bag into a cool/cold water immersion.

NOTE: ice cubes may be in the water, however, no direct contact between injured tissue/part(s) and ice should occur.

- f. Activate ALS intercept, if deemed necessary and if available.

INTERMEDIATE PROCEDURES

- g. Provide advanced airway management if indicated due to other injuries and/or illness.
- h. Initiate IV Normal Saline, titrate IV infusion rate to patient's hemodynamic status.
- i. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- j. Morphine Sulfate 2 mg IV Push in 2 mg increments for pain control related to an isolated amputation injury. May repeat dose up to a total dose of 10 mg. Doses exceeding 10 mg at discretion of Medical Control.
- k. Initiate transport as soon as possible.

Notify receiving hospital.

Contact Medical Control for other problems / issues.

PEDIATRIC EMERGENCIES

5.1 NEWBORN RESUSCITATION

Infants born in the prehospital setting are at greater risk of complications due to respiratory distress, hypoxia, prematurity, infection, acidosis and hypothermia. Anticipation, adequate preparation, accurate evaluation, and prompt initiation of resuscitation steps are critical to successful outcome of a neonatal resuscitation. It is essential to prevent heat loss in newborns: it is important to rapidly dry the infant, cover the head, and wrap the child to avoid a drop in body temperature.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions
2. Maintain open airway, remove secretions and assist ventilations as needed.

NOTE: The newborn should be evaluated for central cyanosis. (Remember: Peripheral cyanosis is common and is not a reflection of inadequate oxygenation). If central cyanosis is present in a breathing newborn during stabilization, early administration of 100% oxygen is important while the neonate is being assessed for need of additional resuscitative measures.

Evaluate heart rate by one of several methods: auscultate apical beat with a stethoscope or palpate the pulse by lightly grasping the base of the umbilical cord.

Pallor may be a sign of decreased cardiac output, severe anemia, hypovolemia, hypothermia or acidosis.

APGAR scoring system provides a mechanism for documenting the newborn's condition at specific intervals after birth. The five objective signs are assessed at one (1) and five (5) minutes of age.

The APGAR score should be documented but should not be used to determine need for resuscitation because resuscitative efforts, if required, should be initiated promptly after birth.

SIGN	0 POINTS	1 POINT	2 POINTS
HEART RATE	ABSENT	< 100	> 100
RESPIRATORY EFFORT	ABSENT	WEAK CRY	STRONG CRY
MUSCLE TONE	FLACCID	SOME FLEXION	ACTIVE MOTION
REFLEX IRRITABILITY	NO RESPONSE	GRIMACE	COUGH, SNEEZE OR CRY
COLOR	BLUE, PALE	BODY: PINK EXTREMITIES: BLUE	FULLY PINK

3. Establish pertinent medical history, including maternal prenatal care, medications or drug use, illness and time of rupture of membranes.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions
- b. Maintain an open airway and suction the mouth, then nose. If meconium (brown stained fluid) is present, suction the hypopharynx (Contact ALS immediately if available for possible need of endotracheal intubation). **NOTE:** If meconium is present, ALS should consider early endotracheal intubation and suctioning.
- c. Dry the infant, place on a dry blanket, cover the head and keep the infant warm.
- d. If the infant is ventilating adequately, administer free flow (blow-by) 100% oxygen at a minimum of 5 liters per minute close to the face. If ventilations are inadequate or if the chest fails to rise, reposition the head and neck, suction, and initiate positive pressure (bag-valve-mask) ventilations with high flow oxygen at 40-60 breaths per minute.

- e. For heart rate 60 - 80 and rapidly rising:
- f. Continue manual ventilation
- g. For heart rate less than 60, or 60-80 and not rapidly rising: Initiate CPR
- h. Activate ALS Intercept if available
- i. Initiate transport as soon as possible with or without ALS

INTERMEDIATE PROCEDURES

- j. Advanced Airway management if indicated.
- k. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- l. Newborn in distress and requiring emergency care:
- m. For heart rate 60-80 and rapidly rising:
- n. Continue manual ventilation and supplemental oxygen
- o. Cardiac Monitor: dysrhythmia recognition if not already done. Manage dysrhythmia per pediatric protocols
- p. For heart rate less than 60, or 60-80 and not rapidly rising:
- q. Initiate CPR
- r. Continue manual ventilation with supplemental oxygen
- s. Advanced airway management if not already done
- t. Cardiac Monitor: dysrhythmia recognition if not already done. Manage dysrhythmia per pediatric protocols
- u. If defibrillation is indicated: initial energy level: 2 joules/kg subsequent: 4 joules/kg.
- v. If synchronized cardioversion is indicated: 0.5-1.0 joules/kg
- w. Establish IV or IO after 2 peripheral attempts, if indicated while enroute
- x. Initiate transport as soon as possible.
- y. Epinephrine 1:1,000 (0.01 mg/kg) IV or IO; follow with 2.0 ml Normal Saline Solution; repeat every 3 - 5 minutes
- z. Epinephrine 1:10,000 (0.01-0.03 mg/kg) IV or IO push
- aa. Narcan 0.1 mg/kg of a 1 mg/ml solution, IV, or IO push. May repeat every two (2) to three (3) minutes as needed. If perfusion is adequate may give intramuscularly (IM).
- bb. Determine serum glucose with glucometer. If needed, Dextrose 10%, 0.5 g/kg IV or IO.
- cc. Normal saline fluid challenge, 10 cc/kg IV or IO.
- dd. If neonate shows signs of maternal narcotic usage (respiratory depression, slow respiratory rate, small pupils): then add Narcan.

Notify receiving hospital

Contact Medical Control for further orders.

5.2 PEDIATRIC ANAPHYLAXIS

Anaphylaxis is an acute, generalized and violent antigen-antibody reaction that can be rapidly fatal. An anaphylactic reaction may present as a mild to severe response: management is based upon severity. Anaphylaxis in children is unusual. As in adults, there are multiple causes of anaphylaxis: injected substances or drugs such as penicillin, cephalosporin, sulfa; other causes include food sensitivities, vaccines, insect stings, virtually any chemical or other environmental allergens.

Hypotension in children is usually due to other causes such as shock from sepsis or dehydration. Wheezing, another feature of anaphylaxis, is most often due to reactive airway disease, infection or foreign body. Drooling, hoarseness and stridor signal upper airway compromise, which is usually due to infection in children. If these symptoms are present, follow the Pediatric Upper Airway Obstruction Protocol.

Most reactions occur within thirty (30) minutes following allergen exposure, although the onset of symptoms can vary from several seconds to hours. As a rule, the earlier the onset of symptoms following antigenic exposure, the more severe will be the subsequent reaction. Virtually all body systems are affected in an anaphylactic reaction.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Determine presence of upper airway involvement (stridor) or lower airway symptoms (wheezing). These may coexist. Maintain an open airway, remove secretions, vomitus and assist ventilations as needed.
3. Administer high concentration oxygen by non-rebreather mask.
4. Determine patient's hemodynamic stability and symptoms. Continually assess Level of consciousness, ABCs and Vital Signs. Determine if blood pressure is appropriate for age.
5. Obtain appropriate history related to event, including Past Medical History (prior allergies and/or anaphylaxis), current medications, or recent antigen exposure.
6. Determine if patient is in mild or severe distress:

Mild Distress: itching, isolated urticaria, nausea, no respiratory distress.

Severe Distress: poor air entry, flaring, grunting, cyanosis, stridor, bronchospasm, abdominal cramps, respiratory distress, tachycardia, shock, edema of lips, tongue or face and generalized urticaria.

TREATMENT/ BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Determine presence of upper airway involvement (stridor) or lower airway symptoms (wheezing). These may coexist. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning, or use of airway adjuncts (oropharyngeal airway) as indicated.
- c. Administer high concentration of oxygen by non-rebreather mask.
- d. Activate ALS intercept, if deemed necessary and if available.
- e. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning, or use of airway adjuncts as indicated.
- f. Administer high concentration of oxygen by non-rebreather mask.
- g. Monitor and record vital signs every 5 minutes.
- h. Initiate transport as soon as possible with or without Paramedics.

INTERMEDIATE PROCEDURES:

- i. Provide advanced airway management, if indicated.
- j. Initiate IV Normal Saline KVO or rate determined by medical control.
- k. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- l. **Mild Distress:** monitor for signs of moderate severe distress.

- m. **Moderate Distress:** Epinephrine (1:1000) 0.01 mg SQ.
- n. Benadryl 1 mg/kg IV push or IM. (Maximum 25 mg IV)
- o. Albuterol 0.5% (0.5 ml mixed with 3 ml of Normal Saline) via nebulizer.
- p. Severe Distress: Epinephrine (1:1,000), 0.01 mg/kg subcutaneously or IV up to max. single dose 0.5 mg.
- q. Large Bore IV normal saline, titrate to appropriate BP for age.
- r. Diphenhydramine HCL (Benadryl) 1.0 mg/kg up to maximum single dose of 25 mg via deep intramuscular injection (IM) or IV push.
- s. Initiate Transport as soon as possible.

Notify receiving hospital.

Contact MEDICAL CONTROL. The following additional may be ordered:

- Epinephrine 1:1,000; administer 0.01 mg/kg subcutaneously or IV up to maximum single dose 0.5 mg.
- Albuterol Sulfate 0.5% (via nebulizer): 0.5 ml diluted with 2.5 ml sterile Normal Saline solution.
- Administration of fluid bolus (es) (expected fluid bolus would be at intervals of 20 ml/kg).
- Methylprednisolone 2mg/kg IV over 1 minute max 125 mg.

5.3 PEDIATRIC BRADYDYSRHYTHMIAS

Primary heart block is rare in children. Pathologically slow heart rates usually result from hypoxemia, acidosis, hypothermia and late shock. Bradycardia may be a late finding in cases of raised intracranial pressure (ICP) due to head trauma, infection, hyperglycemia and previous neurosurgery. Rarely, an ingestion can cause bradycardia. Pre-hospital treatment is directed to the symptomatic patient only. Heart rates that are normal in older patients, may be bradycardia in children.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning to remove secretions and/or vomitus, or use of airway adjuncts as indicated.
3. Administer high concentration of oxygen via non-rebreather mask.
4. Determine patient's hemodynamic stability and symptoms. Continually assess level of Consciousness, ABCs and Vital Signs including capillary refill and determine if appropriate for age. (SEE APPENDIX)
5. Obtain appropriate history related to event, including recent and Past Medical History (underlying congenital heart disease and/or surgery), Medications, Drug Allergies and Substance Abuse including possible ingestion or overdose of medications, specifically calcium channel blockers, beta-blockers, and digoxin preparations.
6. Symptomatic patients will have abnormally slow heart rates accompanied by decreased level of consciousness, weak and thready pulses, delayed capillary refill, or no palpable BLOOD PRESSURE.

TREATMENT / BASIC PROCEDURES

NOTE: Inasmuch as Basic and Intermediate EMTs are not expected to recognize the presence of Bradydysrhythmias, check patient for a slow and /or irregular pulse. If present, treat according to the following protocol.

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning to remove secretions and/or vomitus, or use of airway adjuncts as indicated.
- c. Administer oxygen by nasal cannula or by non-rebreather mask.
- d. If pulse is less than 60 in a child or is less than 80 in an infant and the patient is symptomatic start Cardiopulmonary Resuscitation (CPR).
- e. Activate ALS intercept, if deemed necessary and if available.
- f. Initiate transport as soon as possible with or without ALS.
- g. Continue to monitor vital signs.

INTERMEDIATE PROCEDURES

- h. Advanced Airway Management, if indicated.
- i. IV Normal Saline (KVO)
- j. Initiate transport as soon as possible with or without Paramedic.

PARAMEDIC PROCEDURES

- k. IV Normal Saline (KVO). If hypovolemia component is suspected, administer a fluid bolus of 20 ml/kg.
- l. If patient is symptomatic as defined in Assessment Priorities:
- m. Epinephrine 1:10,000, 0.01 mg/kg IV Bolus or IO (maximum single dose 0.5 mg).
- n. Atropine sulfate 0.02 mg/kg IV, IO, (minimum single dose 0.1 mg, maximum single dose 1.0 mg).
- o. Initiate transport as soon as possible.

Notify receiving hospital.

Contact MEDICAL CONTROL. The following additional may be ordered:

Additional fluid boluses of Normal saline (20 ml/kg)

- Transcutaneous (pediatric) pacing if available
- Epinephrine 1:10,000: 0.01-0.03 mg/kg (maximum single dose of 0.5 mg), IV or Intraosseous (IO)
- Narcan 0.1 mg/kg of a 1 mg/ml solution: IV, or IO.
If age less than 5 years: 0.1 mg/kg
If age 5 years or greater: 2.0 mg. (NOTE: May repeat every two (2) to three (3) minutes as needed.
If perfusion is adequate may give intramuscularly (IM).
- Normal Saline fluid challenge 10-20 cc/kg IV
- Glucagon 0.1 mg/kg IV, IM, to max. 1.0 mg for suspected beta-blocker toxicity

5.4 PEDIATRIC BRONCHOSPASM

Bronchospasm is defined as spasmodic narrowing (contraction) of the lumen (bronchial muscle) of a bronchus for whatever reason resulting in restricted airflow. This results in hypoventilation of the alveoli leading to hypoxemia. The causes of acute bronchospasm may not always be easily discernible. Wheezing in children can occur from a variety of causes. Patients with asthma can wheeze in response to weather changes, stress, exercise, infection or allergy. Pneumonia, bronchitis and bronchiolitis are some of the infectious causes of wheezing. Other causes of pediatric wheezing include foreign bodies (tracheal, bronchial and esophageal) and congenital abnormalities of mediastinal structures, including the heart, trachea and larynx. Unless cardiac problems are suspected, wheezing is treated with bronchodilating agents. Concurrent hypotension should raise concern regarding anaphylaxis or respiratory failure. If the patient has evidence of drooling, hoarseness or stridor, follow Pediatric Upper Airway Obstruction protocol.

Mild distress in children is evidenced by minor wheezing and good air entry.

Severe distress in children is evidenced by poor air entry, extreme use of accessory muscles, nasal flaring, grunting, cyanosis and/or altered mental status (weak cry, somnolence, and poor responsiveness).

REMEMBER: Severe bronchospasm may present without wheezes indicating minimal air movement.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain open airway, remove secretions or vomitus, and assist ventilation as needed. Determine presence of upper airway involvement (stridor) or lower airway symptoms (wheezing). These may coexist.
3. Administer high concentration of oxygen by non-rebreather mask.
4. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and vital signs. Evaluate capillary refill and determine if blood pressure is appropriate for age.
5. Obtain appropriate history related to event, including Past Medical History (prior asthma, anaphylaxis, and allergies), Medications, Drug Allergies and Substance Abuse.

NOTE: exposures to foreign body, (new) foods, medicines, chemicals or envenomation.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway management, suctioning or use of airway adjuncts as indicated.
- c. Administer high concentration of oxygen by non-rebreather mask. (Humidified O₂ is acceptable)
- d. Activate ALS intercept, if deemed necessary and if available.
- e. Initiate transport as soon as possible with or without ALS.
- f. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning to remove secretions and/or vomitus, or use airway adjuncts as indicated.
- g. Administer oxygen by non-rebreather mask.
- h. Initiate Transport as soon as possible with or without ALS.

INTERMEDIATE PROCEDURES

Mild Distress: If the pediatric patient's condition is not improving with administration of supplemental oxygen, consider the following:

- i. Albuterol Sulfate 0.5%: 0.25 ml, if less than 2 years of age via nebulizer.
- j. Albuterol Sulfate 0.5%: 0.5 ml, if age 2 years or greater via nebulizer.
- k. Provide advanced airway management if indicated.
- l. Consider IV Normal Saline (while enroute) if in severe distress.
- m. Initiate Transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

n. Cardiac monitoring / dysrhythmia recognition. Treat according to arrhythmia protocols.

Mild Distress: If the pediatric patient's condition is not improving with administration of supplemental oxygen, consider the following:

- o. Albuterol Sulfate 0.5%: 0.25 ml, if less than 2 years of age via nebulizer.
- p. Albuterol Sulfate 0.5%: 0.5 ml, if age 2 years or greater via nebulizer.

Severe Distress:

- q. Administer Albuterol 0.5% 0.5 ml mixed with 3 ml of Normal Saline via nebulizer. If patient has poor tidal volume administer additional Albuterol treatments may be administered as necessary.
- r. Epinephrine (1:1,000), 0.01 mg/kg subcutaneously (maximum single dose 0.5 mg).
- s. Initiate transport as soon as possible.
- t. Methylprednisolone 2mg/kg IV over 1 minute max 125 mg.

Notify receiving hospital.

Contact MEDICAL CONTROL. The following additional may be ordered:

- Epinephrine (1:1,000), 0.01 mg/kg subcutaneously (maximum single dose 0.5 mg).
- If the pediatric patient's respiratory status worsens: go to Pediatric Anaphylaxis Protocol.

5.6 PEDIATRIC CARDIOPULMONARY ARREST

ASYSTOLE / AGONAL IDIOVENTRICULAR RHYTHM / PULSELESS ELECTRICAL ACTIVITY (PEA)

Cardiopulmonary arrest in infants and children is usually the end result of deterioration in respiratory and circulatory function. Injury is the leading cause of death in children between 1 - 16 years. Other etiologies include, but are not limited to: severe dehydration, Sudden Infant Death Syndrome, congenital anomalies, airway obstruction, bacterial and viral infections, sepsis, asthma, hypothermia and drug overdose.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Determine unresponsiveness, absence of breathing and pulselessness.
3. Maintain an open airway, remove secretions, vomitus, and initiate CPR with supplemental high concentration of oxygen.
4. Continually assess Level of Consciousness, ABCs and Vital Signs including capillary refill.
5. Obtain appropriate history related to event, including recent and Past Medical History, Medications, Drug Allergies and Substance Abuse including possible ingestion or overdose of medications. Observe for signs of child abuse.
6. Symptomatic patients may have abnormally slow or rapid heart rates accompanied by decreased level of consciousness, weak and thready pulses, delayed capillary refill, or no palpable BLOOD PRESSURE.
7. Every effort should be made to determine the possible cause(s) for PEA including medical and/or traumatic etiologies.

TREATMENT/ BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Determine unresponsiveness and cardiopulmonary arrest.
- c. Maintain open airway and assist ventilations (ensure proper seal around the ventilation mask). This may include repositioning of the airway, suctioning to remove secretions and/or vomitus, or use of airway adjuncts as indicated. If indicated, treat spinal injury accordingly.
- d. If unable to ventilate child after repositioning of airway: assume upper airway obstruction and follow Pediatric Upper Airway Obstruction Protocol.
- e. Initiate Cardiopulmonary Resuscitation (CPR).
- f. Activate ALS intercept, if deemed necessary and if available.
- g. Initiate transport as soon as possible; with or without ALS. Keep child warm.

INTERMEDIATE PROCEDURES

- h. Provide advanced airway management, if indicated.
- i. Initiate IV Normal Saline KVO while enroute.
- j. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- k. Cardiac monitoring / dysrhythmia recognition. Treat according to arrhythmia protocols.
- l. Initiate IV Normal Saline KVO. NOTE: If a vein can be visualized or palpated, establish an IV of Normal Saline KVO. If unable to visualize or palpate a vein and child is less than six years old, establish an intraosseous infusion of Normal Saline to keep the line open after 2 peripheral attempts. If unable to visualize or palpate a vein and the child is greater than six years old, attempt external jugular access.

- m. Epinephrine:

For Bradycardia:

IV/IO: 0.01 mg/kg (1:10,000); Subsequent dosages: IV/IO repeat initial dose (0.01 mg/kg 1:10,000) every 3 - 5 minutes.

For Asystolic or PEA:

Initial Dose: IV/IO; 0.01 mg/kg (1:10,000).

Subsequent doses every 3 - 5 minutes: IV/IO: 0.01 mg/kg (1:1,000) NOTE: Dosages as high as 0.2 mg/kg may be effective.

- n. Atropine: IV/IO : 0.02 mg/kg (minimum dose 0.1 mg; maximum dose 0.5 mg in a child and 1.0 mg in an adolescent).

Notify receiving hospital.

Contact MEDICAL CONTROL. Medical Control may order.

- Fluid bolus (es) of Normal Saline (20 ml/kg).
- All other treatment modalities based upon suspected etiology for cardiopulmonary arrest.

5.6 PEDIATRIC COMA / ALTERED MENTAL STATUS

Altered mental status in children covers a range of behaviors and can be subtle. Coma is not difficult to recognize, but irritability, lethargy, changes in feeding or sleeping habits, and other subtle behavioral changes can all indicate a process impairing the normal functioning of the child's central nervous system. History from the caregiver is critical. The common causes of pediatric coma are injury, shock, metabolic disorders, ingestions and CNS infections.

Pediatric shock, if suspected, should be treated according to the Pediatric Shock Protocol. Likewise, Pediatric Head Trauma, if suspected as the cause for altered mental status, should be treated according to the Pediatric Multiple Trauma Protocol. Remember that some forms of injury such as those associated with "shaken baby syndrome" can cause CNS trauma without external evidence of injury.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning and/or use of airway adjuncts (nasopharyngeal airway/oropharyngeal airway) as indicated. Assume spinal injury if associated with trauma and manage accordingly.
3. Evaluate capillary refill and determine if blood pressure is appropriate for age.
4. Administer high concentration of oxygen via non-rebreather mask.
5. Determine patient's hemodynamic stability and symptoms. Continually assess level of Consciousness, ABCs and Vital Signs.
6. Obtain appropriate history related to event, including Past Medical History (diabetes, CNS disorders and/or injury), Medications, Drug Allergies and Substance Abuse (overdose) or Trauma.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning and/or use of airway adjuncts (nasopharyngeal airway/oropharyngeal airway) as indicated. Assume spinal injury if associated with trauma and manage accordingly.
- c. Administer high concentration of oxygen by non-rebreather mask.
- d. If patient is a known diabetic who is conscious and can speak and swallow, give oral glucose or other sugar source as tolerated. CAUTION: Do NOT administer anything orally if the patient does not have a reasonable Level of Consciousness and normal gag reflex.
- e. Activate ALS intercept if deemed necessary and if available.
- f. Initiate transport as soon as possible with or without ALS.

INTERMEDIATE PROCEDURES

- g. Provide advanced airway management (if indicated).
- h. Initiate IV Normal Saline (KVO). If suspect hypovolemic etiology, 20 ml/kg Fluid bolus of Normal Saline in a Buretrol.
- i. Initiate transport as soon as possible with or without Paramedics.

PARAMEDIC PROCEDURES

- j. Cardiac monitoring / dysrhythmia recognition. Treat per protocol. (If indicated)
- k. If obvious narcotic overdose: Narcan 0.4-2.0 mg IV Push or MADD, or IM. Additional Narcan (0.4-2.0 mg) may be administered as necessary – titrated to respiratory status.

Treatment for specific etiologies:

- l. If Glucose is less than 100 mg/dL, administer:
Known Diabetic:
Dextrose 10% 0.5 gm/kg IV Bolus (for neonates) remove 40 mL and replace with NS.
Dextrose 25% 0.5 gm/kg IV Bolus (if estimated body weight is less than 50 kg) remove 25mL and replace with NS.

Dextrose 50% 0.5 gm/kg IV Bolus (if estimated body weight is greater than 50 kg)
Glucagon 0.1 mg/kg IV/IO/IM or MADD up to maximum of 1.0 mg.

Coma of Unknown Etiology:

If age less than 5 years:
Narcan 0.1 mg/kg to max. dose of 2.0 mg, IV/IO/IM or MADD
Dextrose as listed above

If age greater than 5 years:
Narcan 2.0 mg IV/IO/IM or MADD
Dextrose as listed above

- m. If no IV access, administer Glucagon 0.1 mg/kg MADD, IM for hypoglycemia.
- n. Initiate transport as soon as possible.

Notify receiving hospital.

MEDICAL CONTROL may order the following in addition:

- Dextrose 50%, 25 gm IV Push
- Narcan 0.4-2.0 mg IV/IO Push or IM
- Further Normal Saline bolus.
- Dependent upon conditions for suspected substance abuse, overdose, toxic exposure: refer to specific protocols.
- Additional fluid boluses of 20 ml/kg at intervals as needed.
- If coma caused by specific drug overdose, physician may order:
- Atropine 0.02 mg/kg IV Bolus, or IO (minimum dose 0.1 mg)

5.7 PEDIATRIC SEIZURES

A seizure is a temporary alteration in behavior due to the massive electrical discharge of one or more groups of neurons in the brain. Seizures can present in several different forms: generalized or grand mal seizure, partial -simple, partial-complex or petit mal seizure. The single most common cause of seizure disorder is idiopathic epilepsy. However, there are multiple other causes: hypoglycemia, head trauma, vascular disorders, meningitis, sepsis, metabolic abnormalities, poisoning, hypoxemia, tumors, and shock. The seizure may be followed by postictal state or complete coma depending upon cause. The most common cause of seizure in children age 1 - 4 is "benign febrile seizure". These seizures usually last less than 5 minutes and are tonic-clonic and nonfocal.

ASSESSMENT/TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning to remove secretions and/or vomitus, or use of airway adjuncts as indicated.
3. Administer high concentration of oxygen via non-rebreather mask once seizure has abated. Be certain that the oropharynx is clear of secretions and/or vomitus.
4. Obtain appropriate history related to event, including Past Medical History, Medications, Drug Allergies and Substance Abuse including possible ingestion or overdose of medications.
5. Question all witnesses or bystanders as to actual event.
6. The majority of seizures are self-limiting, followed by a gradual awakening. However, prolonged or recurrent seizures may indicate status epilepticus.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning to remove secretions and/or vomitus, or use of airway adjuncts as indicated. (In case of suspected head/neck injury, assure cervical spine immobilization.)
- c. Administer high concentration of oxygen via non-rebreather mask once seizure has abated and assist ventilations as needed
- d. Prevent the patient from harming his or herself. Place patient in left lateral recumbent position.
- e. DO NOT use a bite block.
- f. Activate ALS intercept if deemed necessary and if available.
- g. Initiate transport as soon as possible with or without ALS.
- h. Monitor vital signs en route to the hospital
- i. Notify receiving hospital.

INTERMEDIATE PROCEDURES

- j. Provide advanced airway management if indicated.
- k. Initiate IV Normal Saline (KVO), while en-route to hospital, if vein is visible and/or palpable.
- l. Initiate transport as soon as possible with or without Paramedics.
- m. Continue monitoring vital signs en route to the hospital.
- n. Notify receiving hospital.

PARAMEDIC PROCEDURES

- o. Provide advanced airway management, if indicated.
- p. Initiate IV Normal Saline (IV), in visualized or palpated vein.
- q. Cardiac Monitor: manage dysrhythmias per protocol.
- r. Determine Blood Glucose level with Dextrose stick. If Glucose is greater than 100 mg/dL, glucose administration unnecessary.
- s. If Glucose is less than 100 mg/dL, administer:
 - Dextrose 10% 0.5 gm/kg IV Bolus (for neonates)
 - Dextrose 25% 0.5 gm/kg IV Bolus (if estimated body weight is less than 50 kg)
 - Dextrose 50% 0.5 gm/kg IV Bolus (if estimated body weight is greater than 50 kg)

- t. Narcan
If age less than 5 years: 0.1 mg/kg to max. dose of 2.0 mg IV Bolus, IM, or IO
If age 5 years or greater: 0.4 mg - 2.0 mg IV Bolus, IM, or IO
- u. For status epilepticus *Valium (Diazepam) 0.2-0.3 mg/kg, IV,IO, to maximum dose of 5-10 mg. (rectal dose 0.5 mg/kg X 1)
- v. Initiate transport as soon as possible.

Contact MEDICAL CONTROL. The following may be ordered:

- IV Dextrose per above protocol.
- Additional Narcan (Naloxone) per above protocol.
- Normal Saline fluid challenge, if indicated 10-20 ml/kg

* Valium (Diazepam) should be used to treat only those children who suffer continuous tonic/clonic seizure activity and demonstrate signs of inadequate oxygenation, such as cyanosis. Apnea often follows intravenous administration of Diazepam; accordingly, field personnel should carefully monitor respiration and prepare to support ventilation with bag-valve-mask apparatus following administration of this agent.

NOTE: Valium should not be used in patients with head injury or hypotension without Medical Control Orders.

5.8 PEDIATRIC SHOCK

The most common cause of shock in children is acute volume loss. This can be due to: increased fluid loss (vomiting, diarrhea, hyperthermia, and hemorrhage); decreased intake; or fluid shifts out of the vascular space. Regardless of etiology, treatment should be directed at rapid fluid replacement. Severe shock is present if the child exhibits a decreased level of consciousness, weak and thready pulses, no palpable BLOOD PRESSURE, or a capillary refill of more than 2 seconds.

Children are capable of developing significant sinus tachycardia in the face of dehydration, but if the heart rate is greater than 220/minute refer to the Pediatric Supraventricular Tachydysrhythmia Protocol.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. In case of suspected head/neck injury, assure cervical spine immobilization / stabilization.
3. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning to remove secretions and/or vomitus, or use of airway adjuncts as indicated.
4. Administer high concentration of oxygen via non-rebreather mask or assist ventilations as needed.
5. Control external bleeding sources and keep child warm.
6. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs. Evaluate capillary refill and determine if BLOOD PRESSURE is appropriate for age.
7. If in severe shock, position child 15% Trendelenburg or head down.
8. Obtain appropriate history related to event, such as recent illness, change in eating pattern, excessive exercise or heat exposure, trauma, Past Medical History, Medications, Allergies.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. In case of suspected head/neck injury, assure cervical spine immobilization / stabilization.
- c. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning to remove secretions and/or vomitus, or use of airway adjuncts as indicated.
- d. Administer high concentration of oxygen via non-rebreather mask or assist ventilations as needed.
- e. Control external bleeding sources and keep child warm.
- f. Activate ALS intercept, if deemed necessary and if available.
- g. If in severe shock, position child 15 degrees Trendelenburg or head down.
- h. Initiate transport as soon as possible with or without ALS.
- i. Notify receiving hospital.

INTERMEDIATE PROCEDURES

- j. Provide advanced airway management (endotracheal intubation ONLY), if indicated.
- k. Initiate IV Normal Saline (KVO), while en-route to hospital if vein is visible and/or palpable.
- l. Initiate transport as soon as possible with or without Paramedics.

Contact MEDICAL CONTROL. The following may be ordered:

- Normal Saline bolus at discretion of Medical Control (expected fluid bolus is 20 ml/kg)

PARAMEDIC PROCEDURES

- m. Provide advanced airway management, if indicated.
- n. Initiate IV Normal Saline.

NOTE: If a vein can be visualized or palpated, establish an IV of Normal Saline KVO. If unable to visualize or palpate a vein and child is less than six years old, establish an intraosseous infusion of Normal Saline to keep the line open. If unable to visualize or palpate a vein and the child is greater than six years old, attempt external jugular access.

- o. If severe shock is present, or suspect hypovolemic etiology, administer 20 ml/kg IV Bolus of Normal Saline (unless known history of heart disease)
- p. Cardiac Monitoring / dysrhythmia recognition. Treat per protocol if indicated.
- q. Initiate transport as soon as possible.

Contact MEDICAL CONTROL The following may be ordered:

- Additional Normal Saline boluses at 20 ml/kg.
- Intraosseous Infusion of Normal Saline if less than 6 years of age. Once established administer a single bolus of 20 ml/kg of Normal Saline (may be repeated).
- If known Cardiogenic Shock: Dopamine (40 mg/ml solution) DOSE: 2-20mcg/kg/minute.

NOTE: Vasopressor medications are never used in the treatment of hypovolemic shock unless adequate fluid replacement has been completed.

- r. Notify receiving hospital.

5.9 PEDIATRIC SUPRAVENTRICULAR TACHYCARDIA (SVT)

Supraventricular Tachycardia is the most common dysrhythmia producing cardiovascular instability during infancy, and it can occur throughout the pediatric years. However, it is critical that the rhythm be differentiated from sinus tachycardia, which is seen more often: some common causes of sinus tachycardia are dehydration, shock, hyperthermia, anxiety, pain and fear. Treatment should be directed towards the underlying causes. Supraventricular Tachycardia in infants often produces a heart rate of 240 beats per minute and possibly up to 300 beats per minute. Wide QRS Pediatric Supraventricular Tachycardia is relatively uncommon in infants and children. Any wide-QRS tachycardia should be assumed to be of ventricular origin. Heart rates up to 220 can be due to sinus tachycardia in children. Supraventricular Tachycardia in pediatric patients usually results from an abnormality of the cardiac conduction system. Although the heart rate can vary, it rarely needs treatment if less than 220 in children.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning to remove secretions and/or vomitus, or use of airway adjuncts as indicated.
3. Administer high concentration of oxygen via non-rebreather mask.
4. Determine patient's hemodynamic stability and symptoms. Continually assess level of Consciousness, ABCs and Vital Signs including capillary refill and determine if appropriate for age.
5. Obtain appropriate history related to event, including Past Medical History (prior episodes of Supraventricular Tachycardia or underlying congenital heart disease and/or surgery), Medications, Drug Allergies and Substance Abuse including possible ingestion or overdose of medications. Determine if there is a history of possible causes for sinus tachycardia, such as fluid loss, fever, shock, or bleeding.
6. Symptomatic patients will have heart rates greater than 220 bpm, and one of the following signs of hypoperfusion: decreased level of consciousness, weak and thready pulses, delayed capillary refill, or no palpable BLOOD PRESSURE.

TREATMENT / BASIC PROCEDURES

Note: In as much as Basic EMTs are not expected to recognize the presence of PSVT, check the patient for a rapid or thready pulse and manage according to the following protocol:

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning to remove secretions and/or vomitus, or use of airway adjuncts as indicated.
- c. Administer oxygen by non-rebreather mask.
- d. If tachycardia is related to acute injury or volume loss, see Pediatric Shock Protocol.
- e. Activate ALS intercept, if deemed necessary and if available.
- f. Initiate transport as soon as possible with or without ALS.
- g. Continue to monitor vital signs.
- h. Notify receiving hospital.

INTERMEDIATE PROCEDURES

Note: Inasmuch as Intermediate EMTs are unable to recognize the presence of PSVT, check the patient for a rapid or thready pulse and manage according to the following protocol:

- i. Advanced Airway Management if indicated.
- j. IV Normal Saline (KVO), while en-route to hospital, if vein is visible and/or palpable.
- k. Initiate transport to appropriate medical facility as soon as possible with or without Paramedics.
- l. Continue to monitor vital signs.
- m. Notify receiving hospital and Contact MEDICAL CONTROL. The following may be ordered:
- n. Fluid bolus of Normal Saline (expected fluid bolus of 20 ml/kg).

PARAMEDIC PROCEDURES

- o. Advanced Airway Management if indicated.

- p. IV Normal Saline (KVO). If hypovolemic component is suspected, administer 20 ml/kg IV Bolus of Normal Saline.
- q. Adenosine 0.1 mg/kg Rapid IV push. If no effect, repeat Adenosine 0.2 mg/kg Rapid IV push
MAXIMUM single dose of Adenosine must not exceed 12 mg.
- r. Continue to monitor vital signs.
- s. Initiate transport to appropriate medical facility as soon as possible.

Contact MEDICAL CONTROL. The following may be ordered:

- Additional fluid boluses of Normal Saline (20 ml/kg).
 - Synchronized cardioversion 0.5 joules/kg for symptomatic patients.* Subsequent cardioversions may be given up to 1.0 joules/kg.
 - Vagal maneuvers (see Reminder below).
- t. Notify receiving hospital.

*Synchronized cardioversion should be considered for only those children whose heart rate is in excess of 220, and who demonstrate one or more of the following signs of hypoperfusion: Decreased level of consciousness, weak and thready pulses, capillary refill time of more than 4 seconds, or no palpable BLOOD PRESSURE.

REMINDER: Vagal maneuvers may precipitate asystole and therefore should be employed with caution in the field and only in a cardiac-monitored child with IV access.

5.10 PEDIATRIC TRAUMA AND TRAUMATIC ARREST

Injury is the most common cause of death in the pediatric population. Blunt injuries, which are usually motor vehicle related, are more common than penetrating injuries, but the latter are unfortunately becoming more common. If a child has multiple injuries or bruises in varying stages of resolution, consider child abuse as a possible etiology. The death rate from traumatic injury in children is two times that of the adult patient. To resuscitate a pediatric traumatic arrest victim, aggressive in-hospital management, often times open thoracotomy, is required. The more prolonged the field time and the transport to the medical facility, the less likely the child is to survive. If a child with major trauma has no signs of life on arrival of EMS the chances of survival are essentially zero even with the best care.

ASSESSMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Determine unresponsiveness, absence of breathing and pulselessness.
3. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning to remove secretions and/or vomitus, or use of airway adjuncts as indicated. Assume spinal injury and treat accordingly.
4. Initiate Cardiopulmonary Resuscitation (CPR) if indicated.
5. Administer 100% high flow oxygen by non-rebreather mask or bag valve mask as indicated by patient's condition.
6. Consider all potential non-traumatic causes (hypothermia, overdose, underlying medical conditions etc.)
7. As patient's condition suggests, continually assess Level of Consciousness, ABCs and Vital Signs.
8. Treat all life threatening conditions as they become identified.
9. When multiple patients are involved, they need to be appropriately triaged.
10. Obtain appropriate history related to event, including Mechanism of Injury, Past Medical History, Medications, Drug Allergies, Substance abuse and child abuse.
11. Patient care activities must not unnecessarily delay patient transport to the nearest appropriate facility as defined by regional point of entry protocol.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Determine unresponsiveness, absence of breathing and pulselessness.
- c. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning to remove secretions and/or vomitus, or use of airway adjuncts as indicated.

NOTE: Ventilate at a rate appropriate for age.

- d. Assume spinal injury and treat accordingly.
- e. Initiate transport immediately.
- f. Initiate treatment for shock (maintain supine position, elevate legs and keep child warm if possible) or initiate Cardiopulmonary Resuscitation (CPR) as indicated.
- g. Administer 100% high flow oxygen by non-rebreather mask or bag valve mask as indicated by patient's condition.
- h. Consider all potential non-traumatic causes (hypothermia, overdose, underlying medical conditions etc.)
- i. Activate ALS intercept, if deemed necessary and if available.
- j. As patient's condition suggests, continually assess Level of Consciousness, ABCs and Vital Signs.
- k. Treat all life threatening conditions as they become identified.
- l. When multiple patients are involved, they need to be appropriately triaged.
- m. Initiate transport as soon as possible with or without ALS.

NOTE: Patient care activities must not unnecessarily delay patient transport to the nearest appropriate facility as defined by regional point of entry protocol.

- n. Notify appropriate receiving hospital.

INTERMEDIATE PROCEDURES

- o. Provide advanced airway management, if indicated.
- p. Initiate IV Normal Saline while enroute (KVO).

Contact MEDICAL CONTROL. Medical control may order:

Fluid bolus of Normal Saline (expected fluid bolus of 20 ml/kg). This order may be repeated at the discretion of medical control.

- q. Consider all potential non-traumatic causes (i.e., hypothermia, overdose, other underlying medical conditions, etc.)
- r. Activate Paramedic intercept, if deemed necessary and if available.
- s. As patient's condition suggests, continually assess Level of Consciousness, ABCs and Vital Signs.
- t. Treat all life threatening conditions as they become identified.
- u. When multiple patients are involved, they need to be appropriately triaged.
- v. Initiate transport as soon as possible with or without Paramedics.

NOTE: Patient care activities must not unnecessarily delay patient transport to the nearest appropriate facility as defined by regional point of entry protocol.

PARAMEDIC PROCEDURES

- w. Provide advanced airway management.
- x. Initiate IV Normal Saline (1 - 2 large bore IVs)
- y. Administer fluid bolus of Normal Saline (20 ml/kg) and titrate IV infusion rate to patient's hemodynamic status depending upon age/size/weight of child.
- z. If the child is in cardiopulmonary arrest and unable to establish vascular access, and the child is less than 6 years old, establish an Intraosseous Infusion of Normal Saline and administer 20 cc/kg fluid bolus.

NOTE: In general, the only medications that should be administered to a traumatic arrest patient are oxygen and IV fluids.

- aa. If in cardiopulmonary arrest, no IV access and the child is greater than six years old, attempt external jugular access and administer 20 cc/kg fluid bolus.
- bb. Needle cricothyroidotomy.
- cc. Needle decompression of the thorax if signs of tension pneumothorax

Contact MEDICAL CONTROL. Medical control may order:

- Additional bolus (es) 20 cc/kg of Normal Saline or wide open (depending upon child's age/size/weight).

Consider all potential non-traumatic causes (hypothermia, overdose, underlying medical conditions etc.).

As patient's condition suggests:

- Continually assess Level of Consciousness, ABCs and Vital Signs.
- Treat all life threatening conditions as they become identified.
- When multiple patients are involved, they need to be appropriately triaged.

Initiate transport as soon as possible.

Note: Above activities must not unnecessarily delay patient transport to the nearest appropriate facility as defined by regional point of entry protocol.

Notify appropriate receiving hospital.

5.11 PEDIATRIC UPPER AIRWAY OBSTRUCTION

This emergency can vary in severity from mild to life threatening and the child's condition may change suddenly. Common mechanical causes include: tongue obstructed airway, foreign bodies in the oropharynx, trachea, or esophagus; allergic swelling of upper airway structures ("angioedema"), chemical burns, inhalation injuries; altered mental status and congenital abnormalities (patients with small jaws or large tongues). Infectious causes are common with croup and epiglottitis being the most prevalent. Although epiglottitis is becoming less common due to immunization against Hemophilus Influenza B, it still occurs.

Children, especially 1 to 3 years of age, are at greatest risk for aspirating foreign objects, particularly when running and/or falling. The most common objects aspirated resulting in airway obstruction in children include coins, buttons, beads, pins, candy, nuts, hot dogs, chewing gum, grapes and sausages.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Determine presence of upper airway obstruction (stridor):
3. If the obstruction due to a foreign body is complete or is partial with inadequate air exchange: follow the American Heart Association (AHA) or American Red Cross (ARC) BCLS guidelines for foreign body obstruction. Maintain an open airway, remove secretions, vomitus and assist ventilations as needed.
4. If partial obstruction due to a foreign body is suspected and the child has adequate air exchange: transport to appropriate medical facility. Do not attempt to remove foreign body in the field.
5. If suspected croup (barking cough, no drooling) or epiglottitis (stridor, drooling) maintain an open airway, place child in position of comfort and avoid upper airway stimulation.
6. Administer high concentration oxygen by non-rebreather mask as tolerated.
7. Determine patient's hemodynamic stability and symptoms. Continually assess Level of consciousness, ABCs and Vital Signs. Determine if BLOOD PRESSURE is appropriate for age.
8. Obtain appropriate history related to event, including Past Medical History, current medications, recent infectious history (fever, cough, etc.) or exposure to allergens.

TREATMENT / BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Determine presence of upper airway obstruction (stridor):
- c. If the obstruction due to a foreign body is complete or is partial with inadequate air exchange: follow the American Heart Association (AHA) or American Red Cross (ARC) BCLS guidelines for foreign body obstruction. Maintain an open airway, remove secretions, vomitus and assist ventilations as needed.
- d. If partial obstruction due to a foreign body is suspected and the child has adequate air exchange: transport to appropriate medical facility. Do not attempt to remove foreign body in the field.
- e. If suspected croup (barking cough, no drooling) or epiglottitis (stridor, drooling) maintain an open airway, place child in position of comfort and avoid upper airway stimulation.
- f. Administer high concentration oxygen by non-rebreather mask as tolerated.
- g. Activate ALS intercept, if deemed necessary and if available.
- h. Initiate transport as soon as possible with or without ALS.
- i. Notify receiving hospital.

INTERMEDIATE PROCEDURES

- j. Provide advanced airway management if indicated for mechanical obstruction: Perform direct laryngoscopy if foreign body suspected. If foreign body is visible and readily accessible, attempt removal with Magill forceps.
- k. Provide positive pressure ventilations if needed.
- l. Initiate transport as soon as possible with or without ALS.

m. Notify receiving hospital.

PARAMEDIC PROCEDURES

- n. Provide advanced airway management if indicated for mechanical obstruction: Perform direct laryngoscopy if foreign body suspected. If foreign body is visible and readily accessible, attempt removal with Magill forceps, and proceed with endotracheal intubation if necessary. If unable to remove foreign body, continue BLS airway management by providing positive pressure ventilations.
- o. IV Normal Saline titrated to appropriate BLOOD PRESSURE for age en route.
- p. Needle cricothyroidotomy can be done if you are unable to clear airway obstruction, unable to intubate as needed, or unable to perform positive pressure ventilations.
- q. Initiate transport as soon as possible.
- r. Notify receiving hospital.

Contact MEDICAL CONTROL for further orders.

NOTE: If upper airway obstruction is the result of anaphylactic reaction, refer to the Pediatric Anaphylaxis Protocol for concurrent intervention.

*** REMOVAL OF TRACHEOSTOMY TUBE**

Medical control may order:

wipe neck opening with gauze.

attempt to suction tracheostomy tube.

remove tracheostomy tube if necessary

once airway is opened, begin ventilations as necessary

paramedics may attempt to intubate the patient

5.12 PEDIATRIC VENTRICULAR FIBRILLATION / PULSELESS VENTRICULAR TACHYCARDIA

Cardiopulmonary arrest, as manifested by ventricular fibrillation or pulseless ventricular tachycardia, is quite rare in infants and children and is usually the end result of deterioration in respiratory and circulatory function. Common causes can be sepsis, foreign body aspiration, SIDS, traumatic hemorrhages and meningitis. Primary cardiac insults are rare but may be due to: congenital heart disease, myocarditis or primary dysrhythmias.

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Determine unresponsiveness, absence of breathing and pulselessness.
3. Maintain an open airway, remove secretions, vomitus, and initiate CPR with supplemental high concentration of oxygen.
4. Continually assess Level of Consciousness, ABCs and Vital Signs including capillary refill.
5. Obtain appropriate history related to event, including recent and Past Medical History, Medications, Drug Allergies, and Substance Abuse including possible ingestion or overdose of medications. Observe for signs of child abuse.
6. Every effort should be made to determine the possible cause(s) of the infant's / child's presentation.

TREATMENT BASIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Determine unresponsiveness and cardiopulmonary arrest.
- c. Maintain an open airway and assist ventilations (ensure proper seal around the ventilation mask). This may include repositioning of the airway, suctioning to remove secretions and /or vomitus. Use airway adjuncts as indicated. If indicated, treat spinal injury per protocol.
- d. If unable to ventilate child after repositioning of airway, assume upper airway obstruction and follow Pediatric Upper Airway Obstruction Protocol.
- e. Initiate Cardiopulmonary Resuscitation.
- f. Activate ALS intercept, if available.
- g. Initiate transport as soon as possible, with or without ALS.
- h. Notify receiving hospital.

INTERMEDIATE PROCEDURES

- i. Provide advanced airway management, if indicated.
- j. Hyperventilate with 100% oxygen.
- k. Initiate IV Normal Saline KVO while en route.

Contact MEDICAL CONTROL: Medical Control may order:

- Normal Saline fluid bolus (es) at expected 20 ml / kg.
- l. Activate Paramedic intercept, if available.
 - m. Initiate transport with or without Paramedics.
 - n. Notify receiving hospital.

PARAMEDIC PROCEDURES

- o. Provide advanced airway management, if indicated.
- p. Hyperventilate with 100% oxygen.
- q. Initiate IV / IO after 2 peripheral attempts Normal Saline, but do not delay defibrillation.
- r. Defibrillate up to 3 (three) times if needed: 4J/kg.
- s. Epinephrine IV / IO: 0.01 mg/kg (1:10,000, 0.1mL/kg).
- t. Defibrillate 4J/kg 30-60 seconds after each medication.
- u. Lidocaine 1 mg/kg IV / IO.
- v. Defibrillate 4J/kg 30-60 seconds after each medication.

- w. Epinephrine (subsequent doses): IV / IO : 0.01 mg/kg (1:1,000, 0.01 ml/kg). Maximum dose of .5 mg May repeat every 3-5 minutes. (IV/IO doses up to 0.2 mg/kg of 1:1,000 may be effective).
- x. Lidocaine 1mg/kg IV / IO.
- y. Defibrillate 4J/kg 30-60 seconds after each medication.
- z. Defibrillate 4J/kg 30-60 seconds after each medication.

Contact MEDICAL CONTROL. Medical Control may order:

- Fluid bolus (es) of Normal Saline at expected rate of 20 ml/kg.

All other treatment modalities based upon suspected cause of VF / VT.

- aa. Initiate transport as soon as possible.

Notify receiving hospital.

APPENDICES

A GENERAL GUIDELINES FOR PROTOCOL USAGE

1. The patient history should not be obtained at the expense of the patient. Life-threatening problems detected during the primary assessment must be treated first.
2. Cardiac arrest due to trauma is not treated by medical cardiac arrest protocols. Trauma patients should be transported immediately with CPR, control of external hemorrhage, cervical spine immobilization, and other indicated procedures attempted en route.
3. In patients with non-life-threatening emergencies who require IVs, only two attempts at IV insertion should be attempted in the field. Further attempts must be approved by medical control.
4. Patient transport, or other needed treatments, must not be delayed for multiple attempts at endotracheal intubation.
5. Verbally repeat all orders received prior to their initiation.
6. Any patient with a cardiac history, irregular pulse, unstable blood pressure, dyspnea, or chest pain should be placed on a cardiac monitor.
7. If the patient's condition does not seem to fit a protocol or protocols, always contact medical control.

NEVER HESITATE TO CONTACT MEDICAL CONTROL FOR ANY PROBLEM, QUESTION, OR FOR ADDITIONAL INFORMATION.

B IV THERAPY

1. All trauma patients should receive at least one, and preferably two, IV's of Normal Saline via large bore (14 or 16 gauge) catheters. Trauma patients with a systolic blood pressure <90 mmHg should be receive wide-open fluids until the systolic blood pressure is >90 mmHg. Trauma patients with a systolic blood pressure >90 mmHg should receive fluids at a "to keep open (TKO)" rate or as directed in the applicable protocol.
2. Intraosseous infusion may be performed on pediatric patients up to six years of age. This procedure should be limited to cardiac arrest and unresponsive patients after 2 unsuccessful peripheral IV attempts.
3. All pediatric peripheral IVs should be started with a Buretrol administration set.
4. All IV attempts are to be peripheral. The external jugular vein is considered a peripheral vein. Placement of an intraosseous needle is permitted in a life-threatening emergency where immediate fluid or medication administration is necessary. Only paramedics who have completed the required education program for intraosseous needle placement, and who have been approved by the system medical director, may place intraosseous needles. Except in the case of pediatric cardiac arrest or pediatric multiple trauma, this procedure should only be performed with permission of medical control.
5. Access of indwelling central lines (i.e. Hickman Catheters) is permitted when peripheral IV attempts have been unsuccessful and the needs of intended therapy outweigh the risks. Note, many of these catheters require special access needles. Do not attempt access if special needles are required unless the patient has access needles available.

C. INTRAOSSEOUS THERAPY & EZ-IO PROTOCOL

INDICATION

To administer life-saving drugs or fluids to patients weighing 3kg or more who are in severe shock or cardiac arrest and who do not have peripheral veins available for IV access.

TECHNIQUE (note: See EZ-IO protocol below)

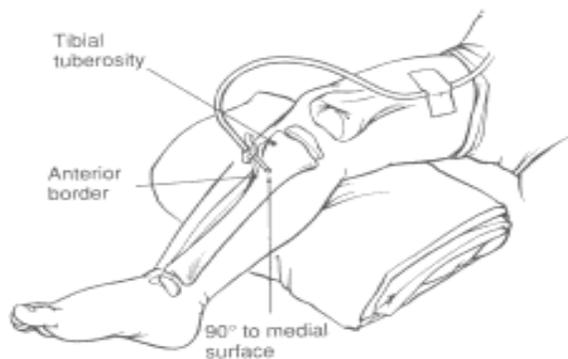
1. Select site 2 fingerbreaths below proximal tibial tubercle.
2. Place towel roll under knee and externally rotate leg to expose broadest side of bone.
3. Prep area with Betadine and use sterile technique.
4. Fill 5 mL syringe with IV fluid and have partner immobilize leg.
5. Using a 16-18 gauge intraosseous needle, insert needle through soft tissue, into bone, with a rotating technique.
6. Remove stylette, attempt to aspirate bone marrow into fluid-filled syringe, then flush fluid through needle.
7. Connect to IV tubing and begin fluid administration as ordered by medical control or standing orders.

POTENTIAL COMPLICATIONS

1. If IV will not flow, needle may have gone through marrow and into bone on the other side. Back out slightly and try infusion again.
2. Fluid may leak around needle, causing swelling. With infiltration, another site must be used.
3. Infection
4. Fat embolism

CONTRAINDICATIONS

1. Fracture on same extremity
2. Recent fracture near site or other infection near site.



EZ-IO® infusion systems require specific training prior to use.

INDICATIONS

EZ-IO® 25mm (40 kg and over) & EZ-IO® 15mm (3–39 kg) EZ-IO® 45mm (40 kg and over with excessive tissue)

Note: *Certain patients may require a Needle Set outside their ideal weight range “One size does not fit all”*

1. Immediate vascular access in emergencies.
2. Acute need for intravenous fluids or medications

CONTRAINDICATIONS

1. Fracture of the bone selected for IO infusion (*consider alternate sites*)
2. Excessive tissue at insertion site with the absence of anatomical landmarks (*consider alternate sites*)
3. Previous significant orthopedic procedures (*IO within 24 hours, prosthesis - consider alternate sites*)
4. Infection at the site selected for insertion (*consider alternate sites*)

CONSIDERATIONS

1. **Flow rate:** Ensure the administration of a rapid and vigorous 10ml flush with normal saline prior to infusion **“NO FLUSH = NO FLOW”**
2. Repeat syringe bolus (flush) as needed
3. **Pain:** Insertion of the EZ-IO® in conscious patients has been noted to cause mild to moderate discomfort (usually no more painful than a peripheral IV). However, IO infusion for conscious patients has been noted to cause severe discomfort *If the patient responds to pain; 2% lidocaine without preservatives or epinephrine (cardiac lidocaine) has been demonstrated to be an effective local anesthetic for numbing the intraosseous space. As with any drug, always consult the pharmaceuticals DFU’s prior to use and ensure the patient does not have an allergy or sensitivity to lidocaine.*

The prescribed dosage of 2% lidocaine without preservatives or epinephrine (cardiac lidocaine) must be infused slowly in 0.1 ml increments to prevent it from being sent directly into the central circulation. Titrated doses of the lidocaine should be given with increasing pressure as this will allow for expanded anesthetic effect in the medullary space. Following administration of the prescribed dose, it is crucial that you wait 30 seconds for the drug to reach maximum anesthetic effect before giving the bolus. Lidocaine is to be used as an anesthetic and not as analgesia and repeated dosing may be necessary.

Note: Lidocaine 2% administration if needed:
1mg (which is 0.1ml); Wait 30 seconds
1mg (which is 0.1ml); Wait 30 seconds
1mg (which is 0.1ml)

Do not exceed 3mg/kg/24hr

EQUIPMENT:

- One (1) EZ-IO Power Driver
- Appropriate size intraosseous Needle Set based on patient size and weight
- EZ-IO 15mm 3-39 kg
- EZ-IO 25mm 40kg and greater
- EZ-IO 45mm 40kg and greater with excessive tissue
- One (1) EZ-Connect®
- Two (2) 10 ml syringes
- Sterile saline solution for flush **Note:** 2% lidocaine without preservatives or epinephrine (cardiac lidocaine) for patients responding to pain

- Non-sterile non-latex gloves
- Antiseptic agent per institution protocol
- One (1) semi-permeable transparent dressing (optional)
- One (1) sterile 2x2 or 4x4 gauze pad
- One (1) (appropriate volume and type) intravenous solution
- One (1) fluid administration set (institution specific)
- One (1) fluid administration pump or pressure bag (institution specific)
- EZ-Stabilizer
- EZ-IO wrist band

PROCEDURE

If the patient is conscious, explain procedure

1. Apply non-sterile latex free gloves
2. Cleanse site using antiseptic agent per institution protocol
3. Allow to *air dry thoroughly*
4. Connect appropriate Needle Set to driver
5. Stabilize site
6. Remove needle cap
7. Insert EZ-IO needle into the selected site. **IMPORTANT:** Keep hand and fingers away from Needle Set
8. Position the driver at the insertion site with the needle set at a 90-degree angle to the bone surface. Gently pierce the skin with the Needle Set until the Needle Set tip touches the bone.
9. Ensure visualization of at least on black line Needle Set
10. Penetrate the bone cortex by squeezing driver's trigger and applying gentle, consistent, steady, downward pressure (allow the driver to do the work)

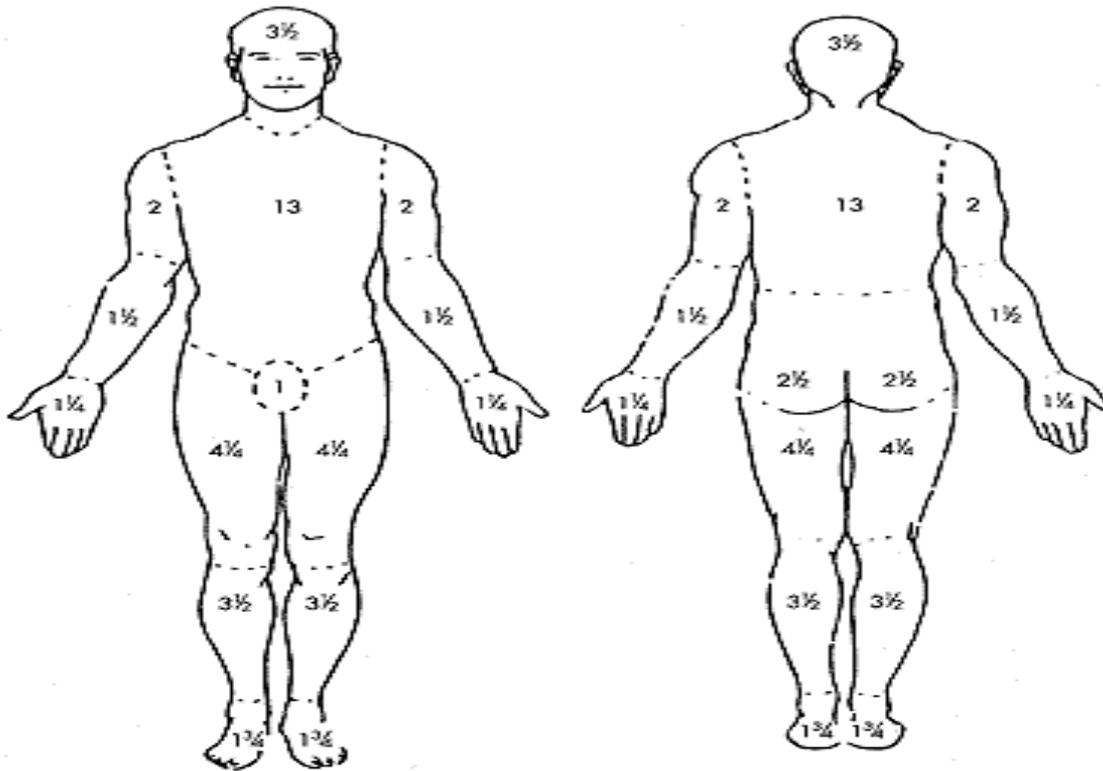
Do not use excessive force. In some patients insertion may take greater than 10 seconds, if the driver sounds like it is slowing down during insertion; reduce pressure on the driver to allow the RPMs of the needle tip to do the work.

In the unlikely event that the battery on the Driver fails clinicians may manually finish inserting the EZ-IO Needle Set. Grasp the Needle Set and, rotate arm, while pushing the needle into the intraosseous space. This may take several minutes.

11. Release the driver's trigger and stop the insertion process when a sudden "give or pop" is felt upon entry into the medullary space or when desired depth is obtained
12. Remove EZ-IO Power Driver from Needle Set while stabilizing the catheter hub
 13. Remove stylet from catheter by turning counter-clockwise and immediately dispose of stylet in appropriate biohazard sharps container: **NEVER** return used stylet or cartridge to the EZ-IO kit
14. Secure site with EZ Stabilizer
15. Connect primed EZ-Connect to exposed Luer-lock hub
16. Confirm placement
17. Syringe bolus: flush the catheter with 10 ml of normal saline

If the patient is responsive to pain the clinician should consider 2% lidocaine without preservatives or epinephrine (cardiac lidocaine) for anesthetic effect prior to the 10ml normal saline flush and it may be necessary to administer additional lidocaine following the saline flush.
18. Assess for potential IO complications
19. Disconnect 10 ml syringe from EZ-Connect extension set
20. Connect primed EZ-Connect extension set to primed IV tubing
21. Begin infusion utilizing a pressure delivery system
22. Secure tubing per institution policy
23. Continue to monitor extremity for complications
24. Place EZ-IO armband on patient, document time and date

D. BURN CHART – ADULT/CHILD



AREA	Age:	Birth-1	1-4	5-9	10-14	15	Adult	Partial thickness 2"	Full thickness 3"	Total
Head		19	17	13	11	9	7			
Neck		2	2	2	2	2	2			
Anterior trunk		13	13	13	13	13	13			
Posterior trunk		13	13	13	13	13	13			
Right buttock		2%	2%	2%	2%	2%	2%			
Left buttock		2%	2%	2%	2%	2%	2%			
Genitalia		1	1	1	1	1	1			
Right upper arm		4	4	4	4	4	4			
Left upper arm		4	4	4	4	4	4			
Right lower arm		3	3	3	3	3	3			
Left lower arm		3	3	3	3	3	3			
Right hand		2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2			
Left hand		2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2			
Right thigh		5%	6%	8	8 1/2	9	9 1/2			
Left thigh		5%	6%	8	8 1/2	9	9 1/2			
Right leg		5	5	5 1/2	6	6 1/2	7			
Left leg		5	5	5 1/2	6	6 1/2	7			
Right foot		3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2			
Left foot		3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2			

This chart is designed to utilize one anatomical diagram and the age based Body Surface Area chart to determine the extent of burn injury. Total area burned must be calculated to ensure appropriate fluid resuscitation.

ASSESSMENT OF BURN SEVERITY AND EXTENT

FIRST DEGREE

First Degree burns affect the superficial epidermis, but basal layer remains viable. Clinically this burn presents as painful erythema that tans within 48 hours; however, this is not considered in estimating burn percentages.

SECOND DEGREE

Second Degree burns affect part of the dermis. Typically this burn is divided into superficial and deep second degree burns. Re-epithelialization occurs from the preserved epithelial appendages.

Superficial - involves only the most superficial dermis. It presents with blistering or sloughing of overlying skin, causing a red, painful wound. Typically, the burn blanches but shows good capillary refill. Hairs cannot be pulled out easily. Healing occurs within 14 days, typically without scarring and without requiring surgical intervention.

Deep - involves more of the epidermis with fewer epidermal appendages spared. It may present as blisters, or a wound with white or deep red base. Sensation is usually decreased. Healing takes more than 14 days. Incidence of hypertrophic scarring correlates with the length of healing phase greater than two weeks. Therefore debriding and grafting is recommended by 2-3 weeks.

THIRD DEGREE

Third Degree burns affect all epidermis, dermis and epidermal appendages. It presents as a white, black or mottled hard, dry wound, from which hairs are easily pulled out. No pain is present. If left without surgical intervention the eschar will eventually separate by the formation of a layer of granulation tissue. Potential risks of not debriding and grafting include:

- sepsis
- hypertrophic scarring
- increased pain

E NASOGASTRIC TUBE PLACEMENT

To establish guidelines for nasogastric tube placement for the patient situation requiring relief of gastric dilation and/or evacuation of ingested non-corrosive poisons.

EQUIPMENT

- Gloves and full face protection.
- Nasogastric tube.
- 30 ml syringe
- If available, cup of water.
- Tape.
- Water soluble lubricant.
- Stethoscope.

PROCEDURE

1. Put on gloves and full face protection.
2. Assemble all necessary supplies and equipment.
3. If patient is responsive, explain procedure and possible disturbing side effects. (coughing and gagging).
4. Measure tube. Start with tip of tube at patient's xiphoid process.
5. Run tube up to tip of ear and then to nose. Mark the tube with a small piece of tape at this point.
6. Lubricate entire tube distal. to the tape mark.
7. Insert tube into the right nares. and advance slowly. If patient is responsive, this will induce a reflex cough, but this should subside. Ask patient to talk, if they cannot, and/or continues to cough, suspect tracheal placement.
8. Once the tube has advanced to the tape mark at the nose, stop.
9. Fill the syringe with 30 cc of air. while auscultating over the stomach gradually inject the air and listen for bubbling. This will insure correct placement. If no sounds are heard, or if the patient begins violently coughing during ingestion, remove and re-attempt.
10. Hook the tube up to slow suction for gastric content removal.
11. Secure tube to patient with tape.
12. Monitor patient for potential complications.

GAGGING, COUGHING OR VOMITING

Monitor patient for GAGGING, COUGHING OR VOMITING: If patient is unresponsive, patient should be placed on left side with head and face down to increase drainage and minimize aspiration.

If patient is awake, explain possible disturbing side effects to patient prior to placement.

Violent coughing and/or gagging may indicate placement of the N.G. tube into the trachea.

Follow step #8 above to evaluate the correct placement of the tube into the esophagus and stomach.

If N.G. tube is accidentally placed into the trachea, it should be immediately removed and the patient should be ventilated and oxygenated.

DOCUMENTATION

1. Size of N.G. tube used.
2. Indications for procedure.
3. Any complications or difficulties with procedure.
4. Time procedure performed.
5. Confirmation of active gastric sounds post placement.
6. Any removal of gastric contents via suction.

F. NEBULIZED BRONCHODILATORS

INDICATIONS

To administer bronchodilator medications to patients with reactive airway disease (asthma, COPD, croup).

PROCEDURE

1. Receive order from medical control or utilize standing orders.
2. Confirm order and write it down.
3. Select medication.
4. Prepare dosage as ordered.
5. Measure patient's vitals' signs.
6. Apply cardiac monitor.
7. Apply pulse oximeter, if available.
8. Auscultate breath sounds.
9. Place desired dose of medication in nebulizer.
10. Assemble nebulizer and attach to oxygen source.
11. Turn on oxygen at flow rate recommended by nebulizer manufacturer.
12. Have patient place mouthpiece in mouth, and breath nebulized medication.
13. When treatment complete, reassess vital signs, breath sounds, pulse oximetry,
14. Monitor patient for effects as well as any side effects.

CONTRAINDICATIONS

1. Symptomatic tachycardia
2. If patient unable to hold device in mouth, use nebulizer mask.

G ENDOTRACHEAL INTUBATION

1. Proper endotracheal tube placement must be documented by at least three different methods. These include:
 - presence of bilateral breath sounds
 - absence of breath sounds over the epigastrium
 - presence of condensation on the inside of the endotracheal tube
 - end-tidal carbon dioxide monitoring (ETCO₂)
 - use of an endotracheal esophageal detector
 - visualizing the tube passing through the cords

At least three verification methods must be documented in the medical record!!

2. Following endotracheal intubation, tube placement should be re-verified by continuing end-tidal carbon dioxide readings or every 5 minutes by noting bilateral breath sounds.

H. DO NOT RESUSCITATE

Patients that are being transferred from a licensed health care facility who have any form of advanced directive may be transported as "DNR" after the crews confirms this status with family or licensed provider and notes this on the run form, there is no need to contact Medical Control.

Do Not Resuscitate (DNR) orders should be honored when valid. The following Do Not Resuscitate orders are preferred on scene calls:

State DNR Form. A valid Texas Department of Health "Out of Hospital Do Not Resuscitate Order" should always be honored. It should be presented at the time of service. The original document will be recognized unless there is evidence of foul play. Copies of the document can also be recognized. Alternatively, a valid Texas Department of Health "Out of Hospital Do Not Resuscitate Order" bracelet or necklace can also be recognized. To be valid, the DNR form must be completed in its entirety and signed as required. Once it is determined that a valid Out of Hospital Do Not Resuscitate Order is presented, then resuscitation measures may be terminated. It is not necessary to contact Medical Control if there are no questions or problems. The State DNR Form shall list the designated procedures that shall be withheld or withdrawn.

- a. Cardiopulmonary Resuscitation
- b. Endotracheal Intubation or other advanced airway management
- c. Artificial Ventilation
- d. Defibrillation
- e. Transcutaneous Cardiac Pacing
- f. Administration of Cardiac Resuscitation Medications

Power of Attorney for Health Care. If a "Durable Power of Attorney for Health Care" is presented, then you should follow the directions of the designated person unless there is suspicion of foul play. The only possible exception is the lucid patient making alternate rational decisions. In this case, the wishes of the patient should be followed. You will need to document what treatment the patient is wanting withheld and they must sign stating as such.

Living Wills or Directives to Physicians. If a paramedic is presented with a Living Will or Directive to Physicians, CPR is to be initiated and the following Procedures followed.

Scene Call with unresponsive patient:

- a. Contact Medical Control
- b. Provide a brief synopsis of the situation. Be sure to include the diagnosis which resulted in the DNR order. (i.e. cancer patient)
- c. Provide a brief report of the patient's current status (vital signs, ECG)
- d. Confirm receipt of written Living Will or Directive to Physicians.
- e. The Medical Control Physician will determine whether to accept or deny the DNR order.
- f. If there are difficulties contacting medical control, contact the supervisor for guidance. If the patient is over 70 years or has a terminal diagnosis, the patient's wishes should be respected.

Suspicion of Foul Play. If upon arriving at the scene of a Cardiac Arrest, and you suspect that it is due to foul play.

- a. Do Not Touch anything
- b. Contact dispatch to have PD respond to you location
- c. Document all that you observed exactly the way you found it.
- d. Have PD sign the run report

Resuscitation should not be attempted in the field in cases of:

- a. Rigor Mortis
- b. Decapitation
- c. Decomposition
- d. Incineration

- e. Mass casualty incident where triage principles preclude CPR from being initiated on every victim.
- f. Obvious massive head or trunk trauma which is incompatible with life (Provided the patient does not have vital signs).

When possible, place the quick look paddles or the ECG leads to confirm Asystole or an agonal rhythm and attach a copy of the strip to all copies of the run report.

Revocation of a DNR. Revocation of a DNR is where you have a family member present that has a DNR form signed by the patient, but another family member that is also present is telling you that they want you to not honor the DNR. In a case like this you will do the following.

- a. Initiate CPR
- b. Contact Medical Control
- c. Provide a brief synopsis of the situation. Be sure to include the diagnosis which resulted in the DNR order. (i.e. cancer patient).
- d. Provide a brief report of the patient's current status(vital signs, ECG).
- e. Confirm receipt of the DNR.
- f. The Medical Control Physician will determine whether to accept or deny the DNR order.
- g. Document the revocation in its entirety, along with the outcome in your narrative. This is for tracking purposes, and in the event that the call goes to court.

Tracking of the DNR: When you are looking through the patient's paperwork and if you come across a copy of a DNR you need to document it in your narrative. This is so we can keep track of the amount of DNR's that we encounter. If you do encounter a DNR and are honoring it, when you get to the ER you will need to have the nurse or physician sign your run report stating that they have received the DNR form.

I. GUIDELINES FOR HELICOPTER TRANSPORT

OVERVIEW

Several factors must be considered before summoning an aeromedical helicopter for a scene response. Stable patients who are accessible by ground vehicles are best transported by ground vehicles. Often, patients can be transported and delivered to local hospitals before a helicopter can reach the scene. Most emergencies can be adequately stabilized in local hospitals, and transferred, if necessary, to Dallas hospitals later.

Helicopter transport should be considered in the following cases:

1. Transport time to local hospital by ground ambulance is greater than transport time to Dallas or Fort Worth hospital by helicopter.
2. Patient extrication time greater than 20 minutes.
3. Number of critically ill or injured patients exceeds capabilities of local EMS agencies.
4. Closest hospital is on "DIVERT" status for trauma patients
5. Ambulance access to the scene, or away from the scene, is impeded by road conditions, weather conditions, or traffic.
6. Patients who have special problems or needs which require treatment in a specialized tertiary care facility including:
 - spinal injuries with paralysis or lateralizing signs
 - burns of greater than 25% body surface, or burns which involve the face, hands, feet, or perineum, or burns with significant respiratory involvement.
 - electrocutions
 - lightning injuries
 - amputation of an extremity
7. Estimated ground transport time to local hospital exceeds 30 minutes and the patient has one of the following injuries or conditions:
 - Significant Mechanism of Injury:
 - automobile versus pedestrian at greater than 10 MPH
 - motorcycle victims ejected at greater than 20 MPH
 - death of occupant in same vehicle
 - ejection of patient from vehicle
 - Patient Conditions:
 - penetrating injury to head, neck, chest, abdomen, or groin
 - two or more proximal bone fractures
 - severe burns
 - flail chest
 - pediatric multiple trauma
 - unstable vital signs SBP <100 and HR >100

J. ROUTINE CARE

The following assessment is to be performed and information is to be obtained on all patients:

1. Always assure scene safety for yourself, your fellow rescuers, and your patient including universal precautions.
2. Primary survey:
 - a. Airway with cervical spine control
 - b. Breathing
 - c. Circulation with control of bleeding
 - d. Disability Determination

A = alert and conscious

V = responsive to verbal stimuli

P = responsive to painful stimuli

U = unresponsive

E. Exposure

3. Secondary survey:
 - a. Obtain vital signs and perform objective head-to-toe assessment
 - b. Obtain history
 - Sex, age, and approximate weight
 - Chief complaint
 - Precipitating factors
 - Significant past medical history
 - Allergies
 - Current medications
4. Place monitoring equipment, if indicated.
 - a. ECG monitor
 - b. Pulse oximetry
 - c. Capnography (when indicated)

5. Apply appropriate protocol and standing order based on assessment.
6. Contact medical control as designated in protocol or for any problems or questions.
7. Position patient comfortably as indicated by condition or situation.
8. Reassure and calm patient. Loosen any restrictive clothing or remove as indicated.
9. Transport as soon as feasible.

K. MULTIPLE-CASUALTY INCIDENTS (MCI)

TRIAGE AND TAGGING: the S.T.A.R.T. Method.

START is an acronym for Simple Triage and Rapid Treatment, a method of triaging and treating patients that was developed in Newport Beach, California, in the early '80s. The START method has proved to be an excellent and rapid approach to triaging large numbers of patients, and only limited medical training is required to use the method effectively. Under the START concept, the first rescuers to a scene clear it of any walking wounded, simply with a verbal instruction to all mobile survivors that they should walk to a described location.

These patients are then moved out of the wreckage area and told to stay put. Later, arriving rescuers will further assess these patients and treat any injuries. Survivors must always be thoroughly assessed when time and resources become available, as they may have hidden serious injuries.

Once the walking wounded are out of the way, rescuers should continue their rapid triage. Patients will be triage tagged at the completion of each assessment. Each patient's triage assessment should be completed in less than 60 seconds. The three areas to be assessed are ventilation, perfusion and pulses, and neurological.

First Assessment

The first assessment evaluates ventilation. If it is adequate, the rescuer goes to the next item. If ventilation is inadequate, basic attempts to clear the airway, such as debris removal or repositioning the head, will be taken. Depending on the results of these corrective actions, the patient is classified as one of the following:

No respiratory effort:

dead/non-salvageable

Respirations above 30 or patient requires assistance maintaining airway:

critical/immediate

Respirations below 30:

go to next assessment

Second Assessment

The next assessment evaluates perfusion. There are two methods used. One is the capillary refill test. The rescuer pinches a lip or a nail bed, holds briefly, then releases pressure. If the area returns to a normal color within two seconds, the patient is classified as delayed. If the color does not return quickly, or if it is cyanotic, the patient is classified as immediate.

When the lighting is poor, or the patient's race does not permit a blanch test, the rescuer can check the patient's radial pulse. If it is detected, the patient most likely has a systolic blood pressure of 80 mmHg. (It should be noted that only the presence of a radial pulse is tested at this point.)

Pulse rates are not considered at this point; each patient falls into one of the following categories:

Capillary refill >2 seconds OR no radial pulse:

critical/immediate

Capillary refill < 2 seconds OR palpable radial pulse:

go to next step.

Third Assessment

The third assessment evaluates the neurological status of the patient. Based on this assessment, the patient is placed in one of the following categories:

Unconscious:

critical/immediate

Altered level of consciousness:

critical/immediate

Altered mental process:

critical/immediate

Normal mental responses:

delayed

It should be pointed out that the first assessment that produces a "critical/immediate" category stops further triage assessment of the remaining areas. The patient is tagged "critical/immediate" at that time. Only correction of life-threatening problems, such as airway blockage or severe hemorrhaging, would be undertaken before moving to the next patient.

The START process permits a few rescuers to very rapidly triage a large number of patients. Little specialized medical training is required to make these initial triage decisions. After patients are moved to the treatment area, more detailed assessments can be conducted by paramedics.

The **S-T-A-R-T** Triage system is designed to lessen the number of assessments made by the EMT on a victim of a multiple casualty incident before a treatment and transportation decision can be reached.

L. Mucosal Atomizer Delivery Device (MADD)

The Mucosal Atomizer Delivery Device (MADD) is an alternative drug delivery device utilizing the vascular nature of the nasal mucosa by aerosolizing medication into a fine mist. Because of this easy access, administration of medications via the nasal mucosa can be rapidly absorbed directly into the blood stream. This method is a satisfactory route for water-based medications (i.e. naloxone, Glucagon, lidocaine) in the absence of rapid intravenous access.

INDICATIONS

Assessment of patient exhibiting signs and symptoms associated with stroke

CONTRAINDICATIONS

None

NOTES/PRECAUTIONS

- No more than 1/2 - 1 mL per nostril per dose
- Patients with decreased blood flow to the nasal mucosa (i.e. trauma, surgery, recent cocaine use) may have impaired absorption rates.
- Excessive mucosal secretion, upper respiratory infection or epistaxis may dilute or “wash away” medication prior to absorption.
- Severe hypertension and other pathologies resulting in vasoconstriction may adversely affect absorption.

PROCEDURE

1. Body Substance Isolation.
2. Inspect the nostrils for excess mucous, blood or substance.
3. Draw up 2 cc medication in a 3 cc luer lock
4. Expel air from the syringe.
5. Connect the MADD tip to the syringe.
6. Hold the patient's head with one hand.
7. Place the atomizer 1.5 cm within the nostril with other hand.
8. Briskly compress the syringe to administer 1 cc of atomized spray.
9. Remove and administer the remaining 1 cc in the nostril.
10. Properly dispose of equipment and document effects.



other
syringe.
the
other

M. Initiation and Termination of Cardiopulmonary Resuscitation (CPR)

Initiation of Cardiopulmonary Resuscitation (CPR)

Initiation of Cardiopulmonary Resuscitation (CPR) by any credentialed Provider is NOT indicated for pulseless, apneic patients in the presence of:

- Obvious appearance of death
 - Decomposition
 - Rigor mortis
 - Obvious mortal wounds (massive burn injuries, severe traumatic injuries with obvious signs of organ destruction such as brain, thoracic contents, etc.)
 - Severe extremity damage, including amputation, should not be considered an obvious mortal wound without coexistent injury/illness
 - Patient submersion of greater than 20 minutes from arrival of the first Public Safety entity until the patient is in a position for resuscitative efforts to be initiated
 - Operationally, on-scene rescuers should consider conversion from rescue to recovery at 20 minutes. Exceptions to this guideline include any potential for a viable patient such as a diver with an air source or a patient trapped with a potential air source. Final decision for transition from rescue to recovery mode rests with on-scene command.
 - Out of Hospital Do Not Resuscitate (DNR) Directive
 - Valid Out-Of-Hospital Do Not Resuscitate Written Order or Device from any (US) State
 - A valid licensed physician on scene (or by telephone) orders no resuscitation efforts
 - A Provider credentialed at the EMT-B level should elect not to begin resuscitative efforts for the pulseless, apneic patient exhibiting obvious dependent lividity. In addition to the previously stated criteria, unless a patient arrests during transport, ALS credentialed Providers should not initiate Cardiopulmonary Resuscitation (CPR) for pulseless, apneic patients in the presence of:
 - Blunt Traumatic Cardiopulmonary Arrest with clearly associated mechanism to the head and/or torso in conjunction with the lack of spontaneous respirations following BLS airway maneuvers
 - Penetrating Traumatic Cardiopulmonary Arrest with clearly associated mechanism to the head and/or torso region:
 - When arrival at the hospital would exceed 20 minutes from arrival of first Credentialed Provider
- OR**
- Lack of spontaneous respirations following BLS airway maneuvers
- AND**
- No evidence of organized electrical activity; (rate >40) on ECG (if a monitor is not available, initiate CPR until a monitor is available)
- AND**
- No evidence of signs of life, specifically pupillary reflexes or spontaneous movement

Termination of Resuscitation Efforts without OLMC

Any System Credentialed Provider, in the following circumstances, may discontinue resuscitation efforts without OLMC:

- Resuscitation efforts were inappropriately initiated when criteria to not resuscitate were present
- A valid advanced directive was discovered after resuscitative efforts have been initiated
- When an ECA, EMT-B, EMT-I or EMT-P Credentialed Provider makes the decision to not initiate resuscitative efforts, or to terminate efforts without involvement of OLMC, the provider(s) making that decision should contact EMS Supervisor, cancel other first response units, and reduce the transport unit to Code 1.

In addition to the previously stated criteria, an ALS Credentialed Provider, in the following circumstances, may discontinue resuscitation efforts without OLMC:

- In penetrating traumatic arrest, an ECG monitor becomes available after initial responders initiated resuscitation and monitor demonstrates patient has electrical heart rate less than 40

- Ongoing resuscitation attempts by a Credentialed Provider of 20 minutes or more without Return of Spontaneous Circulation (ROSC) and no shocks indicated by AED/monitor (if available).
- If at any time during resuscitation attempts, ROSC is achieved, the 20 minute timeline should be restarted.

When an ALS Credentialed Provider makes the decision to not initiate resuscitative efforts, or to terminate efforts without involvement of OLMC, the Provider(s) making that decision should follow the following procedures:

- Contact by radio or telephone and request the appropriate district authority (JP)
- Cancel additional responding units
- Document per System and agency protocols
- Termination of Resuscitation Efforts Utilizing OLMC
- There are instances when an ALS Credentialed Provider must contact OLMC when considering discontinuation of resuscitation efforts. These include but are not limited to the following circumstances:
 - Hypothermia
 - Persistent ventricular fibrillation/ventricular tachycardia
 - Persistent PEA with an electrical heart rate greater than 40
 - For the intubated patient, CO₂ >10 mmHg

When OLMC is involved in the decision to terminate resuscitative efforts, the following procedures should be implemented:

- Resuscitative efforts must be continued while requesting a pronouncement
- Contact AMR EMS ODS
- Document per System and agency protocols

SPECIAL SITUATIONS

A HAZARDOUS MATERIAL INCIDENTS

1. Before approaching the scene of a chemical spill, identify the 4 digit chemical number on the placard on the vehicle. Identify the chemical using the DOT manual.
2. Notify the nearest HAZ-MAT team. Give them the location of the emergency and the suspected chemical or agent.
3. Note any smoke clouds, amount of spilled material, wind direction, and approximate speed.
4. Notify medical control for additional instructions from the poison center.
5. Don safety equipment specific for the type of hazardous material encountered.
6. Quickly remove the patient from the "HOT AREA" and proceed with the primary survey. It is preferable to allow personnel specifically trained in hazardous materials to enter the "HOT AREA" and perform patient removal.

B IMPALED OBJECTS

Impaled objects in the head, chest, abdomen, or extremities are not to be removed unless specifically requested to do so by medical control in a life-threatening situation. Objects through the cheek, or which obstruct the airway, may be removed in order to provide adequate respiration or ventilation.

C PATIENT REFUSAL OF CARE AGAINST MEDICAL ADVICE (AMA)

1. Competent adults are entitled to make decisions about their health care. They have the right to refuse medical care when they have been properly informed of the benefits, risks and alternatives to the recommended care. This policy defines the mechanisms by which a patient who summoned an ambulance, or for whom such an ambulance was summoned, may refuse care and transport.
2. For the purpose of this policy, patients, legal representatives of patients (by legal custody or Durable Power of Attorney for Health Care) or parents of minor patients may refuse medical care if they are:
 - a. Competent - able to understand the nature and consequences of refusing medical care and/or transportation to the hospital
 - AND**
 - b. At
least one of the following:
 - Adult - over 18 years of age
 - An emancipated minor
 - A minor who is married
 - A minor who is in the military
3. At no time may a spouse or relative who is not the legal representative of the patient make a decision to refuse evaluation, treatment or transportation for the patient.
4. The following are considered NOT to be competent to make medical decisions:
 - a. Any patient who presents with an altered level of consciousness or a history of altered level of consciousness within 6 hours of the call, including, but not limited to:
 - Patients under the influence of drugs or alcohol.
 - Patients with head injuries.
 - b. Any patient who has attempted suicide or has threatened suicide (verbally or otherwise). This suicide attempt or threat must be recent and related to the call.
 - c. Any patient who appears to be suffering from cerebral hypoxia from whatever cause.
 - d. Any patient with severely altered vital signs.
 - e. Any patient who makes largely irrational decisions in the presence of an obvious potentially life or limb threatening condition, including persons who are emotionally unstable.
 - f. Any patient under a psychiatric hold which has been invoked by a person authorized to invoke such a hold.
 - g. Any patient with a known mental retardation or deficiency.
5. Anytime a patient refuses emergency medical evaluation, treatment, or transportation, Medical Control MUST be contacted if:
 - The patient has abnormal vital signs.
 - The patient has a potentially life or limb threatening condition.
 - The patient has sustained a head injury.
 - The patient is determined to be NOT competent to refuse evaluation, treatment or transportation as defined in sections 1, 2 and 4 of this protocol.
 - A communication barrier exists (language or handicap).
 - The patient is a minor (emancipated, married or otherwise) or is being represented by a legal representative.
6. All patients who are allowed to refuse evaluation, treatment or transportation must:
 - Not be excluded by the criteria in sections 1, 2 or 4 of this protocol.
 - Have the risks, benefits and alternatives of their decision explained to them by the paramedics and demonstrate an understanding of this discussion. The details of this must be documented on the Prehospital Care Report.

Sign the release form.

- This form must be signed by the patient, the paramedic, and a witness (preferably a relative or friend of the patient).
 - In the event that the decision is being made by a legal representative of the patient or by the parent of a minor patient, this person must sign in place of the patient.
7. If a patient, who is allowed to refuse evaluation, treatment or transport, refuses to sign a valid AMA form the paramedic will complete a PCR in the usual manner AND will also complete an incident report to document the details of the encounter, including why the patient refused to sign. The paramedic will also document on the AMA form "Patient refused to sign AMA."
 8. If a patient is determined to be NOT competent to make medical decisions, the patient should be treated by implied consent. If this patient continues to refuse evaluation, treatment or transportation, all reasonable measures, including police assistance and/or appropriate use of physical restraint, should be used to evaluate, treat and transport the patient.
 9. At no time should the AMR crew place themselves in physical danger. if this should occur, the crew will take all of the following steps:
 - Attempt to leave the patient in the care of a responsible adult, if at all possible.
 - Withdraw to a position of safety and request police assistance if necessary.
 - Fully document the occurrence on the Prehospital Care Report.
 - Complete an incident report to be forwarded with a copy of the Prehospital Care Report to the AMR Clinical Coordinator.
 10. Paramedics have a duty to act in the best interest of all patients.
 - No patient should be encouraged to refuse evaluation, treatment or transportation.
 - Paramedics will advise patients to use paramedic transport if the advice is requested.
 - No person will be denied evaluation, treatment or transport on the basis of age, sex, race, creed, color, origin, economic status, language, sexual preference, disease or injury.

Process of Informed Refusal

To allow a patient to exercise their rights and protect yourself, you need to follow the following steps - each time - every time - with every patient who is not transported or treated.

1. Perform a complete assessment_- maintain a high index of suspicion - results should be consistent with the mechanism of injury and/or illness.
2. Evaluate the Differential Diagnosis_- Avoid rendering any definitive conclusion or diagnosis. Assume the worst and determine other possibilities for presenting complaints / symptoms. Clinical thinking should "rule in" vs. "rule out" possibilities. These possibilities must be communicated to the patient,
3. Rigorously -Ascertain -the Patient's Mentation_- The patient must be alert and oriented to time, place, person, and events. You must determine the patient's competency to make an informed refusal, evaluate choices and decision making capacity. The patient must have an understanding and capacity to comprehend or assimilate information at the scene.

The paramedic must evaluate factors that could impede or impair the patient's decision making capacity or comprehension. These factors include **clinical, physical, emotional, physiologic and psychological status**. The patient must have an awareness of the medical facts in order to make an informed refusal. The paramedic must also evaluate the appropriateness and feasibility of the patient's choice and the patient's ability to execute their choice. Finally, the patient's behavior and psychological status must be appropriate.
4. The Risks of the Differential Diagnosis Must be Explained_- The risks and differential diagnosis must be explained, and the patient must be able to assimilate and comprehend the risks of his/her condition, your recommendations and his/her choices.
5. The Patient Must Be Offered Transport_- The unqualified willingness to transport the patient must be given. The intentional or unintentional discouragement from transport may be a breach of duty.

6. Requirement For Timely Physician Examination_- The patient must be advised to seek further medical care and examination by a licensed physician if the patient continues to refuse care or transport. The limitations of the paramedic's scope of practice/assessment must be explained to the patient.
7. Consequences must be thoroughly explained_- The paramedic must discuss the actual and potential consequences of the patient's failure to follow medical advice at the scene. Document any admonishments given and the patient's reaction, including their comments in quotes("...") whenever possible.
8. Base Hospital Consultation_- Any time a question or uncertainty exists in your mind about the need to transport a patient or about the patient's refusal of vital care or transport - consult the base hospital. If a question does not exist, and your judgment is incorrect, you will be held accountable. Increase your protection, seek a check and balance and ask for help advising the patient. At your discretion, you may also allow the patient to talk to the hospital. A patient's personal physician can be a good resource to consult. In addition to speaking directly with the patient, they can phone the base hospital directly on the taped line to provide further information and insight.
9. Sign a release - Complete this form thoroughly and have the patient sign it. As you may know, the release may or may not actually "release" you or the company from liability. One of the many purposes of using a release, however, is to further demonstrate your good faith and diligence in meeting your responsibilities to the patient. Together with all of your prudent actions, it helps to defend against assertions of abandonment. If the patient refuses to sign, complete the release anyway, and note this with both partners as witnesses. Document the patient's behavior as it relates to the refusal to sign. Have other witnesses sign the release, if feasible.
10. Document Everything - Extraordinary documentation is often required in non-transport situations in order to demonstrate due diligence and execution of duty. Document: your complete assessment, differential diagnosis and risks, patient's complete mentation, the choices offered and information given the patient, the patient's response to this information, advice to seek physician follow-up, consequences of the patient's choices explained to the patient, base hospital direction, if given, pertinent comments by family or bystanders, and obtain signatures on the release form.

Multiple Patient Incidents/Patient-Refusals

A reasonable and good faith effort must be utilized to determine potential injuries and latent effects from unknown injuries before refusals should be accepted. A reasonable effort, however, may be impacted by the number and acuity mix of patients in a given situation. Further, the need for a paramedic's clinical attention to any given patient's needs also impacts reasonability when it comes to how thorough we can be in such situations.

Given the dynamic and variety of circumstances multiple patient incidents entail, the judgment of what constitutes a reasonable effort must be considered on a case by case basis. Some guidelines are: everyone with a chief complaint, suspected chief complaint, or suspicious mechanism of injury must be assessed and evaluated. Every assessment must be documented.

When triage decisions must be made, the need for additional resources and first responder help in evaluating refusals must be considered as a part of due diligence.

The effort to do what is right for everyone at the scene, based on the principles mentioned earlier, is more important than detailed thoroughness in some settings. Let the patient's best interests, your good judgment and common sense, guide your decision making in these situations.

Conclusion

A positive orientation to transport the patient to the hospital will significantly lessen the risk to the patient and medic. Be careful to avoid rationalizing a reduced effort to transport and/or treat the patient due to underestimating the patient's condition. Every patient has a right to our full service and attention. Remember also that, your perception of "system needs" while commendable, cannot supersede your patient's needs and rights. Further, we take our patients one at a time. Morally, ethically, and legally they deserve the best you can give them.

A red flag needs to be raised in your mind anytime you hear yourself refer to the patient as "just a drunk", or anytime you think "it's not that bad, he can't afford this", or "a paramedic unit should not be tied up on this type of call". These rationalizations encourage underestimating the patient's condition, and/or shortcuts, which result in substandard patient care and endangerment of patients. Further, caring for these human beings is our reason for being - it's what we are here to do.

It is our goal, as professionals, to resolve a patient's need in crisis. if the patient needs a blanket, a hand held, to be defibrillated, an IV, or simply a ride to the hospital, it is our job to provide this service to them.

As medics, you are responsible for the decisions you make on every call and for the care you render patients. A single incident of perceived medic callousness on the part of the public reflects not only on you, but the reputations of the profession and that of the entire company if someone makes an issue of it. The safest thing you can do for your patients, yourself, and the company, is to transport. Remember also that one provides services without regard to the ability of a citizen to pay, Patient care and transport decisions must never be made on economic or any non-medical grounds.

Every patient has a right to our service and the best care we can provide for them. In those situations where the patient wishes to exercise their right to refuse service, the paramedic must use extreme caution, as the patient's rights and health must be protected to the extent humanly possible.

D Process for Deviation of Treatment Protocols

In the event an ambulance cannot contact medical control (i.e. mass casualty or radio/telephone problem), all protocols become standing orders. Likewise, in the event that a medical control physician cannot respond to the radio/telephone within two minutes of the call, all protocols are considered standing orders. An emergency department nurse at the medical control hospital may relay orders from the emergency physician in cases where it is impractical for he or she to come to the radio/telephone.

It is not necessary to speak with a medical control physician concerning treatment modalities that are considered to be standing orders except if a question arises concerning the planned treatment.

In the event medical control cannot be contacted, and treatment protocols were carried out as standing orders, the record should be pulled for review by the medical director. Following review, the record will be signed by the medical record indicating retroactive approval.

E RADIO COMMUNICATIONS

Radio communications between field personnel and medical control or between field personnel and a receiving hospital should be brief . It is not necessary to repeat your entire physical exam. The following formats should be followed when contacting either medical control or a receiving hospital

Standard Radio Report (when contacting Medical Control):

- Unit and Paramedic Identification
- Brief description of the issue prompting Medical Control contact
- Patient's Age
- Patient's Sex
- Patient's Chief Complaint
- Brief Focused History
- History of Chief Complaint
- Pertinent Medical History
- Pertinent Current Medications
- Drug Allergies
- Brief Report of Physical Examination
- Vital Signs, Oximetry, ECG Interpretation, Glucometer Reading
- Pertinent Exam Findings
- Pertinent Positive Exam Findings
- Pertinent Negative Exam Findings
- Treatment Rendered
- Treatment Requested
- Transport Destination
- Estimated Transport Time

Bullet Report (for relaying information to receiving hospital when Medical Control contact is NOT required):

- Unit Identification
- Patient's Age
- Patient's Sex
- Patient's Chief Complaint
- Pertinent History
- Pertinent Physical Exam Findings
- Brief Summary of Treatment Rendered
- Estimated Time of Arrival

F VITAL SIGNS BY AGE & WEIGHT

This table is a rapid reference to the normal ranges for patients while at rest, without physiological insult.

Age	Avg Wt	HR/Min (Range)	HR/Min Avg	Systolic BP (Range)	Resp/Min
Neonate	3.0 kg	94 – 145	125 – 135	60 ± 10	40
1 month	4.0 kg	115 – 190	120 – 130	80 ± 10	24 – 30
6 month	7.0 kg	110 – 180	120 – 130	89 ± 29	24 – 30
1 year	10 kg	100 – 160	110 – 120	96 ± 30	20 – 24
2 – 3 year	12 kg	90 – 150	100 – 110	99 ± 25	16 – 22
4 – 5 year	17 kg	65 – 135	95 – 105	99 ± 20	14 – 20
6 – 8 year	24 kg	70 – 115	90 – 100	105 ± 13	12 – 20
8 – 10 year	28 kg	65 – 110	90 – 100	105 ± 13	12 – 20
10 – 12 year	35 kg	55 – 110	85 – 95	112 ± 19	12 – 20
14 year	50 kg	55 – 105	75 – 85	120 ± 20	10 – 14
Adult	70 kg	55 – 100	60 – 85	120 ± 20	10 – 14

G RENAL DIALYSIS PATIENTS

ASSESSMENT / TREATMENT PRIORITIES

1. Maintain universal blood and body fluid precautions.
2. Maintain an open airway and assist ventilations as needed. This may include repositioning of the airway, suctioning or use of airway adjuncts (to include Rapid Sequence Induction) as indicated.
3. Administer high concentration oxygen by non-rebreather mask as determined by patient's condition.
4. Determine patient's hemodynamic stability and symptoms. Continually assess Level of Consciousness, ABCs and Vital Signs. Treat all life threatening conditions as they become identified.
5. Obtain appropriate history related to event, Past Medical History, Medications, Drug Allergies, and Substance Abuse.
6. Over 40,000 patients are on hemodialysis in the United States. They are dialyzed every two to three days; the usual run ranges from five to six hours, depending upon the patient's size, amount of kidney function remaining, and type of dialysate used.
7. In order to "hook up" to the dialysis machine, patients have either an external AV shunt or an internal AV fistula.

TREATMENT / PARAMEDIC PROCEDURES

- a. Maintain universal blood and body fluid precautions.
- b. Maintain an open airway. This may include repositioning of the airway, suctioning or use of airway adjuncts (to include Rapid Sequence Induction) as indicated. Assist ventilations as needed.
- c. Administer high concentration of oxygen by non-rebreather mask.
- d. STANDING ORDERS
- e. Provide advanced airway management (if indicated).
- f. Cardiac monitor/dysrhythmia recognition.

Problems associated with dialysis generally fall into four categories:

- Shock
- Potassium imbalance
- Pulmonary edema
- Machine malfunctions

Shock

Extracellular fluid volume depletion due to loss of saline.

Examination: Patient becomes lightheaded, woozy, but rarely unconscious; patients will often recognize the problem.

Management: If the patient is responsive and there is no blood loss, give 250 ml Normal Saline bolus.

Hemorrhage: Causes of bleeding from the cannula include the following:

Intentional (suicidal): Dialysis patients have the highest suicide rate of chronic disease patients. The patient will open the cannula and allow uncontrolled bleeding.

Examination: exsanguinating hemorrhage and/or dangling cannula.

Management: If the cannula is pumping, clamp the open cannula and apply direct pressure. If bleeding cannot be controlled or the cannula cannot be clamped shut, apply a constricting tourniquet to the limb above the cannula or shunt site.

Accidental / Faulty connection

Examination: steady leak.

Management: Establish connection and apply pressure.

Arteritis

Examination: Oozing around the arterial cannula usually occurs soon after placement of a new cannula.

Management: Applying direct pressure and clamping the cannula may worsen the hemorrhage, since such maneuvers increase back pressure in the vessel.

Disconnection at the vein

Examination: Arterial hemorrhage through cannula and simultaneous venous leakage may occur.

Management: Clamp the cannula which may require a great amount of pressure owing to the Teflon tube core. Disconnect the patient from the dialysis machine if the leak occurred during the dialysis run.

Management: If fluid therapy is required, use veins above the venous cannula. Look for AV fistulas (artificial AV shunts in the forearm and legs of patients who do not have cannulas). AV fistulas are bovine vessel grafts, which may bleed vigorously if damaged.

Cardiac (MI): Dialysis patients have a high incidence of cardiovascular complications.

Examination: Patient becomes "shocky" while on dialysis. There is no apparent blood loss. Patient does not respond to 50 ml Normal Saline bolus.

Management: Refer to Cardiogenic Shock Protocol

Duodenal ulcer: Dialysis patients have a high incidence of duodenal ulcers, which may bleed.

Examination: Patient is hypotensive; after 3 to 4 hours may have tarry stool.

Management: Refer to Shock (Hypoperfusion) Protocol

Subdural hematomas: Dialysis patients have a high incidence of spontaneous subdural hematomas owing to anticoagulant therapy and usually do not give a history of head trauma.

Examination: Patient has severe headaches, especially while on dialysis. Shock may occur while the patient is on dialysis, with headache, somnolence, and focal neurologic signs.

Management: Stop dialysis and transport the patient to the hospital.

Potassium Imbalance

Hypokalemia is found only while the patient is on dialysis or immediately thereafter. Usually, the patient is taking digoxin. Dialysis patients taking digoxin are much more likely to develop digitalis toxicity. During dialysis, serum potassium levels may drop from 5-6 mEq/L to 2-3 mEq/L. A person on digoxin maximizes the shift in a short period of time (5-6 hours); therefore, dialysate must compensate for this large potassium shift.

Examination: Hypotension may be present. Arrhythmias may occur - normal QRS complex, most often bradycardia. Occasionally PVCs are present. Supraventricular tachycardia occurs rarely. Seizures may occur secondary to bradycardia.

Management: Start an IV with Normal Saline. Administer Atropine, 0.5 mg IV, for bradycardia.

Hyperkalemia is probably more common. Prior to dialysis, the patient may have a high serum potassium level, which may cause arrhythmias.

Examination: If alert, the patient will complain of profound weakness and difficulty with respirations (secondary to weakness). ECG may show (a) bradycardia (approximately 40/min), (b) asystole any cardiac arrest in a dialysis patient is due to hyperkalemia until proven otherwise, or (c) no atrial activity with a wide QRS complex.

Management: If the patient has bradycardia, give Atropine. Patient needs dialysis ASAP (alert hospital so that arrangements may be made).

Pulmonary Edema

Pulmonary edema is a common problem with dialysis patients; patients usually gain 2 lb/day of fluid. This must be eliminated to keep weight and BP normal and lungs clear.

Examination: Refer to Congestive Heart Failure / Pulmonary Edema Protocol

Management: Usually, therapy is not effective. Diuretics are not effective. Phlebotomy is risky because of anemia. Morphine does not have the usual effect. Tourniquets may be used with caution.

Machine Malfunctions

Management: Disconnect the patient and clamp the cannulas. Transport the patient to the hospital. Power outages may occur. During a power outage, the patient may choose to stay on the machine and "wait it out." If the outage is short-lived, this option is acceptable. If the outage is prolonged, the blood will cool and the patient may then also be cooled and be at risk from potassium-induced arrhythmias.

H CCT vs. ALS

Transport Criteria – CCT vs. ALS

The following are criteria for Critical Care Transport:

1. Post CPR Resuscitated Patient
2. Intra-aortic balloon pumps
3. Abiomed extra-corporeal circulation device
4. Transvenous pacing device
5. Ventilator patients (CCT can transport BiPap patients with either the Hospital or Patient's BiPap device)
6. More than one IV medication infusions other than lidocaine, heparin, GP2a,3b Inhibitors, Potassium Chloride or Sodium Bicarbonate
7. Obstetric patients less than 34 weeks gestation AND on IV Magnesium sulfate
8. Obstetric patients less than 32 weeks gestation the transport requires enroute fetal monitoring and requires CCT transport.
9. All other medications not listed will fall under the CCT protocols and are not allowed to be transported by an ALS paramedic.
10. IV infusions of medications OTHER than
 - Dopamine
 - Lidocaine
 - Lasix
 - Heparin
 - Nitroglycerine
 - Magnesium sulfate
 - Potassium chloride
 - Sodium Bicarbonate
 - Combination of Nitroglycerine and Dopamine
 - Amiodarone

These criteria have been selected not just because some of the medications are beyond the scope of an ALS ambulance, but also because of the number of the infusions can be related to patient acuity and the level of monitoring required in transport. For example; an obstetric patient with a gestational age of less than 34 weeks on Magnesium sulfate requires fetal heart monitoring enroute, which can only be monitored by either a Doppler or a Fetal Heart monitor.

QUICK DRUG REFERENCE

Adenocard (Adenosine)

Class	Antiarrhythmic
Actions	Slows AV conduction
Indication	Symptomatic PSVT
Contraindications	2 nd or 3 rd degree heart block Sick sinus syndrome Known hypersensitivity to the drug
Precautions	Arrhythmias, including blocks, are common at the time of cardioversion Use with caution in patients with asthma
Side Effects	Facial flushing, headache, shortness of breath, dizziness, and nausea
Dosage	12 mg given as a rapid IV bolus over a 1-2 second period; if, after 1-2 minutes, cardioversion does not occur, administer a 12-mg dose over 1-2 seconds
Routes	IV; should be administered directly into a vein or into the medication administration port closest to the patient and followed by flushing of the line with IV fluid
Pediatric Dosage	0.1 mg/kg given a rapid IV bolus over a 1-2 second period; If, after 1-2 minutes, cardioversion does not occur; administer a 0.2 mg/kg dose over 1-2 seconds

Albuterol (Proventil) (Ventolin)

Class	Sympathomimetic
Actions	Bronchodilation
Indication	Asthma Reversible bronchospasm associated with COPD
Contraindications	Known hypersensitivity to the drug Symptomatic tachycardia
Precautions	Blood pressure, pulse, and EKG should be monitored Use caution in patients with known heart disease
Side Effects	Palpitations, anxiety, headache, dizziness, and sweating
Dosage	Metered Dose Inhaler 1-2 sprays (90 micrograms per spray) Small-Volume Nebulizer 0.5 ml (2.5 mg) in 2.5 ml normal saline over 5-15 minutes
Routes	Inhalation
Pediatric Dosage	0.15 mg (0.03 ml)/kg in 2.5 ml normal saline by small volume nebulizer

(Amiodarone) Cordarone

Class	Antidyhsrhythmic
Actions	Amiodarone prolongs the action potential duration in all cardiac tissues
Indication	Tachycardias, narrow and wide complex Ventricular fibrillation and Pulseless ventricular tachycardia
Contraindications	Amiodarone is contraindicated in patients with sinus node Dysfunction resulting in sinus bradycardia, second and third degree AV block Symptomatic bradycardia Known hypersensitivity
Precautions	Should be used with caution in patients with late or manifest heart failure
Side Effects	Hypotension Bradycardia Increased ventricular beats Prolonged PR,QRS, and QT
Dosage	150 mg over 10 minutes for patients with a pulse 300 mg IVP for VF/PVT; may repeat at 150 mg in 5 minutes
Routes	IV
Pediatric Dosage	5 mg/kg

Aspirin

Class	Platelet Inhibitor/Anti-Inflammatory
Actions	Blocks platelet aggregation
Indication	New onset chest pain suggestive of MI
Contraindications	Patients with history of hypersensitivity to drug
Precautions	GI bleeding and upset
Side Effects	Heartburn Nausea and vomiting Wheezing
Dosage	324mg PO
Routes	PO
Pediatric Dosage	Not recommended

Atropine (Atropine Sulfate)

Class	Parasympatholytic (anticholinergic)
Actions	Blocks acetylcholine receptors Increases heart rate Decreases gastrointestinal secretions
Indication	Hemodynamically-significant bradycardia Hypotension secondary to bradycardia Asystole Organophosphate poisoning
Contraindications	None when used in emergency situations
Precautions	Dose of 3 mg should not be exceeded except in cases of organophosphate poisonings Tachycardia Hypertension
Side Effects	Palpitations and tachycardia Headache, dizziness, and anxiety Dry mouth, pupillary dilation, and blurred vision Urinary retention (especially older males)
Dosage	Bradycardia 0.5 mg every 5 minutes to maximum of 3 mg Asystole 1 mg Organophosphate Poisoning 2-5 mg
Routes	IV
Pediatric Dosage	Bradycardia 0.02 mg/kg Maximum single dose (child 0.5 mg) (adolescent 1.0 mg) Maximum total dose (child 1.0 mg) (adolescent 2.0 mg)

Atrovent (Ipratropium Bromide)

Class	Anticholinergic
Actions	Causes bronchodilation Dries respiratory tract secretions
Indication	Bronchial asthma Reversible bronchospasm associated with chronic bronchitis and emphysema
Contraindications	Patients with history of hypersensitivity to the drug Should not be used as primary agent in acute treatment of bronchospasm
Precautions	Blood pressure, pulse, and EKG must be constantly monitored
Side Effects	Palpitations, dizziness Anxiety, tremors Headache, nervousness Dry mouth
Dosage	0.5 mg should be placed in a nebulizer (typically administered with a beta agonist)
Routes	Inhalation
Pediatric Dosage	0.25 mg

Bendadryl (Diphenhydramine)

Class	Antihistamine
Actions	Blocks histamine receptors Has some sedative effects
Indication	Anaphylaxis Allergic reactions Dystonic reactions due to phenothiazines
Contraindications	Asthma Nursing mothers
Precautions	Hypotension
Side Effects	Sedation Dries bronchial secretions Blurred vision Headache Palpitations
Dosage	12.5 mg IV or 50 mg IM
Routes	Slow IV push Deep IM
Pediatric Dosage	2-5 mg/kg up to 25 mg

Calcium Chloride

Class	Electrolyte
Actions	Increases cardiac contractility
Indication	Acute hyperkalemia (elevated potassium) Acute hypocalcemia (elevated calcium) Calcium channel blocker (nifedipine, verapamil, etc.)overdose Abdominal muscle spasm associated with spider bite and Portuguese man-o-war stings Antidote for magnesium sulfate
Contraindications	Patients receiving digitalis
Precautions	IV line should be flushed between calcium chloride and sodium bicarbonate administration Extravasation may cause tissue necrosis
Side Effects	Arrhythmias (bradycardia and asystole)
Dosage	0.2 ml/kg of a 10% solution, may be repeated at 10 minute intervals
Routes	IV
Pediatric Dosage	0.2 ml/kg of a 10% solution

Dextrose 50%

Class	Carbohydrate
Actions	Elevates blood glucose level rapidly
Indication	Hypoglycemia
Contraindications	None in the emergency setting
Precautions	A blood sample should be drawn before administering 50% dextrose
Side Effects	Local venous irritation
Dosage	25 grams (50 ml)
Routes	IV
Pediatric Dosage	0.5 g/kg slow IV; should be diluted 1:1 with sterile water to form a 25% solution or 2.5:1 to make a 10% solution for (infants)

(Dopamine) Intropin

Class	Sympathomimetic
Actions	Increases cardiac contractility Causes peripheral vasoconstriction
Indication	Hemodynamically significant hypotension (systolic BP of 70-100 mmHg) not resulting from hypovolemia Cardiogenic shock
Contraindications	Hypovolemic shock where complete fluid resuscitation has not occurred
Precautions	Should not be administered in the presence of severe tachyarrhythmias Should not be administered in the presence of ventricular fibrillation Ventricular irritability Beneficial effects lost when dose exceeds 20 mcg/kg/min.
Side Effects	Ventricular tachyarrhythmias Hypertension Palpitations
Dosage	2-20 mcg/kg/minute. Start low and increase as needed Method: 800 mg should be placed in 500 ml of NS giving a concentration of 1600 mcg/ml
Routes	IV drip only
Pediatric Dosage	2-20 mcg/kg/min

Epinephrine 1:1,000

Class	Sympathomimetic
Actions	Bronchodilation
Indication	Bronchial asthma Exacerbation of COPD Allergic reactions
Contraindications	Patients with underlying cardiovascular disease Hypertension Pregnancy Patients with tachyarrhythmias
Precautions	Blood pressure, pulse, and EKG must be constantly monitored Should be protected from light
Side Effects	Palpitations and tachycardia Anxiousness Headache Tremor
Dosage	0.3-0.5 mg
Routes	Subcutaneous (IV for cardiac arrest / impending cardiac arrest)
Pediatric Dosage	0.01 mg/kg up to 0.5 mg

Epinephrine 1:10,000

Class	Sympathomimetic
Actions	Increases heart rate and automaticity Increases cardiac contractile force Increases myocardial electrical activity Increases systemic vascular resistance Increases blood pressure Causes bronchodilation
Indication	Cardiac arrest Anaphylactic shock Severe reactive airway disease
Contraindications	Epinephrine 1:10,000 is for intravenous or endotracheal use; it should not be used in patients who do not require extensive resuscitative efforts
Precautions	Should be protected from light Can be deactivated by alkaline solutions
Side Effects	Palpitations Anxiety Tremulousness Nausea and vomiting
Dosage	Cardiac Arrest 0.5-1.0 mg repeated every 3-5 minutes Severe Anaphylaxis 0.3-0.5 mg (3-5 ml); occasionally and epinephrine drip is required.
Routes	IV IV drip
Pediatric Dosage	0.01 mg/kg initially. With subsequent doses, epinephrine 1:1,000 should be used at a dose of 0.01 mg/kg.

Glucagon

Class	Hormone (antihypoglycemic agent)
Actions	Causes breakdown of glycogen to glucose Inhibits glycogen synthesis Elevates blood glucose level Increases cardiac contractile force Increases heart rate
Indication	Hypoglycemia
Contraindications	Hypersensitivity to the drug Coronary Artery Disease
Precautions	Only effective if there are sufficient stores of glycogen within the liver Use with caution in patients with cardiovascular or renal disease Draw blood glucose before administration
Side Effects	MI N/V Urticaria
Dosage	0.25-0,50 mg (unit) IV 1.0 mg IM
Routes	I IM MADD
Pediatric Dosage	0.03 mg/kg

Haldol (Haloperidol)

Class	Major tranquilizer
Actions	Blocks dopamine receptors in brain responsible for mood and behavior Has antiemetic properties
Indication	Acute psychotic episodes
Contraindications	Should not be administered in the presence of other sedatives Should not be used in the management of dysphoria caused by Talwin or Cocaine
Precautions	Orthostatic hypotension
Side Effects	Physical and mental impairment Parkinson-like reactions have been known to occur, especially in children
Dosage	2-5 mg
Routes	IV IM
Pediatric Dosage	Rarely used

Labetalol (Trandate) (Normodyne)

Class	Sympathetic blocker
Actions	Selectively blocks alpha-1 receptors and nonselectively blocks beta-receptors
Indication	Atrial Fib, Atrial Flutter, SVT refractory to Adenosine
Contraindications	Bronchial asthma Congestive heart failure Heart block Bradycardia Cardiogenic shock
Precautions	Blood pressure, pulse, and EKG must be constantly monitored Atropine and transcutaneous pacing should be available
Side Effects	Bradycardia Heart block Congestive heart failure Bronchospasm Postural hypotension
Dosage	20 mg by slow IV infusion over 2 minutes
Routes	IV infusion Slow IV bolus as described earlier
Pediatric Dosage	Not recommended

Lasix (Furosemide)

Class	Potent diuretic
Actions	Inhibits reabsorption of sodium chloride Promotes prompt diuresis Vasodilation
Indication	Congestive heart failure Pulmonary edema
Contraindications	Pregnancy Fever Dehydration
Precautions	Should be protected from light Dehydration
Side Effects	Few in emergency usage
Dosage	20-80 mg
Routes	Slow IV Push
Pediatric Dosage	1mg/kg

(Lidocaine) Xylocaine

Class	Antiarrhythmic
Actions	Suppresses ventricular ectopic activity Increases ventricular fibrillation threshold Reduces velocity of electrical impulse through conductive system
Indication	Malignant PVCs Ventricular tachycardia Ventricular fibrillation Prophylaxis of arrhythmias associated with acute myocardial infarction and thrombolytic therapy Premedication prior to rapid sequence induction
Contraindications	High-degree heart blocks PVCs in conjunction with bradycardia
Precautions	Dosage should not exceed 300 mg/hr Monitor for central nervous system toxicity Dosage should be reduced by 50% in patients older than 70 years of age or who have liver disease In cardiac arrest, use only bolus therapy
Side Effects	Anxiety, drowsiness, dizziness, and confusion Nausea and vomiting Convulsions Widening of QRS
Dosage	Bolus Initial bolus of 1.5 mg/kg; additional boluses of 0.5 - 0.75mg/kg can be repeated at 8-10-minute intervals until the arrhythmia has been suppressed or until 3 mg/kg of the drug has been administered; reduce dosage by 50% in patients older than 70 years of age Drip After the arrhythmia has been suppressed a 2-4mg/minute infusion may be started to maintain adequate blood levels
Routes	IV IV infusion
Pediatric Dosage	1mg/kg

Magnesium Sulfate

Class	Anticonvulsant Antiarrhythmic
Actions	Central nervous system depressant Anticonvulsant
Indication	Eclampsia (toxemia of pregnancy) Pre-term labor (less than 32 weeks) Torsades de Pointes Refractory Ventricular Tachycardia or Fibrillation Seizures
Contraindications	Any patient with heart block or recent myocardial infarction
Precautions	Caution should be used in patients receiving digitalis Hypotension Calcium chloride should be readily available as an antidote if respiratory depression ensues
Side Effects	Respiratory depression Drowsiness
Dosage	Bolus: 1 - 4 g Drip: Based on use of medication, refer to specific protocol
Routes	IV IM
Pediatric Dosage	Not indicated

Morphine

Class	Narcotic
Actions	Central nervous system depressant Causes peripheral vasodilation Decreases sensitivity to pain
Indication	Severe pain Pulmonary edema
Contraindications	Head injury Volume depletion Patients with history of hypersensitivity to the drug
Precautions	Respiratory depression (Narcan should be available) Acute Abdomen Hypotension Nausea
Side Effects	Dizziness Altered level of consciousness
Dosage	IV 2 mg followed by 2 mg every 5-10 minutes until the pain is relieved or until respiratory depression ensues IM: 5-15 mg based on patient weight
Routes	0.1-0.2 mg/kg IV
Pediatric Dosage	0.1-0.2 mg/kg

Narcan (Naloxone)

Class	Narcotic antagonist																				
Actions	Reverses effects of narcotics																				
Indication	<p>Narcotic overdoses including the following:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">morphine</td> <td style="width: 25%;">Dilaudid</td> <td style="width: 25%;">fentanyl</td> <td style="width: 25%;">Demerol</td> </tr> <tr> <td></td> <td>Paregoric</td> <td>methadone</td> <td>heroin</td> </tr> <tr> <td></td> <td>Percodan</td> <td>Tyloxcodeine</td> <td>Vicodin</td> </tr> <tr> <td></td> <td>Lortabs</td> <td></td> <td></td> </tr> </table> <p>Synthetic analgesic overdoses including the following:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">Nubain</td> <td style="width: 33%;">Stadol</td> <td style="width: 17%;">Darvon</td> <td style="width: 17%;">Talwin</td> </tr> </table> <p>Alcoholic coma To rule out narcotics in coma of unknown origin</p>	morphine	Dilaudid	fentanyl	Demerol		Paregoric	methadone	heroin		Percodan	Tyloxcodeine	Vicodin		Lortabs			Nubain	Stadol	Darvon	Talwin
morphine	Dilaudid	fentanyl	Demerol																		
	Paregoric	methadone	heroin																		
	Percodan	Tyloxcodeine	Vicodin																		
	Lortabs																				
Nubain	Stadol	Darvon	Talwin																		
Contraindications	Patients with a history of hypersensitivity to the drug																				
Precautions	Should be administered with caution to patients dependent on narcotics as it may cause withdrawal effects Short-acting, should be augmented every 5 minutes																				
Side Effects	None																				
Dosage	0.4-2 mg slow IV push. Maximum dose of 10 mg																				
Routes	IV IM MADD																				
Pediatric Dosage	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">< 5 years old</td> <td style="width: 50%;">> 5 years old</td> </tr> <tr> <td>0.1 mg/kg</td> <td>0.4 - 2 mg</td> </tr> </table>	< 5 years old	> 5 years old	0.1 mg/kg	0.4 - 2 mg																
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Nitroglycerin

Class	Antianginal
Actions	Smooth-muscle relaxant Decreases cardiac work Dilates coronary arteries Dilates systemic arteries
Indication	Angina pectoris Chest pain associated with myocardial infarction Hypertension
Contraindications	Hypotension
Precautions	Constantly monitor vital signs Syncope can occur
Side Effects	Dizziness Hypotension Headache
Dosage	One spray or tablet (0.4 mg) administered under the tongue; may be repeated in 5-10 minutes; no more than three sprays or tablets in a 15-minute period; spray should not be inhaled
Routes	SL Sprayed under tongue on mucous membrane or place tablet under tongue
Pediatric Dosage	Not indicated

Oxygen

Class	Gas
Actions	Necessary for cellular metabolism
Indication	Hypoxia
Contraindications	None
Precautions	Use cautiously in patients with COPD Humidify when providing high-flow rates
Side Effects	Drying of mucous membranes
Dosage	Cardiac Arrest: 100% Other Critical Patients: 100% COPD: 35%
Routes	Inhalation
Pediatric Dosage	24-100% as required

Sodium Bicarbonate

Class	Alkalinizing agent
Actions	Combines with excessive acids to form a weak volatile acid Increases pH
Indication	Late in the management of cardiac arrest, if at all Tricyclic antidepressant overdose Severe acidosis refractory to hyperventilation
Contraindications	Alkalotic states
Precautions	Correct dosage is essential to avoid overcompensation of pH Can deactivate catecholamines Can precipitate with calcium Delivers large sodium load
Side Effects	Alkalosis
Dosage	1 mEq/kg initially followed by 0.5 mEq/kg every 10 minutes.
Routes	IV
Pediatric Dosage	1 mEq/kg initially

Solumedrol (Methylprednisolone)

Class	Steroid
Actions	Anti-inflammatory Suppresses immune response (especially in allergic reactions)
Indication	Severe anaphylaxis Possibly effective as an adjunctive agent in the management of spinal cord injury
Contraindications	None in the emergency setting
Precautions	Must be reconstituted and used promptly Onset of action may be 2-6 hours and thus should not be expected to be of use in the critical first hour following an anaphylactic reaction
Side Effects	GI bleeding Prolonged wound healing Suppression of natural steroids
Dosage	125 - 250 mg
Routes	IV IM
Pediatric Dosage	2 mg/kg Maximum dose of 125 mg

Thiamine (Vitamin B1)

Class	Vitamin
Actions	Allows normal breakdown of glucose
Indication	Coma of unknown origin Alcoholism / Delirium tremens Any malnourished state which impairs body regulation / defense mechanism
Contraindications	None in the emergency setting
Precautions	Rare anaphylactic reactions have been reported
Side Effects	Rare, if any
Dosage	100 mg
Routes	IV IM
Pediatric Dosage	Rarely indicated

Valium (Diazepam)

Class	Tranquilizer (benzodiazepine)
Actions	Anticonvulsant Skeletal muscle relaxant Sedative
Indication	Generalized seizures Status epilepticus Premedication before cardioversion Skeletal muscle relaxant Acute anxiety states
Contraindications	Patients with a history of hypersensitivity to the drug
Precautions	Can cause local venous irritation Has short duration of effect Do not mix with other drugs because of possible precipitation problems
Side Effects	Drowsiness Hypotension Respiratory depression, apnea
Dosage	Status Epilepticus 2 mg IV repeat dose immediately until effective up to 20 mg Acute Anxiety 2 mg IV or 5 mg IM Premedication before Cardioversion 2 mg IV doses repeated to a total of 5-10 mg IV prior to procedure
Routes	IV (care must be taken not to administer faster than 1 ml/min) IM Rectal
Pediatric Dosage	Status Epilepticus 0.1 - 0.2 mg/kg

Zofran (Ondansetron)

Class	Antiemetic
Actions	Prevent nausea, vomiting No alteration to level of consciousness
Indication	Nausea / Vomiting Motion Sickness
Contraindications	Hypersensitivity
Precautions	Pregnancy
Side Effects	Headache Urticaria Bronchospasm
Dosage	4 mg over 1 minute
Routes	IV
Pediatric Dosage	Not indicated

Inventory Item	Required In-Service Minimum
Miscellaneous	
DOT Guide book	1
Emergency warning device (warning triangles, etc.)	1 set
Fire extinguisher	1
Flashlight	1
Hand Cleaner	1 bottle
Hydrogen Peroxide	1 bottle
Rubbing Alcohol	1 bottle
Cold packs	3
Hot packs	3
Infection control kits w/gowns	3
No smoking signs	1
Protective gloves (various sizes)	1 box
Protective goggles/glasses	2 pair
Protocols	1 set
Respiratory protection S/M/L	2 each
Two-way radio	1
Ring cutter	1
Waste Disposal Equipment	
Biohazard waste bags	1
Sharps container	1
Airway Equipment	
Adult BVM w/tubing	2
Child BVM w/tubing	1
Infant BVM w/tubing	1
Airway adjuncts oropharyngeal	2 sets
Airway adjuncts nasopharyngeal	2 sets
Nasal cannula	5
Non-rebreather, Adult	5
Non-rebreather, Pedi	5
Non-rebreather, Infant	4
Capnography side stream sampler (if available)	2
Oxygen humidifier	2
Oxygen driven nebulizers	4
Suctioning Equipment	
Portable suction (i.e. V-Vac)	1
Ridged suction tip	2
Soft suction catheters	2
Suction tubing	2

Vehicle mounted unit with power cord	1
Gastric Tube 10,12,14,16,18	1 each
Splinting & Bandaging Supplies	
Adhesive tape	2
Adhesive Bandages	12
Scoop stretcher	1
Backboard, long	2
Bandage scissors	2
Abd Pads 5X9	6
Burn sheet	4
Extremity splints (various sizes)	2 each
Multi-Trauma dressing	2
Meconium Aspiration	1
Foil Baby Blunting	2
Obstetric kit	2
Occlusive dressing	6
Head Blocks	4
Ridged cervical collar, (various sizes)	4 sets
KED	1
Soft roller bandages (Kerlix)	12
Unsterile gauze pads	20
Sterile gauze pads	60
Sterile water	1000mL
Straps	6
Traction splint	1
Triangle bandages	12
Pair soft restraints	1
Patient Care Equipment	
Blankets (seasonal)	1
Glucometer	1
Penlight	1
Sheets	6
Sphygmomanometer	1
B/P Cuff Infant, Child, Adult, and XL	1 each
Stethoscope	1
Stretcher w/straps	1
Thermometer w/sheaths	1
ALS Equipment	
IO Access needle or kit	As Applicable
LP 12, Zoll M series or LP 11, LP 10 and AED with spare batteries	1
Combo pads for LP 12 and Zoll M series or pacer pads for LP 11, LP 10 with AED	1 set
Conductive Jelly	1

Electrodes set Adult/Pedi	2 set each
Combitube/King Airway	1 each
ET tubes, 2.5-9.0	2 each
Buretrol set	1
IV administration Set, 10 & 60 gtts/mL	6 each
IV catheters, 14,16,18,20,22,24,ga	8
IV solution, 0.9% normal saline 100mL	2
IV solution, 0.9% normal saline 500mL	5
IV solution, 0.9% normal saline 1000mL	6
Tourniquets	6
Tegaderm / VeniGuard	6
Nail polish remover	10
Iodine prep pads	10
Alcohol prep pads	20
Laryngoscope Kit (handle, McIntosh blades, Miller blades)	1
End-Tidal CO2 Detectors	2
Becker Airway Airflow Monitor (BAAM)	2
3 way stop cocks	2
Mucosal Atomizer Delivery Device	2
Carpujet	1
CPAP	As Applicable
MICU Equipment	
Scalpel	1
Needle decompression kit	2
Needles, 18,20,22,25 ga	5
Stylette, Pedi & adult	1
Syringes 1,3,10,30 cc	4 each
Tube check (i.e. EDD)	1
Tube securing device	2
Medications	
Adenosine (12 mg/4 mL)	24 mg
Albuterol (2.5 mg/3mL)	7.5 mg
Amiodorone (150 mg/3mL)	450 mg
ASA (81 mg tablets)	1 bottle
Atropine (1mg/10mL)	6 mg
Calcium chloride (1g/10mL)	1 g
Dextrose 50% (25g/50mL)	50 g
Diazepam (10mg/2mL)	20 mg
Diphenhydramine (50 mg/mL)	100 mg
Dopamine (400 mg/5mL)	800 mg
Epinephrine 1:1000 (1 mg/mL)	4 mg
Epinephrine 1:10,000 (1 mg/10mL)	6 mg

Epi-pen, Adult	As Applicable
Epi-pen, Child	As Applicable
Furosemide (10 mg/mL)	120 mg
Glucagon (1 mg/mL)	2 mg
Haloperidol (5 mg/1mL)	10 mg
Ipratropium Bromide (.5 mg/2.5mL)	1.5 mg
Labetalol (5 mg/mL)	100 mg
Lidocaine (1 gm/250 mL)	2 gm
Lidocaine 2% (20 mg/1 mL)	10 mL
Magnesium Sulfate (5 g /10 mL)	5 g
Methylprednisolone (125 mg)	250 mg
Morphine Sulfate (10 mg/mL)	20 mg
Naloxone (2mg/2mL)	8 mg
Nitroglycerine (0.04 mg)	400 mcg
Oral Glucose paste (15 g)	30 g
Sodium Bicarbonate (50 mEq/50mL)	300 mEq
Thiamine (100 mg/mL)	200 mg
Zofran (4 mg/mL)	8 mg
Oxygen, "D" cylinder w/regulator	2
Oxygen, "M" cylinder/regulator	1

In order to meet the requirement of a Cardiac Monitor and Defibrillator the following order will be used. When a unit is equipped with a Lifepak 12 or Zoll M series it will use combo pads. When the unit is equipped with a Lifepak 10 or 11 it will be accompanied by an AED and one set of pacer pads and defibrillator pads.

From time to time the drugs on the above list may be supplied in concentrations or amounts other than those indicated. Regardless of the particular manner in which drugs are supplied, equivalent total amounts must be present, and it is the paramedics' responsibility to be certain that correct dosages are administered to patients.

*Unless specified otherwise, generic and brand name products are considered interchangeable.

Effective Date: January 1, 2010
Expiration Date: January 1, 2011



Revision Approved by: _____
Robert E. Suter, D.O., M.H.A., FACEP

Geographical Area/Duty Status

Geographical Area:

These protocols shall only be utilized under my medical direction in American Medical Response 911 service area, mutual aid areas, and when on transfers.

Duty Status:

American Medical Response Dallas/Collin County/Fairview personnel shall utilize these protocols under my Medical Direction only when acting in their official capacity (On the clock) when representing American Medical Response Dallas/Collin County/Fairview No employee is authorized to use the protocols while volunteering or when working with another agency.

A handwritten signature in black ink, appearing to read "Robert E. Suter". The signature is written in a cursive style with a large initial "R".

Robert E. Suter, D.O., M.H.A., FACEP