

**NEW MEXICO
EMERGENCY MEDICAL SERVICES
GUIDELINES**



TREATMENTS

**FIRST RESPONDER
EMT - BASIC
EMT- INTERMEDIATE (EMT-I)
EMT-PARAMEDIC**

Updated September 20, 2022

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INTRODUCTION

The New Mexico Pre-hospital Treatment Guidelines were developed to assist fire departments and EMS services throughout New Mexico in the development of local EMS medical protocols. They are color coded for the level treatment allowed. The guidelines are the result of a collaborative effort by the EMS Bureau, Region I, Region II, Region III, the J.O.E. and Medical Direction Committees. These guidelines, while reflecting the New Mexico Scope of Practice, were designed to be used as a blueprint, and may be modified to meet specific service requirements. The Guidelines are not mandatory nor are they meant to be all-inclusive. The focus of these guidelines is to provide a resource to clinical practice, maximize patient care, safety, and outcomes regardless of the existing resources and capabilities within an EMS system.

Where applicable, The National Association of State EMS Officials (NASEMSO) Model EMS Guidelines and the American Heart Association Guidelines were utilized to ensure a more standardized approach to the practice of patient care now, and as experience dictates, adoption of future practices. The NASEMSO Model EMS clinical guidelines and AHA guidelines promote uniformity in prehospital care which, in turn, promotes more consistently skilled practice as EMS providers move across healthcare systems. They also provide a standard to EMS Medical Directors upon which to base practice.

Scene safety, patient condition, environmental problems, and time involved in implementing emergency care should be taken into Consideration. On all patient encounters appropriate personal protective equipment should be utilized. If it becomes necessary to vary from established service protocols, direct Contact with Medical Control and good documentation will be your best defense should litigation occur.

Suggested drug dosages are listed after each drug and also contained in the Drug Guidelines section. These Guidelines should be flexible enough to be used as "Standing Orders" or allow for Online Medical Control. In all cases, the receiving physician or emergency department should be Contacted as soon as circumstances permit to allow for physician input into the EMT's therapy, and provide the receiving facility with adequate preparation time.

Vital Signs should be monitored and re-evaluated frequently (typically every five minutes), and IV flow rates re-adjusted as indicated. If placement is unsuccessful after two attempts, or peripheral venipuncture is not possible due to a lack of suitable veins, Consider external jugular vein or intraosseous (IO) cannulation.

Pediatric peripheral and intraosseous (IO) cannulation may be initiated by the EMT-I or EMT-P, however, some words of caution are in order. Pediatric IVs are often extremely difficult to start, and it is recommended that unless the need for an IV is clearly indicated, it should not be attempted. The decision to start a Pediatric IV in the field should be based on the clinical importance of IV therapy in the pre-hospital setting. Consultation with Medical Control is strongly recommended.

Defibrillation is possible for all levels of pre-hospital providers and, Public Access Defibrillation (PAD) for targeted rescuers has been legislated in New Mexico. National guidelines advocate teaching the AED in professional and lay public courses. This may result in situations where, upon arrival on scene, a patient has been defibrillated by a bystander. or other professional (police officer, prison guard, hotel security, etc.) which will require an organized transfer of patient care. This must involve an exchange of information between the bystander and healthcare provider to determine what course of action should be taken next.

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Laryngeal, supra-glottic and multi-lumen airway devices should be used on patients who are unconscious, in need of ventilatory assistance and have no gag reflex. Improper use of these devices will result in inadequate oxygen exchange leading to anoxia and possibly death. Proper placement of the device should result in good bilateral breath sounds and symmetric rise in the chest during ventilations. If breath sounds are not present, immediate re-evaluation of tube placement must be performed. If breath sounds are still not present, immediately remove the device and re-insert or use an alternative airway adjunct. The goal of airway management is to provide an optimal airway to allow for adequate oxygenation to the patient, regardless of the device used.

Endotracheal intubation (without a Special Skill endorsement) is only allowed for patients over the age of 12. Attempts at endotracheal intubation during CPR have been associated with unrecognized tube misplacement or displacement as well as prolonged interruptions in chest compression. Inadequate training, lack of experience, patient physiology (e.g., low pulmonary blood flow, gastric contents in the trachea, airway obstruction), and patient movement may contribute to tube misplacement. After correct tube placement, tube displacement or obstruction may develop. In addition to auscultation of the lungs and stomach, several methods (e.g., waveform capnography, CO₂ detection devices, esophageal detector device, tracheal ultrasound, fiberoptic bronchoscopy) have been proposed to confirm successful tracheal intubation in adults during cardiac arrest.

Transportation of patients by ambulance or medical rescue units is regulated by the Public Regulation Commission and the Medical Rescue Certification regulations. All decisions to transport a patient must be made in accordance with these regulations.

The State of New Mexico does not mandate these treatment guidelines. They may be utilized in whole, in part, or modified to meet specific service requirements. In all cases, on-line Medical Control takes precedence over written protocols or standing orders.

Standing orders for controlled substances are found throughout this document. Listed below is the framework of intent for EMT-Intermediates and EMT-Paramedics to administer controlled substances within their Scope of Practice.

1. In general, narcotic analgesics & benzodiazepines are not appropriate for patients involved in multi-systems trauma, prior to physician evaluation.
2. Narcotic analgesics & benzodiazepines are generally only given to a patient with isolated injuries and stable/normal vital signs or an assessment consistent with kidney stones or an isolated musculo-skeletal etiology (i.e., fracture, severe sprain).
3. No narcotic analgesic or benzodiazepine should be given to any pregnant patient without first discussing the possible ramifications with on-line Medical Control.
4. Any administration outside this realm should be done with on-line Medical Control.
5. If the patient becomes nauseated after administration of narcotic analgesics or benzodiazepines, Consider administration of an anti-emetic agent.
6. The use of benzodiazepines as a sole agent for pharmacological assisted intubation has been determined by the Medical Direction Committee to be not in compliance with the New Mexico Scope of Practice.

These guidelines will be maintained by the New Mexico EMS Bureau and will be reviewed and updated periodically. As evidenced-based material is developed, it will be substituted for the consensus-based guidelines now comprising the majority of the content of this document. In the interim, additional consensus-based guidelines will also be added as the need is identified.

CARDIAC EMERGENCIES

CHEST PAIN / Acute Coronary Syndrome / STEMI

DESCRIPTION OF CONDITION

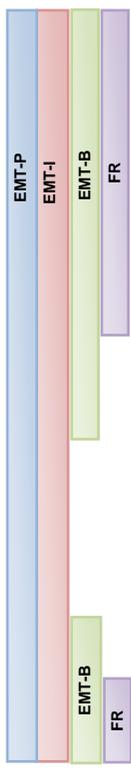
Signs and symptoms may include any, none, or all of the following: sub-sternal chest pain, chest pressure, shortness of breath, diaphoresis, nausea, and vomiting, syncope, radiating pain to the jaw and arms, a feeling of impending doom, and history of cardiac problems. Atypical or unusual symptoms are more common in women, the elderly and diabetic patients. May also present with CHF, syncope and/or shock

EMPHASIS ON PATIENT CARE

Airway management, adequate perfusion and oxygenation, pain control and early transportation to an appropriate facility.

Identify STEMI quickly and determine the time of symptom onset. Administer appropriate medications. Activate hospital-based STEMI system of care. Monitor vital signs and cardiac rhythm and be prepared to provide CPR and defibrillation if needed.

PRE-HOSPITAL MANAGEMENT

- 
1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
 2. History, physical exam, vital signs
 3. If suspected ACS chest pain and no allergy, administer **ASPIRIN** [324 mg] chewable.
 4. Cardiac monitoring, and obtain a 12 - lead EKG, if possible, for documentation
 5. If possible, the EKG may be transmitted for remote interpretation by a physician or screened for STEMI by properly trained EMS providers, with or without the assistance of computer-interpretation.
 6. Advance notification should be provided to the receiving hospital for patients identified as having STEMI.
 7. If applicable, Contact **ONLINE** Medical Control for administration of the patient's own **NITROGLYCERIN** may be repeated every 3-5 minutes to a maximum of 3 times, if BP > 100 systolic, HR > 60, and <140.
 8. Initiate an IV of an isotonic solution at a TKO rate and Consider second IV if time permits.
 9. Consider **NITROGLYCERIN** [0.3-0.4 mg SL] every 3-5 minutes. if BP > 100 systolic. IV must be initiated prior to administration of Nitroglycerin or given with the approval of online Medical Control if IV access is unavailable.
 10. Do not give Nitroglycerin if the patient has used a Sexual Performance Enhancing Drug (SPED) within the last 72 hours OR if there is concern for an inferior MI.
 11. If transport capable, minimize scene time and transport the patient to an appropriate medical facility. Transport and destination decisions should be based on local resources and system of care.

Note: If transport is prolonged, Contact Medical Control for additional Nitroglycerin administration.

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CHEST PAIN (cont.)

12. If SBP \geq 100, Consider administration of narcotic analgesia:

MORPHINE

- a. Adult: [4-10 mg] slow IV/IO titrating 2-4 mg every 10 minutes to effect. (Max of 10 mg without approval from Medical Control). Do not administer if the systolic BP is less than 100.

FENTANYL

- a. Adult: [25-100 mcg] slow IV/IO every 5 minutes to effect. (Maximum single dose of 100mcg and maximum total dose of 300mcg without approval from Medical Control). Do not give if systolic BP is less than 100. Consider an anti-emetic for nausea and/or vomiting:

ONDANSETRON (Zofran®)

- a. Adult: [4mg] IV/IO/PO/IM
- b. Pediatric: [0.05-0.1 mg/kg] IV/IO/PO/IM (Max dose 4mg)

PROMETHAZINE (Phenergan®)

- a. Adult: [12.5-25 mg] PO/IV/IO/IM

13. Treat [Pulseless Rhythms](#), [Tachycardia](#), or [Symptomatic Bradycardia](#) (see specific guideline sections)

Note: Morphine should be used with caution in unstable angina (UA)/NSTEMI due to an association with increased mortality

Note: Current literature does not support the routine use of anti-dysrhythmics, except in symptomatic ectopy. See Ventricular Tachycardia (VT) Guidelines.

MEDICAL CARDIAC ARREST

DESCRIPTION OF CONDITION

Signs and symptoms include an unconscious and unresponsive patient with agonal or absent respiratory effort and no palpable pulses.

EMPHASIS ON PATIENT CARE

CPR, early defibrillation (if indicated) and ACLS intervention as rapidly as possible

PRE-HOSPITAL MANAGEMENT



1. Primary Assessment – Defibrillation if indicated, Assess airway, Assess for normal breathing and palpable pulses. If absent: and manage as indicated.
 - a. Determine cardiopulmonary arrest and time last seen conscious.
 - b. Ascertain if the patient has Advanced Directives (i.e. EMS DNR, Living Will) and if so, follow [Do Not Resuscitate Guidelines](#).
 - c. If no Advanced Directives are present, patients should be resuscitated as close to the point at which they are first encountered and should only be moved if the conditions on scene are unsafe, or do not operationally allow for resuscitation. Consider moving the patient to a room where safe and effective resuscitation can occur. Effectiveness of chest compressions decreases with any movements.
 - d. Initiate CPR (follow AHA Guidelines), and ventilate with a BVM using 100% **OXYGEN** for 2 minutes of CPR, prior to attempts at airway management. All attempts should be made to prevent avoidable interruptions in chest compressions, such as pre-charging the defibrillator and hovering over the chest, rather than stepping away during defibrillations.
 - e. If an AED is available, attach the device; follow instructions and Shock as advised. If an AED is not available, continue CPR until an AED is available. Chest compressions should resume immediately after defibrillation attempts with no pauses for pulse checks
 - f. Insert advanced airway (see [Respiratory Arrest/Distress Guidelines](#)), and continue ventilation, 1 breath every 6 seconds, without interrupting compressions. 100% **OXYGEN**.
2. Place patient on continuous quantitative waveform end-tidal CO₂ (EtCO₂) monitoring if available.
 - a. An abrupt sustained increase in EtCO₂ during CPR should be Considered an indicator of ROSC in all patients with an advanced airway and continuous quantitative capnographic monitoring in place. If providers see an organized rhythm and an abrupt, sustained increase in EtCO₂, complete the cycle of CPR and check for a pulse.
 - b. Conversely, an abrupt sustained decrease in EtCO₂ after ROSC may indicate re-arrest. If this occurs, reassess the patient.
3. If ALS providers/ACLS care is available on scene, the patient should be resuscitated as close to the scene as operationally possible.
4. Initiate an IV/IO of an isotonic solution within the first 2-minute period of chest compressions. at an appropriate rate.

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MEDICAL CARDIAC ARREST (cont.)

5. Defibrillation is the most effective means of terminating Ventricular Fibrillation (VF) and pulseless Ventricular Tachycardia (VT). Following defibrillation attempts administer **EPINEPHRINE 1: 10,000** IV/IO starting as soon as possible. and repeated for duration of resuscitation until pulses return or the arrival of ALS
- Adult – [1.0 mg] IV/IO every 3-5 minutes
 - Pediatric Initial: [0.01 mg/kg] IV/IO every 3-5 minutes
 - If indicated, defibrillate between drug administrations.
6. If defibrillation is manual, it should be delivered at the maximum output of the defibrillator, based on manufacturer's recommendations, up to 360 joules (or 4 J/kg for Pediatric patients), for initial and subsequent defibrillation attempts. (**Paramedic only**)
7. See specific rhythm ([VF/VT](#) / [Asystole](#) / [PEA](#)) protocol.
8. Consider reversible causes of cardiac arrest which include the following:
- Hypothermia – additions to care include attempts at active rewarming. Refer to [Hypothermia/Cold Exposure guideline](#).
 - The dialysis patient/known hyperkalemic patient:
 - CALCIUM CHLORIDE** 10% [10ml] IV/IO (for Pediatrics, the dose is [20 mg/kg] which is 0.2 ml/kg)
 - SODIUM BICARBONATE** [1 mEq/kg] IV/IO
 - Tricyclic antidepressant overdose:
 - SODIUM BICARBONATE** [1 mEq/kg] IV/IO
 - Hypovolemia:
 - NORMAL SALINE** 2 L IV/IO (or 20 ml/kg, repeated up to 3 times for Pediatrics)
 - If the patient is intubated at the time of arrest, Assess for tension pneumothorax and misplaced ETT. If tension pneumothorax suspected, perform needle decompression. Assess ETT, if misplaced, replace ETT

Note: If at any time during this period of resuscitation the patient regains return of spontaneous circulation, proceed to the [Adult Post-ROSC Care](#) guideline

Note: If resuscitation remains ineffective, Contact Medical Control for transport or termination of resuscitation instructions

Note: Patient/Provider Safety Considerations. It is not safe for the patient or providers to perform chest compressions during transport unless a mechanical chest compression device is utilized. Chest compressions during patient movement are less effective in regards to hands on time, depth, recoil and rate and providers performing chest compressions in a moving vehicle are at risk for injury. Therefore, patients should be resuscitated as close to the scene as operationally possible.

VF & VT (without a pulse)**DESCRIPTION OF CONDITION**

Signs and symptoms include an unresponsive patient with absent pulses, and an EKG showing ventricular fibrillation or pulseless ventricular tachycardia.

EMPHASIS ON PATIENT CARE

CPR, defibrillation and ACLS intervention as rapidly as possible

PRE-HOSPITAL MANAGEMENT

1. Follow [Medical Cardiac Arrest Guidelines](#)

Note: If defibrillation is manual, it should be delivered at the maximum output of the defibrillator, based on manufacturer's recommendations, up to 360 joules (or 4 J/kg for Pediatric patients), for initial and subsequent defibrillation attempts. **(Paramedic Only)**

2. Administer **EPINEPHRINE** 1:10,000
 - a. Adult – [1.0 mg] IV/IO every 3-5 minutes
 - b. Pediatric [0.01 mg/kg] IV/IO every 3-5 minutes
3. Consider use of an anti-dysrhythmic for persistent VF/Pulseless VT

AMIODARONE

- a. Adult: [300 mg] IV/IO followed by 10.0 ml saline, rapid flush. May repeat once at 3- 5 minutes with 150 mg
- b. Pediatric:[5mg/kg] IV/IO. May repeat twice to a maximum of 15 mg/kg for 24 hours. Not to exceed 150 mg for a single dose.

LIDOCAINE

- a. Adult:[1.0-1.5mg/kg] IV/IO, (total maximum dose – 3.0 mg/kg IV/IO). Lidocaine may be repeated every 5-10 minutes at a dose of [0.5-0.75 mg/kg] IV/IO up to a total dose of 3 mg/kg
- b. Pediatric:[1mg/kg] IV/IO Maintenance: [20-50 mcg/kg/min] infusion (repeat bolus dose if infusion initiated.15 minutes after initial bolus therapy) not to exceed 3.0 mg/kg

MAGNESIUM SULFATE for Torsades de pointes or suspected hypomagnesemia

- a. Adult: [2.0 g] SIVP/IO
 - b. Pediatric: [25–50 mg/kg] over 10-20 minutes at a max of 2.0 g
4. In some special resuscitation situations, such as preexisting metabolic acidosis, hyperkalemia, or tricyclic antidepressant overdose, Sodium Bicarbonate can be beneficial, however the routine use of Sodium Bicarbonate is not recommended for patients in cardiac arrest.

SODIUM BICARBONATE

- a. Adult: [1.0 mEq/kg] IV/IO
- b. Pediatric: [1.0 mEq/kg] IV/IO

Note: If at any time during this period of resuscitation the patient regains return of spontaneous circulation, proceed to the [Adult Post-ROSC Care](#) guidelines.

Note: Consider termination after 40 minutes of resuscitation efforts without ROSC (40 minutes from time of last shock or from beginning if no shock ever indicated). Contact Medical Control for transport or termination of resuscitation instructions.

Note: Quantitative end-tidal carbon dioxide (ETCO₂) measurements of less than 10 mmHg or falling > 25% despite resuscitation indicates a poor prognosis and provides additional support for termination.

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VF & VT (without a pulse) (cont.)

EMT-P
EMT-I
EMT-B
FR

Note: Patient/Provider Safety Considerations It is not safe for the patient or providers to perform chest compressions during transport unless a mechanical chest compression device is utilized. Chest compressions during patient movement are less effective in regards to hands on time, depth, recoil and rate and providers performing chest compressions in a moving vehicle are at risk for injury. Therefore, patients should be resuscitated as close to the scene as operationally possible.

ASYSTOLE

DESCRIPTION OF CONDITION

Signs and symptoms include an unconscious and unresponsive patient with agonal or absent respiratory effort and no palpable pulses. The patient’s ECG will show no electrical activity on the monitor (confirmed by 10-second strips in at least two consecutive leads, when possible). This guideline is Considered for a normo-thermic patient.

EMPHASIS ON PATIENT CARE

CPR, ACLS intervention, possible decision to terminate resuscitation

PRE-HOSPITAL MANAGEMENT

1. Follow [Medical Cardiac Arrest Guidelines](#).
2. Initiate an IV/IO of an isotonic solution within the first 2-minute period of chest compressions with 20cc/kg fluid bolus.
3. Administer **EPINEPHRINE 1:10,000**
 - a. Adult – [1.0 mg] IV/IO every 3-5 minutes
 - b. Pediatric [0.01 mg/kg] IV/IO every 3-5 minutes
4. Insert advanced airway: (follow [Respiratory Arrest/Distress Guidelines](#)), and continue ventilation with 100% **OXYGEN**.
5. In some special resuscitation situations, such as preexisting metabolic acidosis, hyperkalemia, or tricyclic antidepressant overdose, Sodium Bicarbonate can be beneficial, however the routine use of Sodium Bicarbonate is not recommended for patients in cardiac arrest.

SODIUM BICARBONATE

- a. Adult: [1.0 mEq/kg] IV/IO
- b. Pediatric: [1.0 mEq/kg] IV/IO
6. Consider possible underlying treatable causes of asystolic cardiac arrest, and treat accordingly as per Scope of Practice:

- | | |
|-------------------------|-----------------------|
| Hypovolemia | ▪Toxins |
| Hypoxia | ▪Tamponade, Cardiac |
| Hydrogen Ion (Acidosis) | ▪Tension Pneumothorax |
| Hypo/Hyperkalemia | ▪Thrombosis |
| Hypoglycemia | ▪Trauma |
| Hypothermia | |

Note: If at any time during this period of resuscitation the patient regains return of spontaneous circulation, proceed to the [Adult Post-ROSC Care](#) guidelines.

Note: Consider termination after 40 minutes of resuscitation efforts without ROSC (40 minutes from time of last shock, or from beginning if no shock ever indicated). Contact Medical Control for transport or termination of resuscitation instructions.

Note: Quantitative end-tidal carbon dioxide (ETCO2) measurements of less than 10 mmHg or falling > 25% despite resuscitation indicates a poor prognosis and provides additional support for termination.

Note: Patient/Provider Safety Considerations It is not safe for the patient or providers to perform chest compressions during transport unless a mechanical chest compression device is utilized. Chest compressions during patient movement are less effective in regards to hands on time, depth, recoil and rate and providers performing chest compressions in a moving vehicle are at risk for injury. Therefore, patients should be resuscitated as close to the scene as operationally possible.



PULSELESS ELECTRICAL ACTIVITY (PEA)

DESCRIPTION OF CONDITION

Patient presenting in cardiac arrest with organized electrical activity noted on the cardiac monitor, but without corresponding pulses palpated. Determination and correction of underlying cause of the PEA may improve outcome. Specific problems which may cause PEA:

EMPHASIS ON PATIENT CARE

CPR, return of spontaneous circulation, management of associated conditions

PRE-HOSPITAL MANAGEMENT



1. Follow [Medical Cardiac Arrest Guidelines](#).
2. Initiate an IV/IO of an isotonic solution within the first 2-minute period of chest compressions. at an appropriate rate.
3. Administer **EPINEPHRINE 1:10,000**
 - a. Adult – [1.0 mg] IV/IO every 3-5 minutes
 - b. Pediatric [0.01 mg/kg] IV/IO every 3-5 minutes
4. Insert advanced airway: (follow [Respiratory Arrest/Distress Guidelines](#)), and continue ventilation with 100% **OXYGEN**.
5. Treat for any suspected reversible causes within applicable scope of practice. Consider possible underlying treatable causes of asystolic cardiac arrest, and treat accordingly as per Scope of Practice:

<ul style="list-style-type: none"> Hypovolemia Hypoxia Hydrogen Ion (Acidosis) Hypo/Hyperkalemia Hypoglycemia Hypothermia 	<ul style="list-style-type: none"> ▪Toxins ▪Tamponade, Cardiac ▪Tension Pneumothorax ▪Thrombosis ▪Trauma
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6. Consult with Medical Control for transport or termination of resuscitation orders. See **Notes** below.
7. In some special resuscitation situations, such as preexisting metabolic acidosis, hyperkalemia, or tricyclic antidepressant overdose, Sodium Bicarbonate can be beneficial, however the routine use of Sodium Bicarbonate is not recommended for patients in cardiac arrest.

SODIUM BICARBONATE

- a. Adult: [1.0 mEq/kg] IV/IO
- b. Pediatric: [1.0 mEq/kg] IV/IO



- Note:** If at any time during this period of resuscitation the patient regains return of spontaneous circulation, proceed to the [Adult Post-ROSC Care](#) guidelines.
- Note:** Consider termination after 40 minutes of resuscitation efforts without ROSC (40 minutes from time of last shock, or from beginning if no shock ever indicated). Contact Medical Control for transport or termination of resuscitation instructions.
- Note:** Quantitative end-tidal carbon dioxide (ETCO₂) measurements of less than 10 mmHg or falling > 25% despite resuscitation indicates a poor prognosis and provide additional support for termination.
- Note:** Patient/Provider Safety Considerations - It is not safe for the patient or providers to perform chest compressions during transport unless a mechanical chest compression device is utilized. Therefore, patients should be resuscitated as close to

BRADYCARDIA-SYMPOMATIC**DESCRIPTION OF CONDITION**

The patient will present with a hemodynamically unstable bradycardia (BP <90mmHg systolic, decreased LOC, and a heart rate of < 60 bpm with associated signs and symptoms which may include: chest pain, shortness of breath, etc.).

EMPHASIS ON PATIENT CARE

Maintain adequate oxygenation and perfusion, ALS intervention

PRE-HOSPITAL MANAGEMENT

1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
2. History, physical exam, vital signs
3. If suspected ACS and no allergy, administer **ASPIRIN** [324 mg PO].
4. Cardiac monitoring, and obtain a 12 - lead EKG, if possible, for documentation.
5. If no ALS is available on scene and, if transport capable, initiate transport with ALS intercept.
6. Enroute, initiate an IV/IO of isotonic solution at a flow rate determined by patient condition.
7. Consider:

ATROPINE SULFATE

- a. Adult [0.5 mg] IV/IO, repeated every 3-5 minutes up to a max.dose of (0.04 mg/kg (3 mg).
- b. Pediatric [0.02 mg/kg] IV/IO. May repeat once. Minimum dose 0.1mg and maximum single dose 0.5mg.

Note: Atropine may not be effective in Second Degree Type II or new wide Third Degree blocks.

Note: Atropine should be Considered before pacing for suspected vagal induced bradycardias.

Note: Atropine will not be effective in patients who have had heart transplants.

TRANSCUTANEOUS PACING at a rate of 60-70 bpm.

- a. Assess for electrical and mechanical capture. If patient is showing a Second Degree Type II, Third Degree block or STEMI, Transcutaneous Pacing is the treatment of choice.
 - b. Consider sedation with a benzodiazepine or analgesia in conjunction with Transcutaneous Pacing if BP will allow:
8. Consider:

MIDAZOLAM

- a. Adult:
 - i. [5-10 mg] IN/IM. Max single dose is 10mg. May repeat once after 10 minutes
 - ii. [2 to 5 mg] SIVP/IO. Repeat every 5 minutes as needed up to 10mg.
- b. Pediatric:
 - i. [0.2 mg/kg] IN/IM. Max single dose is 5mg. May repeat once after 10 min.
 - ii. [0.1 mg/kg] SIVP/IO. Repeat every 5 minutes as needed, up to 10mg.

DIAZEPAM

- a. Adults
 - i. [2-10 mg] IV/IO/IM, slow with IV running open

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BRADYCARDIA-SYMPOMATIC (cont.)

- b. Pediatric:
 - i. [0.05–0.1 mg/kg] IV/IO
 - ii. Rectal dosage [0.5 mg/kg] may be warranted in seizure patients if no venous access is available. Onset of action by this route may be delayed.
 - iii. Apnea in children after diazepam administration may occur
9. If the patient is still hypotensive and symptomatic, Consider ONE of the following vasopressors:

NOREPINEPHRINE

1. Adult [4 mcg/min] IV/IO infusion, may increase by 2 mcg/min q 5 mins up to a max dose of 10 mcg/min.

DOPAMINE Drip

- a. Adult [5-20 mcg/kg/min.] IV/IO or

EPINEPHRINE

- a. Adult [2-10 mcg/min. drip]: IV/IO titrate to effect
 - b. Pediatric [0.01 mg/kg] IV/IO (0.1 mL/kg of 1:10,000 concentration) Repeat every 3-5 minutes
2. Consider other treatable causes to include calcium channel blocker or beta blocker overdose, hyperkalemia, hypoxia.

HYPERTENSION (EMERGENT)

DESCRIPTION OF CONDITION

The patient may be experiencing hypertension sufficient to produce clinical end organ dysfunction most commonly in the cardiovascular system, CNS, and kidneys. Diastolic pressure usually exceeds 130 mmHg. Common presentations may include: severe headache, chest pain, CHF, blurred vision, and confusion.

EMPHASIS ON PATIENT CARE

Airway management, adequate oxygenation and perfusion, and transport

PRE-HOSPITAL MANAGEMENT



1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
2. If transport capable, initiate transport to appropriate medical facility. Consider ALS intercept.
3. History, physical exam, vital signs
4. If a stroke is suspected, see [Suspected Stroke Guidelines](#).
5. Enroute, initiate an IV/IO of isotonic solution at a TKO rate.
6. Treat other findings (chest pain, CHF altered mental status) according to the appropriate guidelines.

Note: Most patients with isolated hypertension do not require pre-hospital lowering of blood pressure.

NARROW COMPLEX TACHYCARDIAS

DESCRIPTION OF CONDITION

Patient will present with an elevated heart rate for age with supraventricular focus. and may or may not also present with associated symptoms such as palpitations, dyspnea, chest pain, syncope/near-syncope, hemodynamic compromise, altered mental status or other signs of end organ malperfusion.

EMPHASIS ON PATIENT CARE

Maintain adequate oxygenation and perfusion. Restore regular sinus rhythm - correct rhythm disturbance, and ALS intervention

PRE-HOSPITAL MANAGEMENT

-
1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
 2. History, physical exam, vital signs
 - a. If suspected AMI, administer **ASPIRIN** [324 mg PO].
 3. Place on cardiac monitor if available and record a strip, obtain a 12 lead if possible.
 4. If transport capable, initiate transport to appropriate medical facility. Consider ALS intercept
 5. Enroute, initiate an IV/IO of an isotonic solution, titrate to maintain adequate vital signs.
 6. Determine if the narrow complex rhythm is regular or irregular.
 7. If hemodynamically stable regular Narrow Complex Tachycardia:
 - a. Valsalva maneuvers may be attempted.
 - b. If no response, or patient is in mild to moderate hemodynamic instability, Consider:

ADULT

 - i. Administer **ADENOSINE** [6.0 mg] rapid IV push (1-2 seconds) followed by a 20cc flush of **NORMAL SALINE**.
 - ii. Repeat **ADENOSINE** [12.0 mg] rapid IV push (1-2 seconds) followed by a 20cc flush of **NORMAL SALINE**, after 1-2 minutes, if indicated.
 - iii. Repeat **ADENOSINE** [12.0 mg] rapid IV push (1-2 seconds) followed by a 20cc flush of **NORMAL SALINE**, after 1-2 minutes, if indicated.
 - iv. If patient's condition deteriorates, perform synchronized cardioversion immediately.

PEDIATRIC

 - i. Administer **ADENOSINE** Initial: [0.1 mg/kg (max dose 6 mg)] rapid IV/IO. Repeat in 2-3 minutes if no change at [0.2 mg/kg (max dose 12 mg)] rapid IV/IO.
 8. If hemodynamically stable Irregular Narrow Complex Tachycardia:
 - a. Monitor for deterioration Enroute.
 9. If **UNSTABLE** regular or irregular Narrow Complex Tachycardia:
 - a. Perform Synchronized Cardioversion. If the patient is conscious, and the BP will tolerate it, Consider sedation with a benzodiazepine or analgesia, prior to cardioversion

ADULT

 - i. Cardiovert at 50-100 joules, or biphasic equivalent
 - ii. Cardiovert at 200 joules, or biphasic equivalent
 - iii. Cardiovert at 300 joules, or biphasic equivalent
 - iv. Cardiovert at 360 joules, or biphasic equivalent

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NARROW COMPLEX TACHYCARDIAS (Cont.)***PEDIATRIC***

- i. Deliver a synchronized shock; 0.5-1 J/kg for the first dose
 - ii. Repeat doses should be 2 J/kg
- b. If patient's cardiac rhythm changes during procedure, treat per applicable guidelines.

Notes:

1. Patients in Sinus Tachycardia should be evaluated for underlying causes and treated accordingly.
2. Patients presenting with hemodynamic instability, evidence of poor perfusion, chest pain, altered level of consciousness, shortness of breath, cyanosis or evidence of congestive heart failure are Considered unstable and intervention should be implemented per this protocol.
3. Patients with narrow complex tachycardia, are often familiar with their problem and symptoms. Those who do not show evidence of hemodynamic instability require no pre-hospital medications.

WIDE COMPLEX TACHYCARDIA (with pulse)**DESCRIPTION OF CONDITION**

Patient who presents with Ventricular Tachycardia or Wide Complex Tachycardia with pulse present. These patients may be conscious or unconscious. "Unstable" indicates symptoms such as chest pain, dyspnea, hypotension, CHF, ischemia, or unconsciousness. "Stable" patients with sustained wide complex tachycardia will not have these symptoms, but must be monitored carefully for onset of such symptoms.

EMPHASIS ON PATIENT CARE

Maintain adequate perfusion, adequate oxygenation, ALS intervention

PRE-HOSPITAL MANAGEMENT

- 
1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
 2. History, physical exam, vital signs
 3. Place on cardiac monitor if available, record a strip and obtain a 12 lead EKG if possible.
 - a. If suspected AMI, administer **ASPIRIN** [324 mg PO].
 - b. If the patient becomes unconscious and pulseless, follow [Cardiac Arrest Guidelines](#).
 4. If transport capable, initiate transport to appropriate medical facility. Consider ALS intercept.
 5. Enroute, initiate an IV/IO of an isotonic solution, titrate to maintain adequate vital signs.
 6. If stable wide complex tachycardia or if patient has only mild symptoms of decompensation:
 - a. Consider **ADENOSINE** only if regular and monomorphic.

ADULT

- i. Administer **ADENOSINE** [6.0 mg] rapid IV push (1-2 seconds) followed by a 20cc flush of **NORMAL SALINE**.
 - ii. Repeat **ADENOSINE** [12.0 mg] rapid IV push (1-2 seconds) followed by a 20cc flush of **NORMAL SALINE**, after 1-2 minutes, if indicated.
 - iii. Repeat **ADENOSINE** [12.0 mg] rapid IV push (1-2 seconds) followed by a 20cc flush of **NORMAL SALINE**, after 1-2 minutes, if indicated.
 - iv. If patient's condition deteriorates, perform synchronized cardioversion immediately.
- PEDIATRIC**
- i. Administer **ADENOSINE** [0.1 mg/kg (max dose 6 mg)] rapid IV/IO.
 - b. Consider **AMIODARONE**

ADULT

- i. [150mg] over 10 min. Repeat as needed if VT recurs. Follow with continuous infusion at 1mg/min for first 6hrs.

PEDIATRIC

- i. [5 mg/kg] IV/IO over 20-60 minutes. May repeat twice, up to 15 mg/kg /24 hours; maximum single dose 150 mg.

OR

- c. Consider **LIDOCAINE**

ADULT

- i. [1.0-1.5 mg/kg] IV/IO. If VT persists, [0.5-0.75 mg/kg] every 3 to 5 minutes, up to 3.0 mg/kg total. Follow with continuous infusion at 1-4 mg/minute (30-50 mcg/kg/minutes)

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WIDE COMPLEX TACHYCARDIAS – With Pulse - (Cont.)***PEDIATRIC***

- i. Contact MCEP
 - d. May also Consider **MAGNESIUM SULFATE** [2 g] diluted in 10ml of D5W over 1-2 min.] slow IV/IO. For **Torsades de Pointes**, Magnesium Sulfate is the drug of choice and may require doses up to [5-10 g] administered slow IV/IO.
7. If hemodynamically unstable wide complex tachycardia:
- a. Perform immediate synchronized cardioversion/defibrillate. If the patient is conscious, and the blood pressure can tolerate it, Consider sedation with a benzodiazepine or analgesia prior to cardioversion.

Monomorphic (regular)***ADULT***

- i. Cardiovert at 100 joules, or biphasic equivalent
- ii. Cardiovert at 200 joules, or biphasic equivalent
- iii. Cardiovert at 300 joules, or biphasic equivalent
- iv. Cardiovert at 360 joules, or biphasic equivalent

PEDIATRIC

- i. Deliver a synchronized shock; [0.5-1 J/kg] for the first dose
- ii. Repeat doses should be [2 J/kg]

Polymorphic (irregular)

- i. Defibrillate with the same energy settings as VF
- b. If patient's cardiac rhythm changes during procedure, treat per applicable guidelines.

Note: Although the loading dose of Lidocaine does not need to be reduced, the maintenance dose should be decreased by 50% in the presence of impaired hepatic blood flow and in patients > 70 years of age.

ROSC (RETURN OF SPONTANEOUS CIRCULATION) CARE – Adult

DESCRIPTION OF CONDITION

Patient returned to spontaneous circulation following cardiac arrest resuscitation

EMPHASIS ON PATIENT CARE

Optimize neurologic and other function following a return of spontaneous circulation following resuscitated cardiac arrest.

PRE-HOSPITAL MANAGEMENT

- 
1. Perform general patient management.
 2. Support life-threatening problems associated with airway, breathing, and circulation. Monitor closely for reoccurrence of cardiac arrest.
 3. Titrate oxygen to minimum necessary to keep O₂ saturation > 94%. Do **NOT** hyper-oxygenate.
 4. If transport capable, transport the patient as soon as possible to an appropriate medical facility. Consider ALS.
 5. Establish IV/IO access
 6. For hypotension (SBP less than 90) treat for shock. Cardiogenic shock is common after cardiac arrest. [Refer also to Shock Guideline](#).
 - a. 250 ml NS fluid bolus. May repeat up to 1 L if lungs are clear and the patient remains hypotensive.
 - b. Consider a vasopressor agent:

NOREPINEPHRINE: [4 mcg/min] IV/IO infusion, may increase by 2 mcg/min q 5 mins up to a max dose of 10 mcg/min. Recent evidence supports the use of norepinephrine as the preferred intervention.

DOPAMINE infusion [5–20 mcg/kg/minute] IV/IO.
 7. Check blood glucose. If < 60 mg/dl refer to [Diabetic Emergencies Guidelines](#) for treatment recommendations. If hyperglycemic, notify hospital on arrival.
 8. If patient seizes, refer to [Seizure Guidelines](#)
 9. Perform 12-lead EKG.
 10. Post cardiac arrest patients with evidence or interpretation consistent with ST elevation myocardial infarction (STEMI/Acute MI) should be transported to a hospital that offers percutaneous coronary intervention in their cardiac catheterization laboratory. Activate hospital-based STEMI system of care.
 11. Consider transport patients to facility that offers specialized post-resuscitative care.
 12. Do not allow patient to become hyperthermic.
 13. Mild therapeutic hypothermia may be beneficial in unresponsive patients with ROSC. Use only if a coordinated system of care exists to maintain therapy.
 14. While administering fluid boluses, frequently reassess perfusion for improvement and/or fluid overload respiratory distress. If perfusion improves, slow the IV to KVO and monitor closely. If patient develops fluid overload respiratory distress (dyspnea, rales, crackles, decreasing SpO₂), slow the IV to KVO.

Note:

1. Hyperventilation is a significant cause of hypotension and recurrence of cardiac arrest in the post resuscitation phase.

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ROSC (RETURN OF SPONTANEOUS CIRCULATION) CARE – Adult (Cont.)

2. Most patients immediately post resuscitation will require ventilatory assistance including intubation and sedation.
3. The condition of post-resuscitation patients fluctuates rapidly and continuously, and they require close monitoring. A significant percentage of Post ROSC patients will re-arrest with the highest incidence in the first five minutes after ROSC.
4. Common causes of post-resuscitation hypotension include hyperventilation, hypovolemia, and pneumothorax.

CHILDBIRTH/OBSTETRICAL

IMMINENT DELIVERY

DESCRIPTION OF CONDITION

Determining imminent birth may include: regular contractions lasting 45 - 60 seconds at 1-2 minutes intervals; crowning occurs; patient feels the urge to bear down or feels she needs to have a bowel movement.

EMPHASIS ON PATIENT CARE

Pre-delivery: Treat the child by treating the mother.

Post-delivery: Maintain warmth and adequate ventilations for the baby. Continue care for the mother.

PRE-HOSPITAL MANAGEMENT

1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
2. History, physical exam, vital signs
 - a. Obtain medical and obstetrical history including:
 - i. Due date (EDC)
 - ii. Length of pregnancy
 - iii. Number of pregnancies, live births, and miscarriages (gravida, para, and abortions).
 - iv. Last menstrual period (LMP)
 - v. Summary of prenatal care
 - vi. Number of expected babies
 - vii. When did contractions start, how close, bleeding, and does she feel the need to push.
 - viii. Previous or present illness, cardiac problems, diabetes, etc.
 - ix. Patient's age
 - x. Complications of prior pregnancies, deliveries, prior C-section.
 - xi. Use of drugs
3. Examine the perineum for visible cord, head crowning, presenting part other than the head, active vaginal bleeding, amniotic fluid, and meconium.
4. If birth is imminent and the following conditions present, Contact a physician (preferably one who does obstetrics) for delivery instructions:
 - a. Multiple births
 - b. Excessive bleeding
 - c. Breech presentation
 - d. Meconium
 - e. If transport capable, consider rapid transport and ALS intercept for the following (see [Childbirth Complications](#)):
 - i. Limb presentations
 - ii. Transverse presentation
 - iii. Unlikely to deliver vaginally



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CHILDBIRTH/OBSTETRICAL (cont.)



5. If the birth is imminent in the pre-hospital setting:
 - a. Delivery should be controlled so as to allow a slow controlled delivery of infant. This will prevent injury to mother and infant.
 - b. Open the OB kit, don sterile gloves, and create a field for delivery.
 - c. Reassure mother - encourage to not bear down between contractions, but to “pant”.
 - d. Place slight pressure over the head with hand to prevent rapid delivery, but do not attempt to delay delivery.
 - e. Once head delivers, instruct mother to stop pushing.
 - f. **Do NOT** routinely suction the infant’s airway (even with a bulb syringe) during delivery. Suctioning after birth should not be done routinely; rather it is reserved for babies who have obvious obstruction to spontaneous breathing or require positive pressure ventilation. When suctioning suction the mouth first then nose.
 - g. Support body as delivery proceeds. Baby will be extremely slippery. **DO NOT** pull on baby.
 - h. Dry and wrap in blanket, cover head. Stimulate the baby to breathe/cry. If baby does not breathe spontaneously, follow [Neonatal Resuscitation Guidelines](#). Do APGAR scoring.
 - i. Using clamps or hemostats, clamp the cord, 6-10 inches from baby, 2 - 3 inches apart, then cut between clamps.
 - j. If bleeding occurs post-delivery, massage mother’s abdomen/uterus.
 - k. Do not pull on the umbilical cord. Bring birth products to ED.
 - l. Place sterile pad over vaginal opening.
 - m. Cover mother with clean and dry bedding.
 - n. Record time of the birth.
 - o. Do not let the neonate become hypothermic.
6. If transport capable, transport mother and baby to the nearest hospital. Bring all blood soaked pads and passed tissue to hospital.
7. Monitor the mother and baby’s vital signs and APGAR every 5 minutes.

Neonate Vital Signs			
Age	Respirations	Pulse	Blood Pressure (Systolic)
Newborn	30-60	100-160	50-70

The APGAR Score				SCORE	
Sign	0	1	2	1 min	5 min
Skin Color	Blue, Pale	Body pink, extremities blue	Completely pink		
Heart Rate	Absent	< 100	> 100		
Irritability	No response	Grimaces	Cries		
Muscle Tone	Limp	Some flexion of extremities	Active Motion		
Resp. Effort	Absent	Slow & Irregular	Strong Cry		
			TOTAL SCORE		

8. If the mother continues to bleed, initiate an IV/IO of isotonic solution and infuse at a flow rate to maintain adequate vital signs.
9. If the placenta has delivered, and heavy vaginal bleeding continues, administer **OXYTOCIN** [10-20 USP units in 500 ml Isotonic Solution] at a flow rate of 10-15 gtt/min.

CHILDBIRTH COMPLICATIONS

PRE-HOSPITAL MANAGEMENT

NUCAL CORD

1. If the cord is wrapped around the baby's neck:
 - a. Gently pull and slip over the head or shoulders.
 - b. If it will not slip over either, clamp cord twice, and cut between clamps and proceed with delivery.

BREECH DELIVERY

1. If the delivery is breech, but imminent, attempt to establish Contact with a physician (who does obstetrics) for delivery instructions and, if transport capable, initiate immediate transport to the nearest hospital, preference to OB capable hospital if available.
 - a. Use sterile technique whenever possible. Encourage mother to push hard.
 - b. Allow the fetus to deliver spontaneously up to the level of the umbilicus. Support the body.
 - c. Apply suprapubic pressure to the mother to promote descent of the head. Do not pull traction on the infant's body.
 - d. After the infant's legs are clear, gently extract a 4-6 inch loop of umbilical cord to allow for delivery without excessive traction on the cord.
 - e. Rotate the infant so that shoulders are in an anterior-posterior position. Gently guide the infant upward to allow delivery of the posterior shoulder and then downward to deliver the anterior shoulder. The head may deliver spontaneously at this point.
2. If the head does not deliver, position the head with the infant face downward, away from the maternal symphysis. Avoid excessive traction or manipulation on the infant's spine.
 - a. Rotate the mother's legs upwards towards her shoulders and apply suprapubic pressure if not already doing so.
 - b. Place a gloved hand into the vagina, palm towards the infant's face
 - c. With index and middle fingers form a V on either side of the infant's nose on the maxilla. Gently pull the vagina away from the infant's face and apply gentle traction to roll the occiput under the pubic symphysis.
 - d. If unable to deliver the infant's head, maintain the V formation with your hand and rapidly transport.
 - e. When the head delivers, suction and wrap the baby.
 - f. Clamp the umbilical cord with two cord clamps and cut the cord between the clamps with sterile scalpel.
3. One or both arms may be extended upward behind the neck, which may impede delivery of the head. In this event, there are three delivery options:
 - a. If the fetus is small or the pelvis large, the head and extended arm may be delivered together.
 - b. Alternatively, the operator may attempt to flex the arm and sweep it down over the face and chest.
 - c. As a last resort, the operator may rotate the fetus 360 degrees in the direction that will sweep the arm out of its nuchal position (clockwise for a left arm, counterclockwise for a right arm).



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CHILDBIRTH COMPLICATIONS (cont.)

PROLAPSED UMBILICAL CORD

1. If transport capable, initiate immediate transport to the nearest hospital, preference to OB capable hospital as emergency cesarean section is definitive management.
2. Place mother in a) left lateral decubitus position and extreme Trendelenburg if possible.
3. Administer high-flow oxygen to mother.
4. Insert gloved hand into vagina and gently push the presenting part away from the cord until it pulsates. Do not attempt to replace the cord back into the uterus
5. Place a moist sterile dressing over cord, if able.
6. **(EMT-I and Paramedic)** Insert IV/IO and run IV fluids to maintain vital signs.

PRE ECLAMPSIA AND ECLAMPSIA

Defined as a condition of pregnancy after 20 weeks gestation characterized by hypertension (BP > 140/90, severe is SBP > 160 and DBP > 110), headaches, clonus, visual disturbances, right upper quadrant pain, and edema of the lower extremities. Clinical presentations are quite variable. Progression to seizures is eclampsia and is life threatening

1. Keep patient in a left lateral recumbent position and keep away from intense stimulus (i.e. bright lights, loud noises, etc.).
2. Secure the airway and administer **OXYGEN** titrated to patient condition.
3. **(EMT-I and Paramedic)** Initiate IV/IO of an isotonic solution TKO.
4. Monitor for the progression of seizures. If the patient begins seizing, administer Magnesium and follow [Seizure Guideline](#)

MAGNESIUM SULFATE [4 gms] slow IV/IO.

If magnesium is unsuccessful at stopping the seizure, Consider:

MIDAZOLAM:

- a. Adult:
 - i. [5-10 mg] IN/IM. Max single dose is 10mg. May repeat once after 10 minutes [2 to 5 mg] SIVP/IO. Repeat every 5 minutes as needed up to 10mg.

OR

DIAZEPAM

- a. Adult:
 - i. [2-10 mg] slow IM/IV/IO
5. If the patient is exhibiting signs and symptoms of severe pre-eclampsia as defined by:
 - a. Systolic BP > 170 and/or Diastolic BP > 110

OR

 - b. Systolic BP > 150 and Diastolic BP > 100 **AND** the patient is exhibiting at least 2 of the following signs and symptoms: severe headache, blurry vision, or abdominal pain, Contact MCEP for possible magnesium 2 gram IV/IO over 10 minutes
 6. For signs of Magnesium Sulfate toxicity, (i.e. hypotension, drowsiness, decreased reflexes, diminished respiratory effort, respiratory paralysis) administer:
 - a. **CALCIUM CHLORIDE or GLUCONATE**
 - i. [5-10 ml] slow IV/IO. (Do not exceed 2ml/min.)
 - b. Unless delivery is imminent, transport immediately.

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CHILDBIRTH COMPLICATIONS (cont.)**VAGINAL BLEEDING**

1. **(EMT-I and Paramedic)** For all patients, initiate an IV/IO of an isotonic solution and infuse at a flow rate to maintain adequate vital signs

Pre-delivery

- a. Consider possible placental abruption, especially if associated with trauma or cocaine use.
 - i. If unstable vital signs (or fetal heart tones <100), notify emergency department of possible need for c-section.

Post-delivery

- a. Most likely due to the inability of the uterus to contract, after delivery of the placenta.
 - i. Massage fundus of the uterus (located suprapubically) vigorously.
 - ii. **(Paramedic only)** If bleeding continues administer:
OXYTOCIN [10-20 USP units in 500 ml Isotonic Solution] at a flow rate of 10-15 gtts/min.
 - iii. Initiate rapid transport

SHOULDER DYSTOCIA

1. If infant shoulders impact the symphysis pubis:
 - a. Hyperflex mother's hips to severe knee-chest position.
 - b. Apply firm suprapubic, not fundal, pressure to attempt to dislodge the shoulder.
 - c. After the delivery, continue with resuscitative measures as needed

MATERNAL CARDIAC ARREST

1. Apply manual pressure to displace uterus from right to left
2. See **Cardiac Arrest (VF/VT/Asystole/PEA)** guideline for resuscitation care (defibrillation and medications should be given for same indications and doses as if non-pregnant patient)
3. Transport as soon as possible if infant is estimated to be over 24 weeks gestation A cesarean section (resuscitative hysterotomy) at receiving facility is most successful if done within 4-5 minutes of maternal cardiac arrest)
4. Contact direct Medical Direction and/or closest appropriate receiving facility for direct medical oversight and to prepare team.



NEONATAL RESUSCITATION

DESCRIPTION OF CONDITION

The patient is a newborn who requires resuscitative intervention. Extent and level of intervention is patient condition dependent.

EMPHASIS ON PATIENT CARE

Maintain adequate perfusion, adequate oxygenation, ALS intervention

PRE-HOSPITAL MANAGEMENT

- 
1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated
 - a. Respiratory rate and effort (strong, weak, or absent; regular or irregular)
 - b. Signs of respiratory distress (grunting, nasal flaring, retractions, gasping, apnea)
 - c. Heart rate (fast, slow, or absent)
 - i. Precordium, umbilical stump or brachial pulse may be used. Umbilical stump is preferred for accuracy and ease of access.
 - d. Muscle tone (poor or strong)
 - e. Color/Appearance (central cyanosis, acrocyanosis, pallor, normal)
 - f. APGAR score (appearance, pulse, grimace, activity, respiratory effort)
 - i. May be calculated for documentation, but not necessary to guide resuscitative efforts.
 - g. Estimated gestational age (term, near term, premature)
 - h. Pulse oximetry should be Considered if prolonged resuscitative efforts
 - i. Goal oxygen saturation at 10 minutes is 85-95%
 2. History
 - a. Date and time of birth
 - b. Onset of symptoms
 - c. Prenatal history (prenatal care, substance abuse, multiple gestation, maternal illness)
 - d. Birth history (maternal fever, presence of meconium, prolapsed or nuchal cord, maternal bleeding)
 3. Clamp and cut cord if still attached to mother
 4. Warm, dry, and stimulate the infant.
 - a. Wrap infant in dry towel or thermal blanket to keep infant as warm as possible during resuscitation; keep head covered if possible
 - b. If strong cry, regular respiratory effort, good tone, and term gestation, infant should be placed skin-to-skin with mother and covered with dry linen
 5. If weak cry, signs of respiratory distress, poor tone, or preterm gestation then position airway (sniffing position) and clear airway as needed
 - a. If thick meconium or secretions present and signs of respiratory distress, suction mouth then nose
 6. If heart rate >100 beats per minute
 - a. Monitor for central cyanosis
 - i. Provide blow-by oxygen as needed
 - b. Monitor for signs of respiratory distress
 - i. Initiate bag-valve-mask ventilation with room air at 40-60 breaths per minute

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NEONATAL RESUSCITATION (Cont.)



7. If heart rate <100 beats per minute but less >60
 - a. Initiate bag-valve-mask ventilation with room air at 40-60 breaths per minute
 - i. Primary indicator of effective ventilation is improvement in heart rate
 - ii. Rates and volumes of ventilation required can be variable, only use the minimum necessary rate and volume to achieve chest rise and a change in heart rate
 - b. If no improvement after 90 seconds change to oxygen source until heart rate normalizes
8. If heart rate < 60 beats per minute
 - a. Ensure effective ventilations with supplementary oxygen and adequate chest rise
 - b. Initiate chest compressions
 - i. Two-thumb-encircling-hands technique is preferred
 - c. Coordinate chest compressions with positive pressure ventilation (3:1 ratio, 90 compressions and 30 breaths per minute)
 - d. Establish an IV/IO and Consider a fluid challenge with Normal Saline 10cc/kg if hypovolemia is a Consideration.
 - e. If CPR and BVM with supplemental oxygen do not raise HR >60, administer 1:10,000 Epinephrine [0.01mg/kg. Repeat every 3-5 minutes
 - f. Assess BGL: capillary or venous, if BGL is < 45 mg/dl, administer **D10W** [1gm/kg] IV/IO over twenty minutes.
 - g. If non-addicted mother has used narcotics within the past four hours, Consider Naloxone 0.1 mg/kg IV/IO for the infant with respiratory depression unresponsive to conventional resuscitation. **DO NOT** administer Naloxone to infants of narcotic addicted mothers, or when this is in question.
 - h. Transport as soon as possible and Contact Medical Control for online medical direction

ENVIRONMENTAL

DROWNING

DESCRIPTION OF CONDITION

Includes a history of being submerged under water for an excessive period of time resulting in potential cardio-pulmonary compromise

EMPHASIS ON PATIENT CARE

Rapid Assessment and management of life-threatening injuries, rescue from the water-based environment, airway maintenance, CPR, if indicated and transport of all patients suffering from drowning for hospital evaluation.

PRE-HOSPITAL MANAGEMENT



1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
 - a. Primary survey should include aggressive airway management and restoration of adequate oxygenation and ventilation. Unlike the CAB strategy used in standard cardiac arrest, patients suffering cardiac arrest from drowning require an ABC approach with prompt airway management and supplemental breathing.
 - b. History should include circumstances leading to the submersion, details of mechanism of injury, time under water, was the water fresh, polluted or salt water, water temperature (if available) and pre-existing medical conditions.
 - c. History, mechanism of injury and exam should include Consideration of possible c-spine injury. If evaluation suggests injury to the cervical spine, manage c-spine.
 - d. Assess for other associated injury such as injury to the head or dive-related emergency.
2. Begin artificial respirations in the water, if needed, taking C-spine precautions. See [Spinal Immobilization Guideline](#)
3. Insert advanced airway (see [Respiratory Arrest/Distress Guidelines](#)), and continue ventilation, 1 breath every 6 seconds, without interrupting compressions. **100% OXYGEN.**
4. Suction as needed.
5. If cardiac arrest occurs, follow [Medical Cardiac Arrest Guidelines](#).
6. Do not stop CPR if the patient has been in cold water.
7. If hypothermia is present or suspected, refer to [Hypothermia Guidelines](#).
8. If transport capable, transport the patient to an appropriate medical facility.
9. Enroute, initiate a large bore IV/IO of an isotonic solution and infuse at a flow rate to maintain adequate vital signs.

HYPERTHERMIA / Heat Exposure

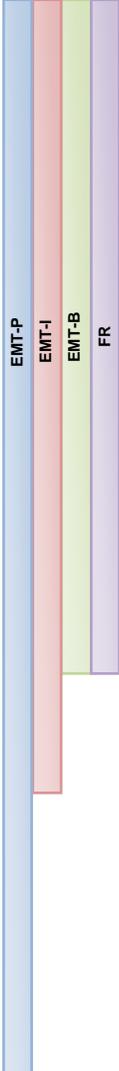
DESCRIPTION OF CONDITION

Hyperthermia is Considered a sustained core temperature of greater than 101° F (38.3° C), with thermoregulatory mechanisms failing around 105.8° F (41° C). This condition can result from environmental exposure, exertion, medications, or illness. Signs and symptoms include any or all of the following: muscle cramps, weakness, exhaustion, dizziness, fainting, altered level of consciousness, unresponsiveness, and rapid heart rate. Skin may be moist or dry, and normal, cool, or hot. The most severe form of hyperthermia is heat stroke, defined as an elevated core temperature and altered level of consciousness.

EMPHASIS ON PATIENT CARE

Rapid re-cooling of the core temperature, fluid maintenance (elderly, chronically ill, and Pediatrics are at a higher risk)

PRE-HOSPITAL MANAGEMENT

- 
1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated. Use humidified O₂.
 2. Move victim to a cool area and shield from the sun or any external heat source
 3. Remove as much clothing as is practical and loosen any restrictive garments
 4. If alert and oriented, give small sips of cool liquids
 5. If there is altered mental status, check blood glucose level and Consider possible drug use as a contributing factor as well as other causes.
 6. Maintain airway vigilance for emesis, seizure
 7. If transport capable, transport the patient as soon as possible to an appropriate medical facility. Consider ALS.
 8. Place on cardiac monitor and record ongoing vital signs and level of consciousness
 9. If temperature is > 104 degrees F (40 degrees C) or if altered mental status is present, begin active cooling by:
 - a. Continually misting the exposed skin with tepid water while fanning the victim (most effective)
 - b. Truncal ice packs may be used, but are less effective than evaporation
 - c. Ice bath immersion provides the most rapid cooling mechanism but may not be available to EMS and makes monitoring of the patient very difficult.
 10. Establish IV/IO access for heat stroke
 11. **NORMAL SALINE** IV/IO Bolus in [250 - 500 cc] increments as necessary to support LOC, HR and end organ perfusion. Re-evaluate LOC, VS, and lung sounds between boluses.
 12. Monitor and treat for shivering during active cooling. Consider:
 - a. Adult:
 - i. **MIDAZOLAM** [5-10 mg] IN/IM. Max single dose is 10mg. May repeat once after 10 minutes. [2 to 5 mg] SIVP/IO. Repeat every 5 minutes as needed up to 10mg.
 - ii. **LORAZEPAM** [1mg] IV/IO, may repeat once in 5 minutes or; 2mg IM, may repeat once in 10 minutes
 - iii. **DIAZEPAM** [2mg] IV/IO, may repeat once in 5 minutes

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HYPERTHERMIA / HEAT EXPOSURE (Cont.)

b. Pediatric:

Consider **NORMAL SALINE** [10–20ml/kg] IV fluid bolus for dehydration even if vital signs are normal. If uncontrolled shivering occurs during cooling:

- i. **MIDAZOLAM** [0.2 mg/kg] IN/IM. Max single dose is 5mg. May repeat once after 10 min. [0.1 mg/kg] SIVP/IO. Repeat every 5 minutes as needed, up to 10mg.
- ii. **LORAZEPAM** [0.1mg/kg] IV/IM (single maximum dose 1mg)
- iii. **DIAZEPAM** [0.2mg/kg] IV/IO or 0.5mg/ kg PR (single maximum dose 2mg IV or 4mg PR)

13. Cooling efforts should continue until the patient's temperature is less than 102.2 F (39 C) and the patient demonstrates improvement in mental status.

14. Monitor for arrhythmia and cardiovascular collapse, ([see Cardiac Emergencies](#)).

15. Treat seizures per [Seizure Guideline](#)



HYPOTHERMIA / Cold Exposure

DESCRIPTION OF CONDITION

Patients may suffer from hypothermia from exposure to a cold environment (increased heat loss) or may suffer from a primary illness or injury that, in combination with cold exposure (heat loss in combination with decreased heat production), leads to hypothermia. Patients may suffer systemic effects from cold (hypothermia) or localized effects, such as in frostbite. Patients with mild hypothermia will have normal mental status, shivering and may have normal vital signs while patients with moderate to severe hypothermia will manifest mental status changes, eventual loss of shivering and progressive bradycardia, hypotension, and decreased respiratory status. Patients with frostbite will develop numbness involving the affected body part along with a “clumsy” feeling along with areas of blanched skin. Later findings include a “woody” sensation, decreased or loss of sensation, bruising or blister formation, or a white and waxy appearance to affected tissue

EMPHASIS ON PATIENT CARE

Maintain hemodynamic stability, prevent further heat loss, aggressive management of cardiac arrest and prevent loss of limbs. Level of consciousness is the most reliable indicator of the severity of hypothermia.

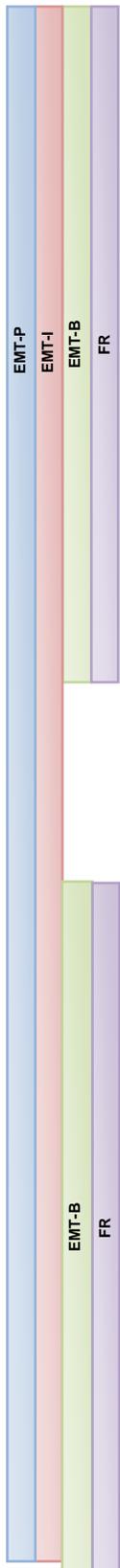
PRE-HOSPITAL MANAGEMENT



1. Patient Assessment should begin with attention to the primary survey, looking for evidence of circulatory collapse and ensuring effective respirations. The patient suffering from moderate or severe hypothermia may have severe alterations in vital signs including weak and extremely slow pulses, profound hypotension and decreased respirations. The rescuer may need to evaluate the hypothermic patient for longer than the normothermic patient (up to 60 seconds).
2. History – Along with standard SAMPLE-type history, additional patient history should include attention to any associated injury or illness, duration of cold exposure, ambient temperature, and treatments initiated before EMS arrival.
3. There are several means to categorize the severity of hypothermia based on either core body temperature readings or clinical evaluation. If possible and reliable, EMS providers should perform core body temperature measurements and categorize patients into one of the three follow levels of hypothermia:
 - a. Mild – normal body temperature 35-32.1° C/95-89.8°F
Vital signs not depressed, normal mental status, shivering is preserved. Body maintains ability to control temperature.
 - b. Moderate - 32°-28°C – 89.7°-82.5°F
Uncontrollable, violent shivering, slurred speech, stumbling. Progressive bradycardia and hypotension. Below 30 C shivering will be lost.
 - c. Severe - 28°-22° C (or lower) – 82.4°- 68.1° F (or lower)
Shivering stops, muscle rigidity, stupor progressing to unresponsiveness, respiratory rates which may become undetectable.
4. Maintain patient and rescuer safety. The patient has fallen victim of cold injury and rescuers have likely had to enter the same environment. Maintain rescuer safety by preventing cold injury to rescuers.

(Continued next page)

HYPOTHERMIA / Cold Exposure (Cont.)



5. Manage airway as indicated
6. In Mild Hypothermia :
 - a. Remove the patient from the environment and prevent further heat loss by removing wet clothes and drying skin, insulate from the ground, shelter the patient from wind and wet conditions and insulate the patient with dry clothing or a hypothermia wrap/blankets, cover the patient with a vapor barrier and, if available, move the patient to a warm environment
 - b. Hypothermic patients have decreased oxygen needs and may not require supplemental oxygen. If oxygen is deemed necessary, it should be warmed, to a maximum temperature between 104-108° F (40-42° C) and humidified if possible
 - c. Provide beverages or foods containing glucose if feasible and patient is awake and able to manage airway independently.
 - d. Vigorous shivering can substantially increase heat production. Shivering should be fueled by caloric replacement
 - e. Consider field-rewarming methods such as placement of large heat packs or heat blankets (chemical or electric if feasible) to the anterior chest or wrapped around the patient's thorax if large enough. Forced air warming blankets (e.g. Bair Hugger®) can be an effective field rewarming method if available
 - f. Monitor frequently. If temperature or level of consciousness decreases, refer to severe hypothermia, below
 - g. Consider IV/IO access. Indications for IV/IO access and IV fluids in the mildly hypothermic patient are similar to those of the non-hypothermic patient. IV fluids, if administered, should be warmed, ideally to 42° C. Bolus therapy is preferable to continuous drip. The recommended fluid for volume replacement in the hypothermic patient is normal saline.
 - h. If alterations in mental status, perform a finger stick blood glucose and treat as indicated (see [Diabetic Emergencies](#)) and Assess for other causes of alterations of mentation
 - i. Transport to a hospital capable of rewarming the patient
7. In Moderate or Severe Hypothermia:
 - a. Perform ABCs. Pulse checks for patients suffering hypothermia should be performed for 60 seconds. Obtain core temperature if possible for patients exhibiting signs or symptoms of moderate/severe hypothermia. Core temperatures are best measured by esophageal probe, if one is available and the provider has been trained in its insertion and use. If esophageal temperature monitoring is not available or appropriate, epitympanic or rectal temperatures should be used. Of note, rectal temperatures are not reliable or suitable for taking temperatures in the field and should only be done in a warm environment (such as a heated ambulance)
 - b. Manage airway as needed. Care must be taken not to hyperventilate the patient as hypocarbia may reduce the threshold for ventricular fibrillation in the cold patient. Indications and contraindications for advanced airway devices are similar in the hypothermic patient as in the normothermic patient
 - c. Prevent further heat loss using the above methods
 - d. Initiate field-rewarming methods such as placement of large heat packs or heat blankets (chemical or electric if feasible) to the anterior chest or wrapped around the patient's thorax if large enough. Forced air warming blankets (e.g. Bair Hugger®) can be an effective field rewarming method if available.

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HYPOTHERMIA / Cold Exposure (Cont.)



- e. Handle the patient gently. Attempt to keep the patient in the horizontal position, especially limiting motion of the extremities to avoid increasing return of cold blood to the heart. Once in a warm environment, clothing should be cut off (rather than removed by manipulating the extremities). Move the patient only when necessary such as to remove the patient from the elements
 - f. Apply cardiac monitor or AED if available
 - g. Establish IV/IO and provide warmed NS bolus. Repeat as necessary.
 - h. If alterations in mental status, consider measuring finger stick blood glucose and treat as indicated (see [Diabetic Emergencies](#)) and Assess for other causes of alterations of mentation
 - i. If transport capable, transport as soon as possible to a hospital capable of aggressive resuscitation. If cardiac arrest develops Consider transport to a center capable of extracorporeal circulation (if feasible)
8. If the patient is pulseless and apneic:
- a. Begin CPR prior to defibrillation and ventilate with warm, humidified oxygen.
 - b. If patient in ventricular fibrillation, defibrillation should be attempted once, followed by 2 minutes of chest compressions, then rhythm and pulse checks.
 - c. If defibrillation is unsuccessful and the patient's core temperature is $< 30^{\circ}\text{C}$ (86°F), do not make further attempts at defibrillation until the core temperature has increased to $> 30^{\circ}\text{C}$ (86°F).
 - d. Continue CPR and attempt to rewarm the patient
 - e. If defibrillation is unsuccessful and the patient's core temperature is $> 30^{\circ}\text{C}$, (86°F), follow guidelines for normothermic patients.
 - f. Consider inserting advanced airway (see [Respiratory Arrest guidelines](#)).
 - g. If the patient is in asystole, CPR alone is the mainstay of therapy.
 - h. If monitoring reveals an organized rhythm (other than VF or VT), but no pulses are detected, do not start CPR, but continue to monitor.
 - i. While this may represent Pulseless Electrical Activity (PEA), this may also represent a situation in which the patient's pulses are not detectable, but remain effective due to decreased metabolic needs.
 - ii. In the case of PEA, the rhythm will deteriorate rapidly to asystole, in which case, CPR should be initiated.
 - iii. Given the potential to cause VF with chest compressions, it is better to maintain effective cardiac activity than to start CPR and cause VF.

Note: There is little evidence to guide medication therapy in severe hypothermia with cardiac arrest. 2014 Alaska Cold Injuries Guidelines and the Wilderness Medical Society Practice Guidelines suggest not using vasoactive medications until the patient's core temperature is greater than 30°C (86°F).
 - i. Rapidly and carefully transport the patient to an appropriate medical facility.
 - j. Monitor the patient's vital signs and rhythm closely.
9. Frostbite:
- a. If the patient has evidence of frostbite, and ambulation/travel is necessary for evacuation or safety, avoid rewarming of extremities until definitive treatment is possible. Additive injury occurs when the area of frostbite is rewarmed then inadvertently refrozen. Only initiate rewarming if refreezing is absolutely preventable

(Continued next page)

HYPOTHERMIA / Cold Exposure (Cont.)

- b. If rewarming is feasible and refreezing can be prevented use circulating warm water (98.6 - 102° F/37 - 39° C) to rewarm effected body part, thawing injury completely. If warm water is not available, rewarm frostbitten parts by Contact with non-affected body surfaces. Do not rub or cause physical trauma.
- c. After rewarming, cover injured parts with loose sterile dressing. Do not allow injury to refreeze

MEDICAL EMERGENCIES

ABDOMINAL PAIN - ACUTE

DESCRIPTION OF CONDITION

The patient is experiencing moderate to severe abdominal pain. Causes can include blunt or penetrating trauma, appendicitis, food poisoning, pancreatitis abdominal aortic aneurysm, gastritis, gall bladder problems, kidney stone, intestinal obstruction, ectopic pregnancy, ulcers, and ovarian cyst.

EMPHASIS ON PATIENT CARE

Airway management, rapid transport, maintain adequate perfusion.

PRE-HOSPITAL MANAGEMENT

1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
2. Maintain the patient NPO (nothing by mouth)
3. Allow patient to assume a position of comfort
4. If transport capable, initiate transport to appropriate medical facility.
5. History, physical exam, vital signs
6. Enroute, initiate IV/IO access (determined by patient condition) of an isotonic fluid, infused at flow rate to maintain adequate vital signs.
7. **If no contraindications exist**, Consider administration of pain medications.

KETORLAC (TORADAL®) See Note below.

- a. Adult: [10-30mg] IV/IO, [30-60mg] IM
- b. Pediatric: (>1 yr. of age) [0.5 mg/kg] IM/IV/IO to a max of 30mg

MORPHINE

- a. Adult: [4-10 mg] slow IV/IO titrating 2-4 mg every 10 minutes to effect. (Max of 10 mg without approval from Medical Control). Do not administer if the systolic BP is less than 100.
- b. Pediatric: (2-12 yrs. of age) [0.05-0.1mg/kg] slow IV/IO titrated to effect

FENTANYL

- a. Adult: [25-100 mcg] slow IV/IO every 5 minutes to effect. (Maximum single dose of 100mcg and maximum total dose of 300mcg without approval from Medical Control). Do not give if systolic BP is less than 100.
- b. Pediatric: (2-12 yrs. of age) [0.5-1 mcg/kg] IV/IO to a maximum of 2.0 mcg/kg slow IV push over 2 minutes.

8. Consider an anti-emetic for nausea and/or vomiting:

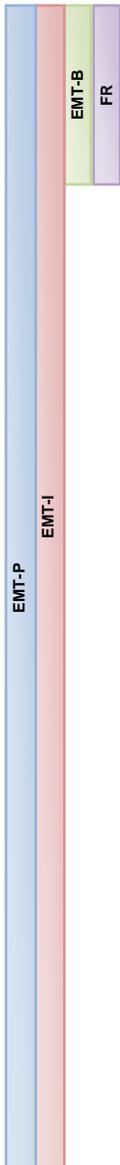
ONDANSETRON (Zofran®)

- a. Adult: [4mg] IV/IO/PO/IM
- b. Pediatric: [0.05-0.1 mg/kg] IV/IO/PO/IM (Max dose 4mg)

PROMETHAZINE (Phenergan®)

- a. Adult: [12.5-25 mg] PO/IV/IO/IM

Note: Ketorolac is best reserved for patients with a history concerning for kidney stones and should not be used in anyone who has suspected bleeding (for example – trauma, abdominal aortic aneurysm rupture, gastrointestinal bleeding). This medication should not be used in patients with known or suspected kidney dysfunction.



ALLERGIC REACTION/ANAPHYLAXIS

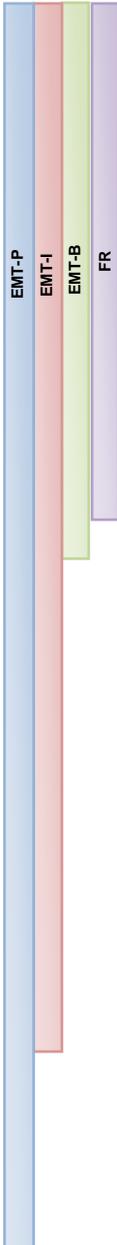
DESCRIPTION OF CONDITION

Signs and symptoms may include any one or all of the following: wheezing associated with bronchoconstriction and/or stridor associated with upper airway edema, tachycardia, tachypnea, dyspnea, diminishing lung sounds, diaphoresis, tripod positioning, facial swelling, hives, shock and perhaps a history of severe allergies. Respiratory involvement may or may not occur in all cases of anaphylaxis. Be aware of "silent chest" presentation in cases of severe respiratory distress associated with poor air exchange.

EMPHASIS ON PATIENT CARE

Maintenance of airway, adequate oxygenation, adequate perfusion

PRE-HOSPITAL MANAGEMENT

- 
1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
 2. If transport capable, rapidly transport the patient to an appropriate medical facility. Consider ILS or ALS intercept.
 3. History, physical exam, vital signs
 4. For insect bites, remove stinger with scraping motion; do not pinch the stinger with tweezers.
 5. If patient exhibits respiratory distress administer **EPINEPHRINE 1:1,000**:
 - a. Adult - [0.3mg] IM using a pre-measured, pre-filled device or 0.3 ml dose limiting syringe – FR and Basic.
 - b. Pediatric - [0.01mg/kg] IM using a pre-measured, pre-filled Pediatric device, or 0.3 dose limiting syringe – FR and Basic. Not to exceed the adult dose.
 - c. If signs of anaphylaxis and hypoperfusion persist following the first dose of epinephrine, additional IM epinephrine can be repeated every 5-15 minutes at the doses noted above
 - d. Consider administration of **ALBUTEROL** [5.0 mg], (DuoNeb® 2.5mg Albuterol+0.5mg Ipratropium) or **LEVALBUTEROL** [0.63–1.25 mg]
 6. Consider administration of **IPRATROPIUM** [0.5 mg]
 7. Enroute, initiate a large bore IV/IO of an isotonic solution. Titrate to maintain adequate perfusion.
 8. Consider **DIPHENHYDRAMINE**
 - a. Adult - [25-50 mg] slow IV/IO at a rate of 1ml/min. or deep IM.
 - b. Pediatric - [1mg/kg] slow IV/IO or deep IM with a max dose of 50 mg.
 9. Consider administration of **SOLUMEDROL**:
 - a. Adult - [125mg] IV/IO (Max dose 125mg)
 - b. Pediatric - [1-2mg/kg] IV/IO (Max dose 125mg)
- Or
- Consider administration of **DEXAMETHASONE**
- a. Adults – [10 mg] IV/IO/IM
 - b. Pediatrics – [0.6 mg/kg] (range 0.15-1.0 mg/kg) IV/IO/IM (Max dose of 10mg)
10. If there is a marked decrease in BP, or the patient is displaying signs & symptoms of respiratory and/or cardiovascular collapse (paramedic only):
 - a. Administer **EPINEPHRINE 1:10,000** Mini-bolus
- Or
- b. Administer **EPINEPHRINE drip**

(Continued next page)

ALLERGIC REACTION/ANAPHYLAXIS (Cont.)

11. Consider an **EPINEPHRINE** IV drip (0.5 mcg/kg/minute) when cardiovascular collapse (hypotension with altered mental status, pallor, diaphoresis and/or delayed capillary refill) is present despite repeated IM doses of epinephrine in conjunction with at least 60 ml/kg isotonic fluid boluses.

Note: Cardiac monitoring (at all levels) should be done for all patients receiving Epinephrine.

ALTERED LEVEL OF CONSCIOUSNESS

DESCRIPTION OF CONDITION

Signs and symptoms may include any or all of the following: limited or no response to verbal or painful stimuli, inappropriate responses, irrational behavior and unable to ascertain causation.

EMPHASIS ON PATIENT CARE

Airway management, adequate perfusion, identify treatable causes

PRE-HOSPITAL MANAGEMENT



1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated. If occult trauma is possible, Consider spinal immobilization.
2. History, physical exam, vital signs
3. Cardiac monitoring, and obtain a 12 - lead EKG, if possible, for documentation
4. Consider possible causes:

a. Diabetic Emergency	f. Dehydration
b. Overdose	g. Syncope
c. CVA/TIA	h. Hypo/Hyperthermia
d. AMI	i. Shock or hypoperfusion
e. Head Trauma	j. CNS Infection
5. Perform glucometry
 - a. If the glucose is < 60 mg/deciliter and/or associated signs and symptoms of Hypoglycemia, follow [Diabetic Emergencies Guidelines](#).
6. If narcotic overdose is suspected, follow [Overdose/ Poisoning Guidelines](#).
7. If transport capable, transport the patient without delay to an appropriate medical facility.
8. If no ILS/ALS capability, radio for ILS or ALS intercept.
9. If patient exhibits signs and symptoms of shock, follow [Shock Guidelines](#).
10. Active cooling or warming if indicated.
11. If cardiac suspected, follow specific [Cardiac Emergency Guidelines](#)
12. Enroute, initiate IV/IO access (determined by patient condition) of an isotonic fluid, infused at flow rate to maintain adequate vital signs.

Note: In cases of altered mental status as a result of narcotic overdose, after Naloxone administration, the patient may rapidly awaken, become combative and experience vomiting. This should be Considered prior to insertion of an advanced airway device.

BEHAVIORAL / PSYCHIATRIC EMERGENCIES

DESCRIPTION OF CONDITION

The patient will be alert, but may have an altered mental status with associated inappropriate actions. Signs and symptoms may include: inappropriate appearance and attitude, confused speech or inability to formulate thoughts, threatened or attempted suicide, depression, aggression, hallucinations, hysteria, extreme anxiety or any action that could cause harm to the patient or others.

EMPHASIS ON PATIENT CARE

Provider and patient safety, transport decisions

PRE-HOSPITAL MANAGEMENT

- 
1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
 - a. If evidence of immediate danger exists:
 - i. Protect yourself and others (leave the scene, if necessary).
 - ii. Summon law enforcement.
 - iii. Protect the patient from injury. Involuntary restraint should be Considered if indicated by patient behavior and if necessary to render care and protect rescuers.
 - b. If no evidence of immediate danger exists.
 - i. Remove the patient from stressful environment if possible.
 - ii. **ONE EMS** provider should be responsible for Assessing, treating, and communicating with patient.
 - iii. The **SAME EMS** provider should remain with patient during transport.
 2. History, physical exam, vital signs
 - a. Pertinent medical history, if possible including:
 - i. Prescription and non-prescription drugs.
 - ii. Underlying medical cause, for example hypoxia, hypoglycemia, trauma, metabolic derangement.
 - iii. Previous psychiatric problems
 3. Consider and treat all possible trauma/medical causes for aberrant behavior per guidelines. Be aware that medical illnesses including hypoglycemia, hypoxia, stroke, head injury, CNS infection, etc. may mimic psychiatric illness. Do not assume the patient's condition is purely psychiatric.
 4. If transport capable, transport with patient consent.
 - a. Transport the patient in position of comfort, if not contraindicated by injuries.
 - b. Keep environment as quiet as possible.
 5. If transport capable, transport without consent.
 - a. Any person may be transported to an appropriate health care facility by an EMT, under medical direction, when the EMT makes a good faith judgment that the person is incapable of making an informed decision about his own safety or need for medical attention and is reasonably likely to suffer disability or death without the medical intervention available at such a facility. Follow: REFUSAL – [Involuntary Restraint and Transport Guidelines](#).
 - b. Law enforcement officers may transport the patient directly to a mental health facility if vital signs are within normal limits and the EMT does not suspect any other underlying traumatic or medical causes.

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BEHAVIORAL / PSYCHIATRIC EMERGENCIES

6. Verbal de-escalation measures should be attempted first, prior to physical or chemical restraints. Use physical restraints should only be done for protection of EMS providers or the patient.
7. Chemical restraints with benzodiazepines may be Considered if the patient remains a danger to him or herself or to EMS personnel after attempts at verbal de-escalation. This may be done prior to physical restraints if EMS personnel determine that it is safer to attempt medications first. Consider:

MIDAZOLAM

- a. Adult:
 - i. [5-10 mg] IN/IM. Max single dose is 10mg. May repeat once after 10 minutes
 - ii. [2 to 5 mg] SIVP/IO. Repeat every 5 minutes as needed up to 10mg.
8. All patients who receive physical or chemical restraints must be continuously observed by ALS personnel. The use of sedating medications requires cardiac monitoring, end tidal CO₂ monitoring if available, and frequent reassessment of the patient's airway and ventilation status.

EMT-I

EMT-B

FR

EMT-P

DIABETIC EMERGENCIES

DESCRIPTION OF CONDITION

Signs and symptoms may include any or all of the following: Hypoglycemia - altered mental state, seizures, unconscious, drooling, skin is pale and moist, confused, agitated, sudden onset, headache. Hyperglycemia – hot skin, acetone/fruity breath, Kussmaul respirations, polyuria, polydipsia, and polyphagia. There may be a history of recent injury, illness or unusual exertion. Though usually occurring in IDDM, this may also occur in NIDDM. Consider other causes of symptoms.

EMPHASIS ON PATIENT CARE

Maintain adequate perfusion, glucose replacement if hypoglycemic, appropriate hydration for hyperglycemia.

PRE-HOSPITAL MANAGEMENT

- 
1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
 2. History, physical exam, vital signs
 3. Perform glucometry, if available.
 - a. If **HYPOGLYCEMIC** (glucose < 60 mg/dl) with related symptoms; administer one of the following to increase blood sugar:
 - i. If the patient is conscious, able to swallow and able to self-protect the airway, administer **ORAL GLUCOSE** [12-25 gm]. Pediatric dose is 0.5-1 gm/kg
 - ii. If the patient is unconscious
 - 1) Initiate an IV/IO of an isotonic solution at TKO
 - 2) Administer **50% DEXTROSE** [12.5-25g], IV/IO into a free-flowing line.
 - 3) Pediatric dose is **25% DEXTROSE** [1 gm/kg] of a solution (dilute 50cc D50 1:1 with sterile water, give 2-4 ml/kg slow IV/IO).
 - 4) In neonates (BGL <45 mg/dl), use a **10% DEXTROSE** solution (dilute 50cc D50 in 500ml bag of D5W) at [0.5-1.0 gm/kg].
 - 5) Repeat BGL in 5 minutes. Repeat as needed to keep glucose levels > 60 mg/dl.
 - iii. If unable to obtain IV/IO access, Consider **GLUCAGON** [0.5-1 mg], IM

Note: After Glucagon administration, it is imperative that the patient receives supplemental glucose, orally (if conscious), or by IV access when obtainable. Glucagon will not work in all patients, especially those with liver disease. Patients receiving Glucagon must be transported to a medical facility.
 - iv. Search for causes of hypoglycemia.
 - v. If the patient continues to be symptomatic, transport to closest appropriate receiving facility.
 - vi. Mandatory MCEP for refusal is required when the patient is not a diabetic, the patient is on oral hypoglycemic medications in the Sulfonylurea drug class or takes intermediate and/or long-acting insulin.
 - vii. If the patient's symptoms are resolved, consider release without transport if all of the following are true:
 - 1.) Patient displayed an adequate response (normal vital signs, normal mentation, and a BGL within normal limits) to **one** dose of dextrose
 - 2.) Patient has no acute co-morbid conditions such as: chest pain, shortness of breath, seizures, intoxication, also received naloxone. liver disease, kidney disease, or febrile illness.

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DIABETIC EMERGENCIES (cont.)



- 3) Patient is only on a short acting insulin or insulin analog, or on a pre-mixed insulin analog (e.g. NovoLog® 70/30 or Humalog® 70/30)
 - 4) Patient does **NOT** use oral medications to control blood glucose
 - 5) Patient is not actively vomiting.
 - 6) Patient can promptly obtain and will eat a carbohydrate meal
 - 7) Patient or legal guardian refuses transport or patient and EMS providers agree transport not indicated
 - 8) Patient is released to a competent adult for observation for 2-3 hours.
- b. If hyperglycemia (glucose > 250 mg/dl) with symptoms of dehydration, vomiting, or altered level of consciousness or registers "HIGH":
- i. Protect the patient's airway, administer high-flow oxygen and assist ventilations, if indicated.
 - ii. Initiate an IV/IO of an isotonic solution and bolus at 500-1,000cc for adult patients if associated dehydration or signs of poor perfusion and no signs of volume overload, otherwise TKO.
 - iii. If transport capable, transport to the closest appropriate medical facility.
4. If thiamine deficiency is suspected (i.e. chronic alcohol consumption, radiation therapy, malnourishment) Consider **THIAMINE** [100 mg] slow IV/IO or IM (adult), [10-25 mg] slow IV/IO or IM (Pediatric).

POISONING / OVERDOSE

DESCRIPTION OF CONDITION

Evidence of inhalation, ingestion, or injection of a substance causing an untoward effect. Signs and symptoms may include any one or all of the following: respiratory depression, apnea, tachycardia, bradycardia, cardiac arrhythmias, altered mental status, unconsciousness, nausea, vomiting, and cardiac arrest.

EMPHASIS ON PATIENT CARE

Airway management, adequate oxygenation and maintain adequate perfusion. Remove patient from hazardous material environment/decontaminate to remove continued sources of absorption, ingestion, inhalation, or injection.

PRE-HOSPITAL MANAGEMENT



1. Make sure the scene is safe.
2. Consider Body Substance Isolation (BSI) or appropriate personal protective equipment (PPE)
3. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
4. History, physical exam, vital signs
 - a. If medication overdose:
 - i. Amount of and type
 - ii. Time taken
 - iii. Accidental vs. intentional
 - iv. Mixed OD
 - v. History of underlying illness, if appropriate
 - vi. Treatment prior to arrival
 - b. If poisoning:
 - i. Identify substance and quantity taken
 - ii. Method taken
 - iii. Underlying conditions
 - iv. Has the patient vomited?
5. Poison center should be engaged as early as reasonably possible to add in appropriate therapy and to track patient outcomes to improve knowledge of toxic effects. The national 24-hour toll-free telephone number to poison control centers is (800) 222-1222, and it is a resource for free, confidential expert advice from anywhere in the United States.
6. Gather all drug containers and take them with the patient to the hospital.
7. If transport capable, transport the patient as soon as possible to an appropriate medical facility.
8. Initiate IV/IO access for infusion of lactated ringers or normal saline and obtain blood samples if EMS management might change value (e.g. glucose, lactate, cyanide)
9. Fluid bolus (20 ml/kg) if evidence of hypoperfusion.

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POISONING / OVERDOSE (Cont.)

- 
10. Ingestion of caustic substances (acids and alkali)
- Symptomatic dystonia, extrapyramidal signs or symptoms, or mild allergic reactions
Consider administration of **DIPHENHYDRAMINE**
 - Adult: 25 mg IV/IO or IM
 - Pediatric: 1 mg/kg IV/IO or IM (maximum single dose of 25 mg)
11. If narcotic overdose is suspected with serious signs and symptoms:
- Administer **NALOXONE**:
 - Adult: [0.4 mg – 2.0 mg] IM/SQ (2.0 mg total dose). May be repeated at 2 – 3 minutes, if needed. [2mg (1mg per naris)] IN
 - Pediatric: [0.1 mg/kg] IM/SQ not to exceed 2.0 mg
 - Neonate: [0.1 mg/kg] IM/SQ not to exceed 2.0 mg
 - If the patient remains unresponsive, secure definitive airway, (follow [Respiratory Arrest/Distress Guidelines](#)) and check BGL.
- Note:** Much higher doses should be given to patients with suspected propoxyphene (Darvon®), pentazocine (Talwin®), and Fentanyl overdoses. Contact MCEP for higher doses.
12. If carbon monoxide poisoning is suspected:
- Remove patient from toxic environment
 - Apply a cardiac monitor, examine rhythm strip for arrhythmias, and Consider obtaining a 12-lead EKG
 - Check blood glucose level
 - Monitor pulse oximetry and ETCO₂ for respiratory decompensation
 - 100% oxygen via non-rebreather mask or bag valve mask
13. If organophosphate poisoning or other chemical nerve agent is suspected, i.e. increased salivation, lactation, urination, defecation, and gastrointestinal cramping and emesis:
- Administer **ATROPINE** [2 mg] and **PRALIDOXIME (2PAM)** [600 mg] using an IM auto-injector device.
(**Paramedic Only:** If auto-injector device is unavailable, administer **ATROPINE** [2.0 mg – until symptoms abate] IV/IO/IM.)
14. If cyanide poisoning is suspected, Consider **HYDROXOCOBALAMIN (Cyanokit®)**
- Adult: 5 grams IV/IO (70 mg/kg) over 30 minutes
 - Pediatric: [70 mg/kg] IV/IO over 30 minutes (max dose of 5 grams)
15. If tricyclic anti-depressant (TCA) or salicylate (aspirin) overdose is suspected with serious signs/symptoms, widening of the QRS complexes, PVC's, hypotension, seizures, dysrhythmias, or a combination of any of these, Consider **SODIUM BICARBONATE** [1 mEq/kg] slow IV/IO.
16. If patient presents with a calcium channel blocker overdose:
- Adult - administer **CALCIUM CHLORIDE** (CaCl₂) 10% [10-20 ml] slow IV/IO. Do not exceed 2ml/min.
 - Pediatric - administer **CALCIUM CHLORIDE** (CaCl₂) 10% [0.1 – 0.2 ml/kg] slow IV/IO. Do not exceed 2 ml/min.

NAUSEA/VOMITING**DESCRIPTION OF CONDITION**

The patient is experiencing discomfort secondary to nausea and vomiting.

EMPHASIS ON PATIENT CARE

Decrease discomfort secondary to nausea and vomiting

PRE-HOSPITAL MANAGEMENT

1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
2. History and physical examination focused on potential causes of nausea and vomiting (e.g. gastrointestinal, cardiovascular, gynecologic)
3. Consider Acupressure
4. Establish IV/IO access for a medication line if needed.
5. Consider an anti-emetic for nausea and/or vomiting:

ONDANSETRON (Zofran®)

- a. Adult: [4mg] IV/IO/PO/IM
- b. Pediatric: [0.05-0.1 mg/kg] IV/IO/PO/IM (Max dose 4mg)

PROMETHAZINE (Phenergan®)

- a. Adult: [12.5-25 mg] PO,IV/IO, IM
6. Consider Normal Saline bolus of 500 ml unless contraindicated (e.g. h/o CHF, renal failure)
 - a. May repeat as indicated
 - b. Consider 10 – 20 ml/kg IV/IO fluid unless contraindicated
7. If transport capable, transport the patient to an appropriate medical facility

Note: Ondansetron is preferred in children for the treatment of nausea and vomiting.

Note: For dystonia/ akathisia induced by an anti-emetic administer **DIPHENHYDRAMINE:**

- a. Adult: 25-50 mg IV/IO/IM/PO
- b. Pediatric: 1-2 mg/kg IV/IO/IM/PO (maximum 50 mg)

Note: Nausea and vomiting are symptoms of illness – in addition to treating the patient's nausea and vomiting a thorough history and physical are key to identifying what may be a disease in need of emergent treatment (e.g. bowel obstruction, myocardial infarction, pregnancy)



SEIZURE

DESCRIPTION OF CONDITION

Most seizures spontaneously end within 5 minutes with a postictal state of varying length, with unconsciousness or altered LOC. These seizures do not require advanced level intervention. Status epilepticus exists when witnessed seizure activity continues for > 10 minutes or multiple seizures recur without a return to full mental capacity. These types of seizures do require paramedic level intervention. Signs and symptoms may include any one or all of the following: may experience an aura, violent spasms of muscles lasting up to 3 - 5 minutes, incontinence, increased salivation, postictal phase, possible history of drug usage for seizures.

EMPHASIS ON PATIENT CARE

Maintain adequate airway, adequate oxygenation, protect patient from harm. Cessation of seizures in the prehospital setting, minimizing adverse events in the treatment of seizures in the prehospital setting and minimizing seizure recurrence during transport.

PRE-HOSPITAL MANAGEMENT

- 
1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
 2. History, physical exam, vital signs
 3. Apply oxygen via face mask or non-rebreather mask. Administer bag-valve mask ventilation if oxygenation/ventilation are compromised.
 4. If transport capable, initiate transport to an appropriate medical facility, Consider ILS/ALS intercept.
 - a. Determine blood glucose level
 - i. Check capillary blood glucose level.
 - ii. If < 60 mg/dl, refer to [Diabetic Emergencies](#) guideline for treatment recommendations.
 5. Initiate a large bore IV/IO of an isotonic solution at a TKO rate if IV medications are needed.
 6. Consider administration of an anticonvulsant medication if seizure is prolonged (greater than 5 minutes) or if more than two seizures reoccur without an intervening lucid period.

MIDAZOLAM

- a. Adult:
 - i. [5-10 mg] IN/IM. Max single dose is 10mg. May repeat once after 10 minutes
 - ii. [2 to 5 mg] SIVP/IO. Repeat every 5 minutes as needed up to 10mg.
- b. Pediatric:
 - i. [0.2 mg/kg] IN/IM. Max single dose is 5mg. May repeat once after 10 min.
 - ii. [0.1 mg/kg] SIVP/IO. Repeat every 5 minutes as needed, up to 10mg.

DIAZEPAM

- a. Adults
 - i. [2-10 mg] IV/IO/IM, slow with IV running open
- b. Pediatric:
 - i. [0.05–0.1 mg/kg] IV/IO
 - ii. Apnea in children after diazepam administration may occur.

(Continued next page)

SEIZURE (Cont.)

7. If there is a concern for Febrile Seizures, Consider the following interventions after stopping the seizure:
 - a. Removal of excess layers of clothing
 - b. Administer Acetaminophen [15 mg/KG PO, maximum dose of 650mg, if able to swallow.
 8. If the patient is in the third trimester of pregnancy or recently post-partum, Consider magnesium sulfate. Refer to [Childbirth Complications Guidelines](#)
 9. Cardiac monitoring
- Note:** Buccal, intranasal, or intramuscular routes for benzodiazepines are preferred as first line for administration of anticonvulsants. Rectal administration of anticonvulsants is not recommended. Intravenous (IV) placement should follow the initial treatment of seizures.

SUSPECTED STROKE / TRANSIENT ISCHEMIC ATTACK

DESCRIPTION OF CONDITION

Signs and symptoms may include: Unilateral facial droop, or any of the following: altered mental status, unilateral weakness or paralysis, difficulty maintaining oral secretions, unequal pupils or visual disturbance, difficulty in speaking, gait or proprioception disturbances, elevated BP, headache, and/or seizures. Patient may have a past history of CVA or TIA.

EMPHASIS ON PATIENT CARE

Maintain adequate perfusion, adequate oxygenation, and transport

PRE-HOSPITAL MANAGEMENT



1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
2. Provide oxygen only if O2 saturation < 94%. Titrate to > 94%
3. If seizure activity present, refer to [Seizure](#) guideline
4. Perform serial pre-hospital stroke Assessments (Cincinnati, Los Angeles, FAST) and LVO scale (RACE, C-STAT, LAMS)
5. History – In addition to standard past and current medical history, establish timeline of onset of symptoms, patient's last known well or last seen at their baseline, blood glucose level, blood thinner usage (especially if in addition to or other than aspirin or clopidogrel), presence or lack of headache/speech difficulties, weakness in arms or legs, etc.
6. If transport capable, transport the patient to an appropriate medical facility, preferably a Stroke Center. Early notification of the facility is important.
7. Consider ALS intercept or utilization of aeromedical resources if symptomatic, and Consider bypassing a non-stroke capable facility.
8. Enroute, initiate an IV/IO of isotonic solution at a TKO rate. **(EMT-I and Paramedic only).** Avoid multiple IV attempts
9. Acquire 12-lead EKG if possible

Note: Patients presenting with signs/symptoms of stroke should be transported to the nearest stroke center or, if not available, an acute stroke ready hospital.

Note: Do not treat hypertension in the pre-hospital setting.

SYNCOPE (FROM UNKNOWN CAUSE)

DESCRIPTION OF CONDITION

Syncope, “Fainting”, is indicated by both the loss of consciousness and the loss of postural tone. Syncope typically is abrupt in onset and resolves equally quickly. EMS providers may find the patient awake and alert on initial evaluation.

EMPHASIS ON PATIENT CARE

1. Stabilize and resuscitate when necessary
2. Initiate monitoring and diagnostic procedures
3. Transfer for further evaluation

PRE-HOSPITAL MANAGEMENT

1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
2. History, including conditions leading to the event, physical exam, and vital signs
3. Consider and rule out conditions including: (See specific guidelines)
 - a. [Diabetic Emergency](#)
 - b. [Poisoning/Overdose](#)
 - c. [Cardiac Emergency](#)
 - d. [Stroke/TIA](#)
 - e. [Head Injury](#)
 - f. [Bleeding](#)
 - g. [Dehydration](#)
 - h. [Seizure](#)
4. Provide oxygen only if O2 saturation < 94%. Titrate to > 94%
5. Evaluate for hemorrhage and treat for shock if indicated
6. Evaluate for trauma and Consider spinal immobilization if indicated.
7. Obtain blood glucose and treat per Hypoglycemia/Hyperglycemia guideline as indicated
8. If transport capable, transport the patient to an appropriate medical facility.
9. Enroute, initiate an IV/IO of an isotonic solution and infuse at a flow rate to maintain adequate vital signs. **(EMT-I and EMT-P only)**
10. Cardiac Monitor and treat arrhythmias (if present refer to appropriate guideline)
11. 12-lead EKG

Note: By being most proximate to the scene and to the patient’s presentation, EMS providers are commonly in a unique position to identify the cause of syncope. Consideration of potential causes, ongoing monitoring of vitals and cardiac rhythm as well as detailed exam and history are essential pieces of information to pass onto hospital providers.

Note: All patients suffering from syncope deserve hospital level evaluation, even if they appear normal with few complaints on scene.



RESPIRATORY ARREST/DISTRESS

GENERAL RESPIRATORY GUIDELINES

DESCRIPTION OF CONDITION PATIENT PRESENTATION

The patient is not breathing, not breathing adequately, or experiencing agonal respirations with inadequate rate and/or depth.

EMPHASIS ON PATIENT CARE

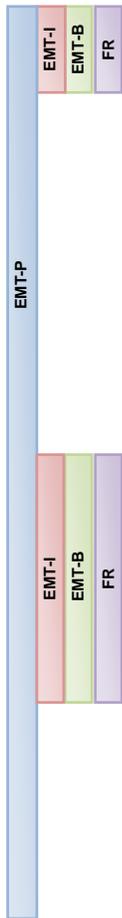
Recognition of respiratory distress, maintenance of a patent airway and provide effective oxygenation and ventilation.

PRE-HOSPITAL MANAGEMENT

- 
1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
 - a. History: Assess for
 - i. Time of onset of symptoms
 - ii. Associated symptoms
 - iii. History of asthma or other breathing disorders
 - iv. Choking or other evidence of upper airway obstruction
 - v. History of trauma
 - b. Physical Examination: Assess for
 - i. Shortness of breath
 - ii. Abnormal respiratory rate and/or effort
 - iii. Use of accessory muscles
 - iv. Quality of air exchange, including depth and equality of breath sounds
 - v. Wheezing, rhonchi, rales, or stridor
 - vi. Cough
 - vii. Abnormal color (cyanosis or pallor)
 - viii. Abnormal mental status
 - ix. Evidence of hypoxemia
 - x. Signs of a difficult airway (short jaw or limited jaw thrust, small thyromental space, upper airway obstruction, large tongue, obesity, large tonsils, large neck, craniofacial abnormalities, excessive facial hair)
 2. If respirations are inadequate or absent, maintain or establish airway patency by:
 - a. Non-Invasive Ventilation Techniques
 - i. Positioning maneuvers as indicated by patient condition
 - ii. Use continuous positive airway pressure (CPAP), bi-level positive airway pressure (BiPAP), intermittent positive pressure breathing (IPPB), humidified high-flow nasal cannula (HFNC), and/or bi-level nasal CPAP for severe respiratory distress or impending respiratory failure. (CPAP only at First Responder level)
 - iii. Use bag-valve mask (BVM) ventilation with supplemental oxygen in the setting of respiratory failure or arrest.
 - b. Oropharyngeal airways (OPA) and nasopharyngeal airways (NPA)
 - i. Consider the addition of an NPA and/or OPA to make BVM more effective, especially in patients with altered mental status.

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GENERAL GUIDELINES (Cont.)



- c. Supraglottic airways (SGA) or extraglottic devices (EGD)
 - i. Consider the use of an SGA or EGD if BVM is not effective in maintaining oxygenation and/or ventilation.
- d. Endotracheal Intubation (for patients 13 years of age and older)
 - i. When less-invasive methods (BVM, SGA/EGD placement) are ineffective, however, use endotracheal intubation to maintain oxygenation and/or ventilation
 - ii. Other indications may include potential airway obstructions, severe burns, multiple traumatic injuries, altered mental status or loss of normal protective airway reflexes
 - iii. Monitor clinical signs, pulse oximetry, and capnography for the intubated patient
 - iv. Video laryngoscopy enhances intubation success rates and should be used when available. Fiberoptic-assisted endotracheal intubation may be needed if the vocal cords cannot be visualized by other means.
- e. Airway adjuncts should be monitored for proper placement.
- f. Pulse oximetry (including room air SAO₂), end-tidal CO₂ detectors (ETCO₂) and capnometry/capnography is recommended.
- g. Suction (oropharynx, nasopharynx, trachea or stoma)
- h. If transport capable, transport to the closest appropriate hospital for airway stabilization should occur when respiratory failure cannot be successfully managed in the prehospital setting.
- i. Gastric decompression may improve oxygenation and ventilation, so it should be Considered when there is obvious gastric distention or when more invasive airway management is required.
- j. When patients cannot be oxygenated/ventilated effectively by previously mentioned interventions, the provider should Consider cricothyroidotomy if the risk of death for not escalating airway management seems to outweigh the risk of a procedural complication.

Note: Avoid excessive pressures or volumes during BVM

Note: Once a successful SGA/EGD placement or intubation has been performed, obstruction or displacement of the tube can have further deleterious effects on patient outcome. Tubes should be secured with either a commercial tube holder or tape.

ASTHMA, COPD (EMPHYSEMA, CHRONIC BRONCHITIS)

DESCRIPTION OF CONDITION

Any constriction of the small airways of the lungs resulting in broncho-constriction, increased secretions and wheezing. The patient will almost always have a pertinent history and will be suffering from some degree of dyspnea. Wheezing may not be present and lack of wheezing with decreasing breath sounds is often a sign of impending respiratory arrest. Signs and symptoms may include any or all of the following: inspiratory wheezing, rapid and/or shallow respiratory rate, nasal flaring, and use of accessory muscles. Patient may complain of difficulty in breathing, and cyanosis may be present. LOC may be decreased, diminishing or silent bilateral lung sounds, wheezing, stridor, and/or sternal retractions. The patient may be tachycardic, diaphoretic, with tripod positioning. "See Saw" breathing may be present in children.

EMPHASIS ON PATIENT CARE

Airway maintenance, alleviate respiratory distress due to bronchospasm, adequate oxygenation. Promptly identify and intervene for patients who require escalation of therapy. Deliver appropriate therapy by differentiating other causes of respiratory distress.

PRE-HOSPITAL MANAGEMENT

- 
1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
 2. History, physical exam, vital signs
 3. Monitor pulse oximetry and end-tidal CO₂ (ETCO₂) as an adjunct to other forms of respiratory monitoring.
 4. Consider a 12-lead EKG after treating the respiratory distress if there are concerns for cardiac involvement and/or ischemia.
 5. Give supplemental oxygen. Escalate from a nasal cannula to a simple face mask to a non-rebreather mask as needed, in order to maintain normal oxygenation.
 6. Suction the nose and/or mouth (via bulb, Yankauer, suction catheter) if excessive secretions are present.
 7. If patient is in moderate to severe respiratory distress and acute asthma or emphysema is suspected:
 - a. Adults - administer **ALBUTEROL** [5.0 mg] or **LEVALBUTEROL** [0.63 – 1.25 mg], diluted in 3 cc of a sterile isotonic solution, over a 5 - 15 minute period. Some patients may need continuous nebulizer treatment during the entire transport. Providers are encouraged to deliver nebulized **ALBUTEROL** via bag valve mask for patients who are unable to provide effective respiratory exchange. Do not delay transportation waiting for the medication to take effect.
 - b. Pediatric - administer **ALBUTEROL** [1.25-2.5 mg] or **LEVALBUTEROL** [0.31-.63], diluted in 3 cc of a sterile Isotonic Solution over a 5-15 minute period, repeated as needed.
 - c. Consider **IPRATROPIUM** (Basic, Intermediate & Paramedic only) [250-500 mcg (0.25 - 0.5mg)] in conjunction with Albuterol. Not recommended for Pediatrics.
 8. If transport capable, initiate transport to an appropriate medical facility. Consider ILS or ALS intercept.

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ASTHMA, COPD (EMPHYSEMA, CHRONIC BRONCHITIS) (Cont.)

9. Initiate an IV/IO of isotonic solution if there are clinical concerns of dehydration in order to administer fluids, or when administering IV medications.

a. Consider administering:

METHYLPREDNISOLONE

- i. Adult [2mg/kg, max dose 125mg] IV/IO
- ii. Pediatric [2mg/kg, max dose 125mg] IV/IO

Or

DEXAMETHASONE

- i. Adults [10mg] IV/IO/IM
- ii. Pediatric [0.6mg/kg] IV/IO/IM, max dose 10mg.

10. If no improvement and the patient is refractory to other treatments, administer:

EPINEPHRINE

a. Adult - 1:1,000 - [0.3mg] IM using:

- i. Auto injector device
- ii. Pre-measured, pre-filled Pediatric device – FR and Basic.

b. Pediatrics – [0.01 mg/kg to a max dose of 0.3 mg] IM using:

- i. Pedi auto injector device
- ii. Pre-measured, pre-filled Pediatric device – FR and Basic.

11. Consider **MAGNESIUM SULFATE**

a. Adult: [2.0 gms] SIVP/IO in adults.

b. Pediatric: Status asthmaticus only – [25-50 mg/kg to a max of 2.0 grams] over 10-20 minutes

12. Improvement of Oxygenation and/or Respiratory Distress with Non-invasive Airway Adjuncts

a. Non-invasive positive pressure ventilation via continuous positive airway pressure (CPAP) or biphasic positive airway pressure (BiPAP – Paramedic only) should be administered for severe respiratory distress.

b. Bag-valve-mask ventilation should be utilized in children with respiratory failure.

13. Supraglottic Devices and Intubation (for patients 13 years of age and older)

a. Supraglottic devices, and intubation should be utilized only if bag-valve-mask ventilation fails. The airway should be managed in the least invasive way possible.

Note: Do not delay transport while administering Albuterol. You may continue treatment Enroute to hospital. Monitor respiratory rate and depth closely.

Note: Avoid hyper-inflation of the chest and lungs during positive pressure ventilation.



CROUP

DESCRIPTION OF CONDITION

The most common age group affected is 1 to 3 years but this process can develop in any age patient. The onset is slow. Signs and symptoms are: hoarse voice, harsh “seal bark” cough, stridor upon inhalation, and high-pitched squeaking sounds may be present. In addition, other signs of respiratory distress may be present. Always Consider the possibility of foreign body aspiration.

EMPHASIS ON PATIENT CARE

Prevent agitation to the patient, airway management, and adequate oxygenation (humidified)

PRE-HOSPITAL MANAGEMENT

- 
1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
 2. Rule out other potential causes including:
 - a. Anaphylaxis
 - b. Asthma
 - c. Bronchiolitis (wheezing < 2 years of age)
 - d. Foreign body aspiration
 - e. Submersion/drowning
 3. Monitoring
 - a. Pulse oximetry and end-tidal CO₂ (ETCO₂) should be routinely used as an adjunct to other forms of respiratory monitoring.
 - b. Perform EKG only if there are no signs of clinical improvement after treating respiratory distress.
 4. Airway
 - a. Give supplemental oxygen. Escalate from a nasal cannula to a simple face mask to a non-rebreather mask as needed, in order to maintain normal oxygenation.
 - b. Suction the nose and/or mouth (via bulb, Yankauer®, or suction catheter) if excessive secretions are present.
 5. Inhaled Medications
 - a. **EPINEPHRINE** [Epi 1:1000 5ml] (equivalent to 0.5ml 2.25% racemic epi) nebulized. This should be administered by advanced life support (ALS) providers to all children in respiratory distress with signs of stridor at rest. This medication should be repeated at this dose with unlimited frequency for ongoing distress.
 - b. Humidified oxygen or mist therapy is **not** indicated.
 6. Medications
 - a. **DEXAMETHASONE**
 - b. Adult: [4-10 mg] PO/IV/IO/IM
 - c. Pediatric: [0.6 mg/kg] PO/IV/IO/IM to max dose of 10 mg should be administered to patients with suspected croup.
 7. Utility of IV Placement and Fluids
 - a. Defer IV placement unless needed for clinical concerns of shock administering IV medications.

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CROUP (Cont.)

8. Improvement of Oxygenation and/or Respiratory Distress with Non-invasive Airway Adjuncts
 - a. Continuous positive airway pressure (CPAP) should be administered for severe respiratory distress
 - b. Bag-valve-mask ventilation should be utilized in children with respiratory failure
9. Supraglottic Devices and Intubation (for patients 13 years of age and older)
 - a. Supraglottic devices and intubation should be utilized only if bag-valve-mask ventilation fails. The airway should be managed in the least invasive way possible.
10. If transport capable, initiate transport to an appropriate medical facility. Consider ALS intercept.
11. History, physical exam, vital signs
12. Do not attempt to intubate adults if there is adequate air exchange.

EPIGLOTTITIS

DESCRIPTION OF CONDITION

This process can develop in any age patient. The onset is usually rapid. Signs and symptoms are: Pain on swallowing, high fever (102 to 104) degrees Fahrenheit, drooling, mouth breathing, stridor upon inhalation, changes in voice quality, tripod positioning, chin and neck thrust forward. In addition, other signs of respiratory distress may be present. Since the development of Haemophilus B immunization, the incidence of epiglottitis has been reduced significantly, however it should still be considered for patients presenting with the usual signs and symptoms.

EMPHASIS ON PATIENT CARE

Prevent agitation to the patient, airway management, and adequate oxygenation (humidified)

PRE-HOSPITAL MANAGEMENT

- 
1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
 - a. Do not attempt to place anything, including airway adjuncts or fingers, in the patient's mouth. This may lead to complete airway block or bleeding into airway.
 - b. Allow the patient to maintain a position of comfort for optimal airway positioning
 2. If transport capable, rapidly and carefully transport the patient, allowing the patient to maintain a position of comfort, to the nearest medical facility. Consider ALS intercept.
 3. including: History, physical exam, and vital signs
 4. Do not attempt to intubate adults if there is adequate air exchange.
 5. Intubation may be very difficult due to swelling of the epiglottis and surrounding structures. Well-performed BVM ventilation can often provide adequate oxygenation until arrival at the hospital.

Note: Assisted ventilation of any type can agitate the patient causing complete airway obstruction. Judicious observation and intervention are best, reserving aggressive airway interventions for children who proceed to respiratory arrest.

OBSTRUCTED AIRWAY

DESCRIPTION OF CONDITION

The patient has a complete or partial obstruction of the airway due to a foreign body or as a result of swelling from anaphylaxis, croup, or epiglottitis. The patient may have an unknown illness or injury and cannot be ventilated after the airway has been properly opened.

EMPHASIS ON PATIENT CARE

Rapid recognition of obstruction and the provision of necessary interventions to quickly and safely establish a patent airway, and provide effective oxygenation and ventilation.

PRE-HOSPITAL MANAGEMENT

- 
- 6. Responsive patients.
 - a. Able to talk or cough:
 - i. Reassure victim.
 - ii. Encourage coughing.
 - iii. Oxygen 15 LPM non-rebreather mask.
 - iv. Transport immediately
 - b. Unable to talk or cough, or weak ineffective cough:
 - i. Adults and Children ≥ 1 year - deliver repeated abdominal thrusts until obstruction relieved or the victim becomes unconscious. (Follow AHA Guidelines)
 - ii. Infants < 1 year of age, do alternating 5 back slaps and 5 chest thrusts. (Follow AHA Guidelines)
 - iii. Chest thrusts are preferred on advanced pregnancy and marked obesity.
 - iv. If transport capable, transport immediately and notify Medical Control
 - 7. Unresponsive patients
 - a. Adults and Children ≥ 1 year
 - i. Gently lower patient to the ground if you see that he is becoming unresponsive.
 - ii. Begin CPR, starting with chest compressions. Do not check for a pulse.
 - iii. Attempt ventilation. Each time you open the airway to give breaths, open the mouth wide and look for the object.
 - 1) If you see an object, attempt to remove it.
 - 2) If you do not see an object, continue CPR.
 - b. Infants < 1 year of age
 - i. Begin CPR, starting with chest compressions. Do not check for a pulse.
 - ii. Each time you open the airway to give breaths look for the object in the back of the throat.
 - 1) If you see an object, attempt to remove it.
 - 2) If you do not see an object, continue CPR
 - c. Do not perform finger sweeps.
 - d. After removal of obstruction, provide airway management and circulatory support as indicated. Initiate transport
 - e. If still obstructed, visualize with laryngoscope, remove obstruction with Magill forceps.
 - f. If unable to clear airway, Consider surgical cricothyrotomy in adults and children > 12 .

PULMONARY EDEMA

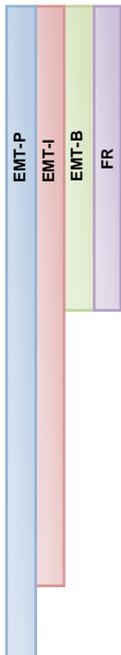
DESCRIPTION OF CONDITION

Patient presenting with signs, symptoms, and history of moderate to severe dyspnea and or poor perfusion secondary to pulmonary edema. Emphasis will be placed on complete Assessment of patient and history with treatment of the underlying cause if possible. Caution should be taken in getting a complete history since many of these patients are taking numerous medications for chronic conditions.

EMPHASIS ON PATIENT CARE

Decrease respiratory distress and work of breathing, maintaining adequate oxygenation and perfusion, and direct supportive efforts towards decreasing afterload and increasing preload.

PRE-HOSPITAL MANAGEMENT



1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
2. If transport capable, initiate transport to an appropriate medical facility. Consider ILS or ALS intercept.
3. History, physical exam, vital signs
4. Provide supplemental O₂ as needed to maintain O₂ saturation > 94%.
5. Consider CPAP
6. Consider BiPAP
7. Obtain 12-lead EKG after initial management of respiratory distress
8. Enroute, initiate an IV/IO of an isotonic solution and infuse at a KVO rate.
9. Closely monitor IV drip rate. **DO NOT OVERHYDRATE** the patient.
10. Evaluate dysrhythmias and treat per appropriate guidelines.
11. Consider **NITROGLYCERIN** [0.4mg] SL every 5 minutes, if patient is in severe distress, and BP > 100 systolic, HR > 60.
 - a. If chest pain is present or there is evidence of cardiac ischemia on the EKG, refer to [Chest Pain guideline](#).
12. Consider intubation for patients 13 years of age and older, positive pressure ventilation, and ET suctioning as needed.

SMOKE INHALATION INJURIES

DESCRIPTION OF CONDITION

Patient is exposed to a toxic environment and there is potential of inhalation of a toxic substance.

EMPHASIS ON PATIENT CARE

Removal of patient from the toxic environment and assure adequate ventilation, oxygenation and correction of hypo perfusion.

PRE-HOSPITAL MANAGEMENT



1. Primary Assessment - Assess airway, breathing and circulation and manage as indicate
2. Consider Body Substance Isolation (BSI) or appropriate personal protective equipment (PPE)
3. Remove patient from toxic environment
4. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
See [Respiratory Arrest/Distress Guideline](#)
5. History, physical exam, vital signs
6. 100% oxygen via non-rebreather mask or bag valve mask
7. Airway compromise must be anticipated in patients who have visible signs of smoke inhalation such as soot around the nostrils and mouth, burns to the face or neck or signs of respiratory distress.
8. Apply a cardiac monitor, examine rhythm strip for arrhythmias, and Consider obtaining a 12-lead EKG
9. Check blood glucose level
10. Monitor pulse oximetry and ETCO₂ for respiratory decompensation
11. If transport capable, transport the patient as soon as possible to an appropriate medical facility. Consider ALS.
12. Establish IV/IO access.
13. If Carbon Monoxide exposure is suspected, place the patient on high flow oxygen
14. If Cyanide exposure is suspected Consider:
 - HYDROXOCOBALAMIN (Cyanokit®)**
 - a. Adult: [5 grams] IV/IO (70 mg/KG) over 30 minutes
 - b. Pediatrics (<70kg): [70 mg/kg] IV/IO (max dose of 5 grams)

Note: Do not look for cherry red skin coloration as an indication of carbon monoxide poisoning as this is usually a morgue finding

Note: CO oximeter devices may yield inaccurate low/normal results for patients with CO poisoning. All patients with probable or suspected CO poisoning should be transported to the nearest appropriate hospital, based on their presenting signs and symptoms

SHOCK

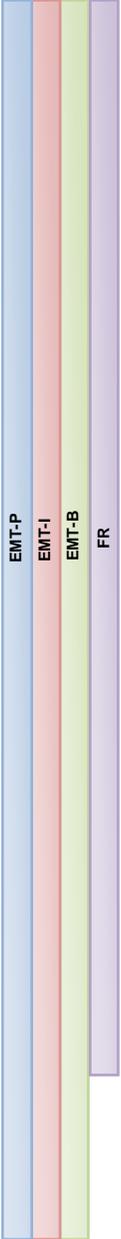
DESCRIPTION OF CONDITION

Signs and symptoms may include any or all of the following: disoriented, weak, tachycardia, systolic < 90, weak or absent radial pulses, cool and clammy skin, diaphoresis, pallor, nausea and vomiting, rapid and shallow respiration, and have a significant injury, mechanism of injury or illness.

EMPHASIS ON PATIENT CARE

Maintain adequate perfusion, oxygenation

PRE-HOSPITAL MANAGEMENT

- 
1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
 2. History, physical exam, vital signs including patient temperature.
 3. Signs of poor perfusion such as one or more of the following:
 - a. Altered mental status
 - b. Delayed/flash capillary refill
 - c. Hypoxia (pulse oximetry < 94%)
 - d. ETCO₂ < 25 mm Hg
 - e. Decreased urine output
 - f. Respiratory rate > 20 in adults or elevated in children (see normal vital signs table)
 - g. Hypotension for age (lowest acceptable systolic blood pressure in mm Hg):
 - i. < 1 year: 60
 - ii. 1-10 years: (age in years) (2) +70
 - iii. > 10 years: 90
 - h. Tachycardia for age
 - i. Weak, decreased or bounding pulses
 - j. Cool/mottled or flushed/ruddy skin
 4. Potential etiologies of shock:
 - k. Hypovolemia (poor fluid intake, excessive fluid loss (e.g. bleeding, hyperglycemia excessive diuretics, vomiting, diarrhea)
 - l. Sepsis (temperature instability: < 36 C or 96.8 F; > 38.5 C or 101.3 F; and/or tachycardia, warm skin, tachypnea
 - i. Hospital Sepsis Alert
 - m. Anaphylaxis (urticaria, nausea/vomiting, facial edema, wheezing)
 - n. Signs of heart failure (hepatomegaly, rales on pulmonary exam, extremity edema, JVD)
 5. Administer oxygen (titrate oxygen to SPO₂ ≥ 94%)
 6. ETCO₂ monitoring
 7. If transport capable, transport the patient without delay to an appropriate medical facility.
 8. If available, perform point of care testing; BGL and serum lactate (if available).
 9. Consider antipyretics for fever if able to tolerate PO.
 - a. Acetaminophen (15 mg/kg; max dose of 650 mg)
 - b. Ibuprofen (10 mg/kg; max dose of 600 mg) if over 6 months of age.

(Continued next page)

SHOCK (Cont.)

10. Establish IV access; if unable to obtain within 2 attempts or < 90 seconds, place an IO needle.
11. IV fluids (20 ml/kg isotonic fluid; max of 1 liter) over < 15 minutes,
- Use a pressure infuser or
 - Use a push-pull method of drawing up the fluid in a syringe and pushing it through the IV. May repeat up to 3 times
12. If there is a history of adrenal insufficiency, give:

METHYLPREDNISOLONE

- Adult [2mg/kg, max dose 125mg] IV/IO
- Pediatric [2mg/kg, max dose 125mg] IV/IO

Or

DEXAMETHOSONE

- Adults [10mg] IV/IO or IM
- Pediatric [0.6mg/kg] IV/IO or IM, max dose 10mg.

13. Consider Vasopressors (shock unresponsive to IV fluids)

- Cardiogenic shock, hypovolemic shock, obstructive shock:

NOREPINEPHRINE

- [4 mcg/min] IV/IO infusion, may increase by 2 mcg/min q 5 mins up to a max dose of 10 mcg/min. Recent evidence supports the use of norepinephrine as the preferred intervention.

DOPAMINE, [5-20 mcg/kg/minute] IV/IO**EPINEPHRINE**, [0.05-0.3 mcg/kg/minute] IV/IO

- Distributive shock (with the exception of anaphylactic shock):

NOREPINEPHRINE

- Adult [4 mcg/min] IV/IO infusion, may increase by 2 mcg/min q 5 mins up to a max dose of 10 mcg/min. Norepinephrine is the first-line drug of choice for neurogenic shock.

- For anaphylactic shock (see [Allergic Reaction/Anaphylaxis](#) guidelines).

TRAUMA EMERGENCIES

GENERAL TRAUMA GUIDELINES

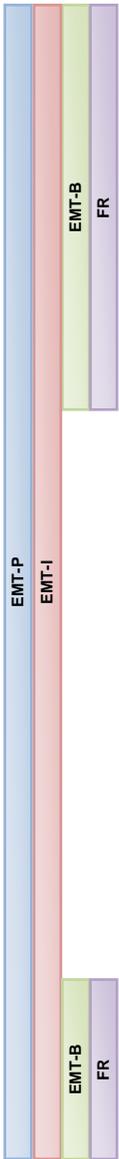
DESCRIPTION OF CONDITION

Variable signs and symptoms in a patient with a history of blunt or penetrating trauma.

EMPHASIS ON PATIENT CARE

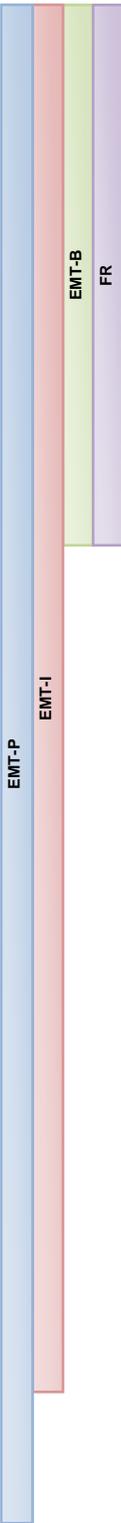
Rapid Assessment and management of life-threatening injuries, safe movement of patient to prevent worsening injury severity and rapid and safe transport to the closest, most appropriate facility

PRE-HOSPITAL MANAGEMENT

- 
1. Primary survey – Assess the ABCs and manage as indicated.
 - a. Hemorrhage control of life threatening bleeding (See External Hemorrhage/Extremity Hemorrhage Guideline)
 - b. Airway Patency
 - i. If the patient is unable to maintain their airway, insert an advanced airway (See [Respiratory Arrest/Distress Guidelines](#)) and monitor oxygen saturations and ETCO₂ if possible. Maintain spine precautions during any airway procedures.
 - ii. Do not place a nasopharyngeal airway in a patient with facial trauma
 - c. Breathing (See [Chest Injuries Guideline](#))
 - i. Place patient on oxygen to maintain O₂ saturations over 94%
 - ii. Monitor for the development of a tension pneumothorax
 - iii. Consider needle decompression (**Paramedic only**)
 - d. Circulation
 - i. Establish IV/IO access
 - ii. If the patient is hypotensive:
 - 1) ADULTS:
 - a) SBP > 90mmHg and normal mental status, no IV fluids required
 - b) SBP < 90mmHg, HR > 120 or altered mental status, administer 500ml to 1000ml bolus of normal saline and reassess
 - c) If a brain injury is suspected, fluid resuscitate to a SBP > 110
 - 2) PEDIATRICS:
 - a) If a child demonstrates tachycardia for their age with signs of poor perfusion (Low BP, greater than 2-second capillary refill, altered mental status, hypoxia, weak pulses, pallor, or mottled/cool skin), give a 20ml/kg bolus of normal saline and reassess.
 - e. Disability
 - i. Consider spinal motion restriction (See [Spinal Injury Guideline](#)) and Spinal Motion Restriction Procedure.
 - ii. Maintain a high index of suspicion for a Traumatic Brain Injury. Any occurrence of hypoxia or hypotension can worsen injury. (See [Head Injury Guideline](#))

(Continued next page)

MAJOR TRAUMA (Cont.)

- 
- f. Exposure
 - i. Rapidly identify sites of penetrating wounds or other blunt injuries. Be sure to roll the patient to examine the back
 - ii. Prevent hypothermia
 - g. Minimize scene time. The goal should be less than 10 minutes for an unstable patient or a patient who needs emergent surgical intervention, with the majority of interventions performed Enroute.
 - h. Each jurisdiction should develop Trauma Destination Protocols for patients with guidance from your Regional Trauma Advisory Committee (ReTrAC), based on local resources. See CDC Guidelines for Field Triage of Injured Patients.
2. Secondary Survey
 - a. Obtain patient medical history and medication usage, especially noting blood thinner use.
 - b. Head to toe physical exam
 - i. Splint extremity fractures ([See External Hemorrhage/Extremity Hemorrhage Guideline](#))
 3. Consider Pain management in the hemodynamically stable patient.

MORPHINE

- a. Adult: [4-10 mg] slow IV/IO titrating 2-4 mg every 10 minutes to effect. (Max of 10 mg without approval from Medical Control). Do not administer if the systolic BP is less than 100.
- b. Pediatric: (2-12 yrs. of age) [0.05 mg/kg] IV/IO or IM every 10 min. up to 0.2 mg/kg

FENTANYL

- a. Adult: [25-100 mcg] slow IV/IO every 5 minutes to effect. (Maximum single dose of 100mcg and maximum total dose of 300mcg without approval from Medical Control). Do not give if systolic BP is less than 100.
- b. Pediatric: (2-12 yrs. of age) [0.5-1 mcg/kg] IV/IO or IM to a maximum of 2.0 mcg/kg slow IV push over 2 minutes.

Note: Do not use NSAIDs in trauma patients.

Note: Fentanyl is shorter acting and often preferred in the initial pain management of multi-system trauma patients.

4. Consider an anti-emetic for nausea and/or vomiting:

ONDANSETRON (Zofran®)

- a. Adult: [4mg] IV/IO/PO/IM
- b. Pediatric: [0.05-0.1 mg/kg] IV/IO/PO/IM (Max dose 4mg)

PROMETHAZINE (Phenergan®)

- a. Adult: [12.5-25 mg] PO/IV/IO/IM

5. Consider **TRANEXAMIC ACID (TXA)**

- a. Patients > 15 years of age: [1 gram] over 10 minutes followed by [1 gram] administered over 8 hours.

BITES - NON-VENOMOUS ANIMAL, or HUMAN**DESCRIPTION OF CONDITION**

Signs and symptoms may include any or all of the following: local pain, swelling, puncture wounds and lacerations.

EMPHASIS ON PATIENT CARE

Scene safety, control of bleeding, prevent further contamination

PRE-HOSPITAL MANAGEMENT

1. Assess the scene for safety. Remove patient to a safe area for Assessment and treatment.
2. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
3. History, physical exam, vital signs
4. Irrigate the wound with sterile solution and bandage as appropriate.
5. If applicable, have someone attempt to find the animal and check vaccination history. If the bite was from a human, if possible, have law enforcement ascertain the identity and medical history of the person.
6. Do not attempt to secure animal, leave it to the Police or Animal Control Officers. All animal bites must be reported.
7. If transport capable, transport the patient to an appropriate medical facility.
8. If patient exhibits signs and symptoms of shock, follow [Shock Guidelines](#).

BITES - VENOMOUS**DESCRIPTION OF CONDITION**

Signs and symptoms may include any one or all of the following: pain, local swelling, puncture wounds, bleeding at site, tachycardia, tachypnea, vomiting, abdominal pain, numbness at extremities, and headache.

EMPHASIS ON PATIENT CARE

Scene safety, control of bleeding, prevent further contamination

PRE-HOSPITAL MANAGEMENT

1. Assess the scene for safety. Remove patient to a safe area for Assessment and treatment.
2. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
3. Manage bite wound and extremity
 - a. Remove jewelry from affected area.
 - b. Stabilize extremity and place at the level of the heart.
 - c. Irrigate bite with sterile isotonic solution or sterile water.
4. If transport capable, initiate transport to an appropriate medical facility.
5. History, physical exam, vital signs
 - a. Obtain history of bite.
 - i. Try to safely identify type of animal.
 - ii. Ascertain time of bite and onset of signs and symptoms.
 - b. Keep patient calm and still.
6. If anaphylaxis develops, follow [Allergic Reaction / Anaphylaxis Guidelines](#).
7. Enroute, initiate an IV/IO (flow rate determined by patient condition) of an isotonic solution in an unaffected extremity.
8. Consider opiate pain medications for moderate to severe pain.

MORPHINE

- a. Adult: [4-10 mg] slow IV/IO titrating 2-4 mg every 10 minutes to effect. (Max of 10 mg without approval from Medical Control). Do not administer if the systolic BP is less than 100.
- b. Pediatric: (2-12 yrs. of age) [0.05-0.1mg/kg] slow IV/IO titrated to effect

FENTANYL

- a. Adult: [25-100 mcg] slow IV/IO every 5 minutes to effect. (Maximum single dose of 100mcg and maximum total dose of 300mcg without approval from Medical Control). Do not give if systolic BP is less than 100.
 - b. Pediatric: (2-12 yrs. of age) [0.5-1 mcg/kg] IV/IO to a maximum of 2.0 mcg/kg slow IV push over 2 minutes.
9. Consider an anti-emetic for nausea and/or vomiting:

ONDANSETRON (Zofran®)

- a. Adult: [4mg] IV/IO/PO/IM
- b. Pediatric: [0.05-0.1 mg/kg] IV/IO/PO/IM (Max dose 4mg)

PROMETHAZINE (Phenergan®)

- a. Adult: [12.5-25 mg] PO/IV/IO/IM

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Bites - Venomous (Cont.)**Notes:**

1. Never place a tourniquet around an affected extremity, except in the case of uncontrollable hemorrhage. Follow [Hemorrhaging/Bleeding Guidelines](#)
2. Rapid onset of signs and symptoms indicate a major envenomation.
3. Do not cut and attempt to remove poison.
4. Do not use any type of cryotherapy on bite wound.

BURNS - THERMAL

DESCRIPTION OF CONDITION

Signs and symptoms may include any one or all of the following: Partial thickness - burns involving the epidermal and dermal layers characterized by reddening or blistering skin. Full thickness - burns involving all skin layers, muscle fascia, and/or charred black or grayish skin, dry in appearance.

EMPHASIS ON PATIENT CARE

Airway management, pain management, fluid replacement, minimize tissue damage and transport to a burn center after stabilization

PRE-HOSPITAL MANAGEMENT

1. Stop the burning process, and remove patient from source.
2. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
3. History, physical exam, vital signs
 - a. Estimate percentage of body surface area (BSA) affected and estimate partial or full thickness burns.
4. Remove jewelry and clothing unless adhered to skin.
5. Place dry sterile dressings over burns, with no two burned surfaces touching.
6. Maintain body temperature to prevent hypothermia.
7. If transport capable, initiate or arrange transport to appropriate medical facility. Consider air evacuation and Contact Medical Control for destination decisions.
8. Enroute, initiate a large bore IV/IO of an isotonic solution and titrate it to adequate vital signs.
9. Initiate a second IV in an unburned area. If > 20% BSA affected, administer isotonic fluid
10. (LR preferred) based on Parkland Burn Formula: (Initial fluid rate can also be calculated as: body weight (kg) X TBSA = cc of fluid to be given in first 2 hours)
 - a. 4cc/kg/ TBSA = CC for 1st 24 hours
 - b. ½ to be given in first 8 hours
 - c. ½ over the next 16 hours.
11. If no contraindications exist, Consider administration of pain medications.

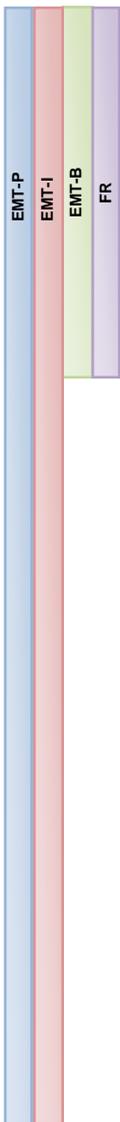
MORPHINE

- a. Adult: [4-10 mg] slow IV/IO titrating 2-4 mg every 10 minutes to effect. (Max of 10 mg without approval from Medical Control). Do not administer if the systolic BP is less than 100.
- b. Pediatric: (2-12 yrs. of age) [0.05 mg/kg] IV/IO or IM every 10 min. up to 0.2 mg/kg

FENTANYL

- a. Adult: [25-100 mcg] slow IV/IO every 5 minutes to effect. (Maximum single dose of 100mcg and maximum total dose of 300mcg without approval from Medical Control). Do not give if systolic BP is less than 100.
- b. Pediatric: (2-12 yrs. of age) [0.5-1 mcg/kg] IV/IO or IM to a maximum of 2.0 mcg/kg slow IV push over 2 minutes.

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BURNS - THERMAL (Cont.)



12. Consider an anti-emetic for nausea and/or vomiting:

ONDANSETRON (Zofran®)

- a. Adult: [4mg] IV/IO/PO/IM
- b. Pediatric: [0.05-0.1 mg/kg] IV/IO/PO/IM (Max dose 4mg)

PROMETHAZINE (Phenergan®)

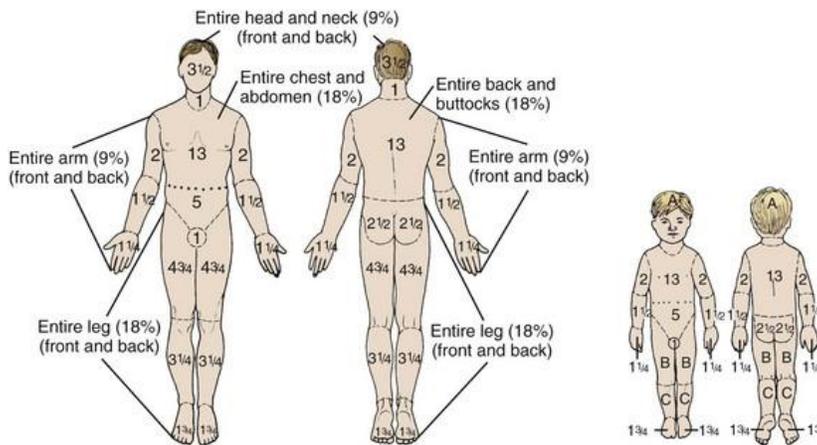
- a. Adult: [12.5-25 mg] PO/IV/IO/IM

13. With facial or airway involvement (singled nasal hair, soot inside nares, stridor etc.) early invasive airway management should be Considered. See [Respiratory Arrest/Distress-General Guidelines](#)

Note: Do not apply electrodes to burned areas.

Note: A quick method of estimating Total Body Surface Area (TBSA)

The Patient's hand = to 1% TBSA



See chart for A, B, and C according to age

A

AGE	Birth-1 yr	1-4 yr	5-9 yr	10-14 yr	15 yr	Adult
Head	19	17	13	11	9	7
Neck	2					
Ant trunk	13					
Post trunk	13					
R buttock	2 1/2					
L buttock	2 1/2					
Genitalia	1					
R U arm	4					
L U arm	4					
R L arm	3					
LL arm	3					
R hand	2 1/2	6 1/2	8	8 1/2	9	9 1/2
L hand	2 1/2	6 1/2	8	8 1/2	9	9 1/2
R thigh	5 1/2	5	5 1/2	6	6 1/2	7
L thigh	5 1/2	5	5 1/2	6	6 1/2	7
R leg	5					
L leg	5					
R foot	3 1/2					
L foot	3 1/2					

B

BODY AREA

BURNS - CHEMICAL**DESCRIPTION OF CONDITION**

Signs and symptoms include the following: evidence of dry or liquid chemical contamination, and reddening and/or blistering of the skin.

EMPHASIS ON PATIENT CARE

Decontamination, prevention of further injury and exposure, safety of providers

PRE-HOSPITAL MANAGEMENT

- 
1. Assess the scene for safety. Do not enter area until it has been determined safe for EMS to have immediate Contact with patient.
 2. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
 - a. Don the appropriate protective personal equipment (PPE) and decontaminate small areas by irrigating with water.
 - i. Remove all contaminated clothing.
 - ii. Brush away dry chemical, prior to irrigating.
 - iii. Irrigate for minimum of 20 minutes.
 - b. Contact HazMat team for full body contamination.
 3. Remove jewelry and all clothing prior to transport.
 4. History, physical exam, vital signs
 - a. Estimate percentage of Body Surface Area (BSA).
 - b. Assess for additional associated trauma.
 5. If transport capable, initiate or arrange transport to appropriate medical facility. Consider air evacuation and Contact Medical Control for destination decisions.
 6. Enroute, initiate IV/IO access (determined by patient condition) of an isotonic solution to maintain adequate vital signs.
 7. Maintain body temperature to prevent hypothermia.
 8. If no contraindications exist, Consider administration of pain medications.

MORPHINE

- a. Adult: [4-10 mg] slow IV/IO titrating 2-4 mg every 10 minutes to effect. (Max of 10 mg without approval from Medical Control). Do not administer if the systolic BP is less than 100.
- b. Pediatric: (2-12 yrs. of age) [0.05 mg/kg] IV/IO or IM every 10 min. up to 0.2 mg/kg

FENTANYL

- a. Adult: [25-100 mcg] slow IV/IO every 5 minutes to effect. (Maximum single dose of 100mcg and maximum total dose of 300mcg without approval from Medical Control). Do not give if systolic BP is less than 100.
- b. Pediatric: (2-12 yrs. of age) [0.5-1 mcg/kg] IV/IO or IM to a maximum of 2.0 mcg/kg slow IV push over 2 minutes.

(Continued next page)

BURNS - CHEMICAL (Cont.)

9. Consider an anti-emetic for nausea and/or vomiting:

ONDANSETRON (Zofran®)

- a. Adult: [4mg] IV/IO/PO/IM
- b. Pediatric: [0.05-0.1 mg/kg] IV/IO/PO/IM (Max dose 4mg)

PROMETHAZINE (Phenergan®)

- a. Adult: [12.5-25 mg] PO/IV/IO/IM

10. For all patients in whom a hydrofluoric acid exposure is confirmed or suspected:

- a. Vigorously irrigate all affected areas with water or normal saline
- b. Apply a cardiac monitor for significant HF exposures as hypocalcemia may occur
- c. Apply calcium preparation: (Calcium prevents tissue damage from hydrofluoric acid. Calcium gluconate is preferred over calcium chloride as it is less irritating).
 - i. If commercially manufactured calcium gluconate gel is not available, a topical calcium gluconate gel preparation can be made by combining 25 ml of calcium gluconate 10% solution in 75-150 ml of a sterile water-soluble gel (e.g. Surgilube® or KY® jelly)
 - ii. If calcium gluconate is not available, 10 ml of calcium chloride 10% solution in 75-150 ml in sterile water-soluble gel (e.g. Surgilube® or KY® jelly).
 - iii. Apply generous amounts of calcium gluconate gel to the exposed skin sites to neutralize the cutaneous effects of the hydrofluoric acid and to prevent tissue damage and necrosis.
 - iv. If fingers are involved, apply the calcium gel to the hand, squirt additional calcium gel into a surgical glove, and then insert the affected hand into the glove.
 - v. For patients who have sustained a significant exposure to hydrofluoric acid and are exhibiting clinically significant signs and symptoms of hypocalcemia, calcium chloride 10% solution should be administered intravenously

Note: Do not apply electrodes to burned skin areas.



EXTERNAL HEMORRHAGE/ EXTREMITY TRAUMA

DESCRIPTION OF CONDITION

Signs and symptoms would include traumatic extremity hemorrhage (external hemorrhage) and/or potential extremity fractures or dislocations

EMPHASIS ON PATIENT CARE

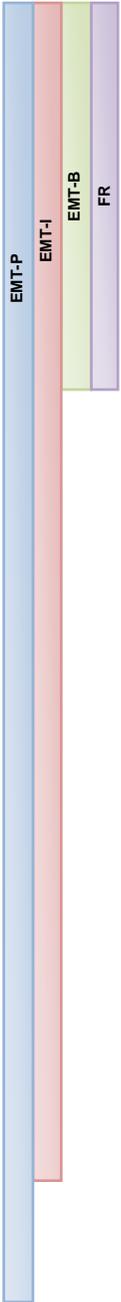
Control of hemorrhage, immobilization, maintain adequate perfusion

PRE-HOSPITAL MANAGEMENT

- 
1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
 2. Control bleeding. Address exsanguinating bleeding first, followed by non-life threatening bleeding.
 - a. Extremity
 - i. Apply direct pressure to bleeding site, followed by pressure dressing.
 - ii. If direct pressure/pressure dressing is ineffective or impractical:
 - (1.) Apply a tourniquet to the extremity, 1-2 inches proximal to the wound and never below the elbow or knee. **Note: A commercially available TCCC or C-TECC approved tourniquet has been widely tested and has fewer complications than improvised tourniquets.**
 - (2.) If bleeding continues, place a second tourniquet next to and proximal to the first.
 - iii. For thigh wounds, consider placement of two tourniquets, side-by-side, and tighten sequentially to eliminate distal pulse.
 - iv. If the bleeding site is not amenable to tourniquet placement (i.e. junctional injury), apply a topical hemostatic agent with direct pressure.
 - b. Groin/axillary injury
 - i. Apply direct pressure to wound
 - ii. If still bleeding, pack wound tightly with gauze and continue direct pressure
 - iii. Consider topical hemostatic agent adjuncts
 - c. Amputations or partial amputations
 - i. Controlling hemorrhage is the first priority.
 - ii. Cover remaining limb with sterile dressings, saturate with saline, cover with dry dressings, and elevate the injured extremity.
 - iii. Wrap severed part in sterile gauze, preserving all amputated material. Dampen gauze with sterile saline. Place in a watertight container, place container in ice water, if available. **DO NOT FREEZE OR USE DRY ICE.**
 - iv. Partial amputations should be dressed and splinted in alignment with the extremity to assure optimum blood flow.
 3. If the patient is hypotensive, transport immediately and complete the remainder of the Assessment and treatment Enroute. **(EMT-I & Paramedic only)** Initiate IV/IO and bolus 20cc/kg of Normal Saline. Repeat until there is a palpable radial pulse or normal mentation of the patient. If there is concern for a Traumatic Brain Injury, then fluid resuscitate until systolic blood pressures are above 110.
 4. Evaluate for obvious extremity deformity, shortening, rotation, or instability.
 - a. Neurovascular status of extremity
 - b. Pulses, capillary refill, movement and sensation

(Continued next page)

EXTREMITY TRAUMA (Cont.)

- 
- 5. Stabilize suspected fractures/dislocations
 - a. If distal vascular function is compromised, gently attempt to restore normal anatomic position. Strongly Consider pain management before attempting to move a suspected fracture.
 - b. Use splints as appropriate to limit movement of suspected fracture
 - i. Reassess distal neurovascular status after any manipulation or splinting of fractures/dislocations
 - c. Elevate extremity fractures above heart level whenever possible to limit swelling
 - d. Apply ice/cool packs to limit swelling in suspected fractures or soft tissue injury. Do not apply ice directly to skin
 - 6. If transport capable, transport the patient to an appropriate medical facility.
 - 7. Consider administration of pain medications.

MORPHINE

- a. Adult: [4-10 mg] slow IV/IO titrating 2-4 mg every 10 minutes to effect. (Max of 10 mg without approval from Medical Control). Do not administer if the systolic BP is less than 100.
- b. Pediatric: (2-12 yrs. of age) [0.05-0.1 mg/kg] slow IV/IO titrated to effect

FENTANYL

- a. Adult: [25-100 mcg] slow IV/IO every 5 minutes to effect. (Maximum single dose of 100mcg and maximum total dose of 300mcg without approval from Medical Control). Do not give if systolic BP is less than 100.
 - b. Pediatric: (2-12 yrs. of age) [0.5-1 mcg/kg] IV/IO or IM to a maximum of 2.0 mcg/kg slow IV push over 2 minutes.
8. Consider an anti-emetic for nausea and/or vomiting:

ONDANSETRON (Zofran®)

- a. Adult: [4mg] IV/IO/PO/IM
- b. Pediatric: [0.05-0.1 mg/kg] IV/IO/PO/IM (Max dose 4mg)

PROMETHAZINE (Phenergan®)

- a. Adult: [12.5-25 mg] PO/IV/IO/IM

9. Consider **TRANEXAMIC ACID (TXA)**

- b. Patients > 15 years of age: [1 gram] over 10 minutes followed by [1 gram] administered over 8 hours.

CARDIAC ARREST - TRAUMATIC

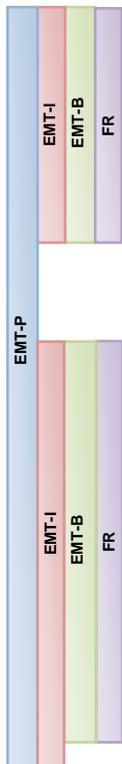
DESCRIPTION OF CONDITION

Signs and symptoms include an unconscious and unresponsive patient with agonal or absent respiratory effort and no palpable pulses with a high suspicion of traumatic origin.

EMPHASIS ON PATIENT CARE

Control bleeding, airway management, chest compressions, fluid replacement, and rapid management of reversible causes

PRE-HOSPITAL MANAGEMENT



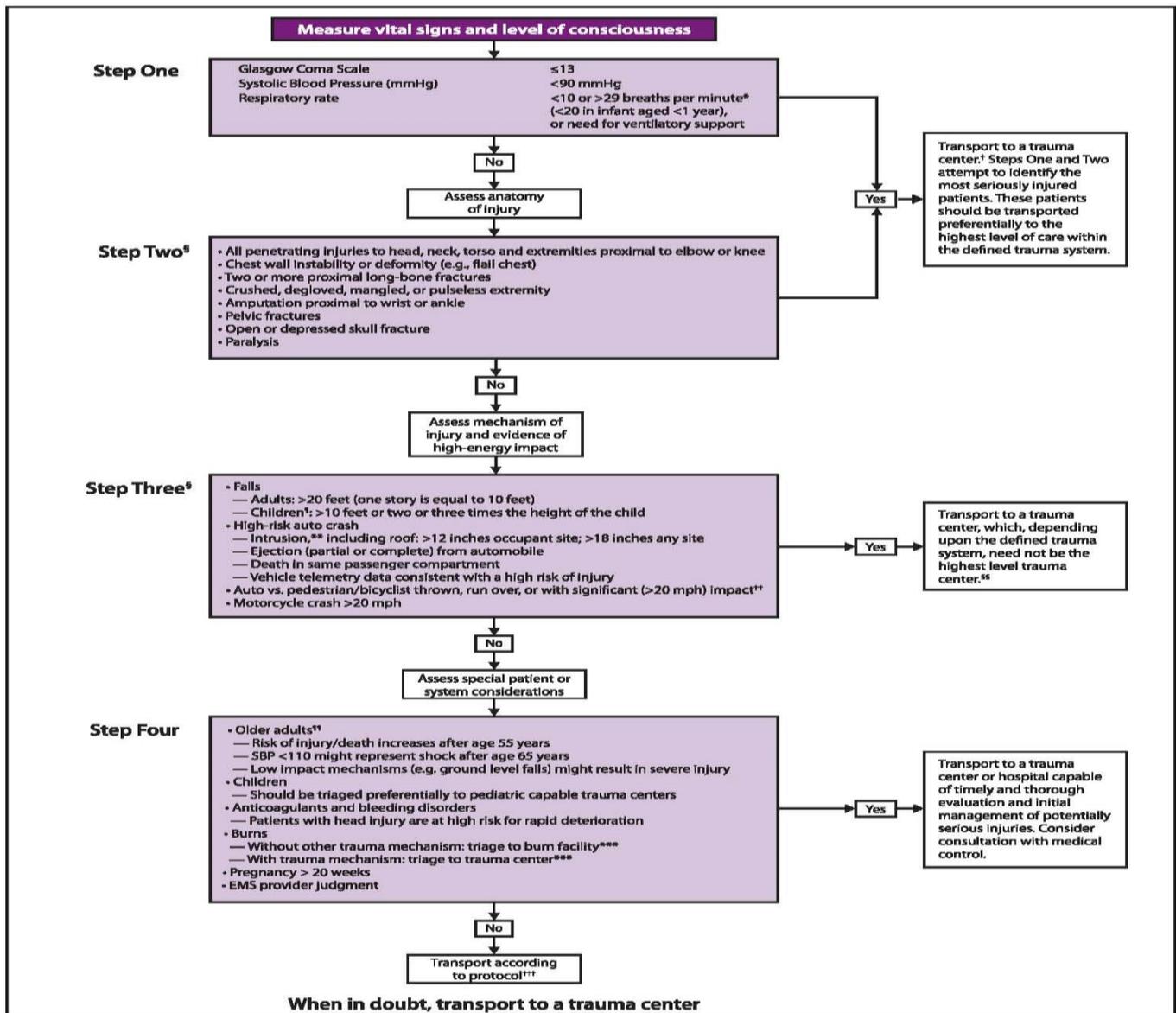
1. Verify that the mechanism of injury is consistent with the patient presentation, and cause of arrest.
2. If the patient has injuries incompatible with life, such as torso transection, exposed brain matter, or frank signs of death present, do not initiate resuscitation.
3. The data does not support initiating resuscitation for blunt or penetrating traumatic arrest if you are greater than 15 minutes from a Trauma Center or greater than 15 minutes from ILS/ALS level care.
4. **(Paramedic Only)** Consider bilateral needle decompression. If the patient is in asystole or PEA < 40 after decompression, then termination of resuscitation should be considered.
5. If the decision is made to transport and no ALS is available on scene, initiate immediate transport and, if indicated, call for ALS intercept. Do the following procedures enroute:
 - a. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
 - b. Control exsanguinating hemorrhage first. See also [External Hemorrhage/Extremity Trauma Guideline](#).
 - c. C- spine precautions if indicated
 - d. Attach AED, Initiate CPR, manage airway and ventilate with 100% **OXYGEN**. If VF or VT occur follow [VF & VT \(without a pulse\) Guideline](#)
 - e. Insert advanced airway: (follow [Respiratory Arrest/Distress Guidelines](#)), and continue ventilation with 100% **OXYGEN**.
 - f. Enroute, initiate two large bore IV/IOs with an isotonic solution wide open.

Note: If at any time during this period of resuscitation the patient experiences a return of spontaneous circulation, proceed to the [Adult Post-ROSC Care](#) guideline

Note: Patient/Provider Safety Considerations. It is not safe for the patient or providers to perform chest compressions during transport unless a mechanical chest compression device is utilized. Chest compressions during patient movement are less effective in regards to hands on time, depth, recoil and rate and providers performing chest compressions in a moving vehicle are at risk for injury.

CDC GUIDELINES FOR FIELD TRIAGE OF INJURED PATIENTS

Each jurisdiction should develop destination protocols for trauma patients with guidance from your Regional Trauma Advisory Committee (ReTrAC). The CDC has developed these guidelines to identify patients who most benefit from direct transport to a Trauma Center.



Abbreviation:

EMS = emergency medical services.

* The upper limit of respiratory rate in infants is >29 breaths per minute to maintain a higher level of over triage for infants.

† Trauma centers are designated Level I-IV. A Level I center has the greatest amount of resources and personnel for care of the injured patient and provides regional leadership in education, research, and prevention programs. A Level II facility offers similar resources to a Level I facility, possibly differing only in continuous availability of certain subspecialties or sufficient prevention, education, and research activities for Level I designation; Level II facilities are not required to be resident or fellow education centers. A Level III center is capable of Assessment, resuscitation, and emergency surgery, with severely injured patients being transferred to a Level I or II facility. A Level IV trauma center is capable of providing 24-hour physician coverage, resuscitation, and stabilization to injured patients before transfer to a facility that provides a higher level of trauma care.

§ Any injury noted in Step Two or mechanism identified in Step Three triggers a “yes” response.

¶ Age < 15 years.

** Intrusion refers to interior compartment intrusion, as opposed to deformation which refers to exterior damage

†† Includes pedestrians or bicyclists thrown or run over by a motor vehicle or those with estimated impact >20 mph with a motor vehicle.

§§ Local or regional protocols should be used to determine the most appropriate level of trauma center within the defined trauma system; need not be the highest-level trauma center.

¶¶ Age > 55 years.

*** Patients with both burns and concomitant trauma for whom the burn injury poses the greatest risk for morbidity and mortality should be transferred to a burn center. If the non-burn trauma presents a greater immediate risk, the patient may be stabilized in a trauma center and then transferred to a burn center.

††† Patients who do not meet any of the triage criteria in Steps One through Four should be transported to the most appropriate medical facility as outlined in local EMS protocols.

CHEST INJURIES

DESCRIPTION OF CONDITION

Chest injuries may result from either a blunt, penetrating, barotraumas, or environment causes. The patient will present with a history, or signs and symptoms associated with one or more of the following conditions: Flail chest, open chest wound, barotrauma event such as an explosion or dive related issue, or exposure to chemical particulate or fumes.

EMPHASIS ON PATIENT CARE

Treatment should be focused at stabilization and ensuring adequate ventilatory and oxygenation status in the patient. All chest trauma patients should be expeditiously transported to the closest available trauma center for management and stabilization. Consider ALS intercept if available.

PRE-HOSPITAL MANAGEMENT

1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
2. If transport capable, initiate transport to appropriate medical facility.
3. History, physical exam, vital signs

SPECIFIC CONDITIONS

Flail Chest

1. All patients should initially be placed on 100% oxygen via a non-rebreathing facemask. Maintain oxygen saturation 94% or above if quantitative measurement is available.
2. Intubation and mechanical ventilation are rarely indicated for chest wall injury alone. Where ventilation is necessary it is usually for hypoxia due to underlying pulmonary contusions. Positive pressure ventilation may be required for severe chest wall instability resulting in inadequate ventilatory volume.
3. If no contraindications exist, Consider administration of pain medications.

MORPHINE

- a. Adult: [4-10 mg] slow IV/IO titrating 2-4 mg every 10 minutes to effect. (Max of 10 mg without approval from Medical Control). Do not administer if the systolic BP is less than 100.
- b. Pediatric: (2-12 yrs. of age) [0.05-0.1 mg/kg] slow IV/IO titrated to effect

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- a. Adult: [25-100 mcg] slow IV/IO every 5 minutes to effect. (Maximum single dose of 100mcg and maximum total dose of 300mcg without approval from Medical Control). Do not give if systolic BP is less than 100.
- b. Pediatric: (2-12 yrs. of age) [0.5-1 mcg/kg] IV/IO or IM to a maximum of 2.0 mcg/kg slow IV push over 2 minutes.

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Flail Chest (Cont.)

4. Consider an anti-emetic for nausea and/or vomiting:

ONDANSETRON (Zofran®)

- a. Adult: [4mg] IV/IO/PO/IM
- b. Pediatric: [0.05-0.1 mg/kg] IV/IO/PO/IM (Max dose 4mg)

Known or Suspected Simple Pneumothorax

1. All patients should initially be placed on 100% oxygen via a non- rebreathing facemask. Maintain oxygen saturation 94% or above if quantitative measurement is available.
2. Observe for progression from simple pneumothorax to tension pneumothorax.

Tension Pneumothorax

1. All patients should initially be placed on 100% oxygen via a non- rebreathing facemask. Maintain oxygen saturation 94% or above if quantitative measurement is available.
2. Consider needle decompression - EMT-P only.

Open Chest Wound

1. All patients should initially be placed on 100% oxygen via a non- rebreathing facemask. Maintain oxygen saturation 94% or above if quantitative measurement is available.
2. Apply a fully occlusive chest seal which are common on the market or an occlusive dressing over the wound and tape on 3 sides. This, in theory, acts as a flutter-valve to allow air to escape from the pneumothorax during expiration, but not to enter during inspiration.
3. Monitor closely for development of a tension pneumothorax.

Barotrauma

Note: Barotrauma may be associated with either diving related incidents, or as a result of a CBRNE (Chemical, Biological, Radiologic, Nuclear, Explosion) event. CBRNE events may also present with associated pulmonary edema due to chemical or heat effects. If a CBRNE event has occurred, provider safety is paramount, and the patient must be adequately decontaminated.

1. All patients should initially be placed on 100% oxygen via a non- rebreathing facemask. Maintain oxygen saturation 94% or above if quantitative measurement is available.
2. Monitor closely for development of simple pneumothorax, or progression of simple pneumothorax to tension pneumothorax.
3. Positive pressure ventilation and CPAP may cause and /or exacerbate underlying pneumothorax. Use with caution.
4. Administer bronchodilators if bronchospasm or wheezing is noted
5. Initiate an IV/IO of an isotonic solution; infused to maintain adequate vital signs.



HEAD INJURY (TRAUMATIC BRAIN INJURY)

DESCRIPTION OF CONDITION

Signs and symptoms may include any or all of the following: slowing pulse rate, increasing blood pressure, increasingly irregular respiratory patterns, altered level of consciousness, unequal pupils, repeating speech patterns, seizures, presence of CSF, with a history of blunt or penetrating head trauma.

EMPHASIS ON PATIENT CARE

Airway management, adequate oxygenation and blood pressure, spinal precautions

Be aware of the potential for spinal, abdominal or chest trauma not apparent due to altered mental status.

PRE-HOSPITAL MANAGEMENT

- 
1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
 2. Maintain cervical stabilization.
 3. Airway
 - a. Oxygen: prevent any desaturation < 90%; use supplemental O2 as needed to maintain O2 saturation ≥ 94%.
 - b. If patient unable to maintain airway, insert an advanced airway (see [Respiratory Arrest/Distress Guidelines](#)), and continue ventilation, 1 breath every 6 seconds.
 - c. Consider oral intubation (for patients 13 years of age and older) only if BVM ventilation ineffective in maintaining oxygenation or if airway is compromised. (**Paramedic only**)
 - d. Nasal airways or nasal intubation should not be used in patients with severe facial trauma.
 4. Breathing:
 - a. Moderate / severe head injury: Continuous waveform capnography and EtCO2 measurement if available. Target EtCO2 35-40 mmHg
 - b. Severe head injury with signs of herniation: Hyperventilation to target EtCO2 30-35 mmHg. This is a short-term option, and is **ONLY** for severe head injury (GCS ≤ 8 or U (unresponsive) on AVPU scale) with signs of herniation.
 - c. Supraglottic airway / intubation (**Paramedic**) only if BVM ventilation inadequate to maintain adequate oxygenation. Target EtCO2 35-40 mmHg
 5. Circulation:
 - a. Wound care:
 - i. Control bleeding with direct pressure if no suspected open skull injury.
 - ii. Moist sterile dressing to any potential open skull wound.
 - b. Moderate / severe closed head injury:
 - i. Blood pressure: avoid hypotension
 - 1) Adult (age > 10 years): maintain SBP ≥ 110 mmHg
 - 2) Pediatric: maintain SBP:
 - a) < 1 month: > 60 mmHg
 - b) 1-12 months: > 70 mmHg
 - c) 1-10 years: > 70 + 2x age in years

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HEAD INJURY (TRAUMATIC BRAIN INJURY) (Cont.)



6. Enroute to the hospital, initiate an IV/IO of an isotonic solution at a rate to maintain adequate vital signs as noted above. Consider second IV/IO, if indicated.
7. Use a Buretrol IV set for Pediatrics. Consider intraosseous access, if peripheral venous access is not available and patient conditions warrants.
8. Disability:
 - a. Evaluate for other causes of altered mental status:
 - i. Evaluate blood glucose if indicated
 - b. Spinal stabilization
 - c. Perform and trend neurologic status Assessment (moderate / severe: GCS ≤13, P (pain) or U (unresponsive) on AVPU scale)
 - i. Early signs of deterioration:
 - 1) Confusion
 - 2) Agitation
 - 3) Drowsiness
 - 4) Vomiting
 - 5) Severe headache
 - ii. Monitor for signs of herniation
 - d. Severe head injury: Elevate head of bed 30 degrees
9. Monitoring:
 - a. Continuous pulse oximetry.
 - b. Frequent blood pressure measurement.
 - c. Initial neurologic status assessment and reassessment with any change in mentation.
 - d. Moderate/severe head injury : apply continuous waveform ETCO2 if available.
10. Complete a secondary survey looking for other traumatic injuries.
11. If transport capable, transport the patient as soon as possible to an appropriate medical facility. Consider ALS.
12. History, physical exam, vital signs, and Glasgow Coma Scale

GLASGOW COMA SCALE

Eye Opening	Spontaneous	4
	To Voice	3
	To Pain	2
	None	1
Verbal Response	Oriented	5
	Confused	4
	Inappropriate Words	3
	None	2
Motor Response	None	1
	Extension (Pain)	2
	Flexion (Pain)	3
	Withdraw (Pain)	4
	Localizes (Pain)	5
	Obeys Commands	6
Glasgow Coma Score Total		

ELECTRICAL INJURY

DESCRIPTION OF CONDITION

Signs and symptoms may include any one or all of the following: Partial to full thickness burns with entrance and exit wounds, associated fractures, disorientation, cardiac dysrhythmias, irregular respiration, apnea, unconsciousness or cardiac arrest.

EMPHASIS ON PATIENT CARE

Identify life threatening issues such as dysrhythmias and cardiac arrest, maintain a high index of suspicion for associated trauma

PRE-HOSPITAL MANAGEMENT

- 
1. Assess the scene for safety. Turn the power off, if it can be done safely, otherwise call the electric company. Identify characteristics of electrical source to communicate to receiving facility.
 2. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
 3. Apply dry dressing to any wounds
 4. Remove constricting clothing and jewelry since additional swelling is possible
 5. Immobilize if associated trauma suspected.
 6. If transport capable, transport the patient as soon as possible to appropriate medical facility. Electrical injury patients should be taken to a burn center whenever possible since these injuries can involve Considerable tissue damage
 7. History, physical exam, vital signs
 8. Place on cardiac monitor if available, and record a strip.
 9. If cardiac arrest occurs, follow Medical Cardiac Arrest Guidelines.
 10. Enroute, initiate a large bore IV/IO of an isotonic solution and infuse at a flow rate to maintain adequate vital signs. Administer fluid resuscitation per [Burn Guidelines](#).

SEXUAL ABUSE / ASSAULT

DESCRIPTION OF CONDITION

The patient has been forcefully exploited by another person(s). The force used may be physical violence, threats, mental manipulation, or other forms of psychological force.

EMPHASIS ON PATIENT CARE

Supportive care, management of associated trauma

PRE-HOSPITAL MANAGEMENT



1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
2. History, physical exam, vital signs
 - a. Treat all life threats as indicated.
 - b. Protect the scene and preserve evidence in cooperation with law enforcement.
 - c. Encourage patient not to bathe, douche, or change clothes.
 - d. Do not allow more people than necessary for patient care in Contact with the patient or on the scene.
 - e. This may be a highly emotional and volatile situation; be sure your physical examination and treatments are clearly documented on the report form.
 - f. Obtain only information needed to treat the patient. Do not attempt to investigate the crime.
3. Victims of domestic violence or sexual assault who report being choked or strangled during the assault, and have any of the following S&S, should be transported to the nearest appropriate medical facility, preferably a trauma center.
 - a. Loss of consciousness, or any other neurological S&S (seizures, altered mental status, amnesia, visual changes, or stroke-like symptoms).
 - b. Visual changes (spots, flashing lights, tunnel vision, or other reported visual disturbances).
 - c. Facial or conjunctival petechial hemorrhage
 - d. Ligature marks or neck contusions
 - e. Soft tissue neck injury or swelling and/or tenderness in the neck.
 - f. Incontinence of bladder or bowel
 - g. Difficulty in speaking or loss of ability to speak
 - h. Shortness of breath due to upper airway swelling/trauma.
 - i. Subcutaneous emphysema
4. Transport decisions should be patient dependent. Have a high index of suspicion for internal injuries. Consider spinal immobilization, IV access and fluid resuscitation, and/or pain management as indicated by the clinical situation.

SPINAL INJURY

DESCRIPTION OF CONDITION

Signs and symptoms may include of pain in the area of the spinal cord or there is a suspicion of spinal injury based on mechanism of injury or patient complaint.

EMPHASIS ON PATIENT CARE

Minimize secondary injury to spine in patients who have, or may have, an unstable spinal injury and patient morbidity from immobilization procedures

PRE-HOSPITAL MANAGEMENT

1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated. Use humidified O₂.
2. Assess the scene, to determine the risk of injury. Mechanism alone should not determine if a patient requires cervical spine immobilization. However, mechanisms that have been associated with higher risk of injury are the following:
 - a. Motor vehicle collisions, including automobiles, all-terrain vehicles, and snowmobiles
 - b. Axial loading injuries to the spine
 - c. Associated, substantial torso injuries
 - d. Falls >10 feet
3. Assess the patient in the position he/she was found. Initial Assessment should focus on determining whether or not a cervical collar needs to be applied.
4. Assess for mental status, neurologic deficits, spinal pain or tenderness, any evidence of intoxication, or other severe injuries
5. Apply a cervical collar if there is any of the following:
 - a. Patient complains of midline neck or spine pain
 - b. Any midline neck or spinal tenderness with palpation
 - c. Any abnormal mental status (including extreme agitation) or neurologic deficit
 - d. Any evidence of alcohol or drug intoxication
 - e. Another severe or painful distracting injury is present
 - f. Torticollis in children
 - g. A communication barrier that prevents accurate Assessment
6. If none of the above apply, patients should not have a cervical collar placed
7. Spinal motion restriction without the use of a hard-cervical collar may be required in penetrating injuries to the neck with neurological deficits, especially when there is concern for on-going bleeding and/or airway management needs.
8. If extrication may be required
 - a. From a vehicle: After placing a cervical collar, if indicated, children in a booster seat and adults should be allowed to self-extricate. For infants and toddlers already strapped in a car seat with a built-in harness, extricate the child while strapped in his/her car seat
 - b. Other situations requiring extrication: A padded long board may be used for extrication, using the lift and slide (rather than a log-roll) technique.



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SPINAL INJURY (Cont.)



9. Helmet removal

- a. If a football helmet needs to be removed, it is recommended to remove the face mask followed by manual removal (rather than the use of automated devices) of the helmet while keeping the neck immobilized. Occipital padding should be applied, as needed, with the patient in a supine position, in order to maintain neutral cervical spine positioning

Note: Evidence is lacking to provide guidance about other types of helmet removal

10. Patients should not routinely be transported on long boards, unless the clinical situation warrants long board use. An example of this may be facilitation of immobilization of multiple extremity injuries or an unstable patient where removal of a board will delay transport and/or other treatment priorities. In these rare situations, long boards should be padded or have a vacuum mattress applied to minimize secondary injury to the patient

UNIVERSAL CARE

DETERMINATION OF DEATH / WITHHOLDING RESUSCITATIVE EFFORTS

DESCRIPTION OF CONDITION

Patient is unresponsive, found without respirations and without a palpable carotid pulse.

Resuscitation must be started on all patients who are found apneic and pulseless unless the following conditions exist (does not apply to victims of lightning strikes, drowning or hypothermia):

1. Traumatic injury or body condition clearly indicating biological death (irreversible brain death), limited to:
 - a. Decapitation: the complete severing of the head from the remainder of the patient's body.
 - b. Decomposition or putrefaction: the skin is bloated or ruptured, with or without soft tissue sloughed off. The presence of at least one of these signs indicated death occurred at least 24 hours previously
 - c. Transection of the torso: the body is completely cut across below the shoulders and above the hips through all major organs and vessels. The spinal column may or may not be severed
 - d. Incineration: 90% of body surface area with full thickness burns as exhibited by ash rather than clothing and complete absence of body hair with charred skin
 - e. Dependent lividity with rigor mortis (when clothing is removed there is a clear demarcation of pooled blood within the body, and the body is generally rigid)
 - f. Injuries incompatible with life (such as massive crush injury, complete exsanguination, severe displacement of brain matter)

OR

2. A valid DNR order (form, card, bracelet) or other actionable medical order (e.g. MOST form) present, when it:
 - a. Conforms to the state specifications for color and construction.
 - b. Is intact: it has not been cut, broken or shows signs of being repaired.
 - c. Displays the patient's name and the physician's name

EMPHASIS ON PATIENT CARE

Verify that the mechanism of injury is consistent with the patient presentation, and cause of arrest.

PRE-HOSPITAL MANAGEMENT



1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated. Assess for dependent lividity with rigor mortis and/or other inclusion criteria.
2. If all the components above are confirmed, no CPR is required
3. If CPR has been initiated but all the components above have been subsequently confirmed, CPR may be discontinued and direct Medical Control Contacted as needed
4. If there is a DNR bracelet or DNR transfer form and there are signs of life (pulse and respirations), provide standard appropriate treatment under existing protocols matching the patient's condition.
5. If there is documentation of a Do Not Intubate advanced directive, the patient should receive full treatment per protocols with the exception of any intervention specifically prohibited in the patient's advanced directive. If for any reason an intervention that is prohibited by an advanced directive is being Considered, direct Medical Control should be obtained.

DO NOT RESUSCITATE (DNR) Status / Advanced Directives

DESCRIPTION OF CONDITION

There are a variety of ways that patients can express their wishes about cardiopulmonary resuscitation or end of life decision making. The patient must possess a DNR Order or other Advanced Directive or the approved Medic Alert bracelet or neck medallion, and patient identification. If a family member or other caregiver has "Durable Power of Attorney" they should be consulted for instructions on patient care or withholding patient care. These guidelines pertain only to patients with valid and verifiable "Advanced Directives".

EMPHASIS ON PATIENT CARE

Verification of documents, medical direction involvement

1. Patients must have one of the following documents or a valid alternative (such as identification bracelet indicating wishes) immediately available.
2. Physician Orders for Medical Orders for Life Sustaining Treatment (MOST) – explicitly describes acceptable interventions for the patient in the form of medical orders, must be signed by a physician or other empowered medical provider to be valid.
3. Do Not Resuscitate (DNR) order – identifies that CPR and intubation are not to be initiated if the patient is in arrest or peri-arrest. The interventions covered by this order and the details around when to implement them can vary widely.
4. Advanced directives – document that describes acceptable treatments under a variable number of clinical situations including some or all of the following: what to do for cardiac arrest, whether artificial nutrition is acceptable, organ donation wishes, dialysis, etc. This frequently does not apply to emergent or potentially transient medical conditions.
5. As specified from state to state, in the absence of formal written directions (MOLT, DNR, advanced directives), and in the presence of a person with power of attorney for healthcare, or healthcare proxy, that person may prescribe limits of treatment.
6. One of the documents above is valid when it meets all of the following criteria:
 - a. Conforms to the state specifications for color and construction
 - b. Is intact: it has not been cut, broken or shows signs of being repaired
 - c. Displays the patient's name and the physician's name
7. If there is question about the validity of the form/instrument, the best course of action is to proceed with the resuscitation until additional information can be obtained to clarify the best course of action.
8. If there is any indication of an attempted homicide, initiate resuscitation until such time that the questions have been answered. If possible, Contact Medical Control for consultation.
9. If a patient has a valid version of one of the above documents it will be referred to as a "valid exclusion to resuscitation" for the purposes of this protocol.

PRE-HOSPITAL MANAGEMENT



1. For all persons, the following procedures may be initiated for the comfort of the person if they have not been refused by the person or by the authorized health care decision-maker, by:
 - a. Administer oxygen by mask or cannula
 - b. Suctioning
 - c. Managing airway, except intubation and other advanced airway maneuvers
 - d. Administering analgesics, including IV route (**EMT-I, EMT-P**)
 - e. Controlling bleeding

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DO NOT RESUSCITATE (DNR) ORDERS - EMS (cont.)

- f. Making patient comfortable
- g. Comforting family
- h. For covered persons in cardiac or respiratory arrest, resuscitative measures to be withheld include:
 - i. External chest compression
 - ii. Artificial ventilations, intubation or other advanced airway maneuvers
 - iii. Defibrillation/external cardiac pacing
 - iv. Administration of cardiac medications
 - v. Artificial respiration
- i. If CPR has been initiated and a valid exclusion to resuscitation has been subsequently verified, CPR may be discontinued and direct Medical Control Contacted as needed.
2. EMS procedures for implementing Durable Powers of Attorney include:
 - a. Primary Assessment - Perform initial primary Assessment, i.e., Assess airway, breathing and circulation.
 - b. Verify identification by:
 - i. Using a driver's license or other signed photo identification; or,
 - ii. Identification by a family member; or,
 - iii. Positive third-party identification by someone who knows the person
 - iv. Verify the identification of the person identified in the Durable Power of Attorney as the authorized health care decision-maker.
 - c. Follow that person's instructions as authorized by the Durable Power of Attorney.
 - d. If there is any question about the validity of a Durable Power of Attorney, every attempt should be made to validate it. If there is any indication of an attempted homicide, initiate resuscitation until such time that the questions have been answered. If possible, Contact Medical Control for consultation.
3. Where a person has both EMS DNR orders and a Durable Power of Attorney, the most recent document shall prevail for pre hospital treatment only.

INVOLUNTARY RESTRAINT AND TRANSPORT

DESCRIPTION OF CONDITION

Emergency treatment applies to any age patient. Emergency treatment without consent implies that a life threat exists and patient is mentally incapable of making decisions on their own behalf. Reasonable force can be used, but only that force necessary to treat and transport the patient.

24-10B-9.1. Emergency transportation.

Any person may be transported to an appropriate health care facility by an emergency medical technician, under medical direction, when the emergency medical technician makes a good faith judgment that the person is incapable of making an informed decision about his own safety or need for medical attention and is reasonably likely to suffer disability or death without the medical intervention available at such a facility.

EMPHASIS ON PATIENT CARE

Provider safety, transport decisions

PRE-HOSPITAL MANAGEMENT



1. Several attempts to gain consent for treatment and transport must be made prior to any attempts to subdue the patient.
2. If the patient meets the following criteria, the EMS provider may use reasonable force to treat and transport.
 - a. The patient, or legal medical decision maker, words or actions indicate that he/she is mentally incapable of making decisions on their own behalf. Such as:
 - i. Displays altered mental status.
 - ii. Patient has inappropriate responses to questions.
 - iii. Evidence of significant drug, alcohol, or other impairment (e.g. medical condition).
 - iv. Disoriented to time, person, place, or event
 - v. Suicide attempt or talking about attempting suicide.
 - b. A life-threat is suspected of existing or does exist.
3. Use the following guidelines to secure and treat the patient.
 - a. Call for law enforcement assistance.
 - b. Have enough personnel to safely secure patient and assure that all personnel are informed of plans and are involved.
 - c. Adequately restrain the patient to stretcher or other device, as needed.
 - d. At least two EMTs should be present at all times, if the patient is, or suspected of being combative.
 - e. Keep bystanders and onlookers away from the patient as they may agitate the patient.
 - f. All resuscitative measures to sustain life may be executed.
 - g. The EMS provider must be in voice Contact with Medical Control.
 - h. Transportation is limited to an appropriate health care facility.
4. Document all actions, statements, and responses to your questions that support your decision to treat the patient without consent.

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INVOLUNTARY RESTRAINT AND TRANSPORT (Cont.)

EMT-P	E	E	FR	5. Use physical restraint only if necessary for protection of EMS providers or the patient
				6. Chemical restraint with benzodiazepines may be Considered if the patient remains a danger to him or herself or to EMS personnel after attempts at verbal de-escalation. This may be done prior to physical restraints if EMS personnel determine that it is safer to attempt medications first. Consider: MIDAZOLAM a. Adult: i. [5-10 mg] IN/IM. Max single dose is 10mg. May repeat once after 10 minutes ii. [2 to 5 mg] SIVP/IO. Repeat every 5 minutes as needed up to 10mg.
	EMT-I	EMT-B	FR	7. Prepare to manage the airway and ventilation status of the patient.
				8. Monitor for cardiac changes.

REFUSAL - ADULT**DESCRIPTION OF CONDITION**

A competent adult (18 years or older) and/or emancipated minors may refuse any or all treatment or transport at any time. If patient, or legal medical decision maker, is not capable of making rational decisions, follow [Involuntary Restraint and Transport Guidelines](#). All refusal patients must be evaluated, vital signs obtained (if possible), and informed of the situation and the potential life threat or disability.

EMPHASIS ON PATIENT CARE

Provider safety, transport decisions

PRE-HOSPITAL MANAGEMENT

1. Primary Assessment - Assess airway, breathing and circulation and manage as indicated.
2. Perform the following (if patient allows):
 - a. Obtain a complete set of vital signs and complete an initial Assessment with particular attention to the individual's neurologic and mental status.
 - b. Determine the individual's ability to make a valid judgment concerning the extent of his/her illness or injury. If the EMS provider has doubts about whether the individual has the mental capacity to refuse or if the patient lacks capacity, the EMS provider should Contact direct medical direction.
 - c. If patient has capacity, clearly explain to the individual and all responsible parties the possible risks and overall concerns with regards to refusing care. Attempts to inform should be done in the presence of a witness, i.e. family members, bystander, or Police Officer (preferably not a member of the EMS service).
 - d. Complete the patient care report clearly documenting the initial Assessment findings and the discussions with all involved individuals regarding the possible consequences of refusing additional prehospital care and/or transportation
 - e. Obtain the patient's signature on refusal and information for report.
 - f. Have a witness sign below narrative.
 - g. Even though you have obtained a signature, take reasonable steps to protect patient by calling a friend or family member to attend to patient.
3. EMS refusal of care represents one of the highest liability exposures that an EMS Provider will ever face. All refusals should be carefully documented. Consider having Medical Control speak directly with the patient by cell phone or radio.
4. If care is requested, perform appropriate medical care with the consent of the individual.

REFUSAL - PEDIATRIC

DESCRIPTION OF CONDITION

Children are unable to refuse treatment and transport on their own behalf. A parent, or guardian, may refuse any part of or all treatment and/or transport on behalf of the patient. Remember this guideline is used only if no life threats exist. If a life threat is present, follow [Involuntary Restraint and Transport Guideline](#).

EMPHASIS ON PATIENT CARE

Provider safety, transport decisions

PRE-HOSPITAL MANAGEMENT



1. History, physical exam, vital signs (if patient allows):
 - a. Inform parent or legal guardian of patient's medical condition, potential injury or illness, potential ramifications if treatment and transport are refused.
 - b. Assure the parent or legal guardian fully understands what you are saying.
 - c. Attempts to inform must be done in the presence of a witness, i.e. family members, bystander, or police officer (preferably not a member of the EMS service).
 - d. Obtain the parent's or legal guardian's signature on refusal and information for report.
 - e. Have a witness sign refusal.
 - f. Document all attempts to gain consent for treatment, advisement of potential injury or illnesses, and potential ramifications if treatment is not rendered.
2. If parents are not available, make all reasonable efforts to locate parents or legal guardians and have them come to the scene, otherwise transport the patient to the nearest appropriate facility. Consider Contacting Medical Control.