

BREVARD COUNTY FIRE RESCUE

EMS

MEDICAL

PROTOCOLS



THIRD EDITION 2018

Introduction

This document is the Emergency Medical Services Protocol for Paramedics and Emergency Medical Technicians working in pre-hospital settings for Brevard County Fire Rescue.

The contents of this protocol are shared by all EMS provider agencies within the county. It includes Standing Medical Orders (Standing Orders) of each of all of the Medical Directors in the County. Each standing order (protocol) may or may not be approved by the Medical Director of the EMS agencies working under this set of protocols based on the equipment availability or reasonable necessity to carry such equipment due to the nature of the two-tiered ALS response system that has been established in many municipal areas in Brevard County. Due to some variability in the standard of care for medical patients, specific Standing Orders (Protocols) may exist in protocol but not authorized by all EMS Medical Directors in Brevard County. If a protocol or a type of equipment or medication is not authorized by an EMS Medical Director of an ALS agency in Brevard County, this variance in authorization will be noted by an asterisk (*) in each protocol indicating “if available” or “approved” by the Medical Director. Medical Director preference and authorization has been maintained in this manner to assure that EMS care in the pre-hospital setting in Brevard County is standardized as much as possible.

These standing orders are instructions for patient medical care. The intent of this protocol is to include and expand upon standing orders found in the Brevard County regional protocol that is utilized by other EMS providers within Brevard County. This document is meant to serve as a standard among all Brevard County Fire Rescue EMS providers to ensure the highest quality of patient care.

Purpose and Rationale

“Members are expected to function fully within their scope of training and level of certification and to properly utilize, when available and in working order, the appropriate medical equipment when treating patients.”

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

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

All patients will be approached with a minimum of an airway bag, drug box and cardiac monitor. Once patient contact is made patients will receive at a minimum the following prior to transport:

1. ALS assessment
2. A complete set of vital signs **consisting of the following: pulse, manual blood pressure, respiration rate and O2 sat.**
3. Initial cardiac rhythm (if indicated by protocol) with continuous cardiac monitoring
4. 12 lead EKG (if indicated by protocol)
5. IV or IO access (if indicated by protocol)
6. Advanced airway placement and airway stabilization (if indicated by protocol)
7. All patients given sedation, exhibit any type of altered mental status, or have any respiratory complaint will receive nasal capnography monitoring.

The Pitt Crew algorithm will be utilized to accomplish the initial patient care guidelines so that they are completed in a timely and efficient manner regardless of manpower on scene.

Approval

These protocols are approved by the Brevard County Fire Rescue Medical Director and are effective as of November 15, 2018.



John R. McPherson

John Mcpherson, M .D.

Document Structure

Areas are alphabetically arranged by medical condition. Appendices are provided for reference. Each condition contains 6 areas with an optional (as needed) area, “Notes”, as follows:

<i>Rationale:</i>	Brief overview of the subject
<i>Assessment Checklist:</i>	Suggests potential conditions, which should be evaluated.
<i>ALS – BLS Determination:</i>	Protocols to be used when summoning BLS from the scene.
<i>Level I:</i>	Basic Life Support Care - This section outlines the approved care for First responders, Emergency Medical Technicians, and Paramedics.
<i>Level II:</i>	Advanced Life Support Care - This section outlines the approved care for Paramedics.
<i>Level III:</i>	Physician Orders – This section outlines care that must be approved by direct Physician Contact. Physicians include the Medical Directors and Emergency Department Physicians.
<i>Notes:</i>	Additional comments, cautions, and information.

Document Maintenance

The third edition of the protocols was approved by the Brevard County Fire Rescue Medical Director and is effective as of November 15, 2018. Updates or revisions are recorded in the Appendix. This record is maintained by the Brevard County Fire Rescue Office of EMS.

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CHAPTER 1: Adult Cardiac Care

Acute Myocardial Infarction

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac/respiratory arrest is ALS • Abnormal VS • Chest tightness, pressure, pain, • Nausea, sweating, SOB, AMS • Cardiac history, with any of the above symptoms • Patient on home cardiac monitor • Recent cocaine or methamphetamine use • Firing of implanted defibrillator 	<ul style="list-style-type: none"> • ALS transport only

Level I (BLS Care):

- Administer oxygen by appropriate device.
- Place the hypotensive patient in the Trendelenburg position.
- Administer baby aspirin (81 mg) x 4 PO (contraindicated if known hypersensitivity, hemophilia, or currently taking any anticoagulants). **Note:** *If the patient is currently taking Coumadin or any other anticoagulant therapy and the 12-Lead ECG shows ischemic changes such as S-T elevation/depression or inverted T-waves, 324 mg of chewable ASA should be administered. If the patient is currently taking Coumadin or any other anticoagulant therapy and the 12-Lead ECG does not show ischemic changes such as S-T elevation/depression or inverted T-waves, ASA should be withheld.*

Level II (ALS Care):

- Establish IV/IO. For STEMI, do a blood draw for hospital if tubes available. Each tube should be labeled with patient's legal name, DOB, the date, time drawn, and Medic's last name.
- Provide continuous ECG monitoring.
- Obtain 12 lead ECG. Consider obtaining a right-side 12 lead or V-4R for inferior wall myocardial infarctions.
- Inferior wall myocardial infarction patients, even if normotensive, should receive a 1000mL fluid bolus and SBP must be >140 mmHg before nitroglycerin can be given.

- Issue a **STEMI Alert** (if ST elevation greater than 1 mm present in two or more contiguous leads), give early report and transmit ECG to the Emergency Department as soon as possible. **Issue a Cardiac Alert for any patient with or suspected cardiac ischemic event – severe angina type pain with one of the following:**
 - ST depression
 - Inverted t-waves
 - Hypotensive patients
 - Symptomatic (non-sinus) tachyarrhythmia > 150 beats per min.
 - SVT, A-Fib with RVR, V-Tach not responsive to medication
 - Symptomatic bradyarrhythmia
 - Paramedic judgment that the patient is very likely to be having an acute severe cardiac ischemic event e.g. BP 94/40 mmHg, diaphoretic, vomiting, shortness of breath, and history of MI
- Administer 0.4 mg nitroglycerin SL every 3-5 minutes up to 3 times for chest pain with SBP >100 mm/Hg and IVF NS 250ml/bolus is initiated.
- Do not use nitroglycerin if the patient has taken Viagra (male or female) in the last 24 hours or long acting erectile dysfunction medications in the last 48 hours.
- Administer 50 mcg IV of Fentanyl for chest discomfort, as needed every five minutes up to a total of 200mcg if SBP >100mmHg.
- If Fentanyl is unavailable, administer 2 mg of Morphine Sulfate, as needed, every 5 minutes to a total of 10 mg if SBP >100mmHg.
- Administer anti-dysrhythmia medications as necessary.
- ECG's for both Cardiac Alert and STEMI's shall be transmitted to the receiving hospital.
- A paper copy of the ECG **MUST** be left with the ED staff at patient transfer.

Level III (ALS Care):

- None

Asystole

Rationale:

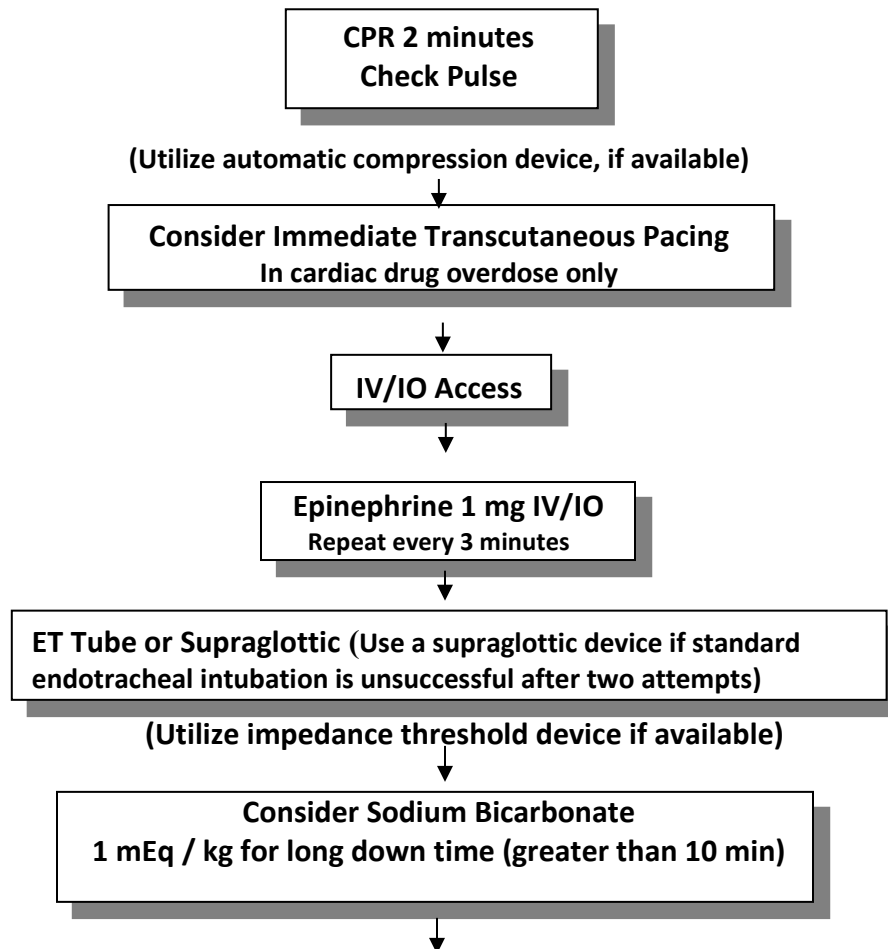
Many victims of cardiac arrest may present with an asystolic rhythm by the time rescuers arrive. Consider possible causes of asystole and confirm asystole in two contiguous leads.

Assessment Checklist:

- Cardiac arrest with asystole, fine ventricular fibrillation, and PEA
- Toxins, Tablets
- Hypoxia
- Tamponade, cardiac
- Hypo/Hyperkalemia
- Thrombosis – pulmonary, coronary
- Hypothermia
- Tension Pneumothorax
- Hydrogen Ion (Acidosis)
- Trauma
- Hypovolemia

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac/respiratory arrest is ALS 	<ul style="list-style-type: none"> • ALS transport only



After two rounds of epinephrine IV, endotracheal or subglottic intubation, obtaining capnography readings that remain less than 10mmHg, and considering surroundings, family appropriateness and dignity, you may terminate resuscitation efforts.

Atrial Fibrillation/Atrial Flutter with Rapid Ventricular Rate

Rationale:

Atrial fibrillation/atrial flutter is the most common cardiac arrhythmia requiring emergent/urgent treatment. Many patients live with A-fib/A-flutter are on anti-coagulation therapy as well as various antiarrhythmic medications to diminish the risk of thromboembolic Cerebral Vascular Accidents. A-fib/A-flutter can produce a rapid ventricular rate, which may need to be treated in the pre-hospital setting. New onset A-fib/A-flutter (less than 48 hours) may be associated with chest pain/acute MI. Long-standing A-fib/A-flutter is generally treated with anticoagulation therapy to prevent thromboembolic CVAs. Hemodynamically unstable A-fib/A-flutter with RVR greater than 150bpm should be treated with electrical cardioversion. Signs and symptoms of instability include ongoing chest pain, shortness of breath, acute altered level of consciousness, SBP less than 90 mm/Hg, and/or pulmonary edema. Minor complaints such as palpitations and weakness may be treated with supportive care. Suspect long-standing A-fib/A-flutter if the patient is on antiarrhythmic therapy such as digoxin, diltiazem, sotalol, amiodarone with anticoagulation therapy.

Assessment Checklist:

- Cardiac ischemia
- Hypoxia
- Hypotension
- Congestive Heart Failure

Transport Triage

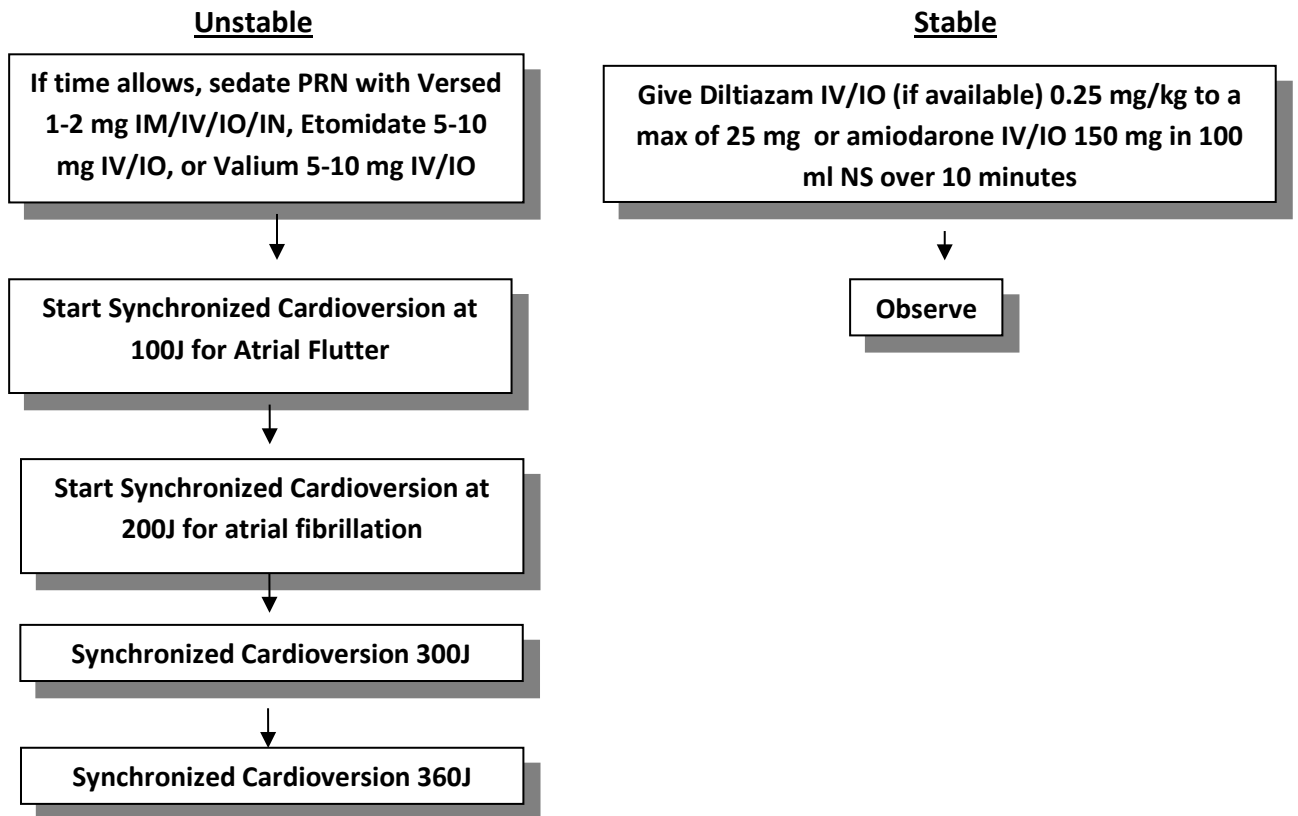
ALS	BLS
<ul style="list-style-type: none"> • Cardiac/respiratory arrest is ALS • Heart Rate >100bpm with other symptoms • Chest tightness, pressure, pain • N/V, diaphoresis, fever, AMS, dehydration • Cardiac history with other symptoms • Patient on home cardiac monitor • Recent cocaine or methamphetamine use • Firing of implanted defibrillator 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Asymptomatic patient with history of A-Fib with a heart rate of less than 100 but greater than 60.

Level I (BLS Care):

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

Level II (ALS Care):

- Provide continuous ECG monitoring.
- Establish IV/IO.
- Pulse oximetry.
- 12 lead ECG if time permits and the patient is stable.
- If sedation is used, apply nasal capnography



Level III (ALS Care):

- None

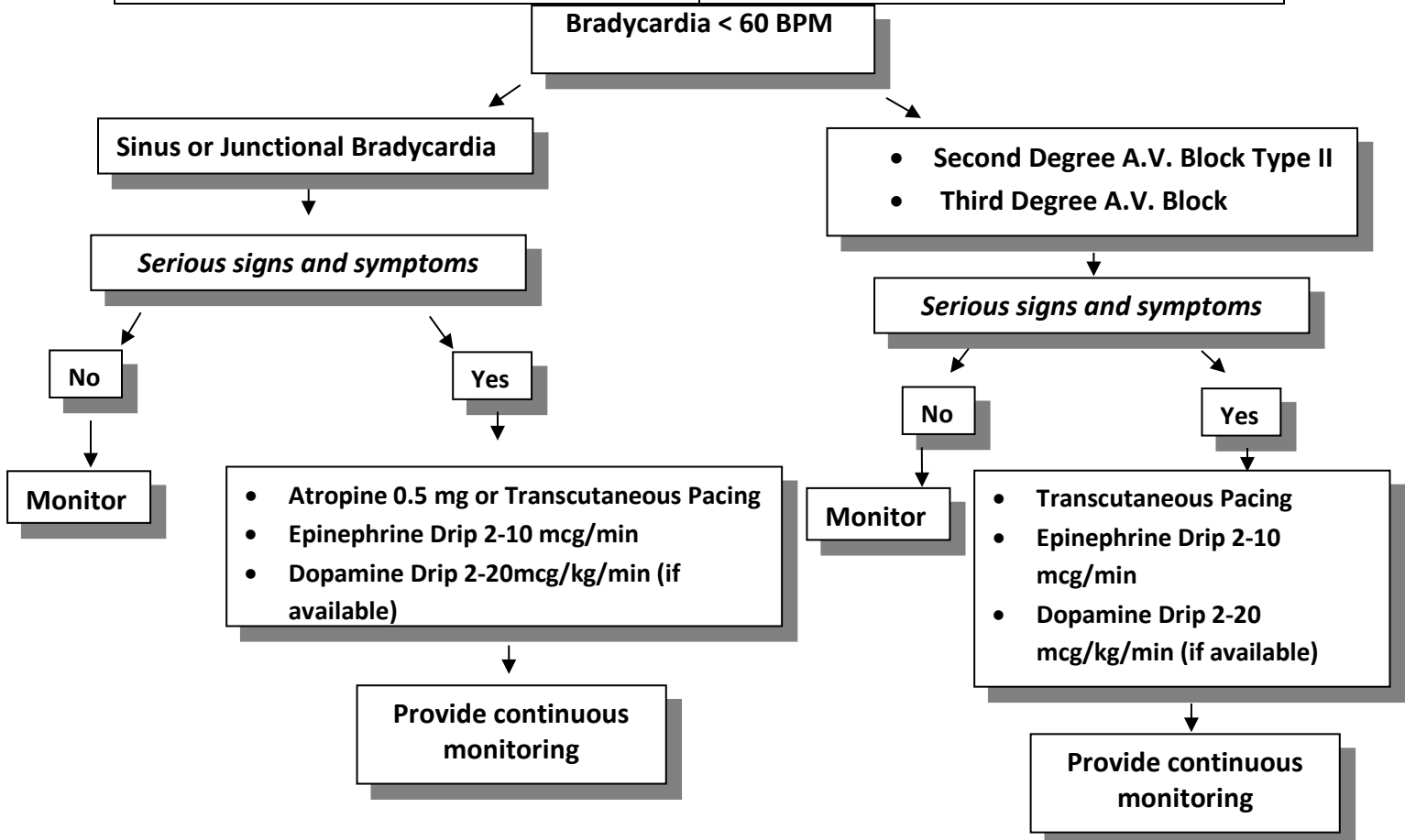
Bradycardia

Rationale:

Some patients are normally bradycardic. Bradycardia is treated only if the patient is medically unstable. Signs and symptoms of instability include ongoing chest pain, shortness of breath, acute altered level of consciousness, SBP < 90 mmHg, MAP < 65 mmHg, and/or pulmonary edema with signs of hypoperfusion such as pallor and diaphoresis.

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac/respiratory arrest is ALS • Abnormal VS • Heart Rate < 60 bpm • Chest tightness, pressure, pain • N/V, diaphoresis, fever, SOB, AMS, dehydration • Cardiac history with other symptoms • Patient on home cardiac monitor • Recent cocaine or methamphetamine use • Firing of implanted defibrillator 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Asymptomatic patient without cardiac history



Note:

- Do not delay transcutaneous pacing if no IV/IO access or for atropine.
- Atropine is ineffective for cardiac transplantation, Type II second degree, and third degree AV blocks.
- Repeat 0.5 mg doses of atropine at 3-5 minute intervals to a maximum of 3 mg if TCP not effective.
- Administer Versed 1-2 mg IV/IO, IM, or IN or 5-10 mg Valium IV/IO for sedation.
- With AMI, do not use atropine.

Cardiogenic Shock

Rationale:

Cardiogenic shock is a severe life-threatening condition that requires rapid intervention. If lung sounds are clear, consider a fluid challenge before using medications to correct symptomatic hypotension. Signs and symptoms of instability include ongoing chest pain, shortness of breath, acute altered level of consciousness, SBP < 90 mmHg, MAP < 65 mmHg (Systolic BP + 2(Diastolic BP) / 3 = Mean Arterial Pressure), and/or pulmonary edema.

Assessment Checklist:

- Large myocardial infarction
- Ruptured valve or ventricular wall
- Large pulmonary embolism

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac/respiratory arrest is ALS • Abnormal VS • Chest tightness, pressure, pain • N/V, diaphoresis, fever, SOB, AMS, dehydration • Cardiac history with other symptoms • Patient on home cardiac monitor • Recent cocaine or methamphetamine use • Firing of implanted defibrillator 	<ul style="list-style-type: none"> • ALS transport only

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO
- Provide continuous ECG monitoring.
- Obtain 12 lead ECG
- If lung sounds are clear, consider a fluid challenge (500 mL of NS) for symptomatic hypotension.
- Consider second IV for dysrhythmia control.
- Administer Norepinephrine infusion by IV/IO at 8 to 16 mcg/ minute or epinephrine infusion IV/IO at 2 to 10 mcg/min or dopamine IV/IO @ 5-20mcg/kg/min (if available) for hypotension not corrected by fluid challenge.
- Advanced airway managed as needed.

Level III (ALS Care):

- None

Cardiopulmonary Arrest

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac/respiratory arrest is ALS • Pulseless/Apneic 	<ul style="list-style-type: none"> • ALS transport only

Transport the patient rapidly to the nearest hospital. If a crew has been on-scene for 20 minutes or more, attempting to resuscitate a patient and capnography remains less than 10 mmHg with an unwitnessed ventricular fibrillation or pulseless ventricular tachycardic cardiac arrest, no bystander CPR was initiated, and patient never had ROSC, with the exception of asystole (**see Asystole protocol**), the crew may elect to either transport the patient to the hospital or contact Medical Control to request the termination of resuscitation.

Level I (BLS Care):

- Note patient's environment
- Wear appropriate Personal Protective Equipment (PPE).
- Perform primary assessment and emergency treatment.
- Assess for Death Scene Criteria.
- Determine pulselessness and apnea.
- Perform CPR with appropriate airway device and automated compression/decompression device (if available). If compression/decompression device is used, a Res-Q-Pod/ITD is recommended (if available).
- AED as indicated.
- Perform a secondary assessment.
- Check capillary blood glucose level.

Level II (ALS Care):

- **Determine cardiac rhythm and follow treatments in the appropriate protocol.**
- Evaluate the need for advanced airway (**see airway management protocol**).
- Capnography monitoring shall be placed after every endotracheal intubation or supraglottic airway insertion (if there is absent or poor waveform activity, the airway adjuncts shall be removed and the patient ventilated with a bag valve mask device with attached ETCO₂ monitor.)
- Establish IV/IO.

- Administer 1 mEq/kg sodium bicarbonate IV and calcium chloride 1 Gm IV in all arrested dialysis patients (if available).
- Establish second IV.
- Transport or terminate code per protocol.
- With ROSC, obtain a 12 lead ECG and treat abnormalities as per protocol.

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

Chest Pain

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac/respiratory arrest is ALS • Age \geq 30 • Abnormal VS • Chest tightness, pressure, pain • N/V, diaphoresis, fever, abnormal breathing, AMS • Patient on home cardiac monitor • Recent cocaine or methamphetamine use • Firing of implanted defibrillator 	<ul style="list-style-type: none"> • ALS transport only

Level I (BLS Care):

- Administer oxygen by appropriate device.
- Evaluate cardiac risk factors, quality of the pain, and signs of cardiac related origin.
- Inquire about the patient’s use of Viagra (male or female) in the last 24 hours or 48 hours for other Viagra-like medications – NTG is contraindicated for these patients.
- Place the hypotensive patient in the Trendelenburg position.
- Administer baby aspirin (81 mg) x 4 PO (contraindicated if known hypersensitivity, hemophilia, or currently taking any anticoagulants).

Note: *If the patient is currently taking Coumadin or any other anticoagulant therapy and the 12-Lead ECG shows ischemic changes such as S-T elevation/depression or inverted T-waves, 324 mg of chewable ASA should be administered.*

Level II (ALS Care):

- Establish IV.
- Provide continuous ECG monitoring.
- Obtain 12-Lead ECG. You may also obtain a right-side 12 or V-R4 lead for inferior wall myocardial infarctions.
- Issue a **STEMI Alert** (if ST elevation greater than 1 mm present in two or more contiguous leads), give early report and transmit ECG to the Emergency Department as soon as possible. **Issue a Cardiac Alert for any patient with or suspected cardiac ischemic event – severe angina type pain with one of the following:**

- ST depression
 - Inverted t-waves
 - Hypotensive patients
 - Symptomatic (non-sinus) tachyarrhythmia > 150 beats per min.
 - SVT, A-Fib with RVR, V-Tach not responsive to medication
 - Symptomatic bradyarrhythmia
 - Paramedic judgment that the patient is very likely to be having an acute severe cardiac ischemic event e.g. BP 94/40 mmHg, diaphoretic, vomiting, shortness of breath, and history of MI
- Treat dysrhythmia as per appropriate Protocol.
 - Administer 0.4 mg nitroglycerin SL every 3-5 minutes up to 3 times for chest pain if SBP >100 mm/Hg and if IVF NS 250ml/bolus has been initiated.
 - Do not use nitroglycerin if the patient has taken Viagra (male or female) in the last 24 hours or long acting erectile dysfunction medications in the last 48 hours.
 - If, after the administration of three doses of Nitroglycerin, the patient continues to experience chest pain and is not hypotensive (SBP < 100 mmHg), Fentanyl may be administered.
 - Administer 50 mcg IV of Fentanyl for chest discomfort, as needed.
 - If Fentanyl is unavailable, administer 2 mg of Morphine Sulfate, as needed, every 5 minutes to a total of 10 mg if not hypotensive patient (SBP > 100 mm/Hg).
 - Obtain a second 12-Lead ECG if time allows for cardiac and STEMI alerts.
 - ECG's for both Cardiac Alert and STEMI's shall be transmitted to the hospital.
 - A paper copy of the ECG MUST be left with the ED staff at patient transfer.

Level III (ALS Care):

- None

Mild Induced Hypothermia

Rationale:

Mild hypothermia (36-32 degrees C or 97-89.6 degrees F) has been shown to improve survival rates and neurological outcomes in cardiac arrest patients. Non-traumatic adult cardiac arrest patients should receive induced hypothermia if the patient's temperature is greater than 36 degrees C or 97 degrees F.

Criteria:

- Cardiac arrest not related to trauma or hemorrhage.
- Age Greater than 16 years.
- If female - without obviously gravid uterus.
- Initial temperature > 36° C or 97°F.
- Patient remains comatose (no purposeful response to pain).

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac arrest is ALS • Altered mental status 	<ul style="list-style-type: none"> • ALS transport only

Perform Neuro exam
GCS < 8

Sedative agent to blunt shivering response as per medical direction.

Cold Saline @ 150 mL/hr to maximum 2 liters (if available)
To achieve 150ml/hr or you may use the 15gtts/min or 10gtts/min formula.
For a 15 drip set = 38gtts/min
For a 10 drip set = 25 gtts/min

Norepinephrine infusion by IV/IO at rate of 8 to 16 mcg/minute or dopamine 5-20 mcg/kg/min IV/IO to keep systolic BP above 120 mmHg or MAP > 90 mmHg

**Repeat temperature at arrival to ED
If temperature is now >36 degrees C or 97 degrees F then start cold saline @ 150 mL/hr**

Pulmonary Edema/Congestive Heart Failure

Rationale:

Most cases of CHF and pulmonary edema will respond to pre-hospital care. Signs and symptoms include: dyspnea on exertion, sitting up or standing (orthopnea) improves breathing, paroxysmal nocturnal dyspnea, worsening pedal edema, rales at inspiration, or JVD.

Assessment Checklist:

- Chronic Obstructive Pulmonary Disease
- Congestive Heart Failure
- Pneumonia
- Pulmonary Embolism
- Submerged Drowning Victim with respiratory compromise

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac/respiratory arrest is ALS • Abnormal VS • Chest tightness, pressure, pain • N/V, diaphoresis, fever, abnormal breathing, AMS • Patient on home cardiac monitor • Recent cocaine or methamphetamine use • Firing of implanted defibrillator 	<ul style="list-style-type: none"> • ALS transport only

Level I (BLS Care):

- Assess patient's temperature. **If febrile, no nitroglycerin SL. Consider pneumonia and see Sepsis protocol.**
- Administer oxygen by appropriate device.
- Place patient in upright position.

Level II (ALS Care):

- Establish IV/IO.
- Provide continuous ECG monitoring.
- Obtain 12-lead ECG.
- Apply nasal capnography
- Administer 0.4 mg nitroglycerine SL every 3 minutes (if SBP > 100 mmHg).
- Consider CPAP. The patient must be awake and able to follow commands to use CPAP. Evaluate the need for advanced airway (See **Airway Management Protocol**).
- Fentanyl 25-50 mcg, for anxiety with CPAP. If unavailable, give Morphine 2 mg to 4 mg IV.
- Bronchial spasms – wheezing should be treated with bronchodilators (cardiac asthma).

Level III (ALS Care):

- None

Pulseless Electrical Activity

Rationale:

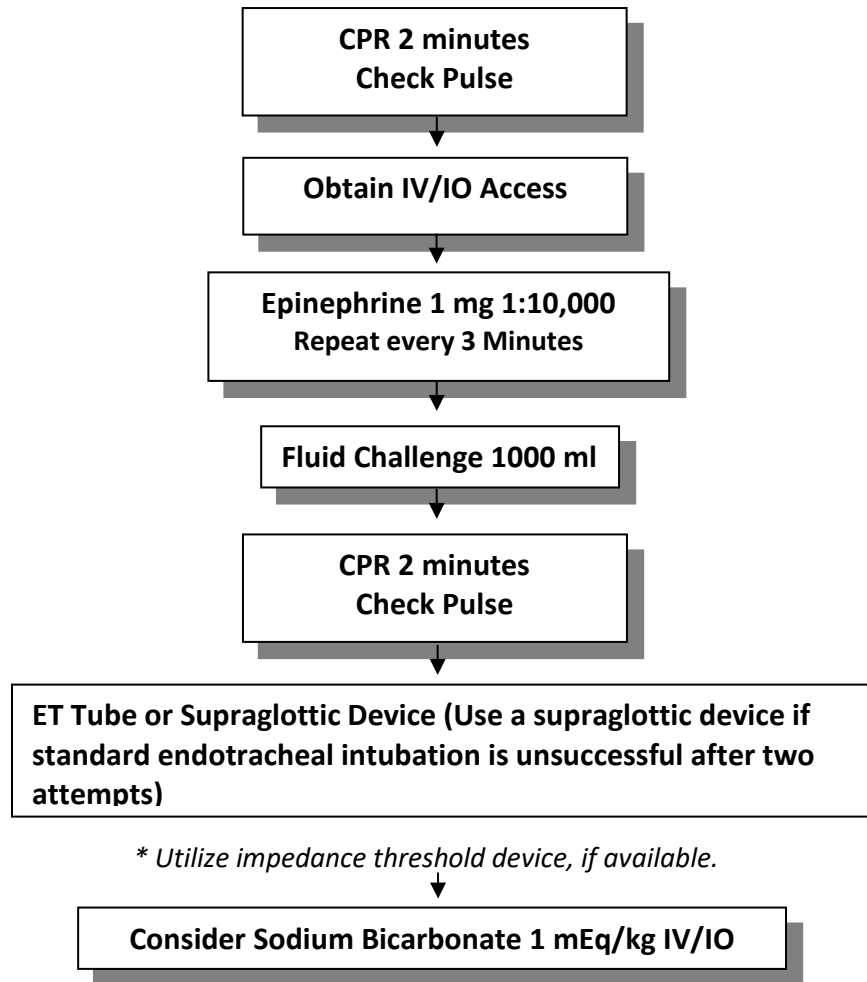
Pulseless electrical activity (PEA) describes any electrical cardiac activity that is not pulse producing. PEA may be the result of an underlying treatable condition. Transient PEA is commonly seen immediately after defibrillation. Do not treat pulseless ventricular tachycardia with this protocol.

Assessment Checklist:

- | | |
|--|--|
| <ul style="list-style-type: none"> • AMI • Hypoxia • Hypothermia • Tension pneumothorax • Overdose (including calcium channel blockers, beta blockers, Tricyclic anti-depressants, and Digoxin) | <ul style="list-style-type: none"> • Hypovolemia • Hyperkalemia • Acidosis • Pulmonary embolism • Cardiac tamponade • Septic Shock |
|--|--|

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac arrest is ALS 	<ul style="list-style-type: none"> • ALS transport only



Note:

- Treat tension pneumothorax with needle decompression

Supraventricular Tachycardia (non-Atrial Fibrillation)

Rationale:

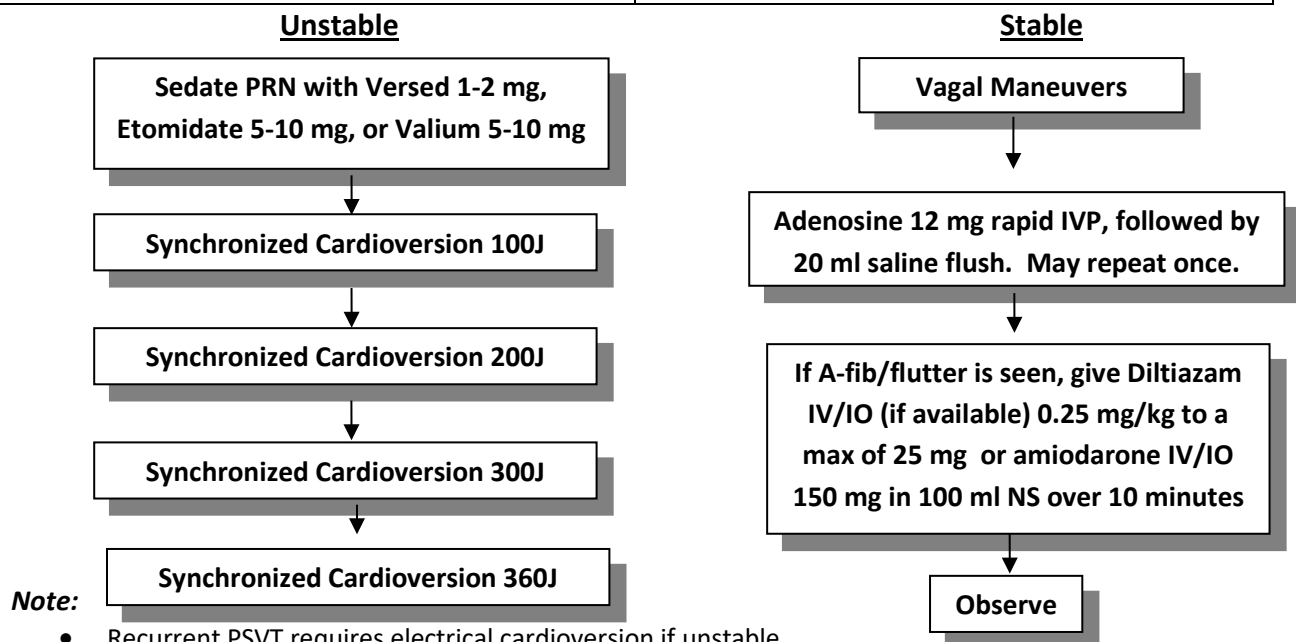
Supraventricular tachycardia (SVT) describes several conditions. Determining the underlying rhythm and cause may be essential for care. Non Afib SVT is a rapid heart rate that develops when the normal electrical impulses of the heart are disrupted and the electrical signal passes more rapidly through an extra electrical pathway from the sinus node. Heart rates > 150 beats/min without P wave should be treated as SVT. Rapid intervention is required in the unstable patient. Unstable is defined as having any of the following: *severe chest pain, dyspnea, hypotension, acute CHF, or acute myocardial infarction*

Assessment Checklist:

- Myocardial infarction
- Dysrhythmia
- **History/Rule out Wolf Parkinson’s White (WPW) or other accessory pathway tachyarrhythmias.**

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac/respiratory arrest is ALS • Abnormal VS • Chest tightness, pressure, pain • N/V, diaphoresis, fever, abnormal breathing, AMS • Patient on home cardiac monitor • Recent cocaine or methamphetamine use • Firing of implanted defibrillator 	<ul style="list-style-type: none"> • ALS transport only



Note:

- Recurrent PSVT requires electrical cardioversion if unstable.
- Adenosine contraindicated with WPW or other accessory pathway tachyarrhythmias.
- Adenosine is diagnostic if rate slows showing Atrial Fibrillation/Flutter, as opposed to PSVT.
- Vagal maneuver – have patient blow into a 10cc syringe for 15 seconds while sitting, then have the patient lie back supine with legs up approximately 45° for 15 seconds , then have the patient sit up.

Ventricular Ectopy

Rationale:

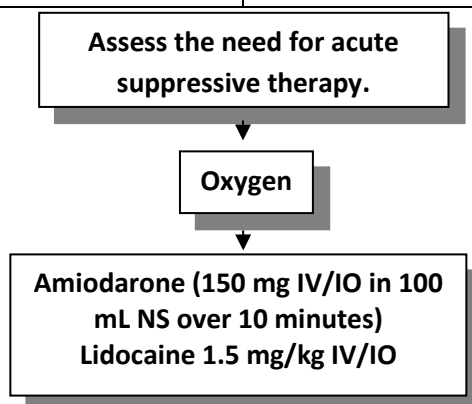
Ventricular ectopy is common. It is important to identify the cause, especially when faced with bradycardia. **Ventricular ectopy is treated if the patient has chest pain, hypotension, if there are more than 6 ectopic beats/minute, or if there are persistent multifocal ectopic beats.**

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac/respiratory arrest is ALS • Abnormal VS • Chest tightness, pressure, pain • N/V, diaphoresis, fever, abnormal breathing, AMS • Patient on home cardiac monitor • Recent cocaine or methamphetamine use • Firing of implanted defibrillator 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Asymptomatic patient without cardiac history



Note:

- Treat a bradycardic rate first if the patient is hemodynamically unstable (See Bradycardia).
- Amiodarone is contraindicated for bradycardia.
- PVCs in an otherwise slow heart rate represent ventricular escape beats, and if eliminated with Lidocaine or Amiodarone may lead to asystole.

Ventricular Fibrillation & Pulseless Ventricular Tachycardia

Rationale:

Ventricular fibrillation and pulseless ventricular tachycardia require immediate treatment. Attempt to also identify the cause of dysrhythmia and correct it. Chest compressions and rapid defibrillation are a priority. The effect of medication therapy and immediate ALS/BLS airway management should not delay high quality chest compressions and defibrillation.

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> Cardiac/respiratory arrest is ALS 	<ul style="list-style-type: none"> ALS transport only

**Chest compressions & ventilations 30:2 (5 cycles, 2 minutes)
then Defibrillate 200 J (Biphasic)**

May utilize Automatic Compression device if available and needed

May utilize Impedance Threshold device if available and used with alternative compression/decompression device

Resume CPR without checking for pulses

CPR for 2 minutes = 200 chest compressions

Pulse check – If pulse producing rhythm displayed, stop CPR and treat as per protocol

Defibrillate 300 J (Biphasic)

Resume CPR without checking for pulses

CPR for 2 minutes = 200 chest compressions

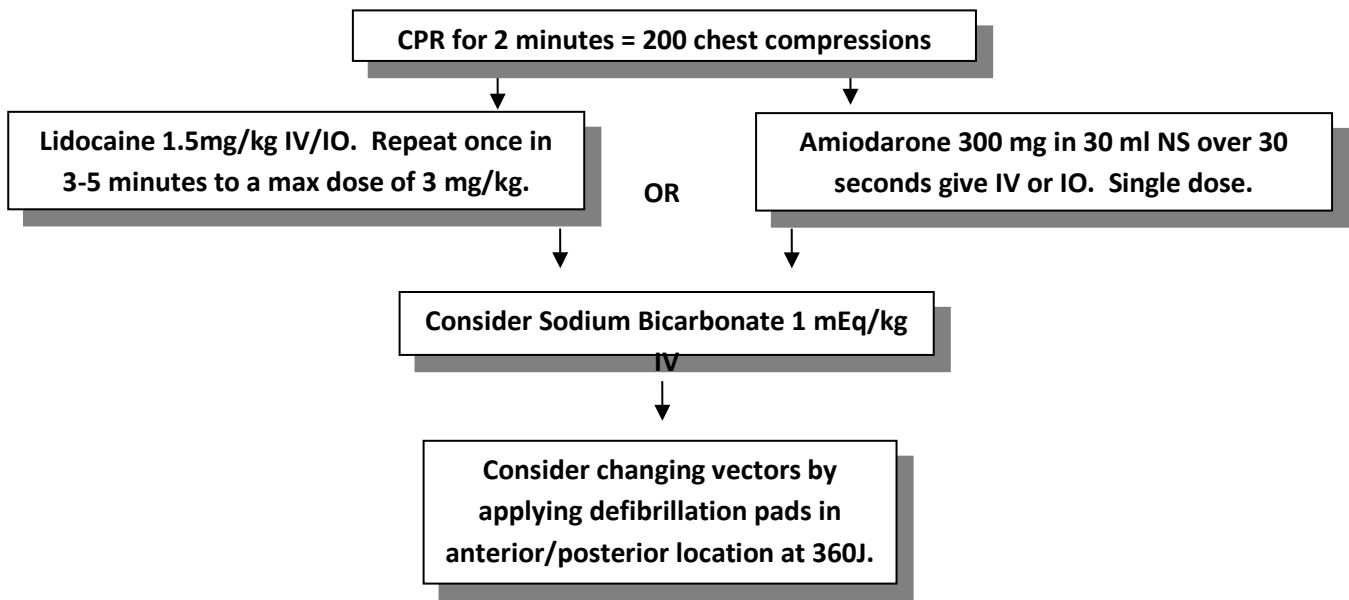
**ET Tube or Supraglottic (if standard endotracheal intubation
is unsuccessful after two attempts use a supraglottic device)**

Resume CPR without checking for pulses

**Epinephrine 1 mg 1:10,000 IV/IO.
Repeat every 3 minutes**

Pulse check after completion of 2 minutes of CPR– If pulse producing rhythm displayed, stop CPR and treat as per protocol

Defibrillate 360 J (Biphasic)

**Level III:**

If a crew has been on-scene for 20 minutes or more, attempting to resuscitate a patient, and capnography remains less than 10 mmHg without obtaining pulses, never had ROSC, no bystander CPR, and was not a witnessed arrest, the crew may elect to either transport the patient to the hospital or contact Medical Control to request the termination of resuscitation.

Note:

- If ROSC obtain a 12 lead ECG immediately.
- If STEMI noted before cardiac arrest or after ROSC, call STEMI Alert and transmit the 12 lead ECG to the receiving hospital.
- Document if witnessed cardiac arrest and if CPR was initiated.
- Document if an AED was used pta and if a Pulsepoint alert resulted in bystander assistance.
- If converted with Amiodarone and VF/Pulseless VT recurs, consider another bolus of Amiodarone at 150 mg.
- Sodium Bicarbonate should be given **only** after intubation if there is a prolonged resuscitation time and/or if acute renal failure is suspected (i.e. the presence of a dialysis shunt).

Ventricular Tachycardia (with pulse)

Rationale:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac/respiratory arrest is ALS • Abnormal VS • Chest tightness, pressure, pain • N/V, diaphoresis, fever, abnormal breathing, AMS • Patient on home cardiac monitor • Recent cocaine or methamphetamine use • Firing of implanted defibrillator 	<ul style="list-style-type: none"> • ALS transport only

Unstable

Immediate Synchronized Cardioversion 100 J. Increase energy by 100 J for successive shocks. Ventricular rate must be >150 BPM. (Defibrillate at 200 J, for polymorphic V-tach. Do not synchronize for cardioversion)



If conversion occurs, follow the stable algorithm. If cardioversion (monomorphic)/defibrillate (polymorphic) is unsuccessful, add antidysrhythmia agents in conjunction with cardioversion. Sedation as time permits (Versed 1-2mg IV/IO/IM/IN or Etomidate 5-10mg IV/IO or Valium 5-10mg IV/IO if available). Do not delay cardioversion/defibrillation to achieve IV access.

Stable

Consider Adenosine if rhythm regular and QRS monomorphic.



Lidocaine 1.5mg/kg IV/IO. Repeat Lidocaine 0.75mg/kg every 5 minutes as needed to a maximum of 3 mg/kg.

OR

Amiodarone 150mg in 100ml NS over 10 minutes.

CHAPTER 2: Adult MEDICAL Care

Standard Medical Care Procedures

Rationale:

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

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

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

Primary care will be initiated prior to any patient transport and shall consist of the following:

- ALS assessment
- A complete set of vital signs
- Initial cardiac rhythm (if indicated by protocol) and continuous EKG monitoring.
- 12 lead EKG (if indicated by protocol)
- IV or IO access (if indicated by protocol)
- Advanced airway placement and airway stabilization (if indicated by protocol)
- All patients given sedation, exhibit any type of altered mental status, or have any respiratory complaint will receive nasal capnography monitoring.

The Pit Crew algorithm will be utilized to accomplish the initial patient care guidelines so that they are completed in a timely and efficient manner regardless of manpower on scene.

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

Level I (BLS Care):

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

Level II (ALS Care):

- Provide ALS support (ECG, IV, advanced airway including capnography, if indicated).
- Administer medication therapy as needed.

Abdominal Pain/GI Bleed

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Female of child bearing age with ABD pain • Female age 12-50 who has ABD pain, fainted, or has systolic BP <90 (ectopic pregnancy) • AMS, Fever, diaphoresis, Ascites • VS not normal for age and size • Evidence of bleeding in stool/urine/vomit • Flank pain/back pain with difficult and/or painful urination. • History of kidney stones 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Diarrhea • Constipation • Chronic issues without any acute changes

Level I (BLS Care):

- Examine for distended or rigid abdomen, bowel sounds, and referred pain.
- Examine for hemorrhage (unexplained tachycardia, hematemesis, bloody or black stool).
- Test for orthostatic hypotension.
- Administer oxygen by appropriate device.
- Use Trendelenburg position if patient is hypotensive.
- Assess history of gastrointestinal problems.

Level II (ALS Care):

- Establish IV, large bore if hemorrhage is suspected.
- Provide continuous cardiac monitoring
- Obtain 12 lead ECG *if cardiac etiology is suspected.*
- Evaluate the need for advanced airway (*see airway management protocol*).
- Fluid bolus 500 mL NS or LR, if hypotensive.
- Administer fluid with caution and establish second IV if abdominal aortic aneurysm is suspected.
- Fluid bolus 1000mL – 2000mL NS or LR, if GI bleeding and hypotensive.
- If actively vomiting, Zofran 4 mg IV/IO/IM or Oral Dissolving Troche (ODT) 4 mg, if available. May repeat once in 2-5 minutes, if needed.

Level III (ALS Care):

- None

Agitated Delirium

Rationale:

Patients with agitated delirium are very difficult to manage. High risk patients with risk management concerns can often lead to injury of EMS personnel if patients are not managed properly. They are generally young adult males, often times with minimal clothing and febrile. Signs and symptoms include anxiety, agitation, confusion, affect change, hallucinations, delusional thoughts, bizarre behavior, combative/violent behavior, and expression of suicidal/homicidal thoughts. Assessment of the patient's mental status is a component of the primary survey. An altered mental status could be caused by a variety of reasons and should be noted using GCS and AVPU.

Assessment Checklist:

- | | |
|--|---|
| <ul style="list-style-type: none"> • Medication effect/overdose (methamphetamine, cocaine, etc.) • Withdrawal symptoms • Bipolar (manic state) • Schizophrenia anxiety disorders • Seizure • Hypoxia • Trauma | <ul style="list-style-type: none"> • Acute psychosis (manic depression, paranoid schizophrenia) • Delirium Tremors/Alcohol withdrawal • Sepsis • Hypovolemia • Hypoglycemia or Hyperglycemia • Overdose • Dysrhythmia • Emotional disorder with agitated behavior |
|--|---|

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Altered mental status • Blood sugar less than 60mg/dl • Violent, with suspicion of overdose or other medical cause • Suffocation • Suspicion of overdose • Suspicion of alcohol or drug withdrawal syndrome (DTs) 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • No other ALS priority symptoms • Violent, with normal VS, no evidence of medical cause • Alzheimer's Disease patients • Alcohol with GCS 13 or greater • History of TBI with normal VS

Level I (BLS Care):

- Evaluate the need for law enforcement.
- Administer oxygen by appropriate device.
- Administer high flow oxygen by Non-rebreather if agitated delirium is suspected.
- Restraints will be used only when the patient is likely to harm themselves or others. **If combative and violent do not attempt to restrain until ketamine is given.** Patients who must be restrained should be placed so that the airway can be effectively monitored. (See **Restraint Protocol.**)
- Check capillary blood glucose level. If less than 60, follow the Hypoglycemia Protocol.
- Document the patient's temperature.
- Contact Poison Control at (800) 282-3171 or (800) 222-1222, if indicated.
- Remove patient from stressful environment
- Verbal techniques (reassurance, calm, establish rapport)

Level II (ALS Care):

- Establish IV/IO. **DO NOT ATTEMPT IV** in the combative patient with uncontrolled agitated delirium, until sedated and restrained.
- Provide continuous ECG monitoring when possible.
- Evaluate the need for advanced airway (*see airway management protocol*).
- Obtain a 12 lead ECG when possible.
- Apply Nasal capnography when possible.
- Ketamine 4 mg/kg IM. Maximum per dose 200 mg. Ketamine IN 4mg/kg is allowed if IM route is not accessible.
- Consider Versed - 4mg IM or 5mg IN. **ONLY if Ketamine is not available.** May repeat once in 15 minutes if uncontrolled combative agitated delirium persists.
- Consider Versed – 2mg IV for patient restrained with conventional methods and IV access has been established without difficulty. **NOTE: You may administer Versed IV to maintain sedation, after IM Ketamine administration, in the patient experiencing agitated delirium. Ketamine and Versed should not be given consecutively IM to affect initial sedation in the patient experiencing agitated delirium.**
- Apply NC ETCO₂ to monitor closely for hypoventilation/apnea once medicated.
- Once the patient is sedated and more manageable establish IV access. Deliver IV fluids wide open for the treatment of the lactic acid build up and dehydration. Add 50mEq Sodium Bicarbonate into a 1000mL NS bolus.

Level III (ALS Care):

- Call medical control for additional sedation if uncontrolled combative agitated delirium persists.

Airway Management

Rationale:

Endotracheal intubation or placement of a subglottic device is the preferred method to stabilize an airway. Secure a patent airway in all patients with persistent GCS equal or less than 8, respiratory failure requiring BVM. HEAVEN is an acronym for six key attributes that can help crews determine the likelihood an emergency-intubation patient will pose a difficult airway. It stands for Hypoxemia, Extremes of size, Anatomic challenges, Vomit/blood/fluid, Exsanguination/anemia, and Neck mobility issues.

Assessment Checklist:

- Cardiopulmonary arrest
- Cervical trauma
- Pulmonary edema refractory to CPAP
- Anaphylaxis
- Airway obstruction/angioedema
- Airway trauma/burns
- Overdose
- Epiglottitis

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal ventilation or respiratory effort • Patient on home apnea monitor 	<ul style="list-style-type: none"> • Baseline normal ventilation and respiratory effort • Normal VS; baseline mental status

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO.
- Provide continuous cardiac monitoring.
- Administer DuoNeb 3.0 mg Nebulizer if indicated.
- Consider CPAP. The patient must be awake and able to follow commands to use CPAP. If the patient is unable to assist by holding the mask and follow commands, proceed to RSI.
- Endotracheal intubation if indicated for adequate oxygen/ventilation or air.
- Perform Rapid Sequential Induction (RSI) of anesthesia for intubation, if indicated and medications available. Etomidate alone may provide adequate sedation for ET intubation.
- Use a supraglottic device if standard endotracheal intubation is unsuccessful after two attempts or if vocal cords cannot be visualized.
- Use Magill forceps to remove a foreign body.
- If likely a difficult airway, use the Endotracheal Tube Introducer (Bougie) if available.
- Perform a cricothyrotomy if all other measures to oxygenate and ventilate are unsuccessful.
- Confirm tube placement utilizing waveform capnography and two other methods (ex: bilateral breath sounds, visualization of endotracheal tube passing through vocal cords, and absent gastric sounds during ventilation)*Waveform capnography supersedes any other confirmation method for endotracheal tube placement.

Level III (ALS Care):

- None

Allergic Reactions

Rationale:

This condition is more common than the potentially more serious anaphylactic reaction. Allergic reactions may require treatment prior to or during rapid transport.

Assessment Checklist:

- Cardiac dysrhythmia
- Upper airway obstruction
- Lower airway obstruction
- Hypotension (<90 mmHg systolic with signs and symptoms of allergic reaction)
- Envenomation
- Food or medication ingestion
- Contact dermatitis
- Rash, Hives, Edema, Itching

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Difficulty breathing or swallowing • Condition worsening • Altered mental status • Known history of anaphylaxis • Rash, hives or itching may be present • Facial, neck, tongue swelling • Stridor • Bronchospasm • Epi-pen injected • Low blood pressure, Tachycardia 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • No difficulty breathing or swallowing • Lungs clear to auscultation • No rash, hives, itching or redness to the skin

Level I (BLS Care):

- Apply the anaphylaxis protocol if airway obstruction, severe bronchospasm or hypotension is present.
- Administer oxygen by appropriate device.
- Place the patient in a sitting position, if not hypotensive.
- Attempt to determine the source of the allergic reaction.
- Poison Control: (800) 222-1222 or (800) 282-3171.

Level II (ALS Care):

- Establish IV/IO.
- Provide continuous cardiac monitoring
- Evaluate the need for advanced airway (*see airway management protocol*).
- Administer Benadryl 0.5mg/kg IV/IO or IM (max 50mg).
- Administer Solu-Medrol 125mg IV/IO or IM.
- Administer Albuterol 2.5mg or DuoNeb 3.0mg nebulizer mask as indicated for bronchospasm. May repeat treatment if indicated. (If available).
- Observe for the development of anaphylaxis.

Level III (ALS Care):

- None

Anaphylaxis

Rationale:

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

Assessment Checklist:

- Dysrhythmia
- Hypoxia with bronchospasm
- Hypotension
- Airway obstruction secondary to edema
- Altered Mental Status
- Envenomation
- Food or medication allergic reaction

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Difficulty breathing/swallowing • Facial, neck, and/or tongue swelling • Stridor, bronchospasm • Condition worsening • Hypotensive shock • Altered Mental Status • Known history of anaphylaxis • Rash, hives, or itching may be present • Use of epi pen 	<ul style="list-style-type: none"> • ALS transport only

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO.
- Provide continuous ECG monitoring.
- Apply Nasal capnography
- Evaluate the need for advanced airway (*see airway management protocol*).
- Administer DuoNeb 3.0mg or albuterol 2.5mg via nebulizer mask for moderate/severe respiratory compromise with or without bronchospasms. Repeat as indicated. (If available).
- **Administer epinephrine 0.3ml, 1:1,000 (1mg/ml) IM** for moderate respiratory compromise, not responding to DuoNeb or for stridor.
- Administer a fluid challenge 1000mL NS if patient is hypotensive.
- Administer epinephrine 0.5-1.0ml 1:10,000 (0.1mg/ml) IV/IO, for extreme respiratory compromise (worsening stridor/angioedema/bronchospasm) or profound hypotension.
- Administer Benadryl 0.5mg/kg IV/IO or IM (max 50mg).
- Administer Solu-Medrol 125mg IV/IO, if available.

- See *Cardiogenic Shock protocol*.

Level III (ALS Care):

- Additional Epinephrine IV as ordered.

Asthma/Bronchitis

Rationale:

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

Assessment Checklist:

- Allergic reaction
- Upper respiratory infections
- Exposure to respiratory irritants
- Pneumonia/bronchitis

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal ventilation or respiratory effort • Home oxygen or chronic steroids • Wheezes, decreased breath sounds with Shortness of breath • Chest tightness 	<ul style="list-style-type: none"> • Baseline normal ventilation and respiratory effort not requiring treatment • Normal VS; baseline mental status

Level I (BLS Care):

- Application of pulse oximetry.
- Assess for airway edema, stridor, and wheezing.
- Administer oxygen by appropriate device.

Level II (ALS Care):

- Establish IV.
- Monitor ECG. Provide continuous cardiac monitoring.
- Apply Nasal capnography.
- Evaluate the need for advanced airway (***see airway management protocol***).
- Administer DuoNeb 3.0 mg via nebulizer mask; may repeat as indicated.
- Consider CPAP if patient's respiratory status is not improving. The patient must be, alert, and able to follow commands to use CPAP.
- **Consider 0.1-0.3ml 1:1,000 (1 mg/ml) Epinephrine IM or for extreme respiratory compromise (status asthmaticus) Epinephrine 0.5-1.0 ml 1:10,000 (0.1mg/ml) IV/IO. May repeat once if needed. (Do not delay advanced airway management if indicated.)**
- Administer Solu-Medrol 125mg Slow IV, IO, or IM (if available).

Level III (ALS Care):

- Additional Epinephrine as ordered.

Carbon Monoxide Inhalation

Rationale:

Carbon monoxide poses a threat to the patient and the rescuer. Use caution in assessing the CO inhalation patient and always administer high flow O₂. Normal diagnostic methods such as pulse oximetry may give normal readings when it is not. This exposure interferes with oxygen exchange on the cellular level. Always consider this exposure in any kind of airway burn or smoke inhalation.

Assessment Checklist:

- Hypoxia of unknown cause
- CNS disorder

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Hazmat incident • Difficulty breathing • Altered mental status • Abnormal VS • Hypoxia of unknown cause • Smoke inhalation • Poisoning • Burns • SPCO greater than 10% with other symptoms 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Breathing normally • No chemical exposure (Hazmat) • SPCO₂ less than 10% with no symptoms

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO.
- Provide continuous cardiac monitoring.
- Apply Nasal Capnography.
- O₂ 100% NRB face mask.
- Assess the patient's Carbon Monoxide level using the rainbow sensor in place of pulse oximetry.
- Evaluate the need for advanced airway (*see airway management protocol*).
- If wheezing, administer Albuterol 2.5 mg or DuoNeb 3mg via nebulizer. Repeat as needed.
- Transport to the closest emergency department.
- **Consider the need early for administering the Cyanokit for any patient with suspected smoke inhalation and/or an elevated Carbon Monoxide level.**
- 12 lead ECG if complaints of chest pain.

Level III (ALS Care):

- None

Cerebrovascular Event: Stroke/TIA

Rationale:

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

Assessment Checklist:

- Hypoglycemia/Hyperglycemia
- Chemical exposures
- Head injuries- Any patient with an injury to the head that is showing stroke like symptoms must have the trauma ruled out first.
- CNS disorders

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Weakness, paralysis, numbness, speech or movement problems new from baseline • Altered mental status • A sudden change in mental status • Abnormal breathing • Symptoms not baseline 	<ul style="list-style-type: none"> • ALS transport only

Level I (BLS Care):

- Monitor oxygen saturation.
- Check capillary blood glucose level.
- Provide oxygen by nasal cannula **only if pulse oximetry reads less than 92%** or chest pain, shortness of breath, or tachypnea.
- Perform focused history and physical assessment, including neurological assessment.
- Establish onset of signs/symptoms.
- Do not delay transport for detailed secondary assessment.
- If the Cincinnati Pre-hospital Stroke Assessment is positive, you will now conduct the VAN Stroke Assessment to detect large vessel occlusions (LVO) (**refer to next page for screening checklist**).
- If time of onset of symptoms is less than 3.5 hours:
 - VAN positive- Transport to Comprehensive Stroke Center or stroke center capable of providing Endovascular Therapy.
 - VAN negative with no Thrombolytic Therapy Contraindications (see below)-Transport to Primary Stroke Center
 - VAN negative with a Thrombolytic Therapy Contraindication (see below)- Transport to Comprehensive Stroke Center or stroke center capable of providing Endovascular Therapy.
- If time of onset of symptoms is greater than or equal to 3.5 hours but less than 24 hours:
 - VAN Positive- Transport to Comprehensive Stroke Center or stroke center capable of providing Endovascular Therapy.

- VAN Negative- Transport to Comprehensive Stroke Center or stroke center capable of providing Endovascular Therapy.
- If time of onset of symptoms is greater than 24 hours, transport to Primary Stroke Center.
- **When calling a “Stroke Alert,” be sure to convey to the hospital if the patient is VAN Positive (Large Vessel Occlusion) or VAN Negative.**
- Elevate head of bed 30°.

Level II (ALS Care):

- Establish **TWO** IVs/IOs.
- Do a blood draw for hospital if tubes available. Each tube should be labeled with patient’s legal name, DOB, the date, time drawn, and Medic’s last name.
- Provide continuous cardiac monitoring.
- Apply Nasal capnography.
- Evaluate the need for advanced airway (*see airway management protocol*).
- If glucose check is less than 60mg/dl, administer D50 25 Gm IV/IO.
- When notifying “Brevard” of a “Stroke Alert,” the paramedic shall include if the VAN assessment is positive or negative.
- Complete Stroke Alert form and have a copy available for the receiving facility.
- Aeromedical transport if the patient is north of the Pineda Causeway (mainland and beachside), south of Malabar Road (mainland), south of Station 64 (beachside) and west of I-95 (county-wide).

Level III (ALS Care):

- None

Thrombolytic Therapy Contraindications:

- Anticoagulants (Xarelto, Pradaxa, Coumadin (Warfarin), Eliquis, Lovenox, Fragmin, Heparin, Arixtra, Savaysa, Lixiana)
- Prior stroke (3 months)
- Significant Head Trauma (3 months)
- History of brain tumor, AVM, or aneurysm
- Active bleeding
- Recent intraspinal or intracranial surgery
- Symptoms suggesting Subarachnoid Hemorrhage:
 - 18 years or older
 - Worst headache of life with elevated blood pressure
 - Severe Nausea
 - Sudden and unexplained LOC after activity

Cerebrovascular Event: Subarachnoid Hemorrhage (Stroke Alert with hemorrhage)

Rationale:

Of the 800,000 strokes annually in the US, 56,000 of these are subarachnoid hemorrhages (SAH). The average age for SAH is <55 and the mortality rate is 50%. 15% of these patients die before reaching the hospital. SAH is bleeding around the brain as the result of a partial or complete rupture in a cerebral vessel (aneurysm). The standard of care for treating this time critical brain hemorrhage is rapid transport to a hospital that provides interventional neurological care. Classic symptoms are acute onset of “the worst headache of my life” with transient loss of consciousness, neck pain and often times, high blood pressure. These symptoms commonly follow exertion. Patients taking anticoagulation medications are at a higher risk of SAH. The SAH Stroke Alert protocol below is based on the Ottawa SAH rule.

Assessment Checklist:

- **Anticoagulation Therapy**
- Neck Pain
- Altered Mental Status
- Syncope
- Seizure
- Hypoglycemia
- Hypertension

Criteria for Stroke Alert with Hemorrhage must include all of the following:

1. Age >40 years
2. “Thunderclap” headache (peak intensity immediately)
3. Symptoms of neck pain or stiffness
4. Witnessed loss of consciousness
5. Onset during exertion
6. On exam, limited neck flexion with pain and stiffness
7. Plus one of the following:
 - GCS < 12
 - Seizure at onset
 - SBP >180 mmHg
 - Nausea and vomiting

Then Stroke Alert with hemorrhage and transport to Comprehensive Stroke Center or stroke center capable of providing Endovascular Therapy.

Exclusion Criteria:

- ***History of recurrent headaches; ≥3 episodes in 6 months***
- ***Previous history of SAH***
- ***Brain tumors or shunts***
- ***Traumatic head injuries***

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Hypertension • Severe Headache • Nausea/vomiting • Altered Mental Status 	<ul style="list-style-type: none"> • Moderate Headache

Level I (BLS Care):

- Monitor oxygen saturation.
- Check capillary blood glucose level.
- Provide oxygen by nasal cannula **only if pulse oximetry reads less than 92%** or chest pain, shortness of breath, or tachypnea.
- Perform focused history and physical assessment, including neurological assessment.
- Establish onset of signs/symptoms.
- Do not delay transport for detailed secondary assessment.
- If the Cincinnati Pre-hospital Stroke Assessment is positive, you will now conduct the VAN Stroke Assessment to detect large vessel occlusions (LVO) (see **Cerebrovascular Event: Stroke/TIA Protocol**).

Level II (ALS care):

- If Stroke Alert Criteria met, call a **“Stroke Alert with hemorrhage”**
- Treat nausea/vomiting with Zofran 4 mg IV/IO/PO
- Establish **TWO** IVs/IOs.
- Do a blood draw for hospital if tubes available. Each tube should be labeled with patient’s legal name, DOB, the date, time drawn, and Medic’s last name.
- Provide continuous cardiac monitoring.
- Apply Nasal capnography.
- Evaluate the need for advanced airway (*see airway management protocol*).
- If glucose check is less than 60mg/dl, administer D50 25 Gm IV/IO.
- Notify “Brevard” of a **Stroke Alert with hemorrhage**.
- Complete Stroke Alert form and have a copy available for the receiving facility
- Air medical transport if the patient is north of the Pineda Causeway (mainland and beachside), south of Malabar Road (mainland), south of Station 64 (beachside) and west of I-95 (county-wide).

Level III (ALS care):

- None

Stroke Alert Checklist

FLORIDA EMERGENCY MEDICAL SERVICES STROKE ALERT CHECKLIST				
DATE & TIMES				
Date:	Dispatch Time:	EMS Arrival Time:	EMS Departure Time:	ED Arrival Time:
BASIC DATA				
Patient Name	Age _____		Gender _____	
Witness(es) Name	Witness(es) Phone (Cell Phone #, Home#, Work#)			
Last Time Known/Well/Normal/ Without Symptoms (onset)				
Blood Glucose				
Prehospital Stroke Scale (Check if abnormal)	Basic Stroke Scale			
	Cincinnati FAST Stroke Scale: <input type="checkbox"/> Facial Droop <input type="checkbox"/> Arm Drift <input type="checkbox"/> Abnormal Speech			
	<input type="checkbox"/> Other Basic Stroke Scale (CPSS ^o , LAPSS ^o , BE-FAST ^o , MEND ^o , others) _____			
Advanced Stroke Scale [Predictive of Large Vessel Occlusion (LVO ^o)]				
<input type="checkbox"/> LAMS ^o <input type="checkbox"/> RACE ^o <input type="checkbox"/> CPSSS ^o <input type="checkbox"/> NIHSS ^o <input type="checkbox"/> VAN ^o <input type="checkbox"/> FAST-ED ^o				
<input type="checkbox"/> Other Advanced Stroke Scales (Enter Scale and Result: _____)				
Comprehensive Stroke Center (CSC) YES NO				
If ANY of the following are positive, transport EMERGENTLY to CSC / PSC-E / TSC / Stroke Interventional Hospital:				
1. Onset >3.5 and < 24 hours				
2. High Suspicion of Major Stroke/LVO on Advanced Stroke Scale				
3. High suspicion of SAH/ICH – see Stroke Alert Criteria below				
4. IV Lytic contraindications				
5. Wake Up Stroke (option to transport to facility capable of required assessment, such as CT Perfusion, or MRI/MRA)				
Thrombolytic Contraindications				
<input type="checkbox"/> TIME – last known normal <input type="checkbox"/> 18 years or greater <input type="checkbox"/> Stroke symptoms: <input type="checkbox"/> facial droop; <input type="checkbox"/> motor weakness; <input type="checkbox"/> speech – slurred words/not expressed clearly <input type="checkbox"/> Symptoms suggesting subarachnoid hemorrhage – worst headache of life with elevated BP <input type="checkbox"/> Elevated blood pressure SBP> 185 or DBP > 110 <input type="checkbox"/> Recent intracranial or intraspinal surgery <input type="checkbox"/> Active bleeding <input type="checkbox"/> Significant head trauma – 3 months <input type="checkbox"/> Prior stroke – 3 months <input type="checkbox"/> History of brain tumor – AV malformation or aneurysm <input type="checkbox"/> Anticoagulation medications: (Warfarin (coumadin) oral; Pradaxa (dabigatran) oral; Xarelto (rivaroxaban) oral; Eliquis (apixaban) oral; Lixiana, Savvsa (edoxaban) oral; Arixtra (fondaparinux) SQ; Heparin (unfractionated heparin) SQ; Lovenox (enoxaparin) SQ; Fragmin (alteparin) SQ.				
Stroke Alert Criteria YES NO				
IF ANSWER IS YES TO ALL OF THE FOLLOWING STROKE ALERT CRITERIA, CALL STROKE ALERT & TRANSPORT EMERGENTLY to MOST APPROPRIATE, CLOSEST AVAILABLE STROKE CENTER (if within a reasonable distance), (Acute Stroke Ready Hospital (ASRH), PSC, or CSC / PSC-E / TSC / Stroke Interventional Hospital)				
1. Onset <3.5 hours (ASRH, PSC, PSC-E / TSC, or CSC); <24 hours (CSC ^o , PSC-E / TSC ^o)?				
2. Any abnormal focal neurological finding on examination?				
3. Absence of head trauma causing deficits?				
4. Absence of stroke symptom response to hypoglycemic treatment?				
Additional Stroke Alert Criteria to Consider for Transport to CSC:				✓ IF ABNORMAL
Suspicion of Subarachnoid Hemorrhage?	Sudden worst-ever headache Sudden & unexplained decrease LOC Often: after activity, with severe nausea/vomiting, neck discomfort specially with movement, GCS<15, significantly elevated BP			
EN ROUTE, PERFORM MORE COMPLETE NEURO ASSESSMENT IF TIME ALLOWS				
DESTINATION STROKE CENTER		STROKE CENTER		

EMS VAN Form



Stroke &
Neurovascular
Services

EMS VAN: Acute Stroke Screening Tool

Is ARM weakness present?

- Yes **Continue the VAN exam**
- No. **Patient is VAN negative. Stop VAN Exam.**

	Yes	No
Visual Disturbance?		
Aphasia?		
Neglect?		

If patient has **any degree of weakness PLUS any one of the below:**

Visual Disturbance (Assess field cut by testing both sides, 2 fingers right, 1 left)

Aphasia (Inability to speak or understand. Repeat and name 2 objects, close eyes, make fist)

Neglect (Forced gaze to one side or ignoring one side, touching both sides)

This is likely a large artery clot (cortical symptoms) = VAN Positive

Childbirth Emergencies

Rationale:

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

Assessment Checklist:

Be aware for the following complications:

- shock
- placenta previa
- uterine rupture
- spontaneous abortion (miscarriage)
- fetal distress related to drug or alcohol abuse
- abruptio placentae-rapid vaginal bleeding
- abnormal presentation - breech, limb, or prolapsed cord

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Bleeding or miscarriage • Baby born; in distress: premature, meconium present, APGAR less than 9 • 3rd trimester bleeding • Breech or abnormal presentation • High-risk or known complications 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Illness during pregnancy without ALS priority symptoms

Level I (BLS Care):

- Mother:
 - Administer oxygen by appropriate device.
 - Be prepared to manage shock.
 - Identify gravid, para, contraction timing and duration, prenatal care (or lack of it), past or known complications, medication or drug use, and last menstrual period.
 - If the patient is hypotensive, consider placing the patient on her left side.
 - Deliver the baby as indicated (crowning present).
 - Manage complications as needed.
 - Administer external uterine massage after delivery. Put baby to breast.
- Baby:
 - Suction and maintain a patent airway.
 - Administer oxygen by appropriate device.
 - Dry and keep the baby warm.
 - Perform APGAR scoring at one minute and five minute intervals post-delivery.
 - Observe the airway for meconium and fluids.
 - Check capillary blood glucose level if APGAR < 9.

Level II (ALS Care):

- Meconium suctioning, if indicated.
- Establish IV at TKO rate for mother. Fluid challenge if hypotension not corrected by BLS care.
- Provide continuous EKG monitoring.
- Evaluate the need for advanced airway (*see airway management protocol*).

Level III (ALS Care)

- Contact Medical Control for any unusual complication and presentations.

Chronic Obstructive Pulmonary Disease

Rationale:

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

Assessment Checklist:

- Pulmonary edema
- Pneumonia
- Pneumothorax
- Status Asthmaticus

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal ventilation or respiratory effort • Patient on home oxygen and pulse oximeter 	<ul style="list-style-type: none"> • Baseline normal ventilation and respiratory effort • Normal VS; baseline mental status

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO.
- Provide continuous ECG monitoring.
- Apply Nasal capnography
- Evaluate the need for advanced airway (*see airway management protocol*).
- Administer Albuterol 2.5mg or DuoNeb 3mg (if available) in a nebulizer mask. May repeat as indicated unless chest pain present of HR >140 bpm. May administer nebulized drugs prior to vascular access.
- Consider CPAP (if available) if the patient is not improving with Albuterol or DuoNeb and oxygen. The patient must be awake, alert, oriented and able to follow commands to use CPAP. If the patient is obtunded, hypoxic and in respiratory distress consider positive pressure ventilation with a BVM, subglottic device or proceed to RSI protocol with ETT placement.
- Administer Solu-Medrol 125mg Slow IV or IO (if available).

Level III (ALS Care):

- None

Diabetic Emergencies (Hyperglycemia)

Rationale:

The hyperglycemia patient may suffer from severe dehydration and hyperosmolar coma resulting in a decreased level of consciousness and life threatening metabolic acidosis.

Assessment Checklist:

- Sepsis
- Cerebrovascular event
- Hypovolemic shock
- Gastroenteritis

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Altered mental status • Unconscious • Rapid breathing • High blood sugar (> 300 mg/dL) with other ALS priority symptoms 	<ul style="list-style-type: none"> • Normal VS; conscious and alert (baseline) • Breathing normally • High blood sugar – no associated symptoms

Level I (BLS Care):

- Assess for Kussmaul respirations.
- Administer oxygen by appropriate device.
- Inquire of the conscious patient about a history of diabetes, insulin dependence and compliance with medications.
- Check capillary blood glucose level.

Level II (ALS Care):

- Establish IV/IO.
- Provide continuous cardiac monitoring.
- Apply Nasal capnography if altered mental status is present.
- Evaluate the need for advanced airway (***see airway management protocol***).
- IV/IO NS rapid infusion if patient shows signs of dehydration, has a blood glucose level greater than 300mg/dL, or has decreased level of consciousness (500mL bolus followed by 1 liter/hour drip).

Level III (ALS Care):

- None

Diabetic Emergencies (Hypoglycemia)

Rationale:

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

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

Assessment Checklist:

- Overdose, substance abuse, including alcohol
- CNS disorder
- Hypothermia
- Prolonged vomiting, diarrhea with minimal nutritional intake
- Infection/Sepsis
- Cerebrovascular event

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Unconscious • Altered mental status • Glucose less than 60 with other symptoms • Abnormal breathing (slow or rapid) • Dehydration or Hypotension 	<ul style="list-style-type: none"> • Normal VS; conscious and alert (baseline) • Breathing normally • Low blood sugar corrected with oral glucose on-scene

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO.
- Provide continuous cardiac monitoring.
- Administer D50 25G IV/IO if glucose is less than 60mg/dl. May repeat if glucose continues to be less than 60mg/dl and patient is symptomatic.
- If D50 25G is unavailable, administer D-10 in the 250 ml of Normal Saline, infused as quickly as possible. .
- If unable to establish IV or IO and glucose less than 60mg/dl, administer Glucagon 1mg IM.
- If seizures, treat with Versed 2mg IM/IV/IO/IN or Valium 5mg IM/IV/IO.

Level III (ALS Care):

- None

Drowning Emergencies

Rationale:

Drowning is a process resulting in primary respiratory impairment from submersion in a liquid medium. This definition implies that a liquid-air interface is present at the entrance to the victim's airway, and can prevent the individual from breathing oxygen. Outcome may include delayed morbidity. There is a possibility with any introduction of liquid to the lungs of a delayed worsening in condition even up to several hours. Drownings should always be treated, even if the patient presents little to no adverse symptoms. The terms wet drowning, dry drowning, active or passive drowning, near-drowning, secondary drowning, and silent drowning should be discarded.

Assessment Checklist:

- Hypothermia
- Dive Injuries
- Barotrauma
- Respiratory Distress

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal breathing • Altered mental status • Decreased or absent vital signs • Vomiting • Coughing 	<ul style="list-style-type: none"> • Normal VS • Normal Breathing • No Trauma

Level I (BLS Care):

- **Spinal immobilization if cause unwitnessed by BCFR personnel or if trauma suspected**
- Thorough suctioning of airway
- Administer 100% oxygen NRB
- Place patient in supine/left lateral recovery position
- Keep patient warm and transport expeditiously

Level II (ALS Care):

- See **Pulmonary Edema Protocol**.
- Establish IV/IO.
- Provide continuous ECG monitoring.
- Apply Nasal Capnography.
- Evaluate the need for advanced airway.
- Consider CPAP at 7.5cmH₂O for patients with significant hypoxia or dyspnea. The patient must be awake and able to follow commands to use CPAP, if the patient is unable to assist by holding the mask and follow commands proceed to RSI.

Level III (ALS Care):

- None

Important:

Continuous assessment of the airway is of utmost importance due to the potential for rapid deterioration. There may be a need for aggressive airway management.

Environmental Cold Emergencies

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac history (CAD, MI, hypertension) • Altered mental status • Tympanic less than 95 degrees F • Change in skin color; <ul style="list-style-type: none"> ○ Frostbite: pale, grey, numb “bloodless” skin ○ Hypothermia: pale, cyanosis with decreased mental status 	<ul style="list-style-type: none"> • Normal VS and baseline mental status • No other symptoms

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO.
- Provide continuous cardiac monitoring.
- Administer D50 25G IV if glucose is less than 60mg/dl and symptomatic.
- Evaluate the need for advanced airway (*see airway management protocol*).
- Heat packs to groin/axilla/chest.

Level III (ALS Care):

- Warm IV fluid.

Environmental Heat Emergencies

Rationale:

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

Assessment Checklist:

- Heat cramps, heat exhaustion, heat stroke, hypovolemic shock
- Hyperglycemia/hypoglycemia
- Head trauma
- CNS disorder
- Cerebrovascular event
- Malignant hyperthermia
- Medication impairing physiologic cooling mechanisms (ex: opioids, antihistamines, antiarrhythmias, recreational drugs, etc.)

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac history (CAD, MI, hypertension) • Altered mental status • Tympanic greater than 101 degrees F • Heat exhaustion: profuse diaphoresis, dehydration • Heat stroke: red, dry skin with decreased mental status, hypovolemic shock 	<ul style="list-style-type: none"> • Normal VS and baseline mental status • No other symptoms

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO.
- Provide continuous cardiac monitoring.

- Evaluate the need for advanced airway (*see airway management protocol*).
- If systolic BP less than 90mm/Hg, administer NS fluid boluses in increments of 500mL NS to keep systolic BP of 90mm/Hg.

Level III (ALS Care):

- None

Hypertensive Emergencies

Rationale:

Hypertensive emergencies not treated can lead to other severe conditions, including myocardial infarction, pulmonary edema, and inter-cranial hemorrhage. Aggressive treatment may worsen these conditions; as a result, aggressive treatment should be initiated only in the emergency department. Prehospital treatment is directed to the underlying cause and symptoms (i.e., chest pain or shortness of breath, severe headache). Hypertensive emergencies occur when systolic pressure > 200 mm/Hg and/or a diastolic pressure > 120 mm/Hg with signs and symptoms of neurological compromise.

Assessment Checklist:

- Emotional stress
- Pain
- Anxiety
- Respiratory distress with CHF
- Cerebrovascular event
- Drug overdose - stimulants
- Myocardial infarction or angina

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Headach • Chest tightness, pressure, pain • Nausea/Vomiting • Diaphoresis • Altered mental status • Patient on home cardiac monitor • Recent cocaine/amphetamine use. 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Asymptomatic patient with cardiac history

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV.
- Provide continuous cardiac monitoring.
- Obtain 12 lead ECG.
- Evaluate the need for advanced airway (*see airway management protocol*).
- See Chest Pain protocol.
- If neurological changes, see *Cerebrovascular Event protocol*.

Level III (ALS Care):

- None

Overdose

(Unknown Etiology)

Rationale:

Not all cases of poisoning or overdose are life threatening immediately. Use calm management and be prepared for a violent interaction, immediate airway management, severe dysrhythmias or even cardiopulmonary arrest. Take protective measures and use law enforcement to assist, as needed.

Assessment Checklist:

- Seizure
- Hypoglycemia or hyperglycemia
- Dysrhythmia
- Emotional disorder or pseudo-syncope episode
- Hypoxia
- CVA or TIA
- Delirium Tremens
- Agitated delirium

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Altered mental status • Speech impairment • Impaired respiratory effort • Opiate overdose • Alcohol • Cocaine, amphetamines and other stimulants • Violent, agitated behavior • Hyperthermia 	<ul style="list-style-type: none"> • Normal VS; baseline mental status

Level I (BLS Care):

- Secure all possible sources of the overdose and transport them to the hospital with the patient.
- Remain particularly alert to early signs of airway compromise and hypoglycemia.
- Administer oxygen by appropriate device.
- Monitor for rapid changes in condition and behavior.
- Patients who must be restrained should be placed so that the airway can be effectively monitored. (See **Restraint Protocol**)
- Document the patient's temperature
- Contact Poison Control at (800) 222-1222 or (800) 282-3171.
- Check capillary blood glucose level.

Level II (ALS Care):

- Establish IV/IO.
- Provide continuous ECG monitoring.
- 12 Lead ECG for patients with antiarrhythmic, antidepressant, or calcium channel blocker/beta blocker medications overdose.
- Evaluate the need for advanced airway (*see airway management protocol*).
- Apply Nasal capnography if altered mental status.

- If glucose level is 60mg/dl, follow Hypoglycemia protocol.
- If respiratory depression or failure and opiate overdose is suspected, administer Narcan 2mg IV in increments of 0.5mg every 30 seconds until respiratory effort improves. If methadone or Fentanyl or its derivatives (Carfentanyl, Acrylfentanyl) are suspected and some response to Narcan is noted, may administer Narcan up to an additional 2mg in incremental doses of 0.5mg every 30 seconds until respiratory depression improves.
 - Narcan is only given until the patients respirations improve; achieving a full reversal may make the patient a management problem. Over aggressive treatment with Narcan can precipitate immediate opiate withdrawals symptoms and aggressive, agitated, even violent behavior may occur.
- If IV access is not available and patient meets above criteria, administer Narcan 2mg via nasal atomizer. RESPONSE TO NASAL NARCAN WILL BE DELAYED with less notable improvements than with the equivalent dose given IV because a significant portion of the medication is ineffective in the posterior oral pharynx.

Level III (ALS Care):

- Sodium Bicarbonate 1mEq/kg IV.

Pain Management

Rationale:

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

Assessment Checklist:

- Suspected bone fractures
- Musculoskeletal injuries
- Burns

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal ABCs • Altered mental status • Significant mechanism, injury to possibly dangerous area • Suspected spinal cord injury • Trauma alert criteria 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Injury to non-dangerous area • Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria • Sprains or minor fractures

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO.
- Provide continuous cardiac monitoring.
- Apply Nasal capnography
- Administer Fentanyl 50-100mcg IV/IO/IM or 100-200mcg IN for burns or isolated long bone fractures.
- If Fentanyl unavailable, administer morphine sulfate, 5mg IV/IO or IM for burns or for isolated long bone fractures to a total of 10mg.

Level III (ALS Care):

- Fentanyl greater than 200 mcg or Morphine (if available) greater than 10 mg

Poisoning

Rationale:

Poisonings by substances other than medications can present with a variety of symptoms. Sometimes the victim will present with a different chief complaint and be unaware of being poisoned. The rescuer must perform a careful and complete interview. *Poisonings may include pesticides, petroleum, and cleaning solvents; either by ingestion, inhalation, or absorption. The rescuer must be alert to the possible need to manage the scene and the patient as a hazardous materials exposure and to prevent contamination of the rescuers and the apparatus.*

Assessment Checklist:

- Seizure
- Hypoglycemia or hyperglycemia
- Dysrhythmia
- Suicidal gesture
- Altered mental status
- Hypoxia
- CVA or TIA
- Delirium Tremens
- Hypotension

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Altered mental status • Unable to speak clearly • Abnormal breathing • Cleaning products, pesticides, acid or lye • Violent (Rule out hypoxia, occult cerebral bleed, overdose, head trauma, etc.) 	<ul style="list-style-type: none"> • Normal VS; baseline mental status

Level I (BLS Care):

- Remove the victim from the source (rescuer should wear appropriate PPE).
- Decontaminate the victim, as needed.
- Assess for SLUDGEM syndrome (salivation, lacrimation, urination, defecation, gastrointestinal upset, emesis, and/or miosis). Indicates organophosphate or carbamate poisoning.
- Administer oxygen by appropriate device.
- Suction, if indicated.
- Do not use a helicopter to transport any hazardous materials exposure patient.
- Contact Poison Control at (800) 222-1222 or (800) 282-3171.
- Check capillary blood glucose level.
- Consider CO inhalation (see **Carbon Monoxide protocol**)

Level II (ALS Care):

- Establish IV/IO at a TKO rate.
- Provide continuous cardiac monitoring.
- If glucose level is less than 60mg/dl, follow Hypoglycemia protocol.
- Apply Nasal capnography.
- For the organophosphate or carbamate poisoning victim, administer Atropine 2mg IV/IO at 5 minute intervals until symptoms are controlled.
- Consider DuoDote Auto Injector.

Level III (ALS Care):

- Haz-Mat protocols as ordered by Medical Control.

Seizure Disorder

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Pregnancy • Trauma • Diabetic • Cardiac history (CAD, MI, hypertension) • Continuous or multiple seizures • Abnormal breathing • No seizure history 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Breathing normally

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO.
- Provide continuous cardiac monitoring.
- If blood sugar is less than 60mg/dl, follow **hypoglycemia protocol**.
- Apply nasal capnography.
- If actively seizing, give Versed 1-2mg IM/IN (maximum dose 5mg) while attempting IV access.
- If IV/IO is established, administer Versed 1-2mg. For refractory seizures, may give up to 5mg.
- If Versed not available, administer Valium IV/ IM in 5mg increments. Maximum dose 10mg.
- Evaluate the need for advanced airway (**see airway management protocol**).
- Consider RSI for airway maintenance in status epilepticus. Remember, using paralytic medication masks underlying seizure activity.

Level III (ALS Care):

- Additional Valium or Versed.
- If seizure is eclampsia related, then administer Magnesium Sulfate 2Gm IV (use caution to dilute before administration).

Sepsis/Sepsis Alert

Rationale:

Sepsis is a rapidly progressing, life threatening condition due to systemic infection. Severe sepsis must be recognized early and treated aggressively to prevent progression to shock and death. Sepsis may be identified when the following markers of the Systemic Inflammatory Response Syndrome (SIRS) are present in a patient with:

1. Suspected infection
2. Temperature > 38° C (100.4° F) OR < 36° C (96.8° F)
3. Respiratory Rate > 20 breaths/min
4. Heart Rate > 90 beats/min

In addition to physiologic markers of SIRS, severe sepsis may cause hypoxia and inadequate organ perfusion, resulting in severe metabolic acidosis marked by elevated blood lactate levels and decreased ETCO₂ levels (measured by capnography). Sepsis is a bacterial (occasionally viral) infection spreading into the blood stream, causing fever. Severe sepsis and septic shock are a result of unchecked bacterial growth causing vasodilation with an associated decrease in end organ perfusion. Decreased mental status, hypoxia with respiratory failure, renal insufficiency, and/or severe hypotension (distributive shock) requires large amounts of IV fluid infusion and vasopressor agents to decrease rapid morbidity and mortality. Suspect infection with decreased/altered level of consciousness.

The purpose of a Sepsis Alert is to provide pre-arrival Emergency Department notification in order to facilitate rapid assessment and treatment of a suspected severe sepsis patient.

Sepsis Alert Criteria

Temperature > 38° C (100.4° F) OR < 36° C (96.8° F) AND one of the following:

- ETCO₂ ≤ 25 mmHg or POCT lactic Acid > 2.0
- Hypotension, SBP < 90mmHg and MAP < 65mmHg
- Decreased level of consciousness (especially in the elderly)

Assessment Checklist:

- Decreased/altered level of consciousness
- Immunocompromised, diabetics, patients on long term steroids
- Indwelling catheters
- Surgery in the last 6 weeks

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Suspected infection • Altered Mental Status • Temperature > 38° C (100.4°F) or <36°C (96.8°F) • Respiratory Rate > 20 breaths/min • Heart Rate > 90 beats/min • ETCO₂ ≤ 25 mmHg • Elevated Lactate > 2.0 • SBP < 100mm/Hg or MAP < 65mmHg 	<ul style="list-style-type: none"> • ETCO₂ ≥30mmHG or ≤45mmHG • SBP > 100mmHg • Temperature between 36° C (96.8° F) and 38° C (100.4° F). • Normal Baseline Mental Status

Level I (BLS Care):

- Administer oxygen by appropriate device to maintain an O2 sat above 95%.
- Check capillary blood glucose level.
- Record the patient's temperature

Level II (ALS care):

- Full ALS assessment and treatment.
- Initiate a Sepsis Alert to the receiving hospital through dispatch. Provide them with the patient's age, sex, ETA, temperature, blood pressure if hypotensive, and ETCO2.
- Do a blood draw for hospital if tubes available. Each tube should be labeled with patient's legal name, DOB, the date, time drawn, and Medic's last name.
- Establish a large bore IV or IO. NORMAL SALINE: 1 liter, regardless of blood pressure. Assess lung sounds every 500cc. Total amount of IVF should not exceed 2000ml (500ml if hemodialysis or CHF patient). If an IO is established the humeral head is preferred site.
- Establish a secondary large bore IV.
- Continuous cardiac monitoring.
- Obtain point of care testing lactic acid level (if available) and report with the sepsis alert.
- Apply nasal capnography and report with sepsis alert.
- Evaluate the need for advanced airway (see **airway management protocol**).
- If intubated, sedate with Versed IV 1-2mg.
- Obtain a 12 lead ECG.
- If systolic BP remains < 90mmHg after or MAP <65mmHg after a 2000ml fluid bolus, administer vasopressor agents.
- Norepinephrine 8-16mcg/min or Dopamine 5-20mcg/kg/min (if available) titrated to maintain systolic BP > 100mmHg.

Level III (ALS Care):

- Call medical control before administering additional fluid boluses or vasopressor agents if hemodialysis or congestive heart failure patient.

Syncope

Rationale:

Assessment of the patient's mental status is a component of the primary survey and should be noted using GCS and AVPU. A syncopal episode can result from a variety of reasons and can be confused with other cases of loss of consciousness and can result in head and other injuries. Severe pain may result in syncope.

Assessment Checklist:

- Seizure
- Hypoxia
- Head trauma
- CVA or TIA
- Severe pain syndromes
- Emotional disorder or pseudo-syncopal episode.
- Hypovolemia/dehydration
- Hypoglycemia or hyperglycemia
- Overdose
- Dysrhythmia
- Orthostatic vitals
- Cardiac ischemia
- Pregnancy

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal VS • Multiple recent fainting episodes • Females with abdominal pain age 12-50 • Abnormal breathing • Cardiac history (CAD, MI, hypertension) • Altered mental status 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Single fainting episode, now awake and alert with normal VS • Near fainting episode, now awake and alert with normal VS

Level I (BLS Care):

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

Level II (ALS Care):

- If glucose level is less than 60mg/dl, follow Hypoglycemia Protocol.
- Establish IV.
- If hypotensive or orthostatic vitals are positive, give fluid bolus of 500mL increments.
- Provide continuous cardiac monitoring.
- Obtain 12 lead ECG.
- Apply Nasal capnography if altered mental status.
- Evaluate the need for advanced airway (*see airway management protocol*).

Level III (ALS Care):

- None

Vomiting

Rationale:

Although nausea and vomiting are common symptoms of gastrointestinal viruses or a side effect of medications, they are often times symptoms of more serious medical problems. Uncontrolled vomiting can lead to aspiration pneumonia and severe hypoxia.

Assessment Checklist:

- Narcotic pain medication
- Vomiting caused by chemotherapy
- Severe Pain
- Infectious disease
- Brain hemorrhage
- Chest pain
- Pregnancy
- Bowel obstruction
- Migraine headache

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal VS • Suspected food poisoning • Females with abdominal pain age 12-50 • Abnormal breathing • Cardiac history (CAD, MI, hypertension) • Altered mental status 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Nausea

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV.
- Provide continuous cardiac monitoring.
- Administer Ondansetron (Zofran) 4mg IV/IM. May repeat IV dose once in 2-5 minutes, if needed.
- Treat other more serious signs and symptoms first (chest pain, unstable vital signs).

Level III (ALS Care):

- None

CHAPTER 3: Adult TRAUMA Care

Standard Trauma Care Procedures

Rationale:

Traumatic injuries require prompt care and transport to the appropriate medical facility. Always suspect cervical injury. Note the mechanism of injury and other conditions that may affect patient care.

Remember the Golden Hour – 1 hour from injury to surgery – to stop internal hemorrhage and prevent death from traumatic injury (this hour is not a time limit for trauma alerts).

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> Abnormal ABCs Altered mental status Significant mechanism, injury to possibly dangerous area Suspected spinal cord injury Trauma alert criteria 	<ul style="list-style-type: none"> Normal VS; baseline mental status Injury to non-dangerous area Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria

Level I (BLS Care):

- Give a size up of the scene and consider early notification of the need for air transport or additional help.
- Assess the scene for hazards and mechanisms of injuries.
- Wear appropriate Personal Protective Equipment (PPE).
- Provide Basic Life Support, including cervical immobilization.
- Cervical immobilization shall be completed for:*
 - Any patient reporting trauma above the nipple line and midline cervical tenderness
 - Any patient that is suspected to be intoxicated, disoriented or obtunded and is suspected to have *significant trauma (either apparent or reported)*
 - Any of the above patients will be immobilized, regardless of whether they are ambulatory upon your arrival.*
- Perform a primary survey and provide emergency treatment.
- Administer oxygen by appropriate device as needed.
- Perform a secondary and ongoing survey enroute to the receiving hospital.
- Monitor oxygen saturation, if indicated.
- Initiate transport according to Trauma Transport Protocols, preferably within 10 minutes of extrication.

Level II (ALS Care):

- Provide ALS support, i.e., ECG, IV, IO, Advanced Airway, etc.
- Apply Nasal capnography if the patients GCS is 12 or less but greater than 8.
- Evaluate the need for advanced airway (*see airway management protocol*).
- Initiate 2 large bore IV lines of normal saline, if indicated.
- Control bleeding with tourniquet, if indicated and available.
- In cases of severe hemorrhagic shock (SBP <90, HR >110) administer Tranexamic Acid (TXA) 1 gram in 100ml NS/LR infused over 10 minutes (1 gram IV Push or IO if in traumatic arrest) after 1 L NS/LR has been infused and blood pressure is not improving.

Level III (ALS Care):

- None

Animal Bites and Stings

Rationale:

Treatment will depend on several factors including the type of animal involved, size of bite, number of bites, whether or not envenomation occurred, possible patient sensitivity, and type of bite. The rescuer evidence of any allergic reaction should be noted (Refer to the anaphylaxis protocol as needed). Bites from bats, skunks, and raccoons should be reported to Brevard County Sheriff's Animal Services at 321-633-2024. Gather as much information on the animal as possible.

Assessment Checklist:

- Snake bites – poisonous or nonpoisonous
- Jellyfish stings
- Allergic reaction
- Hypotension or shock
- Edema in airway
- Insect bites or stings
- Dog or other animal bite
- Anaphylactic shock
- Dyspnea
- Muscle spasms or seizure

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Peripheral bites with serious hemorrhage • Severe central bites (see trauma alert criteria) • Large carnivores, zoo or exotic animals • Snake bite • Altered mental status • Abnormal VS 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Superficial or minor bites • Spider or insect bites, no other symptoms

Level I (BLS Care):

- Irrigate and cleanse wound
- Assess degree of bite/sting marks, outline edematous, erythematous, and ecchymotic areas with a pen, noting the time.
- Administer oxygen by appropriate device.
- Immobilize and elevate any extremities bitten by a snake.
- Keep patient supine and calm.
- Remove stingers if present, taking care to avoid compressing the site.
- Identify the animal, if possible.
- For marine sting, use vinegar to flush site.
- Do NOT apply ice or cold packs to snake bites or marine stings.

Level II (ALS Care):

- Establish IV/IO
- Provide continuous cardiac monitoring.
- Treat specific signs and symptoms as needed by applicable protocol.

Level III (ALS Care):

- None

Burns

Rationale:

Burn management requires aggressive care for inhalation injuries or large area burns (>15% of BSA). Prolonged treatment in the field is not justified. Pain from burns can be severe. Early, aggressive airway management is often necessary for significant airway burns.

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Large burns (> 15% is a Trauma Alert) • Explosions; chemical burns (Hazmat) • Difficulty breathing • Altered mental status • Burns on face involving nose or mouth- Consider transport directly to Burn Center • Burns to the palms, soles of the feet and genitals - consider transport directly to Burn Center • Circumferential burns - consider transport directly to Burn Center 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Small burns < 15% • Sunburn or minor burns

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO.
- If burns are >15% (2nd or 3rd degree) BSA, begin fluid resuscitation at a rate of 500mL NS per hour. If transport times are greater than two hours, consider the use of the Parkland Formula = 4 x %BSA x Wt. (Kg). Give half over first 8 hours and the remainder over the next 8 hours.
- Provide continuous cardiac monitoring.
- Apply Nasal capnography

- Evaluate the need for advanced airway (*see airway management protocol*). If there are signs of singed facial hair or soot around the nose or mouth and signs/symptoms of respiratory distress, consider the airway compromised and perform RSI to secure airway.
- For hypovolemia, follow the Traumatic Shock protocol.
- Administer Fentanyl 50-100 mcg IV/IO/IM for severe burns. If IV access is not available, administer Fentanyl 100 to 200 mcg IN.
- If Fentanyl is not available or contraindicated, administer 5 mg morphine sulfate IV/IO or IM. May give additional Morphine to a maximum of 10 mg as needed.

Level III (ALS Care):

- May give additional Fentanyl or Morphine.

Chest Injury

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal ABCs • Altered mental status • Significant mechanism, injury to possibly dangerous area • Blunt trauma to the chest with significant force or kinetic energy • Penetrating injury • Suspected spinal cord injury • Trauma alert criteria 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Injury to non-dangerous area • Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria

Level I (BLS Care):

- Monitor oxygen saturation.
- Administer oxygen by appropriate device.
- Seal sucking chest wounds on all sides. Occasionally lift up a side if signs and symptoms of tension pneumothorax evolve.
- Stabilize flail segments utilizing bulky dressings.

Level II (ALS Care):

- Establish a large bore IV or IO. If possible establish 2 large bore IV lines.
- Provide continuous cardiac monitoring.
- Apply Nasal capnography if the patients GCS is between 8 and 12.
- Evaluate the need for advanced airway (*see airway management protocol*).
- Perform a pleural decompression as needed for suspected tension pneumothorax.

Level III (ALS Care):

- None

Dive Injuries/Barotrauma

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal breathing • Altered mental status • Suspected neck injury • Diving or SCUBA accident • Chest pain • Shortness of breath • Severe headache 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Normal breathing • Normal vital signs • Meets no trauma alert criteria

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO.
- Provide continuous cardiac monitoring.
- Apply Nasal capnography if the patients GCS is 12 or less but greater than 8.
- Perform pleural decompression as needed for suspected tension pneumothorax.
- Transport to the closest emergency department.
- Evaluate the need for advanced airway (see **Airway Management protocol**).

Level III (ALS Care):

- None

Fractures

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal ABCs • Altered mental status • Significant mechanism, injury to possibly dangerous area • Suspected spinal cord injury • Trauma alert criteria 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Injury to non-dangerous area • Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria

Level I (BLS Care):

- Administer oxygen by appropriate device.
- Assess distal pulses and mark them with an X.
- Align and immobilize. Make only one attempt at reducing a fracture if vascular compromise exists, distal to the fracture site before splint is applied.
- Immobilize joint fractures in position found. Exception to this rule will be fracture or dislocation of the knee that has diminished or absent distal pulses.
- Irrigate open fractures thoroughly with saline then cover with dressing.
- Apply a traction splint to mid-shaft femur fractures.
- Apply a cold pack or ice to the site.

Level II (ALS Care):

- Establish IV/IO for major fractures.
- Provide continuous cardiac monitoring.
- Administer Fentanyl 50-100 mcg IV/IO/IM for severe fractures. If IV access is not available, administer Fentanyl 100 to 200 mcg IN.
- If Fentanyl is not available or contraindicated, administer 5 mg Morphine sulfate IV/IO or IM. May give additional Morphine to a maximum of 10 mg as needed.
- Apply nasal capnography if Fentanyl or morphine sulfate is given to monitor for hypoventilation/apnea

Level III (ALS Care):

- Administer additional Fentanyl or Morphine.

Head Injuries

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal ABCs (ex. Cushing's triad-hypertensive, irregular respiration, bradycardia) • Altered mental status • Significant mechanism, injury to possibly dangerous area • Suspected spinal cord injury 	<ul style="list-style-type: none"> • Trauma alert criteria • Normal VS; baseline mental status • Injury to non-dangerous area • Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria

Level I (BLS Care):

- Administer oxygen by appropriate device.
- Elevate the head of the backboard 15-30 degrees if SBP >90mm/Hg.
- Evaluate the need for law enforcement/restraints (see **Restraint Protocol**).
- Patients who must be restrained should be placed supine on the stretcher and a person must be dedicated to monitor the patient's airway.
- Check capillary blood glucose; if blood glucose level is <60mg/dl, follow Hypoglycemia protocol.
- Immobilize the cervical spine if midline posterior spinous process tenderness or altered level of consciousness.

Level II (ALS Care):

- Establish IV/IO. Keep SBP >90mm/Hg.
- Provide continuous monitoring.
- Apply Nasal capnography if the patients GCS is 12 or less but greater than 8.
- Evaluate the need for advanced airway and RSI if inserting an ETT (**see airway management protocol**). Keep oxygen saturation >95%.
- Capnography for the head injury patient:
 - Target 40-45mmHg for non-herniating patient
 - Target 35-40mmHg for herniating patient

Level III (ALS Care):

- No

Ophthalmic Injuries

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Severe eye injuries • Altered mental status • Hazmat • Penetrating eye injury is a trauma alert 	<ul style="list-style-type: none"> • Minor eye injuries (abrasion, welding, small foreign body, contact lens problem, allergy, infection) • No other associated injuries/exposures

Level I (BLS Care):

- Quickly assess gross visual acuity.
- If the eye is chemically burned, thoroughly irrigate the affected eye(s) as soon as possible with normal saline.
- If the eye is penetrated, do NOT remove impaled object. Objects should be wrapped in bulky dressing to prevent movement.
- Protect injury by applying eye shield, avoiding pressure on the eye itself.
- Keep patient from bending or straining.
- Immobilize the cervical spine if midline posterior spinous process tenderness.
- If eye or orbit receives blunt trauma and blood is noted in anterior chamber (hyphemia), transport with head elevated at least 60 degrees if patient has no cervical spine injuries.
- Dim interior lights during transport.

Level II (ALS Care):

- See Head Injury protocol

Level III (ALS Care):

- None

Traumatic Shock

Rationale:

Hypotension from traumatic blood loss requires rapid recognition, treatment, and transportation to the nearest trauma center with a goal of an hour from the time of injury to surgical intervention.

Assessment Checklist:

- Hemorrhage (including occult)
- Orthostatic hypotension
- Direct pressure, elevation, pressure points, tourniquet
- Neurogenic shock
- Related trauma
- Ulcers or other internal bleeding

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal ABCs • Altered mental status • Significant mechanism, injury to possibly dangerous area • Suspected spinal cord injury • Trauma alert criteria 	<ul style="list-style-type: none"> • ALS transport only

Level I (BLS Care):

- Control bleeding if possible through direct pressure, elevation, pressure points, and tourniquet (only as a last resort).
- Administer oxygen by appropriate device.
- Monitor oxygen saturation.
- Vital signs every 5 minutes.
- If the patient is hypotensive, place in Trendelenburg position.

Level II (ALS Care):

- Establish a large bore IV or IO. If possible establish 2 large bore IV or IO lines. Do not delay transport to establish IV lines.
- Provide continuous cardiac monitoring
- Apply Nasal capnography if the patients GCS is 12 or less but greater than 8.
- Evaluate the need for advanced airway (*see airway management protocol*).
- Repeat 500ml boluses up to 2 liters, as indicated, to maintain a systolic BP >90mmHg or MAP > 65 mmHg (Systolic BP + 2(Diastolic BP)) / 3 = Mean Arterial Pressure (MAP).
- Administer 1 gram of Tranexamic Acid (TXA) in 100ml NS/LR over 10 minutes (1 gram IV/IO push if in traumatic arrest), if hypotension does not improve after 1 liter IVNS has been infused.

Level III (ALS Care):

- Administer norepinephrine infusion if fluid boluses fail to maintain adequate pressure.

Less-Than Lethal Weapons

Rationale:

As police agencies look for alternate methods of controlling and placing people into their custody, they have begun using “less-than lethal” weapons to do so. Patients that require less than lethal weapons to be subdued may be suffering from agitated delirium. EMS Providers are asked to respond to such situations. This protocol will deal with three (3) most common types of less-than lethal weapons that are currently in use by law enforcement personnel.

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal ABCs • Altered mental status • Significant mechanism, injury to possibly dangerous area • Suspected spinal cord injury • Trauma alert criteria • Tased patient 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Injury to non-dangerous area • Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria

Pepper Spray & Tear Gas

Level I (BLS Care):

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

Level II (ALS Care):

- None

Level III (ALS Care):

- None

Taser-Related Injuries

Level I (BLS Care):

- Ensure that the scene is safe and has been cleared by law enforcement.
- Assess for adequate ABCs.
- Consider oxygen administration and monitor oxygen saturation levels.
- Assess for any secondary trauma.

- Assess for underlying medical conditions that may have caused the patient to behave irrationally.
- Check capillary blood glucose level.
- If probes have not been removed prior to EMS arrival, *do not remove*. Bandage in place, as you would with any impaled object. There may be some redness around the area of the probe from a very mild burn.
- If law enforcement has removed probes, ensure that they are treated as a biohazard.
- Have officer eject cartridge from taser for transport if probes are still in place.
- These patients are to be transported, per protocol, to the nearest appropriate receiving facility.
- These patients are considered incompetent to sign a refusal for transport.
- **If a taser has been used to subdue a patient prior to EMS arrival and the arresting/detaining law enforcement officer insists on transporting the patient via police vehicle, the risks of such transportation shall be communicated to the law enforcement officer who is transporting the patient. If the law enforcement officer remains insistent on transporting the patient, the law enforcement officer who is transporting shall sign an approved BCFR Patient Refusal Form.** In the section of the refusal form labeled “Guardian”, the transporting law enforcement officer’s first and last name shall be written and, in the section marked “Relationship”, the words “Arresting Officer” shall be written. The circumstances of the refusal shall be thoroughly documented in a full patient care report with SOAP narrative.

Level II (ALS Care):

- Establish IV/IO access, if indicated.
- Provide continuous cardiac monitoring.
- If patient has seizure activity, go directly to protocol for seizure disorder.
- If patient has chest pain or any arrhythmias, go directly to the appropriate protocol.
- Patients that are tased by law enforcement may be exhibiting an agitated delirium state and require Ketamine for sedation (see ***Agitated Delirium protocol***).

Level III (ALS Care):

- None

Note:

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

Bean-Bag Injuries

- ***Refer to Standard Trauma Care protocol.***

CHAPTER 4: PEDIATRIC Cardiac Care

Standard Cardiac Care Procedures (Pediatric)

Rationale:

Cardiac arrest in children is often secondary to a respiratory component. It is essential these patients receive rapid, decisive care in the prehospital setting. Primary treatment includes intubation and Epinephrine administration. The patient's environment may provide clues as to the underlying cause. The Pediatric Protocols are based on the Handtevy Pediatric Resuscitation System, as approved by the department medical director. Use the appropriate guide for equipment sizing, energy settings, and medication dosing. The guidebook is based on the patient's age; if the age is unknown, use the Handtevy length based measuring tape to determine the patient's age.

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac/respiratory arrest is ALS • Abnormal VS • Chest tightness, pressure, constricting band, crushing discomfort (may radiate to arms, jaw, neck or back) • Nausea, sweating • Altered mental status • Cardiac history, although alone, is not criteria in an asymptomatic pediatric patient (CAD, MI, hypertension) • Patient on home cardiac monitor • Recent cocaine use (within 1 week) • Firing of implanted defibrillator 	<p>These patients are ALS</p>

Level I (BLS Care):

- Note patient's environment
- Wear appropriate Personal Protective Equipment (PPE).
- Determine the appropriate equipment and dosing by using the Handtevy Guide based on the patient's age. If the patient's age is unknown, utilize the length based tape in the Handtevy box.
- Perform primary assessment and emergency treatment.
- Assess for Death Scene Criteria.
- Determine pulselessness and apnea.
- AED as indicated (age > 1 year old).
- Perform CPR with appropriate airway device.
- Perform a secondary assessment.
- Check capillary blood glucose level.

Level II (ALS Care):

- Determine cardiac rhythm and follow treatments in the appropriate protocol.
- Evaluate the need for advanced airway and RSI if indicated (**see airway management protocol**).
- Confirm correct ETT placement with capnography and two other methods.
- Establish vascular access by IV or IO.

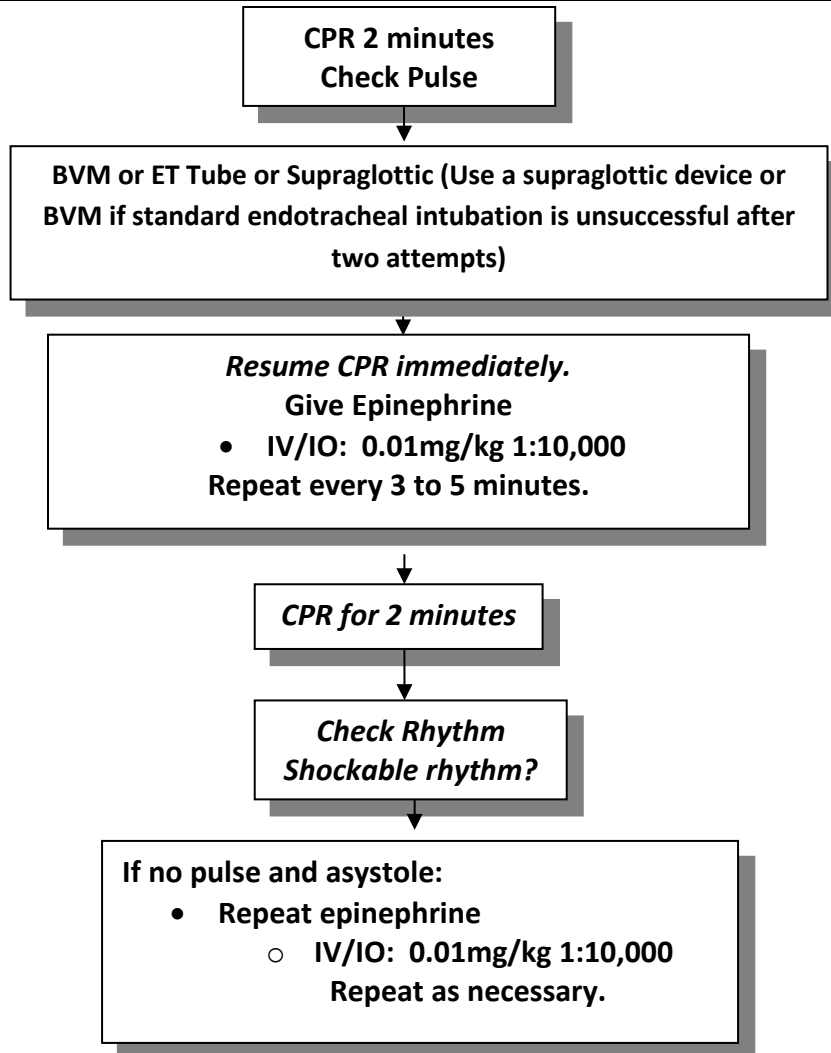
Level III (ALS Care):

- None

Asystole (Pediatric)

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac/respiratory arrest is ALS 	<ul style="list-style-type: none"> • ALS transport only



Note:

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

- | | |
|---|---|
| <ul style="list-style-type: none"> • Hypoxia • Hypo/Hyperkalemia • Hypothermia • Hydrogen Ion (Acidosis) • Hypovolemia • Hypo/Hyperglycemia | <ul style="list-style-type: none"> • Toxins, Tablets • Tamponade, cardiac • Thrombosis – pulmonary, coronary • Tension Pneumothorax • Trauma |
|---|---|

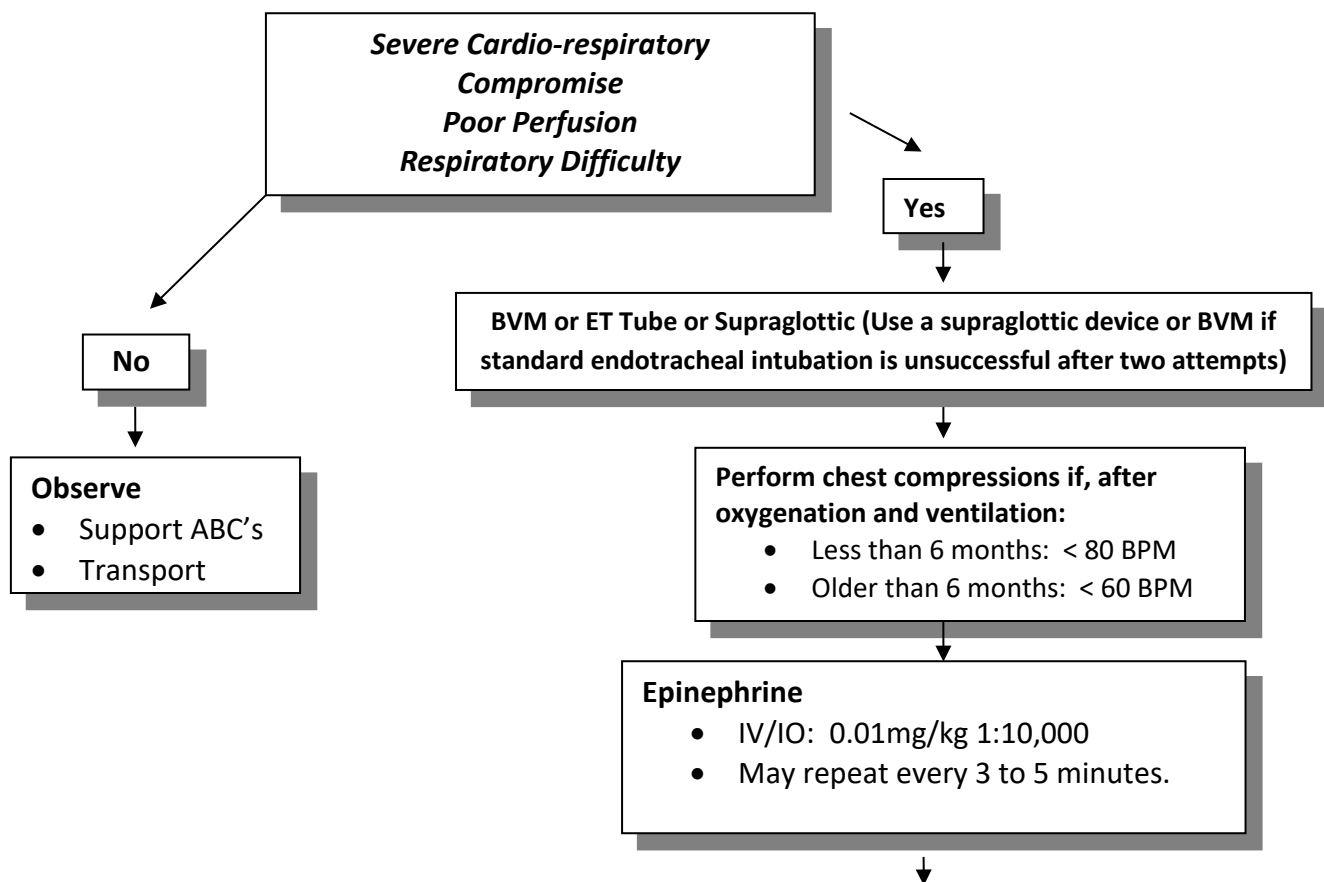
Bradycardia (Pediatric)

Less than 6 months: < 80 BPM

Older than 6 months: < 60 BPM

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac/respiratory arrest is ALS • Abnormal VS • Chest tightness, pressure, constricting band, crushing discomfort (may radiate to arms, jaw, neck or back) • Nausea, sweating • Altered mental status • Cardiac history, although alone, is not criteria in an asymptomatic pediatric patient (CAD, MI, hypertension) • Patient on home cardiac monitor • Recent cocaine use (within 1 week) • Firing of implanted defibrillator 	<ul style="list-style-type: none"> • ALS transport only



Atropine**IV/IO: 0.02-0.05 mg/kg**

- Minimum dose 0.1mg
- Child max dose 0.5mg
- Adolescent max dose 1mg

May repeat same dose once

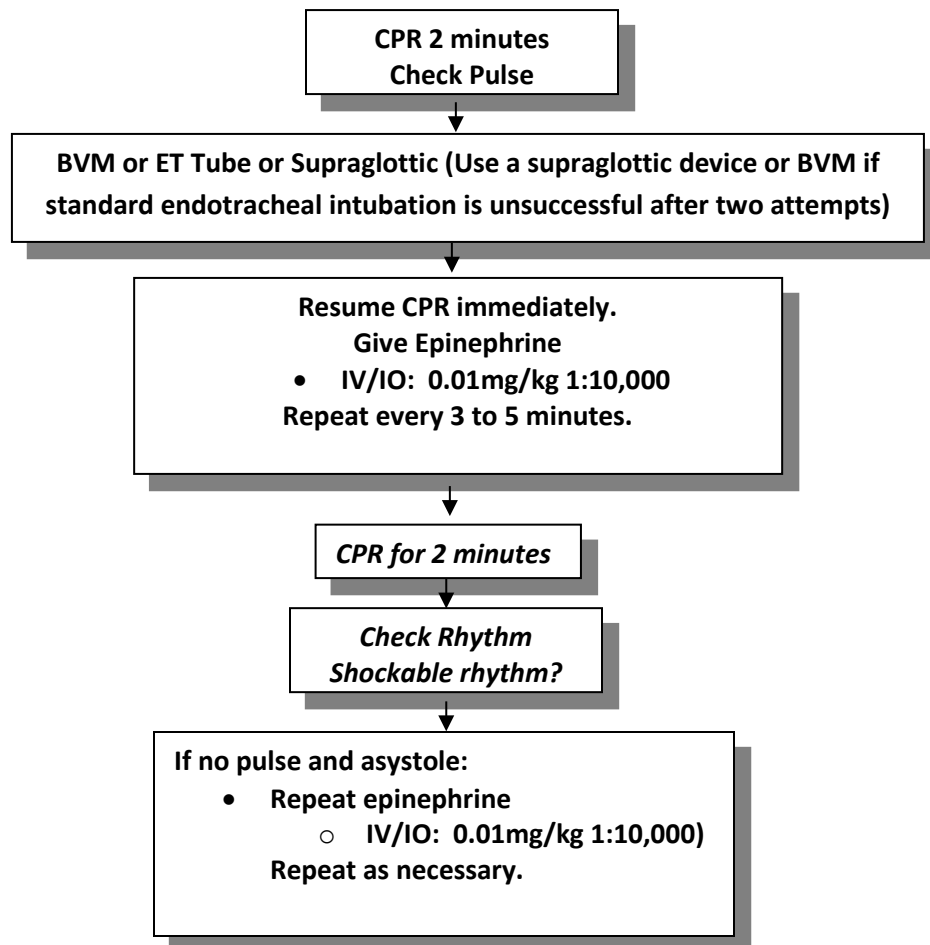
**Consider transcutaneous pacing if
other treatments are ineffective.****Note:**

- Atropine should not be used on infants less than 30 days of age.
- Consider transcutaneous pacing if highly suspicious for beta blocker or calcium channel blocker overdose.

Pulseless Electrical Activity (Pediatric)

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac/respiratory arrest is ALS • Cardiac history, although alone, is not criteria in an asymptomatic pediatric patient (CAD, MI, hypertension) • Patient on home cardiac monitor • Recent cocaine use (within 1 week) • Firing of implanted defibrillator 	<ul style="list-style-type: none"> • ALS transport only



Note:

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

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

Supraventricular Tachycardia [non-Atrial Fibrillation] (Pediatric)

Rationale:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac/respiratory arrest is ALS • Abnormal VS • Chest tightness, pressure, constricting band, crushing discomfort (may radiate to arms, jaw, neck or back) • Nausea, sweating • Fever • Altered mental status • Dehydration • Cardiac history, although alone, is not criteria in an asymptomatic pediatric patient (CAD, MI, hypertension) • Patient on home cardiac monitor • Recent cocaine use (within 1 week) • Firing of implanted defibrillator 	<ul style="list-style-type: none"> • ALS transport only

SVT rates rule-of-thumb:

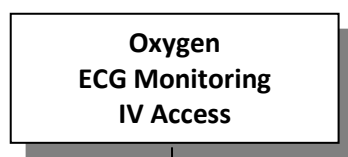
Infant rate > 220 bpm

Child rate > 180 bpm

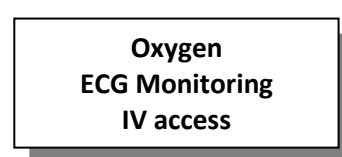
Normal heart rates in children:

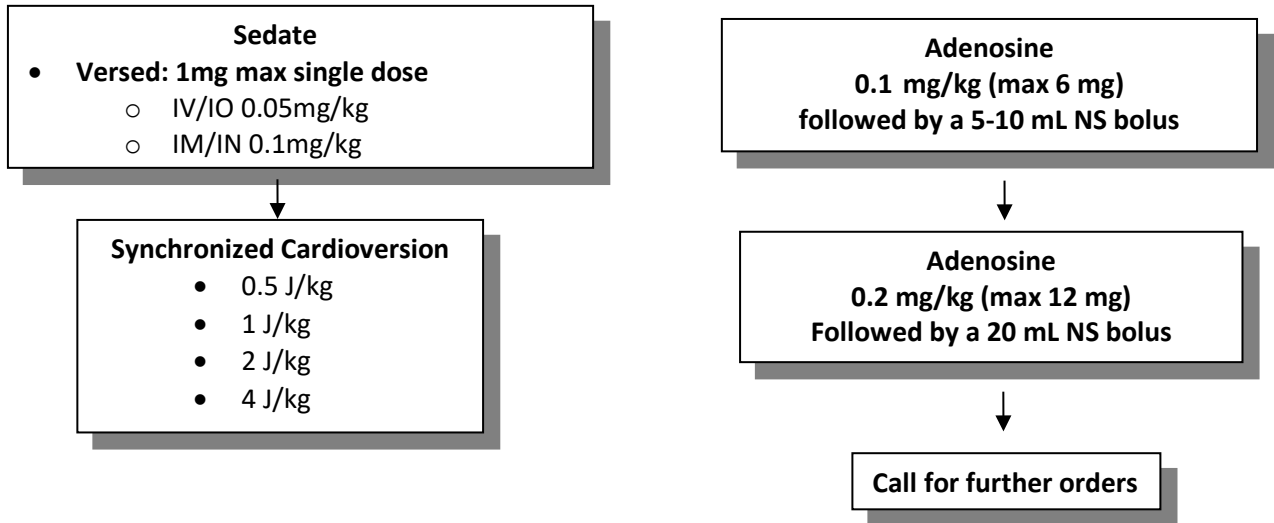
Age	Heart rate range (BPM)	Mean (BPM)
Neonatal to 3 mo	85-205	140
3 mo to 2 yr	100-190	130
2 yr to 10 yr	60-140	80
> 10 yr	60-100	75

Unstable



Stable



**Note:**

- Do not delay cardioversion for IV access.

Ventricular Ectopy (Pediatric)

Note:

PVCs in children are rare and often non-cardiac related. Contact Medical Control before the administration of medications.

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac/respiratory arrest is ALS • Abnormal VS • Chest tightness, pressure, constricting band, crushing discomfort (may radiate to arms, jaw, neck or back) • Nausea, sweating • Fever • Altered mental status • Electrocutation • Dehydration • Cardiac history, although alone, is not criteria in an asymptomatic pediatric patient (CAD, MI, hypertension) • Patient on home cardiac monitor • Recent cocaine use (within 1 week) • Firing of implanted defibrillator 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Asymptomatic patient with cardiac history

Level III (ALS Care):

Amiodarone

- 5 mg/kg in NS given over 30 minutes.

OR

Lidocaine 1 mg/kg IV



Repeat Lidocaine IV 0.5 mg/kg

As needed every 10 minutes to a max dose of 3 mg/kg.

Ventricular Fibrillation & Pulseless Ventricular Tachycardia (Pediatric)

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac/respiratory arrest is ALS • Abnormal VS • Chest tightness, pressure, constricting band, crushing discomfort (may radiate to arms, jaw, neck or back) • Nausea, sweating • Altered mental status • Cardiac history, although alone, is not criteria in an asymptomatic pediatric patient (CAD, MI, hypertension) • Patient on home cardiac monitor • Recent cocaine use (within 1 week) • Firing of implanted defibrillator 	<ul style="list-style-type: none"> • ALS transport only

CPR

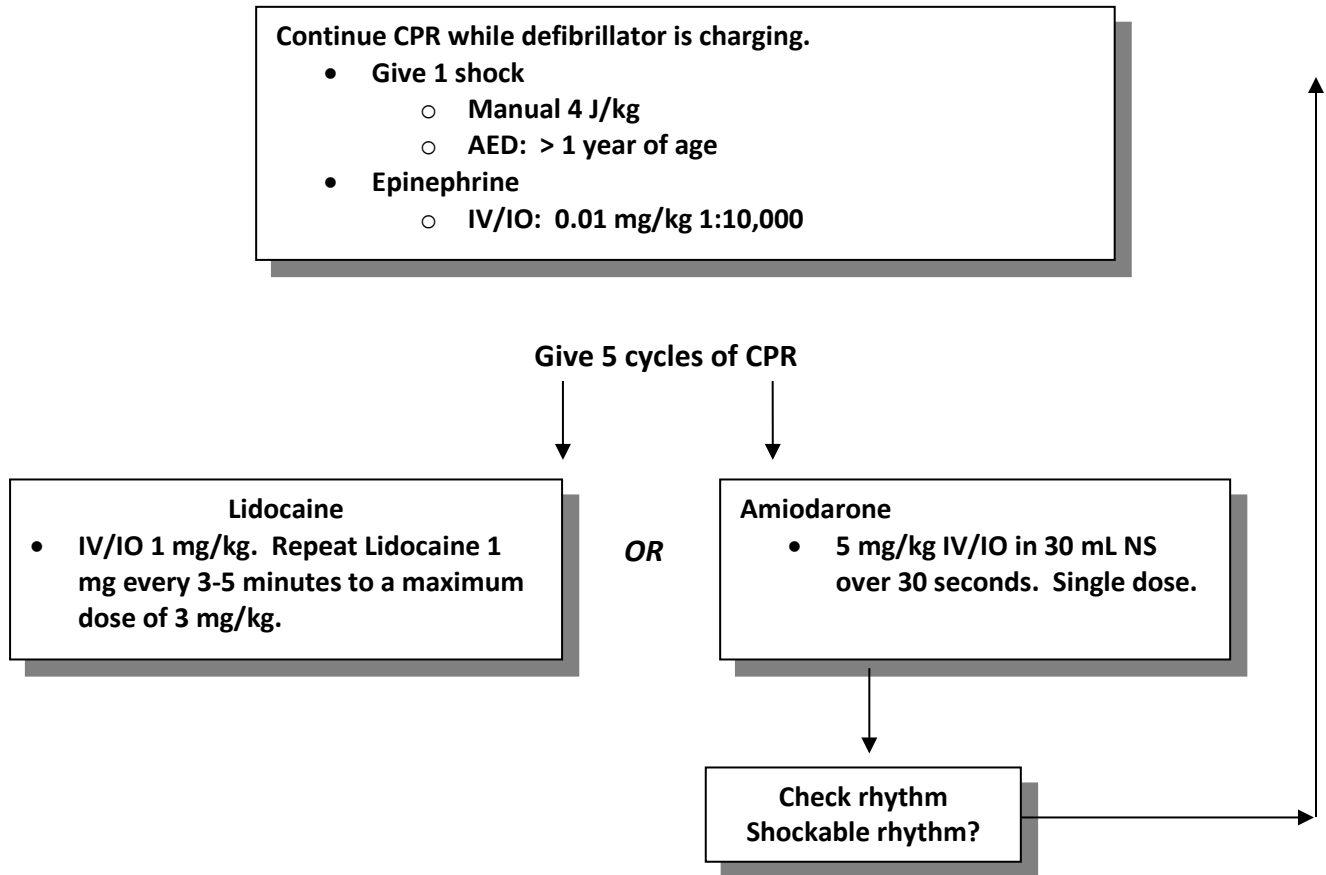
Give 1 shock:

- **Manual 2 J/kg**
- **AED: >1 year of age**
 - Use the Handtevy Pediatric Resuscitation, if available, for 1-13 years of age

Resume CPR Immediately (5 cycles)

Check rhythm
Shockable rhythm?

BVM or ET Tube or Supraglottic (Use a supraglottic device or BVM if standard endotracheal intubation is unsuccessful after two attempts)

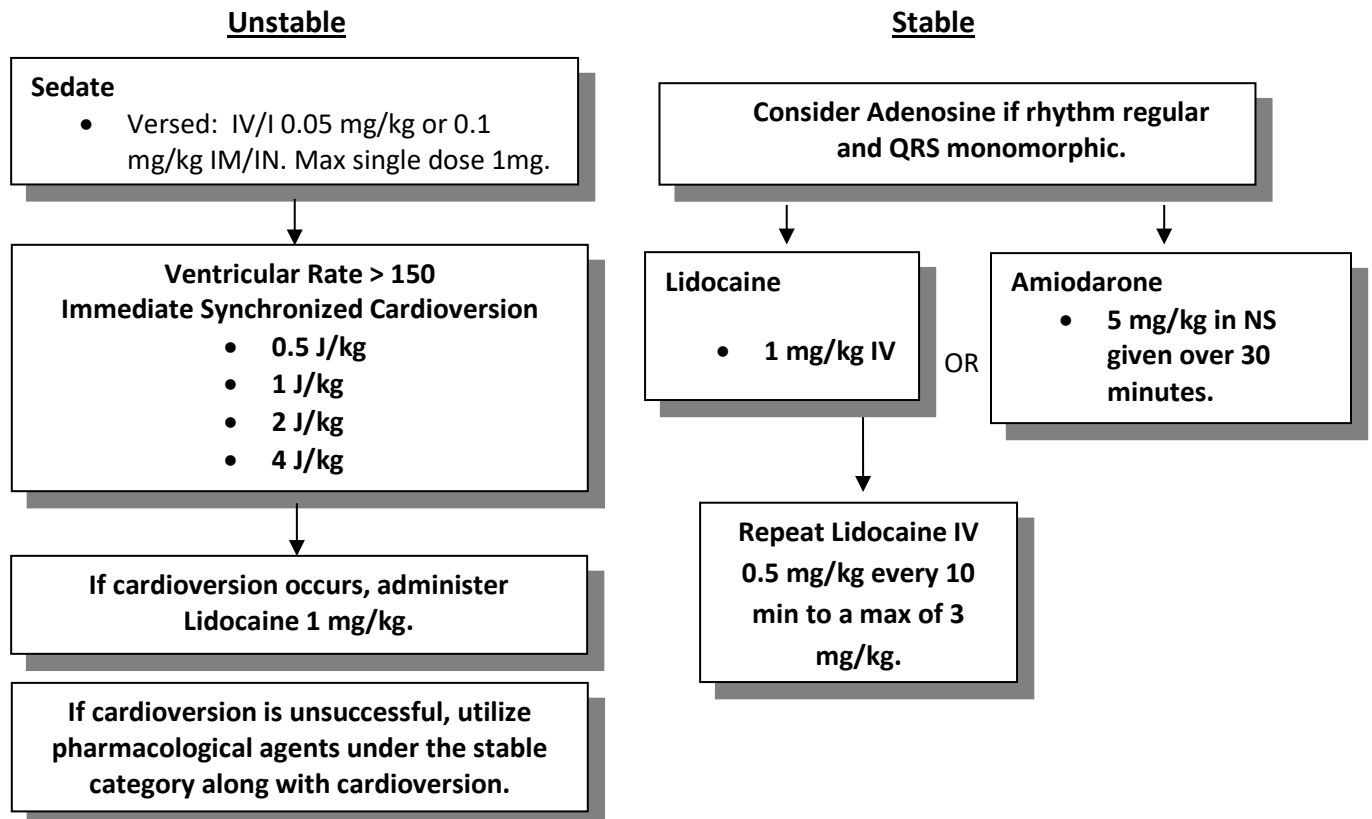


Ventricular Tachycardia (Pediatric)

(Pulse Producing)

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac/respiratory arrest is ALS • Abnormal VS • Chest tightness, pressure, constricting band, crushing discomfort (may radiate to arms, jaw, neck or back) • Nausea, sweating • Fever • Dehydration • Altered mental status • Cardiac history, although alone, is not criteria in an asymptomatic pediatric patient (CAD, MI, hypertension) • Patient on home cardiac monitor • Recent cocaine use (within 1 week) • Firing of implanted defibrillator 	<ul style="list-style-type: none"> • ALS transport only



Note:

- Do not delay cardioversion for IV access.

CHAPTER 5: PEDIATRIC Medical Care

Standard Medical Care Procedures (Pediatric)

Rationale:

Pediatric emergencies make up a small percentage of our call volume. Children very seldom suffer a life threatening medical emergency, but when it does occur, they generally deteriorate quickly. Calm action and speech will help decrease the child's and family's anxiety. The Pediatric Protocols are based off of the Handtevy Pediatric Resuscitation System, as approved by the department medical director. Use the appropriate guide for equipment sizing, energy settings, and medication dosing. The guidebook is based off of the patient's age; if the age is unknown, use the Handtevy length based measuring tape to determine the patient's age.

Level I (BLS Care):

- Pediatric Assessment Triangle
- Assess the scene for hazards or abuse. (800) 96-ABUSE.
- Note the patient's environment.
- Obtain thorough history from bystanders.
- Wear appropriate Personal Protective Equipment (PPE).
- Determine the appropriate equipment and dosing by using the Handtevy Guide based on the patient's age. If the patient's age is unknown, utilize the length based tape in the Handtevy box.
- Provide BLS support (including cervical stabilization, as needed).
- Perform a primary survey and provide emergency treatment.
- Perform a secondary survey, treat, and transport.
- Administer oxygen by appropriate device.
- Monitor oxygen saturation, if indicated.
- Check a glucose reading, if indicated.

Level II (ALS Care):

- Provide ALS support (ECG, IV, advanced airway including capnography, if indicated).
- Evaluate the need for advanced airway and RSI if indicated (**see airway management protocol. BVM ventilation is acceptable**). Confirm correct ETT placement with capnography and 2 other methods.
- Administer medication therapy as needed.
- Refer to Handtevy guide.

Level III (ALS Care):

- As indicated.

Abdominal Pain/GI Bleed (Pediatric)

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Female age 16 and under who has fainted or has systolic BP <90 (ectopic) • Altered mental status • Vital Signs not normal for age and size • Fever • Dehydration • Evidence of bleeding in stool/urine/vomit 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Diarrhea • Constipation • Chronic issues without any acute changes

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO.
- Evaluate the need for advanced airway, if indicated (*see airway management protocol*. BVM ventilation is acceptable).
- If intubated, sedate with Versed IV/IO 0.05mg/kg. Max single dose 1 mg may be repeated once to a max dose of 2 mg.
- Provide the shock patient a fluid challenge of 20mL/kg. Repeat as indicated.
- If actively vomiting, Zofran 0.15mg/kg IV or Oral Dissolving Troche (ODT) 4 mg for 4 years and older. Max dose 4 mg IV.

Level III (ALS Care):

- None

Airway Management (Pediatric)

Rationale:

Many pediatric emergencies are related to airway compromise. Maintenance of the airway takes an even greater importance than in the adult patient. Cardiac arrest in the pediatric patient is usually secondary to airway compromise. Avoid endotracheal intubation in the patient with croup or epiglottitis unless the patient has respiratory arrest. If endotracheal intubation is attempted, two attempts should be made, followed by King Airway or BVM. Maintain the infant or small child's airway with manual techniques such as chin lift or jaw thrust.

Assessment Checklist:

- Asthma
- Severe head or cervical spine injury
- Hyperventilation
- Epiglottitis
- Viral or bacterial infection
- Hypothermia
- Airway trauma/burns
- Foreign object obstruction or aspiration
- Croup
- Pneumonia
- Drowning

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal ventilation or respiratory effort • Patient on home apnea monitor • Patient on home ventilator • <i>Vital Signs not normal for age and size</i> 	<ul style="list-style-type: none"> • Baseline normal ventilation and respiratory effort • Normal VS; baseline mental status

Level I (BLS Care):

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

Level II (ALS Care):

- Evaluate the need for advanced airway with RSI, if indicated.
- Use a supraglottic device or BVM ventilation if standard endotracheal intubation is unsuccessful after two attempts.
- If intubated, sedate with Versed IV/IO 0.05mg/kg. Max single dose 1 mg may be repeated once to a max dose of 2 mg.
- Confirm airway placement with capnography and 2 other documented methods.
- C-collar should be applied to infants and small children to stabilize ET tube.

Level III (ALS Care):

- None

Allergic Reactions (Pediatric)

Rationale:

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

Assessment Checklist:

- Respiratory arrest
- Airway obstruction
- Bronchospasm
- Rash, hives, edema, itching

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Difficulty breathing or swallowing • Condition worsening • Altered mental status • Vital Signs not normal for age and size • Known history of anaphylaxis • Rash, hives or itching may be present • Facial, neck, tongue swelling • Stridor • Bronchospasm • Epi-pen injected • Low blood pressure, Tachycardia 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • No difficulty breathing or swallowing • Lungs clear to auscultation • No rash, hives, itching or redness to the skin

Level I (BLS Care):

- Apply the anaphylaxis protocol if airway obstruction, severe bronchospasm, or hypotension is present.
- Administer oxygen by appropriate device.
- Attempt to determine the source of the allergic reaction.
- Poison Control: (800) 222-1222 or (800) 282-3171.

Level II (ALS Care):

- Establish IV/IO.
- Monitor ECG.
- Evaluate the need for advanced airway (*see airway management protocol*. BVM ventilation is acceptable).
- If intubated, sedate with Versed IV/IO 0.05 mg/kg Max single dose 1 mg may be repeated once to a max dose of 2 mg.
- Administer Benadryl 0.5mg/kg IV/IO or IM. Repeat the dose once in 5 minutes (max 50mg).
- Administer Solu-Medrol 2mg/kg IV/IM/IO up to a max dose of 125mg.
- Observe for the development of anaphylaxis.
- Administer Albuterol as indicated for bronchospasm.

Level III (ALS Care):

- None

Altered Mental Status (Pediatric)

Rationale:

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

Assessment Checklist:

- Trauma
- Seizures (postictal)
- Hypoxia
- Overdose
- Past history-medical or psychological
- Hypoglycemia or hyperglycemia
- Emotional disorder with agitated behavior

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Altered mental status • Blood sugar less than 60mg/dl • Violent, with suspicion of overdose or other medical cause • Suffocation • Suspicion of overdose • Suspicion of alcohol or drug withdrawal syndrome (DTs) 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • No other ALS priority symptoms • Violent, with normal VS, no evidence of medical cause • Developmental disorders • Alcohol with GCS 13 or greater • History of TBI with normal VS

Level I (BLS Care)

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

Level II (ALS Care)

- If glucose level is <60mg/dl, follow Hypoglycemia protocol.
- Establish IV/IO.
- Provide continuous cardiac monitoring.
- Evaluate the need for advanced airway (**see airway management protocol and RSI protocol as needed**). BVM ventilation is acceptable.
 - Confirm airway placement with capnography and 2 other documented methods.
- If intubated, sedate with Versed IV/IO 0.05mg/kg. Max single dose 1 mg may be repeated once to a max dose of 2 mg.
- If violent, combative, or delirious, consider Ketamine for teenage children at risk of self harm and harming medical providers.
- Administer Narcan 0.1mg/kg IV/IO or IN if no IV access, as needed for respiratory depression. Repeat as needed. Total max dose 4mg.

Level III (ALS Care)

- None

Anaphylaxis (Pediatric)

Rationale:

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

Assessment Checklist:

- Airway obstruction
- Shock/poor perfusion
- Hives/Edema
- Bronchospasms
- Known history of anaphylaxis
- Envenomation
- Food or medication allergic reactions

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Difficulty breathing/swallowing • Condition worsening hypotensive shock • Altered mental status • Vital Signs not normal for age and size • Known history of anaphylaxis • Rash, hives or itching may be present • Use of Epi-pen 	<ul style="list-style-type: none"> • ALS transport only

Level I (BLS Care)

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

Level II (ALS Care)

- Establish IV/IO.
- Continuous cardiac monitoring.
- Apply nasal capnography.
- Evaluate the need for advanced airway (*see airway management protocol. BVM ventilation is acceptable*).
- If intubated, sedate with Versed IV/IO 0.05mg/kg. Max single dose 1 mg may be repeated once to a max dose of 2 mg.
- Administer the hypotensive patient a fluid bolus of 20mL/kg. Repeat as needed.
- Administer DuoNeb 3mg or albuterol 2.5mg by nebulizer mask for mild respiratory compromise.
- Administer epinephrine 0.01mg/kg of 1:1,000 (1mg/ml) IM for **moderate** respiratory compromise in the normotensive patient. May repeat to max total dose of 0.3mg (0.3ml).
- Administer epinephrine 0.01mg/kg of 1:10,000(0.1mg/ml) IV/IO for severe anaphylaxis. Max dose 0.5mg (5ml).
- Administer Benadryl 0.5mg/kg IV/IO. Repeat the dose once after 5 minutes as needed (maximum total of 50mg).
- Administer Solu-Medrol 2mg/kg IV/IO. Maximum total of 125mg.

Level III (ALS Care)

- None

Asthma/Bronchitis (Pediatric)

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal ventilation or respiratory effort • Patient on home apnea monitor • Wheezes, decreased breath sounds with Shortness of breath • Chest tightness 	<ul style="list-style-type: none"> • Baseline normal ventilation and respiratory effort • Normal VS; baseline mental status • Symptoms completely relieved by patient taking their own medications

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO.
- Continuous cardiac monitoring.
- Evaluate the need for advanced airway with RSI, if indicated (*see airway management protocol. BVM ventilation is acceptable*). Confirm airway placement with capnography and 2 other documented methods.
- If intubated, sedate with Versed IV 0.05 mg/kg. Max single dose 1 mg may be repeated once to a max dose of 2 mg.
- Administer DuoNeb 3.0mg or Albuterol 2.5mg via nebulizer. This may be administered, as needed, before vascular access. May be repeated as needed.
- Administer Solu-Medrol 2 mg/kg up to a max dose of 125 mg.
- Administer Epinephrine 0.01-0.03mg/kg of 1:1000 (1 mg/ml) IM. If extreme respiratory compromise (status asthmaticus) epinephrine 0.1mL/kg of 1:10,000 (0.1mg/mL) IV/IO. Max does 0.3 mg (0.3ml). See Handtevy pediatric medication guide.

Level III (ALS Care):

- None

Carbon Monoxide Inhalation (Pediatric)

Rationale:

Carbon monoxide can pose a serious threat to the rescuer, as well as the patient. Use caution in assessing the CO patient. Always administer high flow O₂. Some normal diagnostic methods such as pulse oximetry may give normal readings. This exposure interferes with oxygen exchange on the cellular level. Utilize the rainbow sensor in place of pulse oximetry. Always consider it in any airway burn.

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Hazmat incident • Difficulty breathing • Altered mental status • Abnormal VS • Hypoxia of unknown cause • Smoke inhalation • Poisoning • Burns • SPCO₂ greater than 10% 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Breathing normally • No chemical exposure (Hazmat) • SPCO₂ less than 10% with no symptoms

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO.
- Apply Nasal capnography
- Provide continuous cardiac monitoring.
- Assess the patient's Carbon Monoxide level using the rainbow sensor in place of pulse oximetry.
- Evaluate the need for advanced airway (**see airway management protocol. BVM ventilation is acceptable**). Confirm airway placement with capnography and 2 other documented methods.
- If wheezing, administer DuoNeb 3.0mg or Albuterol 2.5mg via nebulizer. This may be repeated as needed.

- Transport to the closest emergency department.
- Consider the need early for administering the Cyanokit for any patient with suspected smoke inhalation and/or an elevated Carbon Monoxide level. It may take time for a District Chief to deliver it to you or the hospital.

Level III (ALS Care):

- None

Croup/Epiglottitis (Pediatric)

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal ventilation or respiratory effort • Patient on home apnea monitor • Wheezes, decreased breath sounds with Shortness of breath • Chest tightness 	<ul style="list-style-type: none"> • Baseline normal ventilation and respiratory effort • Normal VS; baseline mental status • Symptoms completely relieved by patient taking their own medications

Level I (BLS Care):

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

Level II (ALS Care):

- Provide continuous cardiac monitoring if in respiratory arrest.
- Administer a saline mist treatment (if available) for mild croup.
- Refrain from intubation, unless the patient is in respiratory arrest.
- Evaluate the need for advanced airway (**see airway management protocol. BVM ventilation is acceptable**). Confirm airway placement with capnography and 2 other documented methods.
- Refrain from IV or IO therapy unless the patient is in respiratory arrest.
- Consider cricothyrotomy (or needle cricothyrotomy if less than 10 years of age) if unable to intubate.

Level III (ALS Care):

- None

Diabetic Emergencies [Hyperglycemia] (Pediatric)

Rationale:

The hyperglycemia patient may suffer from severe dehydration and hyperosmolar coma resulting in a decreased level of consciousness and life threatening metabolic acidosis.

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Unconscious • Altered mental status • Abnormal breathing (slow or rapid) • High blood sugar with other ALS priority symptoms 	<ul style="list-style-type: none"> • Normal VS • Conscious and alert (baseline) • Breathing normally

Level I (BLS Care):

- Assess for Kussmaul respirations.
- Administer oxygen by appropriate device.
- Check capillary blood glucose level.

Level II (ALS Care):

- Establish IV/IO.
- Provide continuous cardiac monitoring
- Evaluate the need for advanced airway with RSI, if indicated (***see airway management protocol***). Confirm airway placement with capnography and 2 other documented methods.
- If intubated, sedate with Versed IV/IO 0.05 mg/kg. Max single dose 1 mg may be repeated once to a max dose of 2 mg.
- Administer normal saline 20 mL/kg IV/IO rapid infusion for dehydration, as needed.
- Repeat the infusion for the shock patient.
- Continue with an infusion of 20 mL/kg/hour.
- Refer to the Handtevy Resuscitation Guide for the appropriate amount of fluid to be administered based on the patient's age.

Level III (ALS Care):

- None

Diabetic Emergencies [Hypoglycemia] (Pediatric)

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Unconscious • Altered mental status • Glucose less than 60 mg/dl • Abnormal breathing (slow or rapid) • High blood sugar with other ALS priority symptoms 	<ul style="list-style-type: none"> • Normal VS; conscious and alert (baseline) • Breathing normally • Low blood sugar corrected with oral glucose on-scene

Level I (BLS Care)

- Assess for last insulin injection and food intake.
- Administer oxygen by appropriate device.
- Administer oral glucose gel or paste if the patient is conscious and able to maintain airway.
- Check capillary blood glucose level.

Level II (ALS Care)

- Establish IV/IO.
- Provide continuous cardiac monitoring.
- Administer D10 IV/IO if glucose is <60mg/dl. Determine the amount by selecting the appropriate Handtevy guide for the patient's age.
- If unable to establish IV and glucose < 60 mg/dl, administer Glucagon 0.5 mg IM (< 20 kg) or administer Glucagon 1.0 mg IM (> 20 kg), if available.
- The administration of D10 in the 250ml of normal saline may be administered using Handtevy dosing guide.

Level III (ALS Care):

- None

Environmental Cold Emergencies (Pediatric)

Rationale:

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

Assessment Checklist:

- Frostbite
- Coma
- Cardiac arrest
- Drowning

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac history (CAD, MI, hypertension) • Altered mental status • Tympanic less than 95 degrees F • Change in skin color; <ul style="list-style-type: none"> ○ Frostbite: pale, grey, numb “bloodless” skin ○ Hypothermia: pale, cyanosis with decreased mental status 	<ul style="list-style-type: none"> • Normal VS and baseline mental status • Localized Frostbite • No other symptoms

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO.
- Provide continuous cardiac monitoring
- Evaluate the need for advanced airway, if indicated (*see airway management protocol. BVM ventilation is acceptable*).
- If intubated, sedate with Versed IV/IO 0.05 mg/kg. Max single dose 1 mg may be repeated once to a max dose of 2 mg.

Level III (ALS Care):

- Warm IV fluids.

Environmental Heat Emergencies (Pediatric)

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Cardiac history (CAD, MI, hypertension) • Altered mental status • Tympanic greater than 100.4 degrees F • Change in skin color; <ul style="list-style-type: none"> ○ Heat stroke: red, dry skin with decreased mental status 	<ul style="list-style-type: none"> • Normal VS and baseline mental status • No other symptoms

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO.
- Provide continuous cardiac monitoring
- Evaluate the need for advanced airway, if indicated (*see airway management protocol. BVM ventilation is acceptable*).
- If intubated, sedate with Versed IV/IO 0.05 mg/kg. Max single dose 1 mg may be repeated once to a max dose of 2 mg.
- Administer fluid boluses of 20 mL/kg. Titrate as needed to maintain adequate blood pressure. Refer to the Handtevy Resuscitation Guide for the appropriate amount of fluid to be administered based on the patient's age.

Level III (ALS Care):

- None

Overdose [Unknown Etiology] (Pediatric)

Rationale:

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

Assessment Checklist:

- Poisoning
- Seizures
- Hypoxia
- Emotional disorders
- Hyperglycemia/hypoglycemia

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Altered mental status • Unable to speak clearly • Abnormal breathing • Opiate, mood altering medication overdose • Cocaine, amphetamines, other stimulants • Alcohol • Violent (Rule out hypoxia, occult cerebral bleed, overdose, head trauma, etc.) • Age ≤ 3 	<ul style="list-style-type: none"> • ALS transport only

Level I (BLS Care):

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

Level II (ALS Care):

- If glucose level is $<60\text{mg/gl}$, follow Hypoglycemia protocol.
- Establish IV/IO.
- Provide continuous cardiac monitoring
- Obtain 12 lead ECG, if high suspicion for Tricyclic antidepressant overdose
- Evaluate the need for advanced airway, if indicated (**see airway management protocol. BVM ventilation is acceptable**). If intubated, sedate with Versed IV 0.05 mg/kg (max dose 2 mg).
- Administer Narcan 0.1 mg/kg IV/IO/IN. Repeat as needed. Total max dose 4 mg.

Level III (ALS Care):

- None

Poisoning (Pediatric)

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Altered mental status • Unable to speak clearly • Abnormal breathing • Tricyclic or other anti-depression medication overdose • Cocaine • Acid or lye • Violent (Rule out hypoxia, occult cerebral bleed, overdose, head trauma, etc.) 	<ul style="list-style-type: none"> • ALS Transport only

Level I (BLS Care):

- Remove the victim from the source (rescuer should wear SCBA, if required).
- Decontaminate the victim, as needed.
- Assess for SLUDGEM syndrome (salivation, lacrimation, urination, defecation, gastrointestinal upset, emesis, and/or miosis).
- Administer oxygen by appropriate device.
- Suction, if indicated.
- Do not use a helicopter to transport any hazardous materials exposure patient.
- Contact Poison Control at (800) 222-1222 or (800) 282-3171.

Level II (ALS Care):

- Establish IV/IO.
- Provide continuous cardiac monitoring
- Provide nasal capnography
- Evaluate the need for advanced airway, if indicated (*see airway management protocol. BVM ventilation is acceptable*).
- If intubated, sedate with Versed IV 0.05 mg/kg. Max single dose 1 mg may be repeated once to a max dose of 2 mg.
- For the organophosphate or carbamate poisoning victim, administer Atropine 0.05 mg/kg (0.1 mg is the minimum dose) IV/ET/IO. Repeat atropine at 5 minute intervals.

Level III (ALS Care):

- Perform Hazardous Materials protocol if approved by Medical Control.

Seizure Disorder (Pediatric)

Rationale:

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

Assessment Checklist:

- Febrile illness
- Poisoning
- Overdose
- Hypoglycemia

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Pregnancy • Head trauma • Diabetic • Fever • Continuous or multiple seizures • Abnormal breathing • No seizure history • Age \leq 5 	<ul style="list-style-type: none"> • ALS transport only

Level I (BLS Care):

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

Level II (ALS Care):

- If blood sugar is $<$ 60 mg/dl, follow Hypoglycemia protocol.
- Establish IV/IO.
- Provide continuous cardiac monitoring
- Use nasal cannula ETCO₂ monitoring for patient's given medications that can cause respiratory depression or exhibits an altered mental status.
- If IV/IO is established, administer Versed – 0.05 mg/kg, maximum single dose of 1mg may repeat one time (maximum total dose of 2mg).
- If patient is actively seizing, administer IM/IN Versed 0.1mg/kg while attempting IV access. Repeat x1 for persistent or with recurrent seizures. Max dose 5 mg.
- Evaluate the need for advanced airway, if indicated (***see airway management protocol. BVM ventilation is acceptable***).

Level III (ALS Care):

- Additional Versed

Vomiting (Pediatric)

Rationale:

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

Assessment Checklist:

- Pregnancy
- Medication
- Infectious disease
- Chemotherapy
- Bowel obstruction
- Migraine headaches.

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal VS • Suspected food poisoning • Females with abdominal pain age 16 or less • Abnormal breathing • Cardiac history (CAD, MI, hypertension) • Altered mental status 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Nausea

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV.
- Provide continuous cardiac monitoring
- Administer Ondansetron (Zofran) 0.15mg/kg, max dose 4mg IV/IO/IM (or 4mg ODT if not actively vomiting).

Level III (ALS Care):

- None

CHAPTER 6: PEDIATRIC Trauma Care

Standard Trauma Care Procedures (Pediatric)

Rationale:

Traumatic injuries require prompt care and transportation. Always suspect cervical injury. Note the mechanism of injury and any other condition that may affect patient care. Any chest or abdominal injuries, and all head injuries that result in a change or loss of consciousness, should receive an emergency department evaluation. Remember the Golden Hour. Ideally, scene time should remain under 10 minutes. The Pediatric Protocols are based on the Handtevy Pediatric Resuscitation System, as approved by the department medical director. Use the appropriate guide for equipment sizing, energy settings, and medication dosing. The guidebook is based on the patient's age; if the age is unknown, use the Handtevy length based measuring tape to determine the patient's age.

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal ABCs • Altered mental status • Significant mechanism, injury to possibly dangerous area • Suspected spinal cord injury • Trauma alert criteria 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Injury to non-dangerous area • Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria

Level I (BLS Care):

- Give a size up of the scene and consider early notification of the need for air transport or additional help.
- Assess the scene for hazards and mechanisms of injuries.
- Wear appropriate Personal Protective Equipment (PPE).
- Determine the appropriate equipment and dosing by using the Handtevy Guide based on the patient's age. If the patient's age is unknown, utilize the length based tape in the Handtevy box.
- Provide Basic Life Support, including cervical immobilization.
- *Cervical immobilization shall be completed for:*
 - Any patient with midline cervical posterior spinous process tenderness
 - Any patient reporting trauma above the nipple line
 - Any patient that is suspected to be intoxicated, disoriented or obtunded or under age 12 and is suspected to have *significant trauma (either apparent or reported)*
 - Any of the above patients will be immobilized, regardless of whether they are ambulatory upon your arrival.
- Perform a primary survey and provide emergency treatment.
- Administer oxygen by appropriate device.
- Perform a secondary survey en route.
- Monitor oxygen saturation, if indicated.
- Initiate transport according to Trauma Transport Protocols, preferably within 10 minutes of extrication.

Level II (ALS Care):

- Provide ALS support (ECG, IV, etc.)

- Evaluate the need for advanced airway and RSI if indicated (see airway management protocol. BVM ventilation is acceptable).
- Confirm airway placement with capnography and 2 other documented methods.
- Initiate 2 large bore IV lines of normal saline, if indicated, and time available.

Level III (ALS Care):

- None

Animal Bites and Stings (Pediatric)

Rationale:

Treatment of this injury will depend on the type of animal. Other factors may include site of bite, number of bites, possible envenomation, patient sensitivity, and time of bite. Allergic reaction is an important consideration to be evaluated. Refer to the anaphylaxis protocol as needed. Bites from bats, skunks, and raccoons should be reported to Brevard County Sheriff's Animal Services at 321-633-2024. Gather as much information on the animal as possible.

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Peripheral bites with serious hemorrhage • Severe central bites (see trauma alert criteria) • Large carnivores, zoo or exotic animals • Snake bite • Altered mental status • Abnormal VS 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Superficial or minor bites • Spider or insect bites with no other symptoms

Level I (BLS Care):

- Irrigate and cleanse wound
- Assess degree of bite/sting marks, outline edematous, erythematous, and ecchymotic areas with a pen, noting the time.
- Administer oxygen by appropriate device.
- Immobilize and elevate any extremities bitten by a snake.
- Keep patient supine and calm.
- Remove stingers if present, taking care to avoid compressing the site.
- Identify the animal, if possible.
- For marine sting, use vinegar to flush site.
- Do NOT apply ice or cold packs to snake bites or marine stings.

Level II (ALS Care):

- Establish IV/IO in an unaffected extremity, if indicated.
- Monitor ECG.
- Evaluate the need for advanced airway, if indicated (see airway management protocol. BVM ventilation is acceptable).
- If intubated, sedate with Versed IV/IO 0.05mg/kg. Max single dose 1 mg may be repeated once to a max dose of 2 mg.

Level III (ALS Care):

- None

Burns (Pediatric)

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Large burns (> 10% is a Trauma Alert) • Explosions; chemical burns (Hazmat) • Difficulty breathing • Altered mental status • Burns on face involving nose or mouth- Consider transport directly to Burn Center • Burns to the palms, soles of the feet and genitals – Consider transport directly to Burn Center • Circumferential burns – Consider transport directly to Burn Center 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Small burns < 10% (hyperlink) • Sunburn or minor burns

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO in an unaffected extremity, if indicated.
- Burns exceeding 10% (2nd or 3rd degree) BSA, begin fluid resuscitation:
 - < 5 years at 150 mL per hour
 - 5-15 years at 250 mL per hour for the first two hours.
 - If transport time is longer than two hours, use the Parkland Formula = 4 x %BSA x Wt. (Kg). Give half over first 8 hours and the remainder over the next 8 hours.
- Provide continuous cardiac monitoring
- Use nasal cannula ETCO₂ monitoring for patient's given medications that can cause respiratory depression or exhibits any respiratory compromise.
- If there are signs of singed facial hair or soot around the nose or mouth and signs/symptoms of respiratory distress, consider performing RSI to secure airway.

- Evaluate the need for advanced airway (preferably ET tube considering the potential for sub-glottic swelling) with RSI, if indicated (see airway management protocol. BVM ventilation is acceptable).
- If intubated, sedate with Versed 0.05 mg/kg IV/IO (max dose 2 mg)
- Flush chemical burns with copious amounts of water for 15 minutes.
- Administer Fentanyl 1 mcg/kg IV/IO with max dose 100 mcg. If no IV access, 1-2 mcg/kg IN with max dose 200 mcg. The dose of Fentanyl must be calculated, it is not listed in the Handtevy Guide (refer to the drug manual section of protocol).
- If Fentanyl is unavailable or contraindicated, administer morphine sulfate 0.1 mg/kg IV/IO/IM (max dose 5 mg) for burns exceeding 10% (2nd or 3rd degree) BSA

Level III (ALS Care):

- May repeat dose of Fentanyl x 1 if necessary for adequate pain control

Chest Injury (Pediatric)

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal ABCs • Altered mental status • Significant mechanism, injury to possibly dangerous area • Blunt trauma to the chest with significant force or kinetic energy • Penetrating injury • Suspected spinal cord injury • Trauma alert criteria 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Injury to non-dangerous area • Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO.
- Provide continuous cardiac monitoring
- Evaluate the need for advanced airway, if indicated (*see airway management protocol. BVM ventilation is acceptable*).
- If intubated, sedate with Versed 0.05mg/kg IV/IO. Max single dose 1 mg may be repeated once to a max dose of 2 mg.
- Perform a pleural decompression as needed for tension pneumothorax.

Level III (ALS Care):

- None

Fractures (Pediatric)

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal ABCs • Altered mental status • Significant mechanism, injury to possibly dangerous area • Suspected spinal cord injury • Trauma alert criteria 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Injury to non-dangerous area • Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria

Level I (BLS Care):

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

Level II (ALS Care):

- Establish IV/IO access, if indicated.
- Use nasal cannula ETCO₂ monitoring for patient's given medications that can cause respiratory depression.
- Provide continuous cardiac monitoring

Level III (ALS Care):

- Administer Fentanyl 1mcg/kg IV/IO with max dose 100 mcg. If no IV access, 1-2mcg/kg IN with max dose 200mcg. The dose of Fentanyl must be calculated, it is not listed in the Handtevy Guide (refer to the drug manual section of protocol).
- If Fentanyl is unavailable or contraindicated, administer Morphine Sulfate 0.1mg/kg IV/IO or IM. Maximum total dose is 5mg.
- Additional Morphine for pain control as per medical direction

Head Injuries (Pediatric)

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal ABCs (ex. Cushing's triad) • Altered mental status • Significant mechanism, injury to possibly dangerous area • Suspected spinal cord injury • Trauma alert criteria 	<ul style="list-style-type: none"> • Normal VS; baseline mental status • Injury to non-dangerous area • Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria

Level I (BLS Care):

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

Level II (ALS Care):

- If blood glucose level is <60mg/dl, follow Hypoglycemia protocol.
- Establish IV/IO.
- Provide continuous cardiac monitoring
- Apply nasal capnography
- Evaluate the need for advanced airway with RSI, if indicated (**see airway management protocol. BVM ventilation is acceptable**). Confirm airway placement with capnography and 2 other documented methods.
- If intubated, sedate with Versed 0.05 mg/kg IV/IO. Max single dose 1 mg may be repeated once to a max dose of 2 mg.
- Capnography for the head injury patient:
 - Target 40mmHg for non-herniating patient
 - Target 35mmHg for herniating patient

Level III (ALS Care):

- None

Ophthalmic Injuries (Pediatric)

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Severe eye injuries • Altered mental status • Hazmat • Penetrating eye injury is a trauma alert 	<ul style="list-style-type: none"> • Minor eye injuries (abrasion, welding, small foreign body, contact lens problem, allergy, infection) • No associated injuries/exposures

Level I (BLS Care):

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

Level II (ALS Care): (If Trauma Alert Criteria is met)

- Provide ALS support (ECG, IV, etc.)
- Evaluate the need for advanced airway and RSI if indicated (see airway management protocol. BVM ventilation is acceptable).
- Confirm airway placement with capnography and 2 other documented methods.
- Initiate 2 large bore IV lines of normal saline, if indicated, and time available.

Level III (ALS Care):

- None

Traumatic Shock (Pediatric)

Rationale:

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

Assessment Checklist:

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

Transport Triage

ALS	BLS
<ul style="list-style-type: none"> • Abnormal ABCs • Altered mental status • Significant mechanism, injury to possibly dangerous area • Suspected spinal cord injury • Trauma alert criteria 	<ul style="list-style-type: none"> • ALS transport only

Level I (BLS Care):

- Administer oxygen by appropriate device.
- Monitor oxygen saturation.
- Vital signs every 5 minutes.
- If the patient is hypotensive, place in Trendelenburg position.
- Control bleeding if possible through direct pressure, elevation or tourniquet if necessary

Level II (ALS Care):

- Establish IV/IO. Do not delay transport to establish IV lines.
- Provide continuous cardiac monitoring
- Evaluate the need for advanced airway with RSI, if indicated (**see airway management protocol. BVM ventilation is acceptable**). Confirm airway placement with capnography and 2 other documented methods.
- If intubated, sedate with Versed 0.05mg/kg IV/IO. Max single dose 1 mg may be repeated once to a max dose of 2 mg.
- If the patient is hypotensive, administer a fluid bolus of normal saline 20mL/kg.
- Repeat the saline bolus if signs of shock or hypotension persist.

Level III (ALS Care):

- Administer Norepinephrine 2-12mcg/minute for neurogenic shock after volume replacement.
- Titrate norepinephrine to main SBP >80 to age 10 and SBP >90 if age >10

CHAPTER 7: Community Health Care Service

Blood Pressure Screening

Rationale:

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

Assessment Checklist:

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

Level I (BLS Care):

- Have customer sign in per departmental policy.
- Assess the patient's blood pressure.
- If the pressure is acutely abnormal, continue to appropriate protocol.
- Obtain a refusal for treatment/transport if patient is acutely hypertensive with signs/symptoms or BP above 200/120 mmHg and patient is unwilling to be transported to a medical facility.
- Obtain a refusal for treatment/transport if patient is acutely hypotensive with signs/symptoms or Systolic below 90 mmHg and patient is unwilling to be transported to a medical facility.

Level II (ALS Care):

- None

Level III (ALS Care):

- None

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

Rationale:

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

Assessment Checklist:

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

Level I (BLS Care):

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

Level II (ALS Care):

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

Level III (ALS Care):

- Past pneumonia vaccination consults with physician.

CHAPTER 8: Administrative Policies

Active Shooter Response

An Active Shooter is an individual actively engaged in killing or attempting to kill people in a confined and populated area; in most cases, active shooters use firearms and there is no pattern or method to their selection of victims. Active shooter situations are unpredictable and evolve quickly. Typically, the immediate deployment of law enforcement is required to stop the shooting and mitigate harm to victims. Because active shooter situations are often over within 10 to 15 minutes, before law enforcement arrives on the scene, individuals must be prepared both mentally and physically to deal with an active shooter situation.

Casualty Recovery Team (CRT):

A multi-agency concept combining a law enforcement (security) element and a medical element to rapidly assess, treat and extract casualties at incidents involving an active shooter(s) at a public assembly occupancy or outdoor event.

Hot Zone:

(Law Enforcement may refer to this as the inner perimeter) this is an area that is NOT safe for Fire/EMS personnel to enter. This is the area where the shooter/suspect may be located and the threat is direct or immediate. Law Enforcement personnel only will operate in these areas.

Warm Zone:

The area where a potential threat exists, but the threat is not direct or immediate. This is the area where the CRT would operate and be deployed into for victim recovery, treatment and extraction.

Cold Zone:

(Also known as the Outer-Perimeter) -Secure area just outside the Danger Zone where safe operations can be conducted by all personnel. This is the area where the Command Post will be located and where normal patient triage, treatment and transport can occur.

Communication Plan:

1. When notified that the units are responding to an Active Shooter incident, Brevard County Fire Rescue will utilize Alert 4 for common communications. This will be announced and copied by responding units. All personnel will take the radio OFF scan and only monitor ALERT 4.
2. The Alert channel that responding BCFR units will switch to is "ALERT 4". This will allow Law Enforcement to utilize the other Alert channels for their tactical communications.
3. Since all municipal and County Police agencies within Brevard County have the Alert Channels, this would be the most logical channels to utilize for common communications.
4. Fire Rescue will remain on Alert 4 and it will be utilized from either PD/FD and/or Unified command for communication with Fire Rescue.
5. If Command determines that Fire/EMS Divisions, Branches and/or Groups will need to be established then Tactical Channels can be utilized

First Arriving Officer or Acting Officer:

1. Ensure that (2) District Chiefs are responding to the incident as they have the Casualty Recovery Team's protective equipment in their vehicles.
2. Determine with available information if Law Enforcement has the shooter "isolated" or if the shooter is still engaged in active shooting of victims prior to arrival.

3. Determine if Law Enforcement has established a perimeter or staging location for Fire and EMS units. If not, stage units in a safe location. Consider secondary devices that might target first responders when picking a staging area location.
4. If Law Enforcement has established an Incident Commander (IC) or Command Post, find the location and report to command to establish a Unified Command until a District Chief can arrive.
5. If Law Enforcement is busy, or does not have an established Incident Commander, the first arriving Officer will establish command and announce the location. Dispatch will relay this to the appropriate Law Enforcement agency responding and the Alert Channel that Fire Rescue is working on.
6. Work with Law Enforcement to determine how many potential victims there may be and request additional resources as needed. May need to initiate a Mass Casualty Incident (MCI) through dispatch.
7. If there is already an established Incident Commander with Law Enforcement, the second arriving officer will report to a staging location and assume staging officer responsibilities. This officer may be responsible for the staging of both Fire/EMS and in-coming Law Enforcement. So ensure the location is large enough for all responding agencies.

Treatment and Retrieval of Patients from the Warm Zone - (CRT TEAM):

Personnel will only be allowed to enter the Warm Zone if approved by both the Fire Department IC and the Law Enforcement IC, and only after meeting the following objectives:

1. Law Enforcement has confirmed that there are patients that are injured and the patient's rate of survival would benefit from immediate care (cannot self-evacuate or walk out with Law Enforcement).
2. Law Enforcement has initially cleared the building or area and there are no known assailants in the immediate area of where the CRT would be deployed.
3. Law Enforcement is able to provide officer escorts for the Casualty Recovery Team and stay with them while they triage, package and remove the patient(s).
4. All BCFR personnel making entry as part of a Casualty Recovery Team will have appropriate ballistic protection to include a ballistic vest and/or plate carrier with level IV plates inserted, ballistic helmet and medical pouch attached to vest and/or carrier.
5. The protective equipment for the Casualty Recovery team will be on the District 20, 40, 45, 60 and District 80 vehicles. Each district will carry (4) sets of ballistic protection for the Casualty Recovery Team.
6. The protective equipment that the District's will be carrying consist of (4) Plate Carrier vests, with each having (2) Level IV Rifle Plates inserted (1 Front & 1 Back), a ballistic helmet and a medical pouch already attached to the vest.
7. The Casualty Recovery Team Leader has been completely briefed.
8. Appropriate communications with the CRT will be identified and established by Unified Command prior to entry. This will be a separate channel than the primary incident and will have communications with Command. This channel will be identified and ensured that all personnel making entry have the radio channel for the CRT.
9. Final approval for FD personnel to enter rests with the Fire Department IC.
10. The IC has the right to deny entry of personnel if they believe the risk to be unacceptable.
11. If the event involves a weapon other than firearms, appropriate PPE will be worn by the entry teams (i.e. bunker gear with SCBA, hazmat ensembles, etc.).

MCI and ICS:

1. In general, the engine crews should be used to set up treatment areas.

2. Rescues should be staged in an area away from the scene so that they don't become involved until the Transport Officer has requested them for an assignment.
3. Follow the MCI guidelines for establishment of triage, treatment and transportation areas.

REFERENCES:

SOG #2307 Active Shooter Response

TBA Mass Casualty Incident

SOG 3500 Incident Command System (ICS)

TCCC- Tactical Combat Casualty Care

Baker Act

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

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

1. Law enforcement will search the patient when the medical situation permits.
2. Restraints will be used only when the patient is likely to harm himself or others. The restraints should secure all extremities, the torso, and the pelvic region. Continue restraining the patient throughout transport.
3. Ambulatory psychiatric patients shall be escorted by at least two personnel, one on each side of the patient. Each provider should keep one hand in contact with the patient. A provider should sit within arm's reach during transport.
4. Law enforcement will provide a completed Baker Act form (HRS-MH Form 3052A) to the EMS provider prior to transporting the patient. No patient will be transported by BCFR without this form being complete and in their possession at the time of transport. The original form will be taken by the provider and be left with the patient at the receiving facility. The crew shall inspect this form before initializing transport. Do not transport the patient if the form is not completed with the name of the receiving facility, patient's name, time/date, criteria checked off, observations, and a signature.
5. A patient may voluntarily sign a Baker Act form 40 as a self-committal to a mental facility. Once this form is signed, the patient gives up legal rights and can be involuntarily transported.
6. Voluntary patients should have prior authorization for transport from the receiving facility. Notify law enforcement immediately of any patients who are a threat to themselves or others. Detain, if you can do so safely without using force, the patient under the authority of Florida Statute 401.445. Do not use force to detain any patient.
7. Non-emergency substance abuse patients should have prior authorization for transport from the receiving facility.
8. Intoxicated patients may be involuntarily transported under the authority of the Marchman Act. Law enforcement personnel must authorize treatment and transportation. The intoxicated patient who refuses to be transported will be the responsibility of law enforcement.
9. Any patient requiring medical treatment shall be taken to the nearest receiving facility.

BSI and Universal Precautions

According to the Occupational Safety and Health Administration (OSHA), Universal Precautions are required methods of control to protect employees from exposure to all human blood, other potentially infectious material (OPIM), and dangerous substances. Universal Precautions require that all human blood and OPIM be treated as if known to be infectious for blood borne pathogens (HIV, HBV, HCV, etc.) regardless of “low risk” status of patient, and unknown powders and pills should be treated as highly hazardous substances that can be readily absorbed into the body such as fentanyl and fentanyl-related substances.

Due to the opioid crisis and the increased prevalence of fentanyl and fentanyl-related substances, BCFR field personnel should look for any fentanyl indicators such as powders, pills, or capsules, especially when responding to a possible overdose.

Procedure:

If possible fentanyl substances are observed, field personnel should immediately don the minimum Universal Precautions and contact law enforcement and the Brevard County Hazardous Materials team.

Minimum Universal Precautions include:

- Nitrile gloves
- N-95 dust mask
- Eye protection
- Disposable paper suit
- Shoe Covers
- Antidotes such as Duodote Auto Injector, Naloxone, and other agents referenced in the Hazardous Materials section of the protocol should also be readily available for administration in the event of contamination.

BCFR field personnel **should NOT** take samples or disturb any powdered substances without employing proper precautions.

NOTE: If a BCFR field member comes into contact with fentanyl or any suspected fentanyl-related substances, they should immediately wash their skin with soap and water and have Naloxone at the ready in case of adverse reactions. **DO NOT** use Hand Sanitizer as it contains alcohol which will speed the absorption of fentanyl through the skin.

Death Scene

1. Control of death scenes is the responsibility of law enforcement. As a general rule, law enforcement officers voluntarily defer to the EMS provider for resuscitation decisions. Ultimate responsibility for control of death scenes rests with law enforcement. If a law enforcement officer denies you access to the scene, he is acting within the law and assuming responsibility.
2. This protocol is to assist the field EMS provider in making resuscitation decisions. It applies to patients of all ages, including victims of SIDS. It cannot address all possible contingencies. The provider should, when in doubt, attempt resuscitation. All resuscitation will follow Brevard County Fire Rescue protocol unless the Medical Director, or his designated emergency room physician, gives orders otherwise.
3. A patient with a valid “Do Not Resuscitate Order” (DNRO) will still receive all appropriate treatments up until the time they go into Cardiac Arrest.
4. Terminally ill patients present ethical and legal questions when making resuscitation decisions. Frequently, surviving family members will direct that resuscitation should not be attempted. A patient without a DNRO or there is a desire to rescind the DNRO, the request should be honored unless there is doubt as to who the proxy is for the patient. In this case, BLS care should be provided and medical control should be contacted. The questions associated within the “Death with Dignity” issue are important, emotional, and beyond the ability of an EMS system to address.
 - a. The State of Florida’s “Do Not Resuscitate Order” (DNRO) form will be honored, as long as the form is either an original or the form is a copy on yellow paper. The form must be complete and signed. If there is doubt of the authenticity of the form or the form is not a State of Florida DNRO form, resuscitation will be performed on the patient, unless another section of this protocol applies.
 - b. If a patient does not have a DNRO, but is terminally ill, decrepit, and in the end-stage of the disease process, contact medical control for orders to cease resuscitation.
 - c. **If a DNRO is presented after the crew has moved the patient to the back of the rescue to prepare for transport**, then a DNRO cannot be accepted and the patient shall be transported to the hospital. During transport, BLS measures (CPR at a minimum) shall be continued until the patient is turned over to the ED staff. Once transporting, it is imperative that the crew contact the hospital and let them know that they are transporting a patient who may have a DNRO, but a valid DNRO was not present at scene, so only BLS (CPR) is being done without ALS intervention unless requested by the ED physician. No patient shall be transported in the back of a BCFR unit, who is clinically dead, without BLS measures at a minimum. The ED staff will NOT accept any patients who are pulseless and no action was taken by the crew throughout transport.
5. Unquestionable Death Criteria:
 - a. The patient is pulseless with unresponsive pupils.
 - b. In addition to the above, the patient should meet one of the following criteria:
 - i. The patient has lividity (discoloration of dependent parts of the body).
 - ii. The patient has clear signs of body decay or visible decomposition with odor.
 - iii. The patient has rigor mortis (rigidity).

- iv. The patient has an open cranium with exposed brain matter.
 - v. The patient is decapitated or has a severed trunk.
 - c. Asystole must be confirmed in at least two contiguous leads for severe blunt traumatic injury.
 - d. If the deceased resides in a licensed care facility and meets the minimum requirements of A, B and C above, the EMS crews may turn care/custody of the deceased over to the licensed care facility after ensuring that law enforcement is en route.
- 6. Control of Death Scenes:
 - a. When the law enforcement or EMS provider has determined that the scene is a death scene:
 - i. Avoid disturbing the patient's position and the scene as much as possible. Observe the position of anything relevant to the body (such as sheets, weapons, etc.) and the position of the body. Make notes (for law enforcement) about these and about anything disturbed as soon as possible.
 - ii. TOUCH NOTHING
 - 1. Do not use the telephone.
 - 2. Do not touch the medication (or other) containers.
 - 3. Do not turn off anything (except obvious hazards).
 - 4. Do not move anything.
 - 5. Do not replace anything you moved to access the patient.
 - 6. Try not to leave anything on scene (such as electrode wrappers or needles).
 - 7. Exit the scene and do not re-enter and prohibit civilians from entering the scene, even if it is their own home.
 - iii. If law enforcement is not present, notify them.
 - iv. Notify your supervisor if law enforcement has not arrived within 15 minutes of notification.
 - v. Do not leave the scene until law enforcement assumes control.

Destination Decisions

Definitions:

- **State Approved Trauma Center (SATC, Level 1 or 2):**
 - Those hospitals having the facilities and personnel appropriate for the care of the major trauma patient.
- **Basic Treatment Facility (BTF):**
 - A hospital's emergency department that is capable of providing care to most emergency patients, excluding major trauma.
- **Patient Choice:**
 - The hospital chosen independently by the patient. This definition specifically excludes a decision derived by paramedic prompting or recommendation.

Patient Classifications & Destination Decision:

1. Class Red – Unstable
 - a. Medical – to closest facility
 - b. Trauma – refer to Trauma Transport protocol
 - c. Stroke—Refer to Stroke Protocol
2. Class Yellow – Stable, but at risk of deterioration
 - a. Medical
 - i. Hospital of patient's choice, with zone, unless the paramedic decides that such a transport would be detrimental to the patient's clinical condition. Then transport to closest appropriate hospital.
 - ii. Unassigned: closest hospital.
 - b. Trauma – refer to Trauma Transport protocol
3. Class Green – Stable
 - a. Medical
 - i. Hospital of patient's choice within the County, including Sebastian River Medical Center (system status allowing).
 - b. Trauma – refer to Trauma Transport protocol
4. Class 4/Black – Meets Death Scene criteria. Notify Law Enforcement and do NOT transport.

Use of Helicopter Ambulance Service:

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

EMT IV (Intravenous)

- Pursuant to the rules of the Florida Department of Health Chapter 64J-1.004, Florida Administrative Code, an Emergency Medical Technician (EMT) who has successfully completed training equivalent to the 1999 US DOT EMT – Intermediate National Standard Curriculum related to intravenous (IV) therapy shall be allowed to initiate a non-medicated peripheral IV.
- An EMT shall only be allowed to initiate a non-medicated IV under the direct supervision of a Florida certified Paramedic (of the same licensed agency) who has directed the EMT to do so.
- All IVs initiated by an EMT shall follow the guidelines established in the Peripheral Venipuncture (IV) Protocol as outlined in the Procedures Manual of the Brevard County EMS Standing Orders.
- No EMT shall be permitted to initiate an intraosseous infusion or access a patient's external jugular vein.

Incapacitated Patients

- Florida Statute 401.445 provides authority for EMS providers to examine and treat patients who are incapacitated and cannot make decisions for themselves.
- Patients are incapacitated if they are unable to make informed consent for treatment due to intoxication by drugs, alcohol, or by their medical emergency (such as decreased mental status).
- The provider has a legal ability to treat a patient experiencing a medical emergency. Make every attempt to get consent from the patient. If the patient is incapacitated, s/he may be treated and transported without his/her consent.
- Law enforcement shall be requested to restrain any patient who requires it. Unreasonable force shall not be used.
- A patient who has been treated as an incapacitated patient must be transported until a physician determines that he/she is no longer incapacitated.

Dementia, Mild Cognitive Impairment and Health Care Surrogates

When managing an incapacitated patient that has been diagnosed by a physician as having a history of Dementia or mild cognitive impairment, the EMS provider shall work with the medical provider, caregiver, or family member on scene when determining the patient's mental status. If, at any time, the medical provider, caregiver, or family member on scene advises the EMS provider that the patient is experiencing a medical event, then the EMS provider will make every effort to transport the patient to the hospital for evaluation, regardless of whether or not the patient refuses transport. The patient who has been diagnosed with Dementia or mild cognitive impairment may not be able to provide a chief complaint. Therefore, the information provided by the medical provider, caregiver, or family member on scene must be accepted as being in the best interest of the patient and the EMS provider will act accordingly. **If the patient meets the criteria within the Transport Destination (non-ALS transport) Protocol, Coastal Health Systems may be requested for transport. If treated and transported by BCFR personnel, incapacitation patients who are assessed and determined to be "stable" shall be transported to the facility of the nursing home medical staff's, long term care facility medical staff's, caregiver's, family member's, medical power of attorney for health care or designated health care surrogate's choosing. If the incapacitated patient is assessed and found to be "unstable" for any reason, he/she shall be transported to the closest facility (See Transport Destination Protocol for additional guidelines). NOTE: If a request is made by one of the entities listed above to transport a "stable" patient to a facility that is outside the transport units normal service area, BCFR Dispatch shall be notified of the request and the request shall be honored, IF AND ONLY IF, system status will allow the transport to a receiving facility outside of the transport unit's normal service area.**

NOTE: If patients have signed documentation that their health care decisions have been delegated to someone else (Power of Attorney for Health Care or Assigned Health Care Surrogate), then, at the request of the Health Care Surrogate or care giver who has contacted the Health Care Surrogate, patients should be transported for further medical evaluation. Such patients may be alert and oriented and not have a diagnosis of dementia. These patients have given over their rights for health care decisions to another, either voluntarily or by court appointment, based on recognition of some level of cognitive impairment. As stated above, these patients may be transported as a non-ALS transport if criteria are met.

Interfacility Transfer

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

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

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

Mass Casualty Incident (MCI)

This Mass Casualty Incident (MCI) procedure is to be used for any incident when the number of injured exceed the capabilities of the first arriving units to efficiently triage, treat, and transport the victims. For Brevard County Fire Rescue (BCFR), this MCI procedure will be initiated on all incidents involving five or more victims.

A. Responsibilities of Command

1. Remove endangered persons and treat the injured.
2. Stabilize the incident and provide for life safety.
3. Ensure that the functions of extrication, triage, treatment, and transportation are established as needed and carried out.
4. Conserve property and preserve evidence.
5. Provide for the on-going safety, accountability, and welfare of all emergency service personnel throughout the entire incident.

B. Response - When an MCI is determined, the Incident Commander should request the necessary resources needed to mitigate the situation. The following response levels should be considered the minimum resources required to manage a specific number of victims. The Florida Incident Field Operations Guide (F.O.G.) was a reference for this protocol.

1. The MCI Alarm assignment will be:
 - a. One District Chief
 - b. Assistant Chief of EMS Operations
 - c. A Safety Officer will be assigned to the scene
 - d. Two Engine or Truck companies (Whichever is closest)
 - e. Two transport capable rescues or closest ambulance units
2. Level 1 MCI (5-10 victims, Minor MCI)
 - a. Minimum response of one MCI alarm.
 - b. Dispatch will notify the Assistant Chief of Operations or designee.
 - c. Dispatch will notify the Assistant Chief of EMS Operations.
 - d. One Safety Officer will be assigned to the scene
 - e. Dispatch will issue a Staff page.
 - f. Brevard County Communication Center will notify closest Hospitals in the general area of the MCI and the Regional Trauma Center.
 - g. Brevard County Communication Center will notify the on-duty Public Information Officer (PIO)
3. Level 2 MCI (11-20 victims, Minor MCI)
 - a. Minimum response of two MCI alarms.
 - b. Dispatch will notify the Assistant Chief of Operations.

- c. Dispatch will notify the Assistant Chief of EMS Operations.
 - d. One District Chief
 - e. Dispatch will issue a Staff page.
 - f. One Safety Officer will be assigned to the scene
 - g. Brevard County Communication Center will notify all Hospitals in the general area of the area of the MCI and the Regional Trauma Center.
 - h. Brevard County Communication Center will page the BC-EMS Medical Directors.
 - i. Brevard County Communication Center will notify Space Coast Area Transit (SCATS)
 - j. Brevard County Communication Center will notify the on-duty PIO
4. Level 3 MCI (21-99 victims, Major MCI) = F.O.G. Level 3
- a. Minimum response of three MCI Alarms.
 - b. Additional alarms or units should be requested as the situation dictates. Contact (BC-OEM) Brevard County Office of Emergency Management for special resources. Consider two to three climate-controlled buses to hold, treat and transport Green level victims.
 - c. Dispatch will notify the Assistant Chief of Operations or designee.
 - d. Assistant Chief of EMS Operations. Dispatch will issue a Staff page.
 - e. Two or more Safety Officers will be assigned to the scene.
 - f. Deploy the MCI Unit
 - g. Brevard County Communication Center will notify all area Hospitals, Regional Trauma Center and any additional facilities in the region if indicated.
 - h. Brevard County Communication Center will notify the BC-EMS Medical Directors for possible response and assistance
 - i. Brevard County Communication Center will notify SCATS
 - j. Brevard County Communication Center will notify the on-duty PIO
5. Level 4 MCI (100-999 victims or greater, Major MCI)
- a. Minimum response of three MCI Alarms.
 - b. Additional alarms or units should be requested as the situation dictates. Contact (BC-OEM) Brevard County Office of Emergency Management for special resources. Consider two to three climate-controlled buses to hold, treat and transport Green level victims.
 - c. Dispatch will notify the Assistant Chief of Operations or designee.
 - d. Assistant Chief of EMS Operations. Dispatch will issue a Staff page.
 - e. Two or more Safety Officers will be assigned to the scene
 - f. Deploy the MCI Unit (contains enough supplies for 100 victims).
 - g. Brevard County Communication Center will notify all area Hospitals, Regional Trauma Center and any additional facilities in the region if indicated.
 - h. Brevard County Communication Center will notify the BC-EMS Medical Directors for possible response and assistance
 - i. Brevard County Communication Center will notify SCATS

- j. Brevard County Communication Center will notify the on-duty PIO
 - k. Notify BC-OEM for the purpose of requesting Local, Regional and possibly State resources up to or including USAR Teams, the Metropolitan Medical Response System (MMRS) and other special teams or resources if indicated.
6. Level 5 MCI (1000 victims or greater, Major MCI)
- a. Minimum response of three MCI Alarms.
 - b. Additional alarms or units should be requested as the situation dictates. Contact (BC-OEM) Brevard County Office of Emergency Management for special resources. Consider two to three climate-controlled buses to hold, treat and transport Green level victims.
 - c. Dispatch will notify the Assistant Chief of Operations or designee.
 - d. Assistant Chief of EMS Operations. Dispatch will issue a Staff page.
 - e. Two or more Safety Officers will be assigned to the scene
 - f. Deploy the MCI Unit (contains enough supplies for 100 victims).
 - g. Brevard County Communication Center will notify all area Hospitals, Regional Trauma Center and any additional facilities in the region if indicated.
 - h. Brevard County Communication Center will notify the BC-EMS Medical Directors for possible response and assistance
 - i. Brevard County Communication Center will notify SCATS
 - j. Brevard County Communication Center will notify the on-duty PIO
 - k. Notify BC-OEM for the purpose of requesting Local, Regional and possibly State resources up to or including USAR Teams, the Metropolitan Medical Response System (MMRS) and other special teams or resources if indicated.
- C. **First Arriving Officer** - Assumes Command and implements those sections of EOP 1.0 through 5.0 appropriate to the incident, including announcing the location of the Command Post. Perform a Size-up to include:
- 1. Estimate the number of victims involved in the incident.
 - 2. Safety Concerns Haz-Mat, Fires, Collapse hazards etc.
 - 3. If the numbers of sick or injured exceed the capabilities of the first arriving units to efficiently manage the scene, Command should declare an MCI, the "Level MCI", and request additional resources early.
 - 4. Designate a Triage, Treatment, and Transport Group.
 - 5. Designate a Level II Staging area for:
 - a. Engines, Trucks, and Rescues (not for transport), or other resources.
 - b. A separate staging area for Transport vehicles (for patient transport only) where they can enter and depart the scene readily and safely.
 - c. As additional units arrive, Command will establish Division/Groups and assign personnel to the following areas if necessary
 - i. EMS Branch
 - ii. Triage Group

- iii. Treatment Group
 - iv. Transport Group
6. Additional assignments should be made or Division/Groups established based on the complexity of the incident. These may include but are not limited to:
- a. Staging Group
 - b. Landing Zone (LZ)
 - c. Extrication Group
 - d. Haz-Mat Group
 - e. Safety Officer
 - f. Rehabilitation (Rehab) Group
 - g. Critical Incident Stress Debriefing (CISD)
 - h. New Medical Designations
7. Treatment Capability (T-Cap), Ambulance Capability (A-Cap)
- a. Command, EMS and Transport Groups must know the area hospital's ability to accept and treat victims (T-Cap).
 - b. During any MCI, Brevard County Communication Center will contact all hospitals in the area to obtain their T-Cap information.
 - c. In the case of a large incident that may require many transport vehicles, Brevard County Communication Center will poll other agencies for their Ambulance Capability (A-Cap). The (A-Cap) will provide Brevard County Communication Center with the number of vehicles that each agency has available to respond.

D. DIVISIONS and GROUPS:

1. Triage Group:
- a. Use the radio designation, Triage Group.
 - b. Organize the Triage Team to begin the initial triaging of victims using Triage Tags. Consider a team of two personnel per 10 victims.
 - c. BCFR will use Triage tags for any incident with five or more victims.
 - d. During initial triage phase use START Triage (Simple Triage and Rapid Transport) system for adult victims and jump start triage system, if available, for children age eight or younger
 - e. Some agencies may initially use colored ribbons to identify the severity of victims, not triage tags. The ribbon colors coincide with the colors on the triage tags used by BCFR
 - f. Affix a Triage tag to each victim in a visible location (around the neck if possible); remove only enough of the lower portion of the colored tag necessary to identify the condition of the victim. Retain the torn off portion of the tag, and deliver it to the Triage Group Supervisor for tracking
 - g. Advise Command as soon as possible the total number and category of Red, Yellow, Green, and Black victims

- h. Coordinate with the Treatment Group to ensure that victims are moved to the appropriate treatment area in the priority of their injuries and/or illness. i.e. Red category victims are moved before green category victims
 - i. Ensure that all areas around the scene have been checked for potential victims, walking wounded, ejected victims, etc., and that all victims have been triaged
 - j. Report to Command upon completion of duties for further assignments when triage is completed
2. Treatment Group:
- a. Use the radio designation, Treatment Group.
 - b. Assign a person to assist with the documentation.
 - c. Establish a centralized Treatment Area or Areas.
 - d. Ensure that all victims are re-triaged upon arrival to the treatment area utilizing a secondary exam and then document the assessment findings on the Triage Tag.
 - e. Personnel assigned to Treatment Areas that assess or treat victims will document pertinent findings on the Triage Tag.
 - f. All victims in treatment areas must be monitored and constantly re-triaged as their condition may change creating the need to move them to another treatment area.
 - g. Ensure that adequate equipment and personnel are available to effectively treat the victims.
 - h. Considerations for a Treatment Area:
 - i. Think big; make sure the treatment area selected will accommodate all the victims and personnel.
 - ii. Consider weather, safety and possible hazardous materials needs, (decon, runoff, wind direction, etc.).
 - iii. Designate an entrance and exit to each treatment area for good access and to aid in victim movement
 - iv. On large-scale incidents, divide the Treatment area into three distinct and separate areas based on triage priorities Red, Yellow, and Green. Colored Flags or Tarps will be used to mark each Treatment area
 - v. The Immediate care (RED) area must be closest to the transport area to facilitate rapid departure, the Delayed care (YELLOW) area will be the next closest area to the transport area, and Minor care (GREEN) area should be farthest away and well removed from the Yellow and Red areas to eliminate roaming Green victims from interfering with patient care
 - vi. Communicate with the Transport groups to coordinate transport of the appropriate patients
3. Transport Group:
- a. Use the radio designation, Transport Group
 - b. Designate an area where transport units can enter and depart the scene safely. Also consider the need for an Air transport area (LZ) with easy access if indicated.
 - c. Maintain a "Transport Group Log."

- d. Assign a “Documentation Aide” with a second radio to assist with the log and communications.
- e. Establish continuous contact with Brevard County Communication Center in order to determine the (T-CAP) of area hospitals and the (A-CAP) of other transport agencies. Use an approved tactical channel assigned by Brevard County Communication Center.
- f. Coordinate transport of victims from the treatment areas.
- g. Communicate with the LZ the number of patients to be transported by air.
- h. When vehicles are prepared to transport, the Transport Group or their aide will contact Brevard County Communication Center and supply them with the following information:
 - i. The transporting radio ID number.
 - ii. The number of patients going to a specific facility
 - iii. Their priority, RED, YELLOW, or GREEN
 - iv. If any GREEN patients are immobilized on backboards, the receiving facility must be notified
 - v. Transporting vehicle should not contact the receiving facility directly unless there is a change in patient condition or further Medical Control is required

E. References:

1. State Field Operations Guide (FOG)

UHF Med 8

When it becomes necessary for Brevard County Fire Rescue personnel to transport patients to facilities that are out of the normal service area, the following procedure shall be followed with respect to radio communications between BCFR units and the receiving facility (this shall include radio reports to out of area receiving facilities as well as requests for on-line medical direction):

1. Notify BCFR Dispatch of the need to communicate with the receiving facility and request that Dispatch notify the receiving facility to monitor the **UHF Med 8** radio channel. If unable to reach Dispatch by radio, call them at 311-633-1766.
2. If, after a few minutes, the receiving facility cannot be reached on the **UHF Med 8** radio channel, contact Dispatch again and repeat your request to communicate with the receiving facility via the **UHF Med 8** radio channel.
3. If you are still unable to communicate with the receiving facility on the **UHF Med 8** radio channel after following steps 1 and 2, the information normally relayed via radio to the receiving facility shall be relayed to BCFR Dispatch by the Paramedic who is rendering patient care. This information shall then be relayed to the receiving facility via telephone by BCFR Dispatch personnel.

Hospital Locations

Parrish Medical Center	(321) 268-6130	Indian River Medical Center	(772) 567-4311
951 N. Washington Ave, Titusville, Florida 32796		1000 36th Street, Vero Beach, Florida 32960	
Cape Canaveral Hospital	(321) 868-7244	Bert Fish Medical Center	(386) 424-5152
701 W. Cocoa Beach Cswy, Cocoa Beach, Florida 32931		401 Palmetto Street, New Smyrna Beach, Florida 32168	
Rockledge Regional	(321) 637-3000	Halifax Health Medical Center	(386) 425-4101
110 Longwood Ave, Rockledge, Florida 32955		303 N. Clyde Morris Blvd., Daytona Beach, Florida 32114	
Melbourne Regional	(321) 752-1233	Orlando Regional Medical Center	(321) 841-5210
250 N. Wickham Ave, Melbourne, Florida 32935		1414 Kuhl Ave, Orlando, Florida 32806	
Viera Hospital	(321) 434-9475	Arnold Palmer Children's Hospital	(321) 841-5437
8731 N. Wickham Rd, Melbourne, Florida 32940		92 West Miller Street, Orlando, Florida 32806	

Holmes Regional Medical Center (321) 434-7298 1350 S. Hickory Street, Melbourne, Florida 32901	Florida Hospital Pediatrics (407) 303-9732 601 East Rollins St, Orlando, Florida, 32803
Palm Bay Community Hospital (321) 434-8355 1425 Malabar Rd, Melbourne, Florida 32907	Florida Hospital East (407) 303-6014 7727 Lake Underhill Rd, Orlando, Florida 32822
Sebastian River Medical Center (772) 589-9122 13695 US Highway 1, Sebastian, Florida 32958	Nemours Children's Hospital (407) 567-4245 13535 Parkway, Orlando, Florida 32827
Central Florida Regional Hospital (407) 324-7720 1401 W. Seminole Blvd, Sanford, FL 32771	

Multiple Agency Coordination

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

Additional information as it pertains to the bullets above:

Several agencies may provide Emergency Medical Services at an incident. Teamwork, cooperation, and communication are essential in order to ensure appropriate patient care and safety for all responders. Kennedy Space Center, Coastal Health Systems, and Brevard County Fire Rescue have, in their organization's boundaries, responsibility and authority for pre-hospital emergency transport.

When patients are unstable (e.g. unresolved chest pain, neurological deficits, airway obstruction), the first responders and transport paramedic will work collaboratively to complete the intervention being performed by the first responders. Upon completion of the intervention, transfer of the patient to the transporting agency should begin immediately. All medical personnel on-scene and those accompanying the patient to the hospital are responsible for patient care and appropriate patient care documentation. If a difference of opinion regarding treatment according to the application of protocol occurs between agencies, medical control must be notified. The direction of the medical control physician will then be the appropriate course of action and all responders should abide by that directive. Prior to patient transport, if a first responding agency paramedic chooses to accompany the patient, the transport paramedic and first responding paramedic will work collaboratively to achieve the best patient care possible while en-route to the hospital.

If a difference of opinion regarding treatment according to the application of protocol occurs, a medical decision must be made immediately **while on-scene** and medical control cannot be established, **the first responding agency paramedics** will assume primary authority and responsibility for the patient until medical control is established.

If a difference of opinion regarding treatment according to the application of protocol occurs, a medical decision must be made immediately **during transport** and medical control cannot be established, **the transporting agency paramedic** will assume primary authority and responsibility for the patient until medical control is established.

BLS providers will transfer authority for the patient to the first arriving ALS agency.

Non-SOLO Paramedic Personnel

1. BCFR Non-SOLO Paramedic Personnel are authorized to render patient care to “unstable” patients IF AND ONLY IF he/she works continuously under the direct supervision of a BCFR SOLO Paramedic **(The BCFR SOLO Paramedic must physically be in and remain in the patient compartment with the Non-SOLO Paramedic throughout the entire patient encounter and must remain actively engaged in supervising all patient care rendered to any “unstable” patient by the Non-SOLO Paramedic. This Protocol shall also apply to ANY/ALL patients who, prior to the initiation of transport, require the issuance of any form of alert to the appropriate receiving facility).**
2. A BCFR Non-SOLO Paramedic shall be authorized to independently render patient care to any patient (medical or trauma) who, at the time transport is initiated, is determined to be “stable”. Care of such patients may be rendered without a BCFR SOLO Paramedic physically being in the patient compartment and actively directing the care administered by the Non-SOLO Paramedic.
3. If, at any time during the transport of a “stable” patient, the patient’s condition changes such that he/she is no longer considered “stable”, the BCFR SOLO Paramedic shall notify BCFR Dispatch via radio that the patient’s condition has changed. At that time, the BCFR SOLO Paramedic shall stop and assume care of the patient and the Non-SOLO Paramedic shall assume driving at the appropriate response level to the receiving facility (this shall include patients whose condition change requires that an alert of any kind be issued during transport).
4. A BCFR Non-SOLO Paramedic may complete patient care reports on any patient that they assessed or rendered care to, regardless of patient classification. Reports completed by BCFR Non-SOLO Paramedics shall be thoroughly reviewed for accuracy and content by the BCFR SOLO Paramedic. This review shall occur BEFORE the report is signed and electronically uploaded. If the Non-SOLO Paramedic completes the patient care report on any “unstable” or “alert” patient, the BCFR SOLO Paramedic shall ensure that his/her review of the report is documented at the bottom of the narrative section of the report (i.e. “This report was reviewed and approved by SOLO FM John Doe”).
5. At no time during transport shall the patient care rendered by non-SOLO BCFR Paramedic personnel be supervised by Paramedics who are employed by/volunteer for another Fire or EMS agency.

On-Line Medical Control

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

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

Patient Care Documentation

1. All patient care reports shall be completed and electronically uploaded within twenty four (24) hours of the time the call was dispatched (as per BCFR protocol).
2. All units dispatched to the scene of any incident, regardless of whether or not a patient was transported, shall submit written documentation of the incident via the Department's electronic report writing system. This documentation shall be submitted within the twenty four (24) hour time frame as stated in section I. Non-transport BCFR units who arrive at the scene of any EMS related incident or call for service shall include, within the narrative section of the 902 report, documentation of the patient's initial presentation, initial assessment findings, vital signs assessed, and all interventions performed and treatments rendered. If a patient refuses evaluation, treatment, or transport or if the patient denies injury or illness of any kind, the Patient Refusal or Non-transport Protocol shall be adhered to. If, for any reason, an issue arises where the appropriate electronic applications will not allow for the timely submission of reports, an Information Technology "Help Desk" ticket shall be submitted via the Board of County Commissioner's Intranet. The Office of EMS shall also be notified immediately, via electronic mail, of the reasons why the report(s) were not submitted within the time frame specified in section I.
3. All Brevard County hospitals have access to Patient Tracker through ESO that provides them with the patient care record, pre-arrival. Crews need to make sure to select the correct destination on the patient care report. Crews are not required to provide paper abbreviated care reports unless the system is down county-wide.
4. The **SOAP** format shall be used as a template for the completion of all narratives for all patient care reports submitted (this shall include 902 reports, transport reports, and patient refusal with complaints)
5. All interventions and medications documented in any narrative shall also be documented in the "Flowchart" section of the patient care report and shall be listed in chronological order in both the narrative and "Flowchart" sections. Vitals shall also be documented in the "vitals" chart. All of the information located in the charts must be included in the "Plan" section of the narrative.
6. Each and every time a Lifepak 12 or Lifepak 15 device is used to obtain patient assessment data of any kind, the data captured by the device shall be electronically uploaded and shall be attached to the appropriate electronic patient care report. At any time this data cannot be electronically attached to a patient care report due to a failure of an electronic application(s), an Information Technology "Help Desk" ticket shall immediately be submitted as directed in section II and the Office of EMS shall also be notified immediately, via electronic mail, of the reasons why the data could not be electronically attached to the patient care report. In those instances where issues with the appropriate electronic applications cannot be immediately resolved, paper copies of all Lifepak patient assessment data shall be mounted on an approved Brevard County Fire Rescue ECG Mounting Sheet(s). These paper records shall be sent immediately to the Office of EMS via inter-office mail for filing and storage. **NOTE: Paper copies of Lifepak patient assessment data may be submitted IF AND ONLY IF electronic means of uploading and attaching such records is**

unavailable or not in proper working order. The paper records shall be sent immediately to the Office of EMS. These records are part of the patient care report and failure to upload/submit such records constitutes the submission of an incomplete patient care report.

7. Instructions for completing electronic patient care reports on Brevard County Fire Rescue's current documentation program are found on the BEACH and esosuite.net.

Patient Refusal or Non-Transport

1. Any patient refusing needed treatments and/or transportation requires the completion of a Patient Refusal form. Patients who refuse part of the treatment recommended (for example, a patient may allow transport but refuse to have an IV) must also sign the Patient Refusal form. **Any BCFR Paramedics, EMTs, or Ocean Rescue personnel at the scene of any medical or trauma related incident shall obtain a patient signature on an approved patient refusal form. Each and every time a BCFR unit informs BCFR Dispatch that they have arrived at the scene of an incident where any individual has a stated medical complaint or traumatic injury, a patient signature on an approved BCFR Patient Refusal form shall be obtained. This Protocol shall apply regardless of the presence of any municipal first responding Fire/EMS agency at the time of the arrival of BCFR personnel. *** All BCFR personnel present at any EMS event shall be responsible for making sure that this Protocol, in its entirety, is adhered to each and every time a patient refuses evaluation, treatment, or transport, regardless of the actions of municipal first responders or any other Fire/EMS personnel present. *****
2. For each and every patient who signs an approved refusal form, a separate and full patient care report with SOAP narrative shall be submitted. The only exception shall be at incidents or calls for service where a patient(s) denies injury or illness of any kind. In those instances, an MCI Denial of Injury Release Form shall be signed by each and every patient denying injury or illness and only one full patient care report with SOAP narrative shall be submitted. **NOTE: {Specific to BCFR units responding to areas of Brevard County OUTSIDE of a municipality} - The first BCFR unit/personnel to arrive at the scene and make patient contact shall be responsible for obtaining a patient signature on a refusal form and shall also be responsible for completing a full patient care report with SOAP narrative. In the event that both units arrive on scene at the same time, the most senior Company Officer on scene shall decide which crew member(s) are responsible for obtaining a patient refusal and completing the appropriate patient care documentation. If the Engine Crew is designated to complete the patient care documentation, they will be required to complete a 902 (Fire Report) as well as a patient care report (EMS report). No personnel shall, at any time, assign completion of patient care documentation to other crew members who were not present and did not actively participate in the initial assessment of a patient. No personnel shall, via the Department's E-PCR system, electronically attach himself/herself to another responding unit's crew in such a manner as to attempt to negate the requirement of a canceled unit to write a cancellation report. The canceled BCFR transport unit that has responded to and arrived at the EMS event with another BCFR unit, shall complete a narrative in the cancellation report that carefully documents assessment findings and actions taken while transport personnel were present at the scene. The SOAP narrative format need not be used when a transport unit is canceled prior to their arrival at the scene.**
3. The provider will communicate directly with the patient to establish his intent and inform the patient or guardian of:

- a. Their condition.
 - b. The potential risks of refusal.
 - c. Their assumption of all risks by refusal.
4. The refusal form must include the patient's chief complaint, vital signs, consequences of the refusal, and paramedic assessments. The patient's signature shall be witnessed by family members (if available), law enforcement (if available), and bystanders (if available) as well as other crew members.
5. Complete the signature line for patients who refuse to sign with "patient refuses to sign", followed by your signature and have family members (if available), law enforcement (if available), and bystanders (if available) as well as other crew members witness and sign the refusal.

MCI/Denial of Injury Form

1. The MCI/Denial of Injury form is to be used only for incidents involving two or more patients. If there are multiple patients on-scene who do not have any complaint at all or any obvious signs of injury, a MCI/Denial of Injury form may be used. **When completing an ePCR for the incident, you must complete a narrative which includes a generalization of the scene, clearly states that there was no medical need per the individuals on scene, and that an MCI/Denial of Injury form was completed.** The patients' names recorded on the MCI/Denial of Injury Form must be annotated in the narrative as well. With that said, you may choose "no patient found" as the disposition of the call. This option alleviates the mandatory requirement for additional patient information in ESO. Please send the MCI/Denial of Injury form to the Office of EMS.
2. If there are multiple patients on-scene with any type of complaint or injury that refuse treatment and/or transport, a single Patient Refusal form must be filled out and signed for each individual patient. In addition, you must complete a full patient care report for each patient, which includes a full SOAP narrative and necessary patient information.
3. When using the MCI/Denial of Injury Form, the signature box on the back of the form is to be signed by the individual representing those patient's on the form. For example, a school board representative would sign the form in a case where a school bus is involved in an accident and students are on-board with no injuries. Every effort to capture witness signatures shall be made by field personnel.

Minor of Specific Age (16 or 17) Refusal Form

1. When attending to a 16 or 17 year-old minor who is NOT experiencing any pain, injury or illness, but refuses examination, treatment and/or transport, the Brevard County Fire Rescue Minor of Specific Age (16 or 17) refusal form shall be used. A patient care report must be completed when using the Minor of Specific Age (16 or 17) Refusal Form.
2. If there is more than one minor, age specific to 16 or 17, and they do NOT present with any pain, injury or illness and an institutional representative, parent or legal guardian is on scene, the multi-refusal form may be used.
3. The crew members must obtain a signature from the institutional representative, parent or legal guardian. In addition, every effort to capture witness signatures shall be made by field personnel.
4. The Brevard County Fire Rescue Minor of Specific Age (16 or 17) Refusal Form shall only be used when NO pain, injury or illness is exhibited by the individuals within the age group.
5. If a minor is found to be alone, under the age of 16, and is NOT experiencing any pain, injury or illness, every effort shall be made to contact the parents or legal guardian. In addition, law enforcement shall be requested to the scene until the minor can be joined with the parents or legal guardian.
6. Any minor, including those age specific to 16 or 17, experiencing pain, injury or illness shall be transported unless otherwise directed to do so by a parent, legal guardian or the patient (by having a court declared emancipation). In addition, law enforcement shall be requested to the scene and a patient care refusal form must be completed (signed by the parent, legal guardian or patient if emancipated). In addition, a patient care report shall be completed and must include the reason for non-transporting the patient.

Patients Detained/Arrested by Law Enforcement

- EMS personnel are frequently called by law enforcement to assess/treat detained or arrested individuals. As with any other patient, such patients shall be treated according to currently accepted standards of care and applicable written EMS Protocols. BCFR personnel shall not provide “medical clearance” for any patient at any time. The only information that shall be shared with any law enforcement officer regarding a detained/arrested patient is assessment findings and vital signs. It should be made clear to law enforcement personnel that patients may only receive “medical clearance” at a HOSPITAL.
- Patients that are being detained by or are in the custody of law enforcement may refuse treatment/transport as long as, subsequent to a thorough patient assessment, the patient does not present with an altered level of consciousness (Overall GCS < 15) and a taser has not been used to subdue him/her. **If a taser has been used to subdue a patient prior to EMS arrival and the arresting/detaining law enforcement officer insists on transporting the patient via police vehicle, the risks of such transportation shall be communicated to the law enforcement officer who is transporting the patient. If the law enforcement officer remains insistent on transporting the patient, the law enforcement officer who is transporting shall sign an approved BCFR Patient Refusal Form.** In the section of the refusal form labeled “Guardian”, the transporting law enforcement officer’s first and last name shall be written and, in the section marked “Relationship”, the words “Arresting Officer” shall be written. The circumstances of the refusal shall be thoroughly documented in a full patient care report with SOAP narrative.
- If a patient, who has been deemed competent to consent to or refuse treatment/transport, is in any way coerced or threatened by any law enforcement officer in an attempt to get such patients to agree to transport to the emergency department via ambulance, an immediate request shall be made via BCFR Dispatch for the officer’s patrol supervisor/watch commander and the appropriate BCFR District Chief to come to the scene so that such situations can be immediately resolved.
- Patients who have been physically restrained prior to the arrival of EMS personnel shall remain restrained throughout evaluation, treatment, and transport unless such restraint immediately poses a threat to the patient’s health. A law enforcement officer shall accompany EMS personnel during transport of any patient that is violent, is known to have been violent toward law enforcement officers, EMS, or firefighters in the past, or who could potentially become violent. **NOTE: Should any patient being detained or in the custody of law enforcement exhibit any signs of agitated delirium, treat such patients according to the Agitated Delirium Protocol.**
- Any law enforcement officer who takes a patient into custody under the Baker Act and requests that the patient be transported via ambulance shall provide EMS personnel engaged in transporting the patient with a completed Baker Act Form (Form 52). This completed form shall be given to the receiving facility staff upon patient transfer.
- If a law enforcement officer takes a patient into custody under the Baker Act and the patient has no acute medical complaints, Coastal Health Systems shall be requested via BCFR Dispatch if the officer insists that such a patient be transported via ambulance. An approved BCFR Patient Refusal Form shall be signed by the patient and the circumstances of the refusal shall be thoroughly documented in a full patient care report with SOAP narrative. If the patient refuses to sign the refusal form, follow step #5 in the Patient Refusal or Non-Transport Protocol.

Performance Benchmarks

1. It shall be the goal of all BCFR personnel to ensure that patients are assessed and receive, if necessary, life stabilizing treatment at the scene of any incident. It shall further be the goal of all BCFR personnel to transport patients to an appropriate receiving facility, in as timely a fashion as possible, so that they may receive definitive care and treatment in a hospital emergency department. Therefore, the following performance benchmarks shall be adhered to by all BCFR EMT and Paramedic personnel:
 - a. **Every effort shall be made to initiate transport for all MEDICAL patients within 15 minutes after arrival at the scene.**
 - b. **Every effort shall be made to initiate transport for all TRAUMA patients within 10 minutes after arrival at the scene.**
 - c. **All patients who have been classified as either “Yellow”, “Red”, Cardiac Alert, STEMI Alert, Stroke Alert, Trauma Alert, Cardiac Arrest, or any patient having a stated chief complaint of non-traumatic chest pain, shall be actively receiving supplemental Oxygen by the appropriate device (unless contraindicated by Protocol), shall have IV access established or attempted prior to ED arrival, and shall have both cardiac and pulse oximetry monitoring actively being performed at the time of patient care transfer in the receiving facility.**
2. If, for any reason, scene times are extended beyond the above-stated benchmarks, the reasons for any such delay shall be thoroughly documented in the patient care report.
3. If, for any reason, the interventions described in performance benchmark #1C are not actively being performed at the time of patient care transfer to the receiving facility, the reasons for such shall be thoroughly documented in the patient care report.
4. BCFR personnel shall work cooperatively with any municipal or other first responding agency to ensure that quality patient assessment and care are rendered at the scene and that prompt initiation of transport is accomplished within these stated benchmarks.
5. The provider shall ensure that an accurate and complete patient care record was prepared for each instance in which a patient contact was made. The patient care report or 902 shall be completed within 24 hours of the time the vehicle was originally dispatched for emergency medical assistance.

Physician On-Scene

Non-EMS system physicians may assume patient care if they:

1. Are at the scene,
2. AND identify themselves (and show proof) as a Florida licensed M.D. or D.O.,
3. AND agree to assume care of the patient,
4. AND if transporting, agree to accompany the patient to the receiving facility OR declare the patient dead,
5. AND the crew notifies the receiving facility that the patient is in the care of a licensed physician that is accompanying patient to the hospital,
6. AND the crew must properly document the following in their EMS report:
 - a. Medical control by: Physician at Scene
 - b. In the narrative, identify the physician:
 - c. Name
 - d. M.D. license number and state
 - e. Contact phone number

Relatives/Associates Accompanying Patient

There are situations when it is acceptable for a patient's relative or associate to be permitted to ride in the cab/patient compartment of the ambulance in order to accompany the patient to their destination. However, the safety of the crew and the patient is paramount. When considering an additional passenger accompanying the patient during transport some key factors to consider are:

- The patient's condition – Stable vs. Unstable.
- The benefit to the patient - In general, most conscious children should be transported with a familiar relative or associate to provide comfort and support, unless it is deemed that accompaniment interferes with the care of the child.
- It will not interfere with care or cause the problem to be exacerbated.
- If a relative or associate is permitted to accompany a child in the patient compartment of the Ambulance, the child must be secured in a car seat that is fastened to the stretcher.
- A relative or associate who has requested to accompany an adult patient shall ride in the cab of the ambulance. However, at the lead crew member's discretion, there may be circumstances when it would be appropriate for the family member to ride in the patient compartment.
- In all situations proper safety precautions must be taken if a family member is allowed to accompany the patient. Seat belts in the patient compartment and cab must be worn.
- A relative or associate may be denied the request to ride in the ambulance with the patient should the BCFR Company Officer or lead BCFR Medic on scene determine it would pose a hazard to the safety of the crew or care of the patient.

Respiratory Protection

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

Procedure:

The following procedure complies with OSHA regulations:

1. Assignment of responsibility:
 - a. Each agency will delegate an Infection Control Officer who will be responsible for maintaining infection control procedures, program training of personnel, testing for disease, providing personal protective equipment, and investigating employee exposure. This individual will be appointed by the agency's medical director and the State EMS office and will have expertise in issues relevant to infection control including infectious diseases and occupational health.
 - b. The Infection Control Officer will provide the health care worker a yearly respiratory protection program based on current information from OSHA, CDC, and NIOSH.
2. Standard Operating Procedures (SOPs):
 - a. The Infection Control Officer will update procedures as new standards may be published. The respiratory infection program will be modified to comply with new guidelines.
 - b. **IMPORTANT SOP:** *A patient with suspected or confirmed TB should be transported in the rear of an ambulance with the patient wearing a surgical mask over the mouth and nose (if possible) and the vent fan on (negative air pressure). Ambulance personnel should wear respiratory protection when transporting such patients. (DC MMWR Vol. 43 / RR-13, page 51)*
3. Training program:
 - a. The respiratory protection program shall ensure employees are informed of:
 - i. Methods of TB transmission.
 - ii. Signs and symptoms of TB.
 - iii. Diagnosing employee exposure, i.e., positive skin test results, TB infection indicators, and the presence (if contracted) and treatment of the disease.
 - iv. Procedures that may protect the employee from exposure.
 - v. Use of personal protective equipment, negative air pressure, etc.
 - vi. Respirator training, i.e., fit testing, use of, and how to recognize a malfunctioning respirator.
 - b. Respirator inspection, cleaning, disinfection, and storage: All surfaces exposed to potentially infectious materials shall be wiped clean with a detergent and appropriately disinfected immediately after patient care. Instrument and equipment cleaning shall be done in an area separate from treatment areas. Every transport unit will be decontaminated at the end of each shift.

- c. Personal protective equipment shall be used when cleaning. This equipment, disposable cleaning materials, and the respirator, shall be disposed of in red biohazard bags.
 - d. One HEPA respirator for each provider will be stored on each transport unit.
 - e. Three forms of disinfecting agents may be used by each agency:
 - i. Glutaraldehyde-based solutions may be used for sterilization or high level disinfection. All items must be thoroughly cleaned and rinsed following use. *Avoid skin contact and vapors.*
 - ii. Sodium Hypochlorite (household bleach) in a 1:100 solution (1/4 cup to one gallon of water) may be used for intermediate level disinfection on non-critical surfaces and equipment. *Irritating to skin and eyes.*
 - iii. Phenolics (0.5 ounce to one gallon of water) may be used for intermediate level disinfection. After cleaning, spray on surfaces and let stand for 10 minutes before wiping off. *Avoid skin or mucus membrane contact.*
4. Fit testing:
- a. Fit testing requires testing the seal to ensure a respirator fits the provider's face with a leakage of < 10%. A proper fit can usually be attained by using respirators in three sizes.
 - b. Face-seal leakages compromise the ability of particulate respirators to protect employees from airborne materials. Airborne contaminants will take the path of least resistance into the respirator, bypassing the filter if it seals poorly. A proper seal between the respirator and the face is essential. Face-seal leakage can result from various factors:
 - i. Incorrect face piece size or shape.
 - ii. Incorrect or defective face piece sealing-lip.
 - iii. Beard growth.
 - iv. Perspiration or facial oils that can cause face piece slippage.
 - v. Failure to use all the head straps.
 - vi. Incorrect positioning of the face piece on the face.
 - vii. Incorrect head strap tension or position.
 - viii. Improper respirator maintenance.
 - c. Respirator damage.
 - d. Fit testing is the responsibility of the Infection Control Officer and must be done before the provider may make patient contact. The proper fit is confirmed by applying negative pressure in the respirator with no leakage into it.
 - e. Reuse of a disposable respirator is permitted only if the respirator maintains its structural and functional integrity, the interior of the respirator is not contaminated, and the initial user is the sole occupant of the respirator.

Response to Violent or Potentially Violent Scenes

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

Service Animals

When attending to a patient that requires the support of a service dog, every attempt shall be made to bring the service dog with the patient to the hospital if the patient is transported to the emergency department. When transporting a patient to the hospital, it is important to not separate the service animal from its partner, as the dog continues to provide a healing effect on the patient. Service dogs should remain with their partners unless they are deemed in an uncontrolled state or present a direct threat to the health or safety of others. If there is no room in the unit and/or the animal is unable to remain still, an attempt must be made to get the service dog to the emergency department by means of a family member, trusted individual, or BCSO Animal Control. If these options have been exhausted, every effort should be made to leave the service dog in the care of a trusted individual approved by the service dog's owner.

Service Animal Criteria

- A service animal is a dog or a miniature horse trained to perform a task for an individual with a disability.
- The work must be directly related to the disability.
- Does not include any crime-deterrent effect due to an animal's presence.
- Does not include provision of emotion support, well-being, comfort or companionship.
- It is not a pet or therapy animal.

A "Disability" is a physical or mental impairment that substantially limits one or more major life activities:

- Walking
- Hearing
- Speaking
- Seeing
- Performing manual tasks
- Learning
- Caring for one's self

You may ask if the animal is a service animal required for/because of a disability or what work the animal has been trained to perform.

You may not ask about the nature or extent of an individual's disability or for documentation that a service animal is trained.

The service animal must be:

- Under care/supervision of the handler
- Harnessed, leashed, or tethered; if that is not possible, then animal must be controlled via voice, signal or other effective controls.

*Please note: the service animal owner/handler is responsible for damage caused by the animal.

Transport Destination (non-ALS)

For Patients in Long-Term Care Facilities, Skilled Nursing Facilities, Veterans Administration Clinics, (only if the patient remains under supervision of RN/physician until non-emergency transport arrives), and Psychiatric Care Facilities (For psychiatric facilities, the facility must have in-residence patients with a RN/Physician on the premises 24 hours/day, 7 days/week)

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

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

- Chest Pain
- Cardiac Event
- Shortness of Breath
- Respiratory Event
- AMS (Non dementia)
- TIA or Stroke
- Glucose < 60 mg/dL
- Potassium > 6 mEq/L
- Hemoglobin (<9 g/dL)
- Seizure
- Hypotension (< 100 mmHg with signs/symptoms or < 90 mmHg regardless of signs/symptoms) or hypertension (> 140/90 mmHg)
- Bradycardia (< 60 bpm) or sustained tachycardia (> 100 bpm)
- Unstable Trauma
- Dialysis (Emergent)
- Abdominal Pain
- Fever, Possible sepsis

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

NOTE: Should any BCFR personnel make contact with a patient outside of a long-term care facility or skilled nursing facility who refuses evaluation, treatment, or transport from BCFR personnel and further requests transport by a non-ALS transport service, the patient's signature shall be obtained on an approved BCFR Patient Refusal Form and the circumstances of the refusal shall be thoroughly documented in a full patient care report with SOAP narrative. Every effort shall then be made by BCFR personnel to assist the patient in arranging for transport by a non-ALS transport service. The notification of the patient's request shall be made by BCFR personnel through BCFR Dispatch and Dispatch shall, in turn, make the appropriate notification to Coastal. The patient shall then be informed by BCFR personnel on scene that Coastal has been notified and, if known or possible, Coastal's estimated time of arrival shall be communicated to the patient. REMEMBER: This Protocol SHALL NOT be used at any time for any patient present/residing outside of those facilities listed on page 1, unless the patient specifically requests a non-ALS transport service for transport AND refuses BCFR treatment and transport in writing by signing an approved BCFR Patient Refusal Form.

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

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

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

ALS vs. BLS/ Patient Transfer of Care

- ALS care (Red or Yellow Alerts) is defined as any advanced intervention or care required by a Paramedic or higher level of training. For example, ET intubation, IV, ECG, meds, etc.
- BLS care (Green) is defined as no advanced intervention or care required by an advanced level provider (Paramedic).
- If ALS care has been initiated, patient care shall not be transferred to a BLS (EMT) provider. However, if after thoroughly assessing a patient, an ALS (Paramedic) provider determines that only BLS care is required then patient care may be transferred to a BLS (EMT) provider. The patient care report must reflect that only BLS care was required.

Treatment and Transport of Minors

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

Unit Cancellations

1. Brevard County Fire Rescue transport units may accept cancellations from other agencies or units, *only under the following circumstances*:
 - A. The other unit is known to be manned by paramedic personnel, or
 - B. The other unit is manned by EMTs AND
 - The nature of the call is trauma AND,
 - The patient voluntarily signs the refusal form that indicates paralysis and death as the risk of their refusal, AND,
 - The patient has no obvious injury AND,
 - The patient's mental status and vital signs are stable/within normal limits.
2. BLS units may not cancel ALS units responding to medical calls unless the call is a false alarm.
3. First Response BLS units will, when they first arrive, transmit to the responding ALS units an evaluation of the scene and potential injuries. The ALS unit will, if the evaluation indicates a non-emergency call, downgrade their response from emergency to a less dangerous mode of driving. The ALS unit will continue directly to the scene and evaluate all patients.
4. Extenuating circumstances may include patient refusals, multiple calls or rescue squads responding outside of their primary response area. The first response BLS unit should transmit their evaluation to the squad via the radio, such as "The patient refuses treatment and transportation." The Rescue squad may, in extenuating circumstances, cancel in order to remain in service or to respond to another incident.
5. If a BCFR crew has made contact with a patient and the patient refuses, the BCFR crew must obtain a patient refusal. If the canceled BCFR crew is the **first BCFR unit/personnel to arrive at the scene and make patient contact**, the crew shall be responsible for obtaining a patient signature on a refusal form, and shall also be responsible for completing a full patient care report with SOAP narrative if the patient had a complaint. The SOAP narrative format need not be used when a transport unit **is canceled prior to their arrival at the scene**.

CHAPTER 9: Procedures Manual

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

The purpose of this document is to provide a brief review of standard procedures used to treat patients and is not to be a training document. The Medical Directors know you are familiar with the skills and have not explained everything in minute detail. For example IV cannulation directs the provider to “cannulate the vein” without explaining the detailed steps of the procedure. If you have questions in these areas please refer to your instructor, ALS text, or to your medical director. It is not practical, and likely not of interest to you, to include details of every procedure here. For the treatment of Pediatric patients, equipment sizing, energy settings and medication dosing is based off of the Handtevy Pediatric Resuscitation System. Refer to the appropriate guide based off of the patient’s age, if known. If the patient’s age is unknown, use the length based tape to determine the age. The length based tape is located in the Handtevy box.

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

Auto Injector

Procedure:

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

Automatic External Defibrillation

Procedure:

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

Autopulse Automated Circumferential CPR Device

The American Heart Association recognizes that consistent and uninterrupted compressions that maintain coronary perfusion pressures (CPP) during resuscitation efforts is one of the primary keys to surviving the event. The Autopulse Circumferential CPR Device has been proven effective in the pre-hospital clinical setting in providing consistent compressions that maintain a high CPP. If Autopulse is applied by the municipal ALS Paramedic, continue using until care is turned over to the emergency department staff.

Procedure:

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

Precautions/Contraindications:

- The Autopulse **SHOULD NOT** be used on pediatric or trauma patients.
- The Autopulse should be deployed with caution on any patient with suspected atraumatic hemorrhage.
- Compressions **SHOULD NOT** be interrupted unless absolutely necessary.

Capnography

Purpose:

Today, tracheal tube positioning and confirmation is accomplished using nonphysical examination techniques including the use of esophageal detector devices, qualitative end tidal CO₂ indicators, and capnographic or capnometric devices. The American Heart Association (AHA) recommends “secondary confirmation of proper tracheal tube placement for patients with a perfusing rhythm by capnography or exhaled CO₂ detection immediately after intubation and during transport (Class II A).”

Capnography remains a non-invasive method of monitoring the level of carbon dioxide in exhaled breath (EtCO₂) to assess a patient’s ventilatory status. A true capnograph produces an EtCO₂ value as well as a waveform or capnogram. Capnographs are useful for monitoring ventilator status, warning of airway leaks, and ventilator circuit disconnections, and ensuring proper endotracheal tube placement. Capnography may also be used to assist clinicians in assessing adequate CPR and to help determine when to terminate CPR efforts. Waveform capnography can also be useful in identifying low cardiac output states such as pulmonary embolism, cardiogenic shock, and septic shock. If the waveform capnography tracing is flat, remove the ETT or subglottic airway device – **under no circumstances is an airway adjunct to be left in place when capnography is flat.**

Indications:

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

1. To verify and provide evidence of the correct placement of the endotracheal tube.
2. To assure the endotracheal tube remains in the trachea during transport and transfer of the patient to the emergency department staff.
3. To assess the effectiveness of Cardiopulmonary Resuscitation (CPR).
4. To monitor adequate ventilation in the intubated patient.
5. To ensure adequate ventilation of the intubated patient suffering from a closed head injury – ETCO₂ 35-40mmHg.
6. To assist in the decision to terminate CPR if ETCO₂ <10 for > 30 min.
7. Early identification of ROSC with rapidly increasing ETCO₂.
8. To monitor for adequate ventilation if a patient is given a medication that may cause respiratory depression or has a GCS of 12 or less (nasal capnography).

Procedures:

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

A. Capnography use for Sudden Cardiac Arrest:

1. Open the ET CO₂ tubing connector door and connect the appropriate CO₂ filterline tubing by turning the tubing clockwise. The tubing should be attached to the unit first and then to the patient.
2. Press the “on” button and adjust the contrast if necessary.
3. Verify that the ETCO₂ monitor display is on.
4. The CO₂ waveform will display in channel 2 or 3.

5. After auscultation and adequate chest rise, confirm ET tube placement using customary methods including the tube check device. Once confirmed place the manufacture's ET tube adaptor in place and deliver 3-6 ventilations. Levels of CO₂ in the sample gas.
6. CO₂ will not be detected if the esophagus has been intubated.
7. Confirmation of ET tube placement by Capnography is to be supplemented with pulmonary auscultation by stethoscope and the CO₂ colorimetry indicator on the BVM.
8. Once Capnography has been started it is to remain in place until the patient is on the ED bed. This will provide continuous monitoring of the endotracheal tube during any patient movements, loading, transport, and unloading.
9. Initial ETCO₂ levels in the cardiac arrest patient may be very low due to a decrease in metabolism and circulation. If ETCO₂ levels do not increase during CPR, reassess for effective chest compressions and proper ventilation rate.
10. A sudden drop in End tidal ETCO₂ levels during cardiac arrest could be caused by a dislodged or kinked endotracheal tube, tension pneumothorax, inadequate chest compressions, or inadequate ventilations.
11. In the event the patient has return of systemic circulation (ROSC), apply pulse oximetry.
12. At the completion of the call a "Code Summary" report should be attached to the patient care report for archival and quality assurance purposes.

B. Capnography use for intubated Medical and Trauma patients:

1. Follow the same procedures for device connection and tube confirmation listed in A.2. "Capnography used for Sudden Cardiac Arrest."
2. Use in combination with pulse oximetry to confirm appropriate ventilation and oxygenation.
3. The capnography can alert the clinician to critical changes in the medical/trauma patient's condition. These would include:
 - i. A rapid decrease in ETCO₂ values could indicate the onset of:
 1. Cardiac arrest
 2. Sudden hypotension
 3. Pulmonary embolus
 4. Myocardial infarction
 5. CHF
 6. Kinking or dislodgement of the ET tube
 7. Tension pneumothorax
 8. Cardiac tamponade
 9. Massive hemorrhage
 10. Vasodilator shock due to sepsis or anaphylaxis
 11. Inadequate ventilation
 - ii. An increase in ETCO₂ levels can detect tiring accessory respiratory muscles, changes in level of consciousness from sedation secondary to overdose or therapeutic treatment resulting in respiratory depression/hypoventilation.
 - iii. Efficiency of the current treatment is effective by showing if CO₂ values are remaining in or returning to normal ranges.
4. For the intubated head trauma patient that shows signs of severe increase in intracranial pressure, appropriate hyperventilation can be achieved through capnography with a goal of 30-45 mmHg (asymmetrical pupils, GCS dropping more than 5 points, extensor or flexor posturing).

C. Nasal Capnography use:

1. Press the “on” button on the cardiac monitor and adjust the contrast if necessary.
2. Open the CO2 tubing connector door and connect the appropriate CO2 filter line tubing by turning the tubing clockwise. The tubing should be attached to the unit first and then to the patient.
3. Apply the CO2 nasal capnography cannula to the patient.
4. Connect the O2 supply tubing to the nasal capnography tubing if needed and set the appropriate flow rate for a Nasal cannula. If you are using another Oxygen delivery device (NRB, CPAP) skip this step.
5. Verify that the ETCO2 monitor display is on.
6. The CO2 waveform will display in channel 2 or 3.
7. Once Capnography has been started, it is to remain in place until the patient is on the ED bed. This will provide continuous monitoring of the respiratory rate, ventilation, and perfusion during treatment, patient movements, loading, transport, and unloading.
8. Nasal Capnography monitoring provides a much more rapid identification when a patient’s respiration, ventilations or perfusion suddenly change. Pulse oximetry may have a several minute delay before the provider sees the change.
9. Apply pulse oximetry.
10. At the completion of the call a “Code Summary” report should be attached to the patient care report for archival and quality assurance purposes.

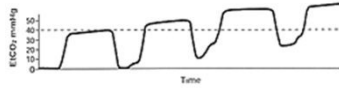
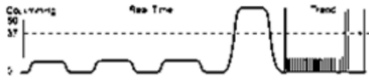
D. Factors Affecting Accuracy:

1. Moisture and secretions entering and clogging the breathing circuit can interrupt monitoring and can cause inaccurate measurements.
2. Sidestream capnographs are not accurate in neonatal and pediatric patients because they compete with the patient’s tidal volume.

Note: Capnography must be documented and uploaded, if:

- the patient is intubated (or a supraglottic airway is in place)
- patient is given a medication that can cause respiratory depression
- has a GCS of 12 or less but greater than 8

Normal capnography wave form	
Intubated esophagus , missed intubation	
Hyperventilation, decreased cardiac output, fall in body temp, decreased	

metabolic rate	
Rebreathing CO_2 base line elevated, faulty expiratory valve, inadequate inspiratory flow, insufficient expiratory time	
ROSC Return of spontaneous circulation	

Central Line Access (Single or Multi-Lumen)

A central line is a long thin catheter that is placed into the internal jugular or subclavian vein. It is typically used for patients that need plasmapheresis, have poor peripheral access, temporary dialysis access, aspiration of air embolus, transvenous pacing, chemotherapy, rapid fluid resuscitation, rapid blood replacement, or hemodynamic monitoring.

A central line may be accessed to provide for the administration of life saving medications or the administration of IV fluids to provide fluids for hypotension or shock. **It is not to be used for the purpose of KVO fluids.**

Procedure:

1. Prepare the administration set
2. Identify the central line location. Check to make sure that the area around the skin is clean, without redness, swelling, or signs of infection. If the patient is febrile or is suspected of being septic do not use the central line.
3. If there is a cap covering the end of the tubing, unscrew it and tape it to the skin near the site (for replacement later). If it is a multi-lumen central line, access the side with the blue cap. Attach a needleless IV lock with a 10ml (empty) syringe to the end of the tubing. Open the clamp on the central line.
4. If there is a needleless end on the tubing already, using aseptic technique, use iodine swab sticks (or iodine pads) to disinfect the screw end of the catheter followed by an alcohol pad. Attach an empty 10ml syringe. Open the clamp on the central line.
5. Withdraw 10ml of blood into the syringe and discard it in a sharps box.
6. Attach a 10ml syringe of saline and flush the blood from the catheter. Remove the syringe.
7. Attach the IV tubing and flow at the desired rate.
8. Secure the IV tubing to the patient with tape.

Child Birth

Procedure:

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

Complications:

1. Prolapsed Cord Presentation:
 - a. Place the mother in Trendelenburg position.
 - b. Insert your gloved hand to apply counter-pressure against the head to allow blood flow through cord.
 - c. Elevate the mother's buttocks to alleviate pressure on the cord.
 - d. Provide emergency transportation to the nearest appropriate facility.
2. Breach Presentation:
 - a. If the presenting part of the fetus is not the head, place the patient in the Trendelenburg position.
 - b. Support presenting parts as they deliver, and coach the mother through a controlled delivery.
 - c. Provide emergency transportation to the nearest appropriate facility.
3. Circumferential (around the neck) Umbilical Cord:
 - a. Try to slip the cord gently over the head.
 - b. If you are unable to slip the cord over the head, clamp it 2 inches apart then cut.
 - c. Provide emergency transportation to the nearest appropriate facility.

Continuous Positive Airway Pressure (CPAP)

Procedure:

1. Assemble the CPAP mask and Tubing. Secure the head strap to the mask.
2. Set the pressure to 7.5 cm of water oxygen pressure.
3. Attach CPAP device to oxygen canister.
4. Apply nasal capnography.
5. Apply CPAP mask to face with head strap firmly in place to secure a good seal.
6. The patient must be awake, oriented and able to follow simple commands for CPAP to be used. If the patient is unable to do so, then positive pressure ventilation with BVM or ETT intubation may be necessary.
7. Reassess patient for mask seal, SAO2 saturations, capnography readings, wave form, and improvement or deterioration.
8. If patient's hypoxemia improves and respiratory rate decreases, then mask CPAP is likely to be successful.
9. If hypoxia persists or worsens with CPAP, then oral tracheal intubation may be required.
10. Patients initially may not be comfortable with mask CPAP but with assurance generally will allow a trial of CPAP. Fentanyl or Morphine may be used as an anxiolytic.

EZ-IO Insertion

Indications:

- Cardiac Arrest
- Patients where rapid, peripheral IV access is unavailable, and after 2 attempts, with any of the following:
 1. Multisystem trauma with severe hypovolemia and/or a significantly burned patient with no IV access.
 2. Severe dehydration with vascular collapse and/or loss of consciousness
 3. Respiratory failure/ Respiratory arrest with no IV access
 4. Any other immediately life-threatening, peri-arrest clinical condition in which IV access is unobtainable.

Under no circumstances should it be used for prophylactic care.

Contraindications:

1. Inability to locate anatomical landmarks (blind insertion contraindicated).
2. Suspected cellulitis or burn over the insertion site.
3. Suspected acute or non-healed fracture proximal to foot in same leg (proximal tibial insertion) or proximal to forearm in same arm (humeral head insertion).
4. Suspected total knee arthroplasty/replacement (proximal tibial insertion).
5. Suspected shoulder arthroplasty/replacement (proximal humerus insertion).
6. Suspected markedly poor circulation extremity - history of amputation, gangrene, bypass (proximal tibia insertion).

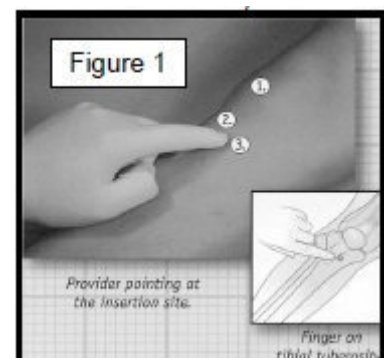
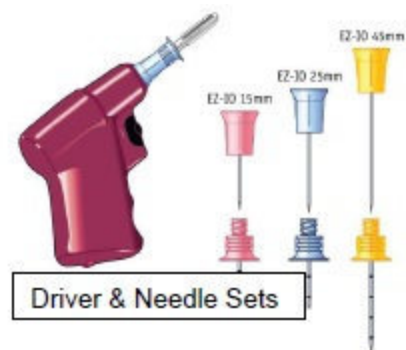
Procedure:

A. Assemble following materials:

1. Driver with Needle Set based on patient size and weight:
 - 15mm 3-39 kg (PINK);
 - 25mm 40kg and greater (BLUE);
 - 45mm 40kg and greater (excessive tissue) (YELLOW).
2. EZ-Connect® 90 degree connection set.
3. Alcohol wipe (or ChlorPrep® or equivalent if available).
4. Saline flush syringe. If the patient is conscious prime the EZIO connection tubing with Lidocaine instead of saline.
5. 1 mg/kg Lidocaine (up to 40mg) for intraosseous push if patient responsive and IO is causing pain. Slowly infuse lidocaine (typically 40 mg) IO over 120 seconds. Allow lidocaine to dwell in IO space 60 seconds. Flush with 5-10 mL of normal saline. Slowly administer an additional dose of lidocaine IO (typically 20 mg) over 60 seconds. NOTE: There is supporting documentation from EZIO that this is a better way to decrease the pain from fluid infusion for conscious patients.
7. Pressure infuser.

B. Locate insertion site:

1. **Proximal tibia site (Figure 1).** This is the preferred site unless contraindicated as detailed above. Palpate patella (1) Palpate tibial tuberosity (2) approximately two fingers widths below patella in adults and adolescents, or one finger width below patella in

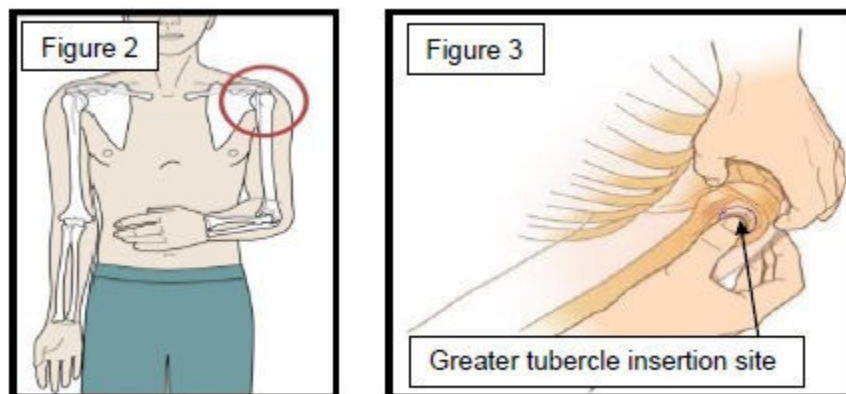


smaller pediatrics. Insertion (3) at one finger width medial to tibial tuberosity in the tibial plateau.

2. **Humeral head site-Adults Only.** Extra precision should be taken when utilizing this site. The anatomy proves more difficult to locate, the insertion area is smaller, and the IO needle is more prone to dislodgement due to a thinner bony cortex and higher likelihood of inadvertent EMS provider contact with the IO line.

Position arm in 90 degree flexion, with elbow kept to side of trunk (Figure 2). This position helps to gain maximal “exposure” of the humeral head.

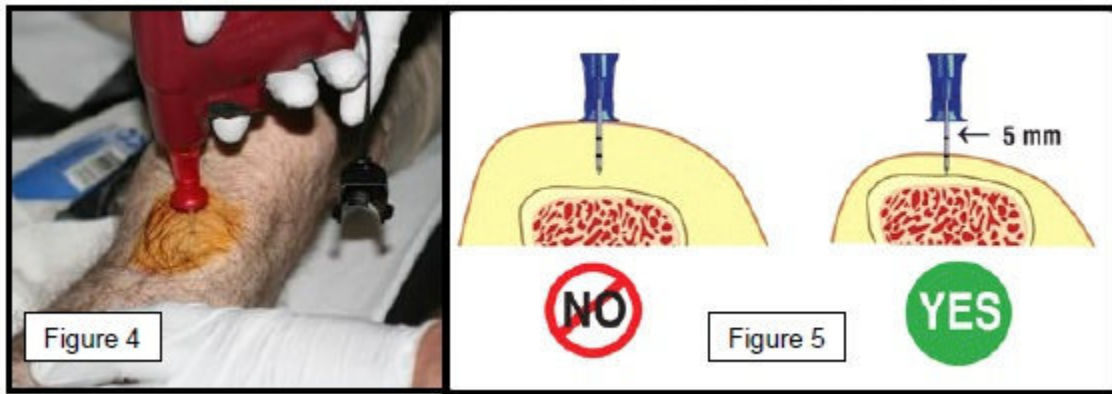
Palpate and identify the mid-shaft humerus and continue palpating with a thumb proximal toward the humeral head. Near the shoulder, note a small protrusion. This is the base of the greater tubercle insertion site. With the opposite hand “pinching” the anterior and inferior aspects of the humeral head, confirm the identification of the greater tubercle in the midline of the humerus (Figure 3).



C. Clean insertion site with alcohol wipe, or preferably with Chloraprep® or equivalent swab.

D. Access the intraosseous space.

1. Stabilize anatomy near the insertion site with non-dominant hand.
2. Position driver at insertion site with needle at 45 degree angle to the surface of the bone. Use driver to insert needle through the skin at the insertion site until you feel the needle tip encounter bone. Allow the driver to perform its function of progressively inserting the needle. Avoid strong, downward pressure on the needle and maintain constant driver drilling speed (Figure 4 next page – proximal tibia insertion site depicted).
3. Once the bone cortex feels encountered, ensure use of proper sized needle by checking for visualization of at least one 5 mm mark line (solid black circumferential line on the needle). If at least one 5mm mark line is not visible, a longer needle will be required to achieve useable intraosseous access (Figure 5 next page).



4. Resume use of driver to insert a properly-sized needle through the bony cortex and into the bony marrow (evident with a sudden decrease in resistance to needle insertion), maintaining the 90 degree angle to the surface of the skin. Most typically, properly-sized needles will have their hub resting on the skin surface at the time the needle tip is correctly in the marrow space.
- E. While stabilizing the needle hub with a thumb and an index finger, disengage the driver from the needle in a gentle, upward motion.
 - F. While still stabilizing the needle hub with a thumb and an index finger, remove the stylet by rotating it counterclockwise until disengaged.
 - G. Do NOT attempt aspiration of blood or marrow via the catheter. Pulling marrow into the catheter may clog the catheter and prevent its use for needed fluid and/or medication administration. Do confirm proper EZ-IO® catheter placement using a combination of the following signs:
 - a. IO catheter rests at 90 degree angle and feels firmly in bone when grasping hub.
 - b. Blood-tinged marrow oozes spontaneously from hub (may often be absent, yet the catheter is still correctly placed).
 - c. Fluid and medication administration is possible without significant resistance and without extravasation.
 - H. When using the proximal tibia insertion site, use of the EZ-Stabilizer® (Figure 6 – next page) is optional and its use is determined by the Paramedic's judgment. When using the humeral head insertion site, use of the EZ-Stabilizer® is required to reduce the chances of inadvertent dislodgement (refer to earlier discussion of humeral head insertion site). If the EZ-Stabilizer® is used, it must be applied prior to connecting the 90 degree connector set to the catheter hub.



- I. The EZ-Connect® 90 degree connector set (also seen in Figure 6) is used to prevent excessive pressure on the catheter when infusing fluids or administering medications. Failure to use the 90 degree connector set can cause inadvertent dislodgement due to excessive pressure down the catheter. Flush the EZ-Connect® set with Normal Saline prior to attaching it to the catheter hub and then flush the line to flush the catheter with 10mL-20mL Normal Saline if patient unresponsive or Lidocaine 2% 1mg/kg up to 40mg slow intraosseous push if the patient is responsive and clearly able to sense pain. If using Lidocaine as directed, follow with 10mL Normal Saline flush.

EZ-IO Insertion (cont.)

- J. Medication administration is given in the same dosing as with IV administrations.
- K. Fluid administration will require the use of a pressure infuser on the IV fluid bag. Due to the increased pressure of the marrow space, IV fluid will not infuse without assistance of the pressure infuser. Inflate pressure infuser until IV fluid is seen infusing rapidly and at a constant flow. A pressure infuser may not provide adequate IO infusion rates in adults if a large fluid bolus is needed and is often ineffective to provide rapid infusion of fluids. Monitor for extravasation and monitor for need to re-inflate pressure infuser.
- L. Rapid fluid boluses are required. Utilize the 2-way stopcock to draw fluid into a 30 or 60 mL syringe from an IV fluid bag and then turn the stop cock on to the patient and inject the fluid from the syringe into the IO. Repeat this process until the 20mL/kg fluid bolus has been infused through the IO.

Complications of intraosseous line placement attempts:

Through and through bone penetration – avoid by using correct needle and insertion technique.

Extravasation – avoid by using correct needle and insertion technique. Monitor ongoing use and stop at early signs of extravasation. Fracture of bone – avoid by using correct insertion technique (avoid excessive pressure).

Infection – avoid by using aseptic technique and do not insert through suspected cellulitis. Growth plate injury in pediatrics – avoid by choosing correct insertion site.

Electrical Cardioversion

The equipment sizing, energy settings, and medication dosing is based off of the Handtevy Pediatric Resuscitation System, as approved by the department medical director. Please refer to the appropriate guide. The medication doses listed are the weight-based formulas used for calculating the desired doses.

Procedure:

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

NOTES:

- If delays in synchronization occur, and clinical conditions are critical, deliver an immediate unsynchronized shock.
- Infant paddles/pads are generally used for patients < 1 year of age or < 15 kg. Refer to the appropriate guide in the Handtevy book for proper sizing.

Electrical Defibrillation

The equipment sizing, energy settings, and medication dosing is based off of the Handtevy Pediatric Resuscitation System, as approved by the department medical director. Please refer to the appropriate guide. The medication doses listed are the weight-based formulas used for calculating the desired doses.

Procedure:

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

NOTE: Infant paddles/pads are generally used for patients < 1 year of age or < 15 kg. Refer to the appropriate guide in the Handtevy book for proper sizing.

Endotracheal Intubation

Direct Visual Intubation

Adult Care

Procedure:

1. Hyperoxygenate the apneic patient.
2. Do not interrupt ventilations for more than 30 seconds.
3. Use ITLS / PHTLS techniques for trauma patients.
4. Assemble and test the laryngoscope.
5. Attach a syringe to balloon cuff.
6. Test the cuff with appropriate amount of air.
7. Deflate it, leaving the syringe attached.
8. Insert the stylet (if you choose to use one) in the tube.
9. Prepare an agency approved securing device, CO2 indicator, and a suction device.
10. Remove any foreign objects in the patient's airway.
11. Suction the airway PRN.
12. Grasp laryngoscope handle in left hand and engage the laryngoscope blade.
13. Grasp endotracheal tube in right hand.
14. Stop CPR for NO MORE than 30 seconds.
15. Insert the laryngoscope blade into the right side of the mouth without touching the teeth.
16. Sweep the tongue to the left and visualize the vocal cords.
17. Insert the tube until the cuff passes the vocal cords.
18. Remove the laryngoscope blade.
19. Inflate the endotracheal cuff with appropriate amount of air.
20. Ventilate the patient with a bag valve device.
21. Rule out abdominal air sounds, auscultate for bilateral breath sounds, and observe chest rise.
22. If lung sounds are unequal, consider causes, deflate and reposition the tube, PRN.
23. If epigastric air sounds are present, extubate, hyperoxygenate, and reintubate with a new tube.
24. Secure the endotracheal tube with a securing device.
25. Resume CPR PRN.
26. Observe and record any CO2 readings including Capnography. If waveform capnography is flat, remove the ETT. *Positive waveform capnography must be clearly documented in the patient care report.*
27. Observe and record the number on the tube in relation to the teeth.
28. Monitor the patient's respiratory status with available indicators.
29. If unable to establish endotracheal intubation after no more than two attempts utilize a bilumen or subglottic airway device
30. Consider cervical collar placement to assist in ET securing.

Endotracheal Intubation

Direct Visual Intubation

Pediatric Care

Procedure:

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

Endotracheal Tube Introducer (Bougie)

Procedure:

1. Prepare, position, and oxygenate the patient with 100% oxygen.
2. Select proper ET tube without stylet, test cuff, and prepare suction.
3. Lubricate the distal end and cuff of the endotracheal tube (ETT) and the distal 1/2 of the Endotracheal Tube Introducer (Bougie) (note: Failure to lubricate the Bougie and the ETT may result in being unable to pass the ETT).
4. Using laryngoscopic techniques, visualize the vocal cords if possible using Sellick's/BURP as needed.
5. Introduce the Bougie with curved tip anteriorly and visualize the tip passing the vocal cords or above the arytenoids if the cords cannot be visualized.
6. Once inserted, gently advance the Bougie until you meet resistance or "hold-up" (if you do not meet resistance you have a probable esophageal intubation and insertion should be re-attempted or the failed airway protocol implemented as indicated).
7. Withdraw the Bougie ONLY to a depth sufficient to allow loading of the ETT while maintaining proximal control of the Bougie.
8. Gently advance the Bougie and loaded ET tube until you have hold-up again, thereby assuring tracheal placement and minimizing the risk of accidental displacement of the Bougie.
9. While maintaining a firm grasp on the proximal Bougie, introduce the ET tube over the Bougie passing the tube to its appropriate depth.
10. If you are unable to advance the ETT into the trachea and the Bougie and ETT are adequately lubricated, withdraw the ETT slightly and rotate the ETT 90 degrees COUNTER clockwise to turn the bevel of the ETT posteriorly. If this technique fails to facilitate passing of the ETT you may attempt direct laryngoscopy while advancing the ETT (this will require an assistant to maintain the position of the Bougie and, if so desired, advance the ETT).
11. Once the ETT is correctly placed, hold the ET tube securely and remove the Bougie.
12. Confirm tracheal placement according to the intubation protocol, inflate the cuff with 3 to 10 cc of air, auscultate for equal breath sounds and reposition accordingly.
13. When final position is determined secure the ET tube, reassess breath sounds, apply end tidal CO2 monitor, and record and monitor readings to assure continued tracheal intubation.

Direct Visual Intubation with Suspected Spinal Injury

Procedure:

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

Digital Intubation

Procedure:

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

Nasotracheal Intubation

Procedure:

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

End-Tidal CO2 Detector

Procedure:

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

External Pacing

The equipment sizing, energy settings, and medication dosing is based off of the Handtevy Pediatric Resuscitation System, as approved by the department medical director. Please refer to the appropriate guide. The medication doses listed are the weight-based formulas used for calculating the desired doses.

Procedure:

1. Attach the electrodes and cables to determine the ECG rhythm.
2. Record the patient's initial rhythm.
3. Attach the Quick Combo pads to the patient.
4. Sedate the conscious patient PRN.
5. Switch the pacer on, set the rate to 70 and mA to 30 and look for pacer spikes on the monitor.
6. Set the mode to demand or fixed (asynchronous) rate.
7. Increase the energy level until electrical capture (a QRS responds to a pacer spike) is observed.
8. Check for a right side Femoral pulse. The pacer may cause muscle twitches so upper extremity and left side pulses may be misleading.
9. Treat failure to capture by checking the patient's rhythm and incrementally increasing the pacer's energy by increments of 20 mA until mechanical capture is observed.
10. Check for a pulse with each change.
11. Treat failure to capture (at maximum) by checking the patient, electrode placement, equipment and transporting.
12. Use the lowest energy setting that will produce a pulse to minimize pain.
13. Observe and record the patient's paced BP.
14. Treat hypotension at a paced rate of 70 by giving an IO fluid bolus.
15. Record the paced ECG.

Transport and monitor the patient frequently.

Handling Amputated Parts

Procedure:

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

Helmet Removal

SPORTS HELMET REMOVAL:

General Guidelines:

- Any athlete suspected of having a spinal injury should not be moved and should be managed as though a spinal injury exists.
- The athlete's airway, breathing, circulation, neurological status, and level of consciousness should be assessed.
- The athlete's helmet should not be moved unless absolutely essential to maintain airway, breathing and circulation.
- If the athlete's helmet must be moved to maintain airway, breathing and circulation, the athlete should be placed in a supine position while maintaining spinal immobilization.
- When moving a suspected spine-injured athlete, the head and trunk should be moved as a unit. One accepted technique is to manually splint the head to the trunk.
- Unless special circumstances exist, such as respiratory distress coupled with inability to access the airway, the athletic helmet should not be removed in the prehospital setting.
- The athlete with shoulder pads has his neck in a neutral position when on the backboard with the helmet in place.



Face Mask Removal:

- Athletic helmets (e.g. football, ice hockey) are frequently custom fitted to the individual. Their design will generally allow easy airway access once the face guard is removed.
- The face mask should be removed prior to transportation, regardless of current respiratory status.
- The best way to remove the face guard is with a screwdriver (cordless screwdriver is best). Sometimes the face guard will need to be cut off at the mounting points with pruning shears.

Football Helmet Removal:

The athletic helmet and chin strap should only be removed:

- If the helmet and chin strap do not hold the head securely, such that immobilization of the helmet does not also immobilize the head;
- If the design of the helmet and chin strap is such that, even after removal of the face mask, the airway cannot be controlled nor ventilation provided;
- If the face mask cannot be removed after a reasonable period of time;
- If the helmet prevents immobilization for transportation in an appropriate position.
- There needs to be a realization that the helmet and shoulder pads elevate an athlete's trunk when in the supine position.

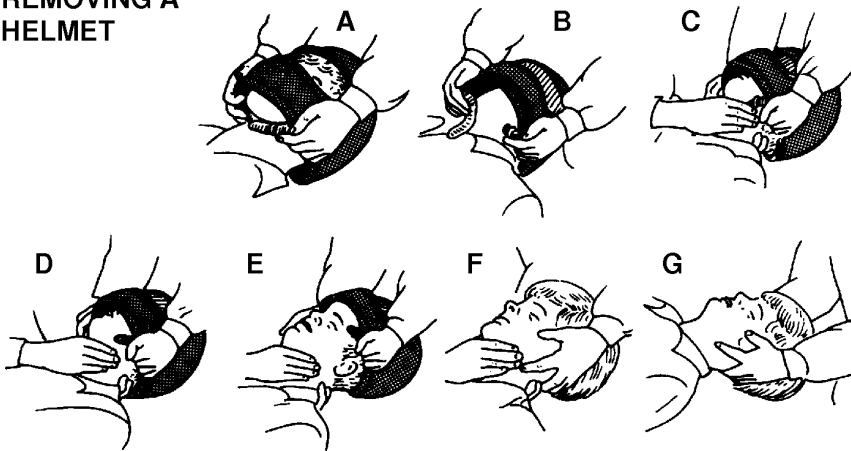
- Should either the helmet or shoulder pads be removed – or if only one of these is present – appropriate spinal alignment must be maintained.
- The front of the shoulder pads can be opened to allow access for CPR and defibrillation.

MOTORCYCLE HELMET REMOVAL:

Motorcycle helmets often must be removed in the prehospital setting because:

1. Often designed with continuous solid face guard that limits airway access.
2. Not custom designed and frequently are poorly fitted to the patient.
3. Large design will usually produce significant neck flexion when patient supine.

REMOVING A HELMET



HELMET REMOVAL PROCEDURE:

1. One Rescuer positions himself above or behind the patient. Place hands on each side of helmet and stabilize head and neck by holding the helmet and the patient's neck.
2. Second Rescuer positions self to the side of the patient and cuts chin strap of athletic helmet or removes strap of motorcycle helmet.
3. Second Rescuer assumes stabilization by placing one hand under neck and occiput and the other hand on the anterior neck with the thumb pressing on the angle of the mandible and the index and middle fingers pressing on the angle of the mandible on the other side.
4. First Rescuer removes helmet by pulling out laterally on each side to clear the ears and then up to remove. Tilt full-face helmets back to clear the nose (tilt the helmet, not the head).
 - a. If patient is wearing glasses, remove them through the visual opening before removing the full face helmet.
5. After removal of the helmet the first Rescuer assumes stabilization of the neck by grasping the head on either side, with fingers holding one angle of the jaw and the occiput.
6. Second Rescuer applies suitable cervical collar.

***BRING THE HELMET WITH THE PATIENT TO THE ER!!!!**

FOOTBALL PAD REMOVAL PROCEDURE:

Possible situations in which removal of shoulder pads would be necessary before transport to an emergency facility may include, but are not limited to, the following situations:

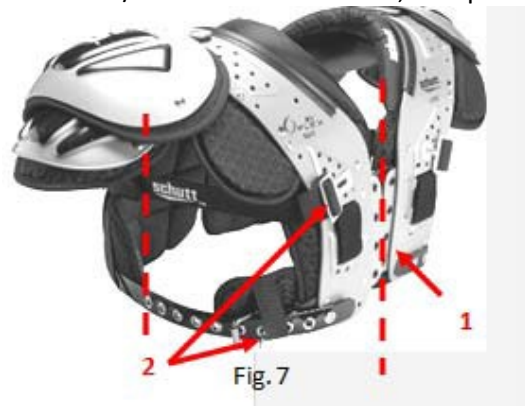
1. The helmet is removed.
2. Multiple injuries require full access to shoulder area.
3. Ill-fitting shoulder pads caused the inability to maintain spinal immobilization.

Jersey / Shirts

Initially pull up and cut just enough for emergency access to the chest. If difficult or jersey is too tight: CUT (scissors): neck to waist & mid-line to across each arm.

**Shoulder Pad-**

CUT laces / material with scissors, CUT plastic plate if present with shears.



How to Remove the Shoulder Pads. The Inter-Association Task Force recommends that shoulder pads be removed only in conjunction with the athlete's **helmet** and only when removal is warranted (see *When to Remove the Shoulder Pads*). Whenever the decision is made to remove the shoulder pads, it is favorable to follow the following steps:

1. Cut jersey and all other shirts from neck to waist and from the midline to the end of each arm sleeve.
2. Cut all straps used to secure the shoulder pads to the torso. Attempts to unbuckle or unsnap any fasteners should be avoided due to the potential for unnecessary movement.
3. Cut all straps used to secure the shoulder pads (and extenders) to the arms.

4. Cut laces or straps over the sternum. A consistent manufactured characteristic of shoulder pads is the mechanism to attach the two halves of the shoulder pad unit on the anterior aspect. This lace or strap system allows for quick and efficient access to the anterior portion of the chest.
5. Cut and/or remove any and all accessories such as neck rolls or collars, so they can be removed simultaneously with the shoulder pads. The shoulder pads can now be released with full access to chest, face, neck, and arms. The posterior portion of the shoulder pads helps to maintain spinal alignment when the helmet and shoulder pads are in place.
6. A primary responder maintains cervical stabilization in a cephalad direction by placing his or her forearms on the athlete's chest while holding the maxilla and occiput. This is a skilled position that requires personnel who are practiced in this technique.
7. With responders at each side of the patient, their hands are placed directly against the skin in the thoracic region of the back.
8. Additional support is placed at strategic locations down the body as deemed appropriate in consideration of the size of the patient.
9. While the patient is lifted, the individual who was in charge of head/shoulder stabilization should remove the helmet and then immediately remove the shoulder pads by spreading apart the front panels and pulling them around the head.
10. All shirts, jerseys, neck rolls, extenders, and so on should be removed at this time.
11. The patient is lowered.

Infusaport (Central Catheter)

****Do not use infusaport if the port is currently being used for chemotherapy***

Procedure:

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

Interfacility Monitoring IV Pumps

Procedure:

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

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

Medication:	Dosage	Medication:	Dosage
Diltiazem (Cardizem)	15 mg/hour	dopamine (intropin)	5 µg/kg/min
Dobutamine HCl (Dobutrex)	20 µg/kg/min	Lidocaine HCl	4 mg/min
Esmolol hydrochloride (Brevibloc)	200 µg/kg/min	magnesium sulfate	3 ml/min
Heparin	1600 units/hr	norepinephrine bitartrate (levophed)	4 µg/min
Eptifibatide (Integrilin)	2 µg/kg/min	phenylephrine (neo-synephrine)	180 µg/min
Nitroglycerin (Tridil)	Initial 5mcg/min. May increase 5mcg/min every 3 to 5 minutes until response		

IV Saline Lock

Procedure:

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

King Airway

The equipment sizing, energy settings, and medication dosing is based off of the Handtevy Pediatric Resuscitation System, as approved by the department medical director. Please refer to the appropriate guide. The medication doses listed are the weight-based formulas used for calculating the desired doses.

Procedure:

1. Hold the KING LT(S)-D at the connector with dominant hand. With non-dominant hand, hold mouth open and apply chin lift, unless contraindicated by C-spine precautions or patient position. Using a lateral approach, introduce tip into corner of mouth.
2. Advance the tip behind the base of the tongue while rotating tube back to midline so that the blue orientation line faces the chin of the patient.
3. Without exerting excessive force, advance tube until base of connector is aligned with teeth or gums.
4. Inflate cuffs to 60 cm H₂O or to “just seal” volume for adult size tubes (#3, #4, and #5). Typical inflation volumes are as follows:
 - KING LT-D: Size #2, 25-35 ml; Size #2.5, 30-40 ml; Size #3, 45-60 ml; Size #4, 60-80 ml; Size #5, 70-90 ml.
 - KING LTS-D: Size #3, 40-55 ml; Size #4, 50-70 ml; Size #5, 60-80 ml.
5. Attach the breathing circuit/resuscitator bag to the KING LT(S)-D. While gently bagging the patient to assess ventilation, withdraw the KING LT(S)-D until ventilation is easy and free flowing (large tidal volume with minimal airway pressure).
6. Add additional volume to cuffs to maximal inflation according to manufacture specification.
7. When utilizing the KING LTS-D’s gastric access lumen: Lubricate gastric tube (up to an 18 Fr) prior to inserting into KLTS-D’s gastric access lumen.

Left Ventricular Assist Device

Basic Life Support

Procedure:

1. Establish patent airway.
2. Supplemental oxygen if any respiratory signs or symptoms are present.
3. Listen to heart sounds.
4. In a functioning device you should hear a continuous whirling sound.
5. Monitor vital signs.
6. A manual blood pressure may not be obtainable.
7. Automated cuff you will be able to obtain a BP with a narrow pulse pressure.
8. Your treatment of the patient will be based on the mean arterial pressure.
9. $\text{Systolic BP} + 2(\text{Diastolic BP}) / 3 = \text{Mean Arterial Pressure (MAP)}$
10. Normal MAP - 60 to 90mmHg
11. Pulse oximetry may not be accurate due to continuous blood flow nature of LAD.
12. Listen for heart sounds.
13. If you cannot hear the device then CPR per cardiac arrest protocol.
14. Record blood glucose level if any weakness, AMS, or history of DM.
15. Treat hypoglycemia as per protocol.
16. Families have been well trained in the care LVADs. LISTEN TO THEM!
17. Patients always carry a "backup bag" - 2 extra charged batteries, and a second controller.
18. Always bring this emergency backup equipment to the hospital.

Advanced Life Support

Procedure:

19. Treat all arrhythmias and other symptom (N/V, CHF, etc.) as per BCFR Protocol.
20. For cardioversion, sedated with Versed 1mg if the MAP is greater than 65mmHg.
21. Monitor continuous O2 saturation, sometimes not obtainable with LVAD patients.
22. Utilize End Tidal Co2 capnography.
23. IV normal saline lock.
24. If evidence of dehydration, bolus 250 ml of Normal Saline with a max of 500 ml of NS until patient is normotensive, ($=$ or $>$ 65 MAP).
25. Evaluate a 12 lead ECG if chest pain or ischemic equivalent symptoms.
26. Call the hospital hotline on the device for the LVAD coordinator on call where the patient had the LVAD implanted to alert them that, due to LVAD dysfunction or STEMI, a critical patient is being transported to their facility. The LVAD center hotline will acknowledge that the patient had the procedure done at their center and may advise regarding ALS care. The patient or spouse/health care designee will be available and provide this phone number to you if it is different than the phone number on the device.
27. The patient or spouse/care taker may have called the LVAD center prior to your arrival. If the patient requires ALS care, and transport you must call the hotline phone number on the LVAD device.
28. Bring significant other or caretaker if possible to act as a device advisor.

Nasal Atomizers

Purpose:

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

Medications to be used with Atomizer:

- Narcan
 - Versed
 - Fentanyl
 - Ketamine
- ½ of the above dosages to be delivered into each nostril.

Procedure:

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

Precautions:

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

Nasopharyngeal Airway Insertion

Procedure:

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

Nebulizer

Procedure:

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

Needle Cricothyrotomy (Age 9 or less)

Procedure:

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

Neonatal Resuscitation

The equipment sizing, energy settings, and medication dosing is based off of the Handtevy Pediatric Resuscitation System, as approved by the department medical director. Please refer to the appropriate guide. The medication doses listed are the weight-based formulas used for calculating the desired doses.

Procedure:

1. The APGAR score will be assessed at both 1 and 5 minutes after birth.
2. Resuscitate any infant with an APGAR < 7.
3. Clear the airway. Gently suction the mouth, then the nose with a bulb syringe.
4. If meconium is present, it should then be quickly aspirated by direct suctioning through an endotracheal tube. Suction pressure should not exceed 100 mmHg.
5. Suctioning is rapidly repeated until no more meconium is present.
6. If the endotracheal tube was used for meconium suctioning, reintubate with a new tube each time.
7. Do not ventilate the patient until all meconium is cleared.
8. The infant may then be ventilated with positive pressure.
9. Initiate breathing if the infant is apneic or the respiratory rate is slow and irregular.
10. Ventilate the infant with a bag valve mask using 100% oxygen at 40 breaths per minute with pressure applied to gently move the chest wall.
11. In an infant who has not yet taken a breath, over 40 cm H₂O pressure may be necessary to expand the lungs. In mildly asphyxiated infants this may produce a prompt increase in heart rate and the onset of regular respiration.
12. Intubate and assist respiration if the heart rate and respiration have not reached normal within 2 minutes.
13. Maintain body temperature.

Oropharyngeal Airway Insertion

Adult Care

Procedure:

1. Measure the device against the patient's face (mouth to ear).
2. Open the mouth with a chin lift or cross finger technique.
3. Insert the airway upside-down and rotate the airway after it passes the tongue, or depress the tongue with a tongue depressor or laryngoscope blade and insert the airway with the device directed downward and follow the contour of the tongue.
4. Ventilate the patient.
5. Establish an advanced airway if not able to ventilate or oxygenate.

Pediatric Care

The equipment sizing is based off of the Handtevy Pediatric Resuscitation System.

Procedure:

1. Measure the device against the patient's face (mouth to ear).
2. Depress the tongue with a tongue depressor or laryngoscope blade.
3. Insert the airway with the device directed downward and follow the contour of the tongue.
4. Ventilate the patient.
5. Establish an advanced airway if not able to ventilate or oxygenate.

Pediatric Resuscitation Tapes **(Handtevy Pediatric Resuscitation System)**

Procedure:

1. Place the patient in a supine position.
2. If the patient's age is known, refer to the appropriate guide in the Handtevy book for all equipment sizing, energy settings, and medication dosing. If the patient's age is unknown, remove tape from the Handtevy box and unfold.
3. Remove tape from package and unfold.
4. Place tape (face up) next to patient.
5. Place end of tape at the top of the patient's head.
6. Place the edge of one hand on the end of the tape.
7. Run the edge of your free hand down the tape.
8. Stop when your free hand is even with the heel of the patient's foot. This will determine the infant's/child's age. Using that information, refer to the appropriate guide in the Handtevy book for all equipment sizing, energy settings and medication dosing.
9. If patient is longer than the tape, stop here and use child or adult protocols.
10. Verbalize the color block (or letter) and age at which your hand has stopped.
11. If patient falls at a border, go to the greater marker.

Peripheral Venipuncture

Preparing the IV:

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

Inserting the IV:

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

Securing the IV:

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

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

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

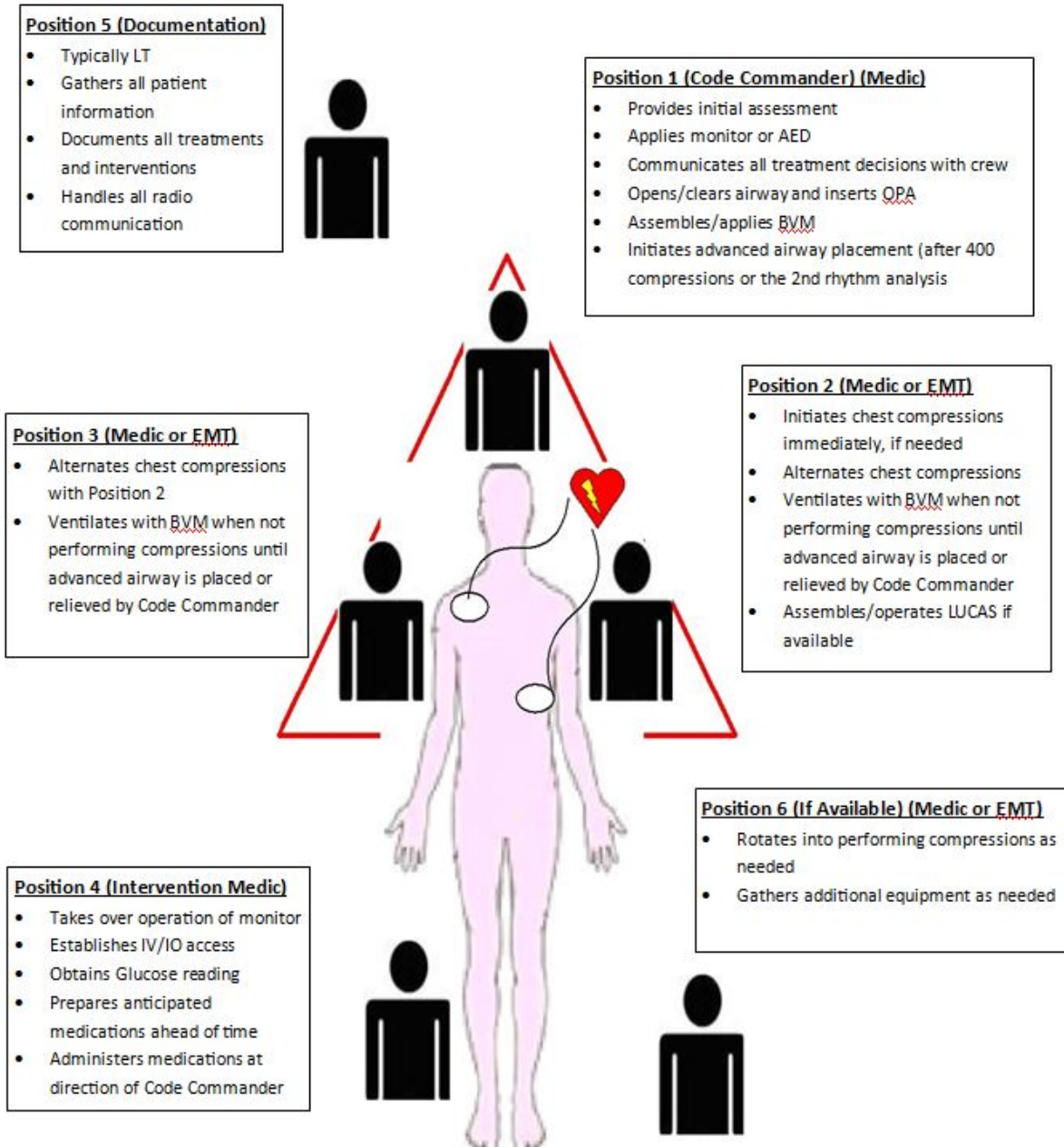
Pleural Decompression

Procedure:

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

Pit Crew Procedure

CPR Procedure



Pulse Oximetry

Procedure:

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

Rapid Sequence Induction (RSI) for Intubation

The equipment sizing, energy settings, and medication dosing is based off of the Handtevy Pediatric Resuscitation System, as approved by the department medical director. Please refer to the appropriate guide. The medication doses listed are the weight-based formulas used for calculating the desired doses.

Procedure:

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

Note: See RSI Medication Administration Chart (on next page).

RSI Medications Chart

Primary Choice	Etomidate	And	Succinylcholine
Adult Dose	20 mg (Max 40 mg for Lg adults)		1.5 mg/kg max 200mg
Pediatric Dose	Handtevy Book (or 0.3 mg/kg max of 20 mg)		2 mg/kg
<hr/>			
2nd Choice	Versed (Midazolam)	And	Succinylcholine
Adult Dose	1-2 mg		1.5 mg/kg max 200 mg
	<i>May repeat prn to maintain sedation to a max dose of 15mg</i>		
Pediatric Dose	0.05 mg/kg max of 2 mg		2 mg/kg
	<i>May repeat one time to maintain sedation to a max dose of 2 mg</i>		
<hr/>			
3rd Choice	Fentanyl	And	Succinylcholine
Adult Dose	100-300 mcg (3 mcg/kg max dose)		1.5 mg/kg max 200 mg
Pediatric Dose	1 mcg/kg		2 mg/kg
<hr/>			
4th Choice	Etomidate Only		
Adult Dose	20 mg (Max 40 mg for Large adults)		
Pediatric Dose	Handtevy Book (or 0.3 mg/kg max of 20 mg)		
<hr/>			
5th Choice	Fentanyl Only		
Adult Dose	100-300 mcg (3 mcg/kg max dose)		

May repeat ½ dose if inadequately sedated for the purpose of intubation.

Pediatric Dose 1 mcg/kg

May repeat dose 1 X for adequate sedation. Not listed in the Handtevy book, the dose must be calculated (refer to the Drug Manual.)

Restraint Protocol

Restraints will be used only when the patient is likely to harm himself or others. The restraints should secure all extremities, the torso, and the pelvic region. Continue restraining the patient throughout transport.

- Patients will be transported in a supine or semifowlers position so that there airway and breathing status can be continuously monitored.
- The patient's extremities will be secured with restraints in a manner that they are able to be used to continue care (i.e. establishing IV access, pulse oximetry, etc). There must be documentation that the patients circulation distal to the restraints is not obstructed.
- The patient will have continuous cardiac monitoring. If the patient has an altered or depressed mental status nasal capnography will be used in addition.
- Document that the patients circulation distal to the restraints is reassessed after the restraints are applied and that it is not occluded or delayed (capillary refill <2).
- Patients who are spitting should have a NRB mask applied with appropriate oxygen flow to protect the crew.

Res-Q-Pod Device

(To be used with automatic chest compression devices)

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

Procedure:

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

Precautions/Contraindications:

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

Spinal Immobilization

Immobilization of the Supine/Prone Patient:

Indications:

1. Mechanism of injury
 - a. Violent impact on the head, neck, torso or pelvis
 - b. Incidents that produce sudden acceleration or deceleration, including lateral bending forces
 - c. Any fall, especially in the elderly
 - d. Ejection or fall from a moving mode of transportation
2. Altered level of consciousness or inability to communicate
 - a. Abnormal GCS
 - b. Evidence of significant intoxication
 - c. Dementia
 - d. Speech or hearing impairment
 - e. Age (young children < 5)
 - f. Language barrier
3. Complaints suggestive of spinal injury
 - a. Spinal pain or tenderness, when palpations the posterior spinous processes
 - b. Neurologic deficit or complaint, including paresthesia, paralysis or weakness
 - c. Anatomical deformity of the spine
4. Distracting Injuries
 - a. Long bone fractures
 - b. Joint dislocations
 - c. Abdominal or thoracic pain, or obvious visceral injury
 - d. Large lacerations, degloving injuries or crush injuries
 - e. Serious burns
 - f. Any injury producing acute functional impairment
5. Penetrating trauma
 - a. Altered level of consciousness
 - b. Any neurological deficits* or complaints
 - i. Test motor function in both upper and lower extremities (entire extremity)
 - ii. Test sensation in both upper and lower extremities (start proximal and work towards hands and feet)
 - iii. Ask about numbness or tingling in extremities
6. Other situations
 - a. Immobilize all patients with the following conditions:
 - i. High voltage electrical injuries (does not include Taser use).
 - ii. Shallow water drowning or diving injuries.
 - b. If spinal immobilization is indicated but refused by the patient:
 - i. Advise the patient of the indication for immobilization, and the risks of refusing the intervention.
 - ii. If the patient allows, apply the cervical collar even if backboard is refused.
 - iii. Maintain spinal alignment as best as can be achieved during transport.
 - iv. Clearly document refusal of immobilization.
 - c. If spinal immobilization is indicated but the patient cannot tolerate supine position:
 - i. Apply all elements of spinal immobilization that the patient will tolerate.
 - ii. Maintain spinal alignment as best as can be achieved during transport.
 - iii. Clearly document the clinical condition that interfered with full immobilization.
 - d. **Spinal precautions can be maintained by application of a cervical collar and securing patient firmly to the stretcher without a long backboard if all 5 of these criteria are met:**

- i. Patient is ambulatory at the scene.
- ii. Patient does not demonstrate an altered level of consciousness or inability to communicate.
- iii. Patient does not have complaints but is tender upon palpation over the spinous processes of the cervical spine.
- iv. Patient does not have any point tenderness when palpating the spinous processes of the thoracic and lumbar spine.
- v. Patient does not have distracting injuries.
- e. **Spinal precautions do not need to be maintained if there is/are no:**
 - i. Tenderness over the spinous processes of the cervical, thoracic, lumbar spine.
 - ii. Distracting injuries.
 - iii. Altered level of consciousness or inability to communicate.
 - iv. Evidence of intoxication.

***WHEN IN DOUBT IMMOBILIZE**

Acronym "NSAIDS" to help remember the steps in this protocol

N	Neuro exam any focal deficits	YES - IMMOBILIZE
S	Significant mechanism of injury	YES - IMMOBILIZE
A	Alteration in mental status	YES - IMMOBILIZE
I	Intoxication evidence	YES - IMMOBILIZE
D	Distracting injury	YES - IMMOBILIZE
S	Spinal exam: point tenderness over the posterior spinous processes	YES - IMMOBILIZE

IF NO TO ALL - SPINAL IMMOBILIZATION NOT REQUIRED

Procedure:

1. Begin with manual immobilization of the head in a neutral, in-line position. Manual immobilization should be provided without interruption until complete patient immobilization is accomplished.
2. Contraindications to placement in an in-line position:
 - a. Neck muscle spasm that prohibits neutral alignment
 - b. Increased pain
 - c. Onset of or increase of a neurological deficit such as numbness, tingling, or loss of motor ability
 - d. Compromise of the airway or ventilation
 - e. If the patient's injuries are so severe that the head presents with such misalignment that it no longer appears to extend from the midline of the shoulders
3. Size and apply the appropriate cervical collar. To size the collar, measure the distance, using your fingers, between the bottom of the jaw to the top of the trapezius muscle or according to manufacturer's recommendations. In the rare instance an appropriately sized cervical collar is not available, maintain manual immobilization and complete the immobilization process without a cervical collar.
4. While maintaining manual stabilization with a cervical collar in place:
 - a. Position the backboard next to the patient so that the head of the backboard is approximately 1-2 feet above the patient's head.
 - b. Log roll the patient onto the backboard in a supine position.

- c. Reposition patient, in order to center on backboard, by sliding patient in an upward motion (axial) on the board. Do not slide patient in a direct lateral position, as this may manipulate the spine.
5. Place cervical immobilization device in place.
6. Pad the space, as needed, between the back of the head and the backboard to prevent hyperextension of the cervical vertebrae.
7. Secure the patient's body to the board with a minimum of six (6) straps.
 - a. Immobilize the upper torso to prevent upward sliding of patient's body during movement and transportation. This is accomplished by bringing straps over the shoulders and across the chest to make an X.
 - b. Additional straps must be placed to prevent side to side movement of the body on the board. This can be accomplished by placing straps across the iliac crests to make an X and mid-to-distal thigh to make an X.
 - c. Arms should be placed at the patient's side to prevent movement of the shoulder girdle.
 - d. Secure both feet together to prevent rotary movement of the legs.
 - e. Apply 1 or 2 inch tape directly across the forehead and secure the head while extending the tape under the backboard. DO NOT apply tape directly under the chin as this may create an airway obstruction. Tape may be placed across the surface of the semi rigid cervical collar.

SUMMARY

- * Long Spine Boards (LSB) have both risks and benefits for patients and have NOT shown to improve outcome.
- * Best use of the LSB may be for extricating the unconscious patient or providing a firm surface for compression.
- * LSB immobilization if blunt trauma, distracting injury, intoxication, altered mental status, neurological complaints - numbness, weakness, non-ambulation, with spinal pain, tenderness or spinal deformity.

Immobilization of the Standing Patient

Procedure:

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

Vest-type Extrication Device (KED)

Procedure:

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

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

Pediatric Immobilizer

Procedure:

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

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

PICC Line Access (Single or Multi-Lumen)

A PICC line is a **Peripherally Inserted Central Catheter**. It is a long thin catheter that is inserted into a peripheral vein, usually in the upper arm, that is advanced into the patient until the tip is located in a large central vein near the heart to obtain IV access. It is typically used for patients that have poor IV access, need prolonged antibiotic care or for giving chemotherapy.

A PICC line may be accessed to provide for the administration of life saving medications or the administration of IV fluids to provide fluids for hypotension or shock. **It is not to be used for the purpose of KVO fluids.**

Procedure:

1. Prepare infusion set.
2. Identify the PICC line location. Check to make sure that the area around the skin is clean, without redness, swelling or signs of infection. If the patient is febrile or is suspected of being septic do not use the PICC line.
3. If there is a cap covering the end of the tubing, unscrew it and tape it to the skin near the site (for replacement later). If it is a multi-lumen PICC line, access the side with the blue cap. Attach a needleless IV lock with a 10ml (empty) syringe to the end of the tubing. Open the clamp on the PICC line.
4. If there is a needleless end on the tubing already, using aseptic technique, use iodine swab sticks (or iodine pads) to disinfect the screw end of the catheter followed by an alcohol pad. Attach an empty 10ml syringe. Open the clamp on the PICC line.
5. Withdraw 10ml of blood into the syringe and discard it in a sharps box.
6. Attach a 10ml syringe of saline and flush the blood from the catheter. Remove the syringe.
7. Attach the IV tubing and flow at the desired rate.
8. Secure the IV tubing to the patient with tape.

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

Procedure:

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

Tourniquet

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

Procedure:

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

Twelve Lead E.C.G. Monitor

Placement of Electrodes:

Limb Leads

1. RA - right arm – upper right arm near the shoulder
2. LA - left arm – upper left arm near the shoulder
3. RL - right leg – medial aspect of lower right leg about half way between knee and ankle
4. LL – left leg - medial aspect of lower left leg about half way between knee and ankle

Chest (Precordial) Leads

5. V1 - 4th intercostal space, immediately to the right of the sternum
6. V2 - 4th intercostal space, immediately to the left of the sternum
7. V4 - 5th intercostal space in the midclavicular line (Note: V4 must be placed prior to V3)
8. V3 - Placed between V2 and V4
9. V5 - 5th intercostal space in the anterior axillary line
10. V6 - 5th intercostal space in the mid axillary line

Right-Sided Twelve Lead

11. V1R - 4th intercostal space, immediately to the left of the sternum
12. V2R - 4th intercostal space, immediately to the right of the sternum
13. V4R - 5th intercostal space in the midclavicular line (Note: V4 must be placed prior to V3)
14. V3R - Placed between V2 and V4
15. V5R - 5th intercostal space in the anterior axillary line
16. V6R - 5th intercostal space in the mid axillary line

CHAPTER 10: Hazardous Materials Exposure

Hazardous Materials Incident

Rationale:

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

Responsibilities:

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

Procedure:

- The team will set up controlled areas of relative exposure. The areas will be a hot zone (in which exposure may be expected), a warm zone (in which decontamination is begun), and a cold zone (in which patients and rescuers should be safe from additional exposure).
- Patients who are in contact with a contaminant are in the hot zone and will be removed to the warm zone by rescuers who are protected by appropriate personal protective equipment. Treatment for victims will begin in the warm zone by properly protected hazardous materials operations level personnel. The Decontamination Team will initiate respiratory care as soon as decontamination has progressed to removal of the patient's Self Contained Breathing Apparatus (SCBA). The team will then send patients to the Treatment/ Transport Area for chemical exposure related problems or to the Medical Assessment Area for post-entry assessment and rehydration as needed.
- Patients who pose a threat of contaminating others (secondary contamination) will be treated in the treatment area by properly protected hazardous materials personnel. Rescue units used to transport contaminated patients will be protected as much as possible against secondary contamination. Any removable equipment not required for patient care will be removed from the rescue unit before a patient is loaded. Patients requiring specialized medications will be treated by paramedics who have received approved training in Hazardous Materials Toxicology.
- Patients who offer no risk of secondary contamination will be transported by a rescue unit to an appropriate facility. If the patient meets criteria found in section III of the TTP, the TTP will dictate where the patient will be transported.

Hazardous Materials Treatment

Rationale:

Proper care of chemically exposed patients by the SOT may require treatments which are not in the EMS protocol. These treatments have been approved by the Medical Directors and may be used with approval of Medical Control at a receiving hospital. **All treatments are level III and require a physician's order.** For the treatment of Pediatric patients, the equipment sizing, energy settings, and medication dosing is based off of the Handtevy Pediatric Resuscitation System, as approved by the department medical director. Please refer to the appropriate guide. The medication doses listed are the weight-based formulas used for calculating the desired doses.

Treatment:

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

- Sodium Nitrite 3% solution, 300mg, given over 2.5 to 5 minutes
- Symptomatic Methemoglobinemia consider:
 - Methylene Blue 1% solution (10mg/ml) 1-2mg/kg, over 10 minutes
- Symptomatic Organophosphate or Carbamate poisoning consider:
 - Atropine Sulfate, 2mg. Repeat doses every 3-5 minutes.
 - Consider Pralidoxime Chloride (2-PAM), 1gm, over 5-10 minutes. Repeat in 1 hour PRN.
- Phenol exposure consider:
 - Polyethylene Glycol (GUNK) topically

Atropine Sulfate

CLASS:

- ANS- Anti-Cholinergic, Parasympatholytic

MECHANISM OF ACTION:

- It is a competitive antagonist for muscarinic acetylcholine at post-synaptic receptor sites and in the CNS. HEART: It has positive chronotropic effects particularly in the SA node, atrial and junctional tissues. Cardiac output increases due to increased heart rate. It increases cardiac muscular consumption of oxygen (MVO₂). It has positive dromotropic effects through the entire conduction system except the purkinje fibers. Ventricular bradydysrhythmia may be stabilized as a result of an increased cardiac rate. SYSTEMIC: CNS stimulation particularly with toxic doses may precipitate psychosis, restlessness, excitation, confusion, hallucinations, and delirium. It may also cause mydriasis as a result of paralysis of the ciliary muscle with resultant photophobia. It dries mucous membranes of respiratory system and relaxes smooth muscles of the airways. Decreased smooth muscle tone, decreased sphincter tone, decreased pancreatic enzyme secretion (insulin, glucagon) may all result from its use.

INDICATIONS:

- Cholinergic crisis due to organophosphate or carbamate poisonings.

CONTRAINDICATIONS:

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

DRUG INTERACTIONS:

- Increased effect of other anticholinergic (antimuscarinic) agents.
- Increased effect of sympathomimetic agents.
- Concomitant use of Pralidoxime may potentiate antimuscarinic toxic effects.

DOSAGE:

- Moderately severe poisoning (hypersecretion and other end-organ manifestations without CNS depression)
 - Adults & Children > 12 years: 2.0 – 4.0 mg q 15 min. Until pulmonary secretions are controlled, which may be accompanied by other signs of atropinization (flushing, dry mouth, dilated pupils, and tachycardia > 140/min)
- Severe poison: may need two or more times the dose

- Refer to the appropriate Handtevy guide for the volume of medication to be administered to pediatrics.

Calcium Gluconate

CLASS:

- Cation

ACTIONS:

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

INDICATIONS:

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

CONTRAINDICATIONS:

- Hypercalcemia
- Ventricular fibrillation
- Digitalized patients

CAUTION:

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

DRUG INTERACTIONS:

- Do not administer to digitalized patients.

DOSAGE:

- Topical:
 - Mix 1 gram 10% calcium gluconate with 5 oz. water soluble lubricant (KY or Surgilube) and apply over painful areas.
 - Cover with sterile dressings.
- Intravenous:
 - Adult: 1 gram over 5 minutes (10% solution)
 - Pediatric: 0.5 gram over 5 minutes (10% solution)
- Refer to the appropriate Handtevy guide for the volume of medication to be administered to pediatrics.

SUPPLIED:

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

ROUTES OF ADMINISTRATION:

- Topically,

Cyanokit Protocol

Rationale:

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

Assessment Checklist

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

Smoke Inhalation – Adult

Exposure Level I (BLS Care) (Mild – soot in nose/mouth/oropharynx)

1. Don appropriate PPE
2. Remove patient from source of smoke/inhalation
3. Administer 100% O2 via non-rebreather
4. Monitor pulse-oximetry
5. Monitor ECG, if indicated
6. Reassess frequently

Exposure Level II (ALS Care) (Moderate – soot in nose/mouth/oropharynx, confusion, disorientation, altered LOC, Hypotension)

1. Administer 100% O2, ventilate with BVM if needed
2. Intubate/PEEP as indicated
3. Collect blood sample via closed vacutainer technique before starting IV (purple top tube). Transport blood sample with patient to receiving hospital.
4. Initiate IV/NS @TKO
5. Monitor ECG/Pulse oximetry if available (Note: pulse oximetry monitors may give false readings in patients exposed to CN/methemoglobin or CO).
6. Apply nasal capnography or rainbow sensor to monitor CO2.
7. If hypotensive, consider fluid challenge and administer Cyanokit 5 gm IV pgb on scene or enroute (Contact Medical Control as needed)
8. Treat other presenting symptoms
9. Transport to appropriate facility

Exposure Level III (ALS Care) (Severe - soot in nose/mouth/oropharynx, Coma, respiratory/cardiac arrest, Hypotension)

1. Administer 100% O2 with BVM or intubate/PEEP, as indicated
2. Collect blood sample via closed vacutainer technique before starting IV (purple top tube).
3. Initiate IV/NS @TKO
4. Administer Cyanokit 5g IV pgb and monitor for clinical response/and need for second 5 g dose (Contact Medical Control as indicated)
5. If hypotensive, consider fluid challenge
6. Monitor ECG/Pulse oximetry if available (Note: pulse oximetry monitors may give false readings in patients exposed to CN/methemoglobin or CO).
7. Apply nasal capnography or rainbow sensor to monitor CO2.

Methylene Blue

CLASS:

- Antidote

ACTIONS:

- This compound has an oxidation/reduction action and a tissue staining property. It has two opposite actions on hemoglobin:
 - Low concentrations will reduce methemoglobin to hemoglobin.
 - High concentrations oxidize iron in the ferrous state (Fe²⁺) to ferric iron (Fe³⁺) that results in the formation of methemoglobin. Only iron in the ferrous state can bind with oxygen. **SOT will be using the low concentration.**

INDICATIONS:

- Chemically induced methemoglobinemia

CONTRAINDICATIONS:

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

DRUG INTERACTIONS:

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

DOSAGE:

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

SUPPLIED:

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

ROUTES OF ADMINISTRATION:

- IV only

DuoDote Auto-Injector (Pralidoxime Chloride/Atropine)

CLASS:

- Cholinesterase reactivator

MECHANISM OF ACTION:

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

INDICATIONS:

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

CONTRAINDICATIONS:

- Known hypersensitivity

DRUG INTERACTIONS:

- When atropine and pralidoxime are used together, the signs of atropinization may occur earlier than expected.
- Barbiturates are potentiated.
- It is not recommended in the treatment of carbamate poisonings.

SUPPLIED:

- Each auto-injector delivers 2.1 mg of atropine and 600 mg of pralidoxime chloride

ROUTES OF ADMINISTRATION:

- IM

Sodium Bicarbonate Breathing Treatment

CLASS:

- Alkaloid electrolyte

ACTIONS:

- Relieves symptoms of chest burning, throat irritation, and dyspnea due to chlorine gas inhalation

INDICATIONS:

- Symptomatic Chlorine Gas inhalation

CONTRAINDICATIONS:

- None

DRUG INTERACTIONS:

- Do not mix with other drugs as it inactivates catecholamines.

DOSAGE:

- Mix 3 ml of 8.4% Sodium Bicarbonate with 2 ml NS. Give by nebulizer at 6 lpm.

SUPPLIED:

- 50 mEq in a 50 ml prepackaged syringe

ROUTES OF ADMINISTRATION:

- Inhalation

Sodium Nitrite

CLASS:

- Antidote

ACTIONS:

- Reacts with hemoglobin to form methemoglobin (oxidizes ferrous Fe ++ iron in normal hemoglobin to ferric FE +++ iron, or methemoglobin). The latter removes cyanide ions from various tissues and couples with them to become cyanmethemoglobin, which has relatively low toxicity. *Chemical Reaction: $\text{NaNO}_2 + \text{Hemoglobin} = \text{Methemoglobin} + \text{Methemoglobin} = \text{Cyanmethemoglobin}$* * Sodium Nitrite may induce a dangerous methemoglobin level and may also cause hypotension.

INDICATIONS:

- Cyanide Poisoning
- Hydrogen Sulfide Poisoning

CONSTRANINDICATIONS:

- Absence of symptoms
- History of glucose-6-phosphodehydrogenase (G6PD) deficiency

DRUG INTERACTION:

- Must be followed by Sodium Thiosulfate in cyanide poisoning to obtain maximum effect
Methylene Blue may reverse excessive methemoglobinemia, but it should be used cautiously as it may release CN back into the system.

DOSAGE:

- Adult: 300 mg over 2.5-5 min., repeat at 1/2 of initial dose in 20 minutes if symptoms persist;
- Pediatric: 0.2 ml/kg, not to exceed 300 mg, repeat at 1/2 of initial dose in 20 min. if symptoms persist. Refer to the appropriate Handtevy guide for the volume of medication to be administered to pediatrics.

SUPPLIED:

- 300 mg in 10 ml vial.

ROUTES OF ADMINISTRATION:

- IV, IO

Sodium Thiosulfate

CLASS:

- Antidote

ACTIONS:

- The function of Sodium Thiosulfate is to convert cyanmethemoglobin to thiocyanate, by the enzyme rhodanese. The thiocyanate is excreted by the kidneys. *Chemical reaction: $Na_2S_2O_3 + \text{cyanmethemoglobin} + O_2 = HSCN$*

INDICATIONS:

- Cyanide poisoning

CONTRAINDICATIONS:

- Absence of indications
- History of glucose-6-phosphodehydrogenase (G6PD) deficiency

DRUG INTERACTIONS:

- Is to be given immediately after Sodium Nitrite in CN poisoning;
- Is not used in Hydrogen Sulfide poisoning;
- Methylene Blue may reverse excessive methemoglobinemia, but it should be used cautiously as it may release CN back into the system.

DOSAGE:

- Adult: Give 12.5 gm over 2.5-5 min., repeat at 1/2 initial dose in 20 minutes if symptoms persist.
- Pediatric: Give 1.65 ml/kg, not to exceed 12.5 gm, repeat at 1/2 initial dose in 20 min. if symptoms persist. Refer to the appropriate Handtevy guide for the volume of medication to be administered to pediatrics.

SUPPLIED:

- 12.5 gm in 50 ml vial

ROUTES OF ADMINISTRATION:

- IV, IO

Solu-Cortef **(Hydrocortisone Sodium Succinate)**

CLASS:

- Steroidal anti-inflammatory

ACTIONS:

- This medicine is an anti-inflammatory adrenocortical steroid. It is a highly water-soluble sodium succinate ester of hydrocortisone permitting IV administration. It is particularly useful where high blood levels are required rapidly.

INDICATIONS:

- Chemically induced asthma

CONTRAINDICATIONS:

- Known hypersensitivity
- Not to be administered prematurely because the benzyl alcohol contained in the solution may be associated with fatal "gaspings syndrome"
- Systemic fungal infections

CAUTION:

- Average and large doses may cause elevation of B/P, sodium and water retention, and increased excretion of potassium.

DOSAGE:

- Adult- Give 100 to 500 mg over 30 seconds. The dose is determined by severity.
- Pediatric- The dose is determined by severity and not weight.

SUPPLIED:

- 250 mg two compartment single dose vial;
- The vial contains a compartment with powder and another with 2 ml bacteriostatic water. Directions on mixing the product are found with the vial.

ROUTES OF ADMINISTRATION:

- IV, IM

CHAPTER 11: Trauma Transport Protocol

Trauma Transport Protocol

1. DISPATCH CENTER PROCEDURE

- a. Brevard County EMS uses enhanced 911 Computer Aided Dispatch (CAD). All 911 calls are answered in the jurisdictional law enforcement dispatch center, and then transferred. Requests for emergency medical services are directed to the Brevard County Fire Rescue Department Emergency Communications Center (hereafter referred to as Brevard). This center dispatches EMS transport units to all requests for emergency medical services within Brevard County. The enhanced 911 system provides the dispatcher the following information:
 - i. Caller's phone number
 - ii. Caller's address
 - iii. Name of phone listing
 - iv. Community where call is being placed
 - v. Emergency Services Number
 - vi. Victim(s) location
 - vii. Appropriate law enforcement agency
 - viii. Appropriate fire station response area
 - ix. Appropriate extrication equipped agency
- b. Brevard will determine the nature of the 911 emergency. The dispatcher will, using a topical question guide, ask the caller a series of questions to determine the extent and severity of injuries. The following are examples of situations and pertinent questions to be asked (from the Clawson protocols):
 - i. Vehicle Incident:
 1. How many and what type of vehicles are involved?
 2. How many people are injured?
 3. Is anyone trapped?
 4. Is fuel leaking?
 5. Is any fuel fire visible?
 - ii. Traumatic injury:
 1. Is the patient awake?
 2. Is the patient reporting chest pain?
 3. Is the patient reporting difficulty breathing?
 4. Is any bleeding controlled?
 5. Is the patient trapped?
 6. Is there any amputation?
 - iii. Shooting or stabbing:
 1. Is the patient awake?
 2. Is the patient breathing?
 3. What is the type and location of wound?
 4. Is the assailant still on the scene?
 - iv. Fall:
 1. Is the patient awake?
 2. Is the patient having problems breathing?
 3. Where is the patient experiencing pain?
 4. From what height did the patient fall?

- c. The Emergency Services Number (ESN) is used by Brevard to identify the geographic location of the caller. The ESN system identifies the first, second, and third response fire and medical units for those locations in the Brevard County service area. Brevard will dispatch units according to the location and proximity of the closest unit. Any available unit, which is closer to the incident than a dispatched unit, will notify Brevard and respond as instructed.
- d. Brevard may request other agencies to respond on a mutual aid basis if an ALS unit is not available. Mutual aid requests between agencies will be directed to Brevard by the Incident Commander. Other agencies that may be requested for assistance include the Coast Guard, Florida Marine Patrol, and law enforcement.
- e. The first (ALS or BLS) emergency services unit on the scene of an incident will use the Trauma Scorecard Methodology to evaluate trauma alert criteria. If the unit on scene issues a Trauma Alert, Brevard will document the time and notify the supervisor, other responding units, and the closest appropriate trauma center.

2. On Scene Procedure

- a. The arriving provider will evaluate the scene, Trauma Alert Criteria, the safety of the scene, the severity and number of patients, the need for extrication, and the need for additional help. A Trauma Alert will be issued if the patient meets the Trauma Scorecard Methodology Criteria.
- b. The paramedic providing patient care shall advise Brevard to which facility the patient will be transported, the criteria for which the alert was issued, and the mechanism(s) of injury.

3. Trauma Alert Criteria

- a. Adult Trauma (age 16 and older)
 - i. Any ONE of the following:
 1. The patient requires active airway assistance (other than supplemental O₂).
 2. The heart rate is greater than 120 bpm without radial pulse.
 3. The systolic BP is less than 90 mm/Hg without a radial pulse.
 4. Best motor response is less than or equal to 4 or the Glasgow coma scale is less than or equal to 12.
 5. There is 2nd or 3rd degree burns greater than or equal to 15% or more of the total body surface area. (If there are 2nd or 3rd degree burns to the palms of the hand, soles of the feet or genitalia or any 2nd or 3rd degree circumferential burn, while not considered trauma alert criteria, medics should strongly consider transporting to a burn center.)
 6. There is amputation proximal to the wrist or ankle.
 7. There is penetration injury to the head, neck or torso, excluding superficial wounds where the depth of the wound can be determined.
 8. There are two or more long-bone fracture sites. Suspected ankle and wrist fractures are not included. Suspected hip fractures are not included unless the hip fracture is subsequent to a MVC or fall from a height of greater than 10 feet. **NOTE: Known or suspected fractures of the radius and ulna on the same forearm are considered one fracture site. Known or suspected fractures of the tibia and fibula on the same leg are considered one fracture site.**
 9. There is paralysis, loss of sensation, or suspicion of spinal injury.

- ii. Or any TWO OR MORE of the following:
 1. The respiratory rate is 30 or more.
 2. Sustained heart rate is 120 beats per minute or more.
 3. Best motor response is 5 or less on the Glasgow Coma Scale
 4. There is major degloving injury or flap avulsion greater than 5".
 5. There is a gunshot wound (GSW) to an extremity.
 6. There is one long-bone fracture from a MVC or from a fall of 10 feet or greater.
 7. The patient's age is 55 or older.
 8. The patient was ejected from a motor vehicle, including motorcycle, moped, ATV, or open body of a pick-up truck.
 9. The patient caused steering wheel deformity by impact.
- iii. The EMT or paramedic can also issue a "Trauma Alert" if, in his judgment, the trauma patient's condition warrants it. This will be documented, as required in section 64E-2, F.A.C.
- b. Pediatric Trauma Alert Criteria (a pediatric patient is any patient with a physical and anatomical characteristic of a person 16 years of age or younger.
 - i. Any ONE of the following:
 1. Airway:
 - a. The patient requires intubation or the patient's breathing is assisted with manual jaw thrust, single or multiple suctioning, or through the use of other adjuncts to assist ventilator efforts.
 2. Consciousness:
 - a. The patient presents with an altered mental status that includes drowsiness, lethargy, the inability to follow commands, unresponsiveness to voice, totally unresponsive, or there is the presence of paralysis; or the suspicion of a spinal cord injury or loss of sensation.
 3. Circulation:
 - a. The patients has a faint or non-palpable radial or femoral pulse, a systolic blood pressure of less than 50 mm/Hg, or sustained tachycardia greater than 160 beats per minute.
 4. Fracture:
 - a. There is evidence of an open long bone fracture or there are two or more fracture sites or dislocations (except for suspected isolated wrist or ankle fractures/dislocations). **NOTE: Known or suspected fractures of the radius and ulna on the same forearm are considered one fracture site. Known or suspected fractures of the tibia and fibula on the same leg are considered one fracture site.**
 5. Skin:
 - a. The patient has a major soft tissue disruption, including major degloving injury, major flap avulsions, 2nd or 3rd degree burns to 10 percent or more of the total body surface area,
 - b. There is an amputation proximal to a wrist or ankle

- c. There is any penetrating injury to the head, neck or torso (excluding superficial wounds where the depth of the wound can be determined).
 - ii. Or any TWO OR MORE of the following:
 - 1. Consciousness: The patient exhibits symptoms of amnesia, or there was a loss of consciousness.
 - 2. Circulation: The carotid or femoral pulse is palpable, but the radial or pedal pulses are not palpable or the systolic blood pressure is less than 90 mm/Hg.
 - 3. Fracture:
 - a. The patient reveals signs or symptoms of a single closed long bone fracture. Long bone fractures do not include isolated wrist or ankle fractures.
 - b. **NOTE: Known or suspected fractures of the radius and ulna on the same forearm are considered one long bone fracture site. Known or suspected fractures of the tibia and fibula on the same leg are considered one long bone fracture site.**
 - 4. Size: The pediatric trauma patient has a weight less than 11 kilograms or the body length is equivalent to this weight on a pediatric length and weight emergency tape.
 - iii. The EMT or paramedic can issue a "Trauma Alert" if, in his judgment, the trauma patient's condition warrants it. This will be documented, as required in section 64-2, F.A.C.

4. Transportation

- a. All Trauma Alert patients will be transported to the nearest State Approved Trauma Center (SATC) or State Approved Pediatric Trauma Referral Center (SAPTRC). Guidelines for transportation follow:
 - i. Pediatric Trauma Alert patients should be transported to a SAPTRC (Arnold Palmer Hospital).
 - ii. Burn patients meeting the Trauma Alert criteria should be transported to SATC with burn services (Adult – Orlando Regional Medical Center, Pediatric – Arnold Palmer Hospital).
 - iii. Trauma Alert patients will be transported to the closest appropriate receiving facility as follows:
 - 1. Cardiac Arrest: Cardiac arrest secondary to trauma will be transported to the nearest hospital.
 - 2. Lack of Patent Airway: After attempts to secure the airway, as defined by airway management protocol, and the trauma patient still presents with an unstable airway (unsecured airway), the patient will be transported to the nearest receiving facility.
 - 3. Mass Casualty Incidents: Patients will be transported as designated by the Incident Commander.
 - 4. Patients, who in the opinion of the transportation crew will not survive transport to a trauma center, may be transported to the nearest hospital.
 - iv. Air Transportation Guidelines:
 - 1. Trauma meeting the Trauma Alert Criteria and one of the following:

- a. Located in the air transport zone, which is north of Pineda Causeway (mainland and beachside), south of Malabar Road (mainland), south of Station 64 (beachside) and/or west of I-95 (county-wide).
 - b. Prolonged extrication.
 - c. Severe traffic conditions delay transport.
- v. Ground Transportation will be used for the trauma alert patient (including pediatric patients) when:
 1. Within aeromedical boundaries.
 2. Air transport is not available.
 3. ETA of air transport is in excess of 30 minutes or their arrival takes longer than ground transport.

5. Designated Facilities

- a. Trauma alert patients will be transported to the nearest appropriate trauma center. If that trauma center is unable to provide adequate trauma care, the patient will be transported to the next closest trauma center.
 - i. Brevard County Fire Rescue providers will transport adult “trauma alert” patients to:
 1. Holmes Regional Medical Center - (321) 434-7298
 - a. 1350 South Hickory St. in Melbourne, FL
 2. Halifax Health Medical Center - (386) 425-4101
 - a. Clyde Morris Blvd. in Daytona Beach, FL
 - ii. Brevard County EMS providers will transport adult burn “trauma alert” patients to:
 1. Orlando Regional Medical Center - (321) 841-5210
 - a. 1414 South Kuhl Ave., Orlando, FL
 - iii. Pediatric Trauma Alert patients including burns meeting Trauma Alert criteria will be transported to:
 1. Arnold Palmer Hospital - (321) 841-5437
 - a. 92 West Miller St., Orlando, FL
 - iv. Patients who DO NOT MEET trauma alert criteria may be transported to the closest appropriate receiving facility.
 1. Parrish Medical Center - (321) 268-6130
 - a. 951 North Washington Ave., Titusville, FL
 2. Rockledge Regional Medical Center - (321) 637-3000
 - a. 110 Longwood Ave., Rockledge, FL
 3. Cape Canaveral Hospital - (321) 868-7244
 - a. 701 W. Cocoa Beach Causeway, Cocoa Beach, FL
 4. Holmes Regional Medical Center - (321) 434-7298
 - a. 1350 S. Hickory St., Melbourne, FL
 5. Melbourne Regional Medical Center - (321) 752-1233
 - a. 250 N. Wickham Road, Melbourne, FL
 6. Palm Bay Community Hospital - (321) 434-8355
 - a. 1425 Malabar Road, NE, Palm Bay, FL
 7. Sebastian River Medical Center - (772) 589-9122
 - a. 13695 US Highway One, Sebastian, FL
 8. Viera Hospital - (321) 434-9475

- a. 8745 N. Wickham Road, Viera, FL

6. Documentation

- a. Providers will complete an EMS report on all trauma patients, including those who are pronounced dead on scene.
- b. The provider who transfers a patient to an air ambulance will complete the state approved abbreviated report and give it to the transport agency. Every attempt should be made to complete this form (abbreviated) prior to air transport; however, a verbal report will be acceptable. The on-scene unit will subsequently fax a copy of the complete EMS report to the receiving facility.
- c. The transport unit will submit or fax the completed report to the receiving facility.

7. Emergency Trauma Inter-Hospital Procedure

- a. Brevard County Fire Rescue does not transport trauma patients between receiving facilities. Coastal Health Systems of Brevard, Inc. will provide any transport deemed necessary by the initial receiving Trauma Center to another Trauma Center for any higher levels of care necessary or unable to be performed at the initial receiving State Approved Trauma Center.

8. Transportation Deviation

- a. Any deviation from this Trauma Transport Protocol must be documented in the EMS report.

NOTE: Once a Trauma Alert is issued, only the agency medical director or receiving physician can cancel the alert. At no time can a paramedic, regardless of agency, cancel a trauma alert.

Aeromedical Boundaries

- North of Pineda Causeway (Mainland and Beachside)
- South of Malabar Road (Mainland)
- South of Station 64 – 2550 S. A1A, Melbourne Beach, FL 32951 (Beachside)
- West of I-95 (County-Wide)

CHAPTER 12: Start Triage Plan

S.T.A.R.T. Triage Plan

Step 1:

- The initial medical responder enters the incident area, identifies himself and directs all of the victims that can walk to gather and remain at a patient staging area. This identifies victims who have sufficient respiratory, circulatory, mental, and motor function to walk. Most of these victims will be triaged green. Do not tag them now. Triage them separately later.

Step 2:

- Evaluate non-ambulatory victims where they present. Assess respiration. Is it normal, rapid or absent?
 - If absent, reposition the airway to see if spontaneous respiration begins. If respiration is absent, tag black. Do not perform CPR.
 - If the victim requires help in maintaining an open airway or has a respiration rate over 30 per minute, tag red. (Attempt to use non-EMS person to hold the airway). If respiration is normal (less than 30 per minute), go to next step.

Step 3:

- Assess the victim's perfusion by testing capillary or palpating a radial pulse.
 - If the capillary refill is over 2 seconds or the radial pulse is absent but a carotid pulse is present, tag red.
 - If the capillary refill is less than 2 seconds or if the radial pulse is present, go to the next step.
 - Any life threatening bleeding should be controlled now and elevate the victims legs to begin shock treatment. (Again, attempt to use non-EMS person to maintain pressure or bleeding site).

Step 4:

- Assess victim's mental status.
 - If the victim has not demonstrated he can follow simple commands, ask him to perform a simple task.
 - If he cannot follow simple commands, tag red.
 - If the victim can follow simple commands, tag yellow or green depending upon condition.
 - The victim's injuries will determine the color.

CHAPTER 13: Assessment and Scoring Tools

APGAR Scale

<u>Criteria</u>	<u>0 points</u>	<u>1 point</u>	<u>2 points</u>
Heart Rate	Absent	<100	>100
Respiratory Rate	Absent	Slow, irregular	Good, crying
Muscle Tone	Flaccid	Some flexion	Active motion
Reflex Irritability	No response	Grimace	Cough or sneeze
Color	Blue or Pale	Pink with blue	Extremities Fully pink

Glasgow Coma Scale

Eyes	Opens Eyes Spontaneously	4
	Opens eyes to Verbal Stimuli	3
	Opens Eyes to Painful Stimuli	2
	Fails to Open Eyes	1
Verbal Response	Appropriate Conversation/Oriented to Month & Year	5
	Confused and/or Disoriented	4
	Inappropriate Conversation/Answers	3
	Incomprehensible Sounds	2
	No Verbal Response	1
Motor Response	Follows Directions	6
	Removes Pain Source	5
	Withdraws From Pain Source	4
	Non-purposeful Flexion (Decorticate)	3
	Non-purposeful Extension (Decerebrate)	2
	No Motor Response	1

Transfer total to Other Side (Trauma Score)

Adult Trauma Score

Respiratory Rate	10 – 24 minute	4
	25 – 35 minute	3
	36 minute or greater	2
	1 – 9 minute	1
	None	0

Respiratory Expansion	Normal	1
	Retractive	0

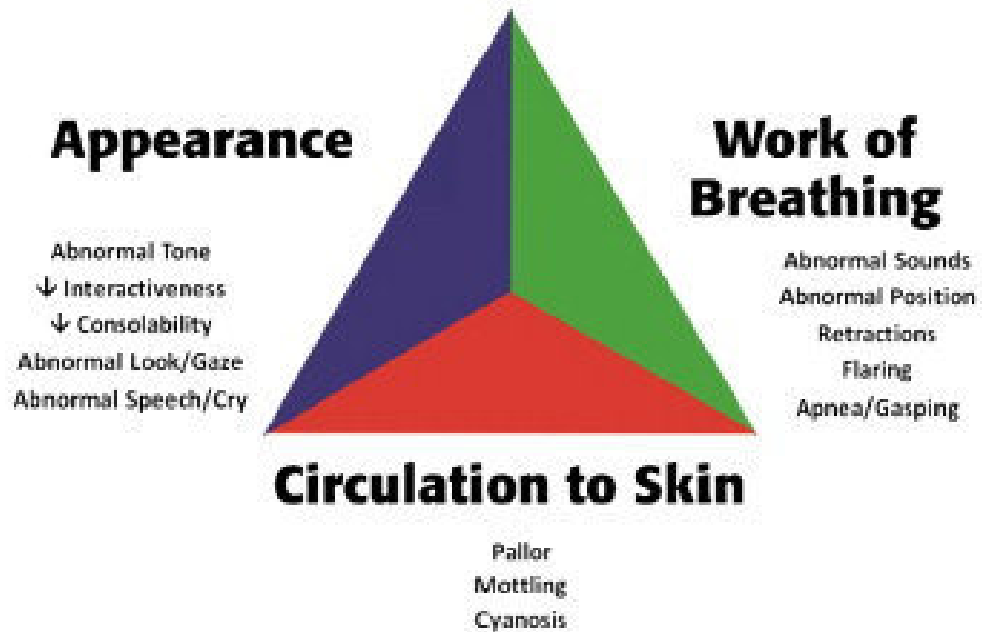
Systolic Pressure	90 mm Hg or greater	4
	70 – 89 mm Hg	3
	50 – 69 mm Hg	2
	0 – 49 mm Hg	1
	No Pulse	0

Capillary Refill	Normal	2
	Delayed	1
	None	0

Total GCS Score	14 – 15 =	5
	11 – 13 =	4
	8 – 10 =	3
	5 – 7 =	2
	3 – 4 =	1

Total Trauma Score =

Pediatric Assessment Triangle



Pediatric Trauma Score

PARAMETER	+2	+1	-1
AIRWAY	No Respiratory Assistance Required	Requires Positioning Constant Observation	Requires Invasive Procedures
WEIGHT	> 20 kg	10 – 20 kg	< 10 kg
CNS	Fully Awake	History of Syncope or Repeated Vomiting	Coma or Seizures
CIRCULATION	Systolic BP > 90	Systolic BP 50 - 90	Systolic BP < 50
SKELETAL INJURIES	None	Closed Deformity	Open Fx. or Multiple Closed Fx.
SKIN Wounds	None	Minor Wounds Abrasions, Lacerations	Major Open Penetrating Wounds

NOTE:

- Total possible score is +12; lowest possible score is -6. Children with a score lower than 8 generally have a poor outcome and should be transferred to a tertiary care facility. (Source – The Journal of Trauma. Volume 28, Number 4, pp. 425 – 429)

Infant / Child Vital Signs by Age

Age	Resp. Rate	Pulse	Systolic BP
Newborn	30 – 60	100 – 160	50 – 70 mm Hg
1 – 6 Weeks	30 – 60	100 – 160	70 – 95 mm Hg
6 Months	25 – 40	90 – 120	80 – 100 mm Hg
1 Year	20 – 30	90 – 120	80 – 100 mm Hg
3 Years	20 – 30	80 – 120	80 – 110 mm Hg
6 Years	18 – 25	70 – 110	80 – 110 mm Hg
10 Years	15 – 20	60 – 90	90 – 120 mm Hg

Stroke Alert Checklist

FLORIDA EMERGENCY MEDICAL SERVICES STROKE ALERT CHECKLIST					
DATE & TIMES					
Date:	Dispatch Time:	EMS Arrival Time:	EMS Departure Time:	ED Arrival Time:	
BASIC DATA					
Patient Name	Age _____		Gender _____		
Witness(es) Name	Witness(es) Phone (Cell Phone #, Home#, Work#)				
Last Time Known Well/Normal/ Without Symptoms (onset)					
Blood Glucose					
Prehospital Stroke Scale (Check if abnormal)	Basic Stroke Scale				
	Cincinnati FAST Stroke Scale: <input type="checkbox"/> Facial Droop <input type="checkbox"/> Arm Drift <input type="checkbox"/> Abnormal Speech <input type="checkbox"/> Other Basic Stroke Scale (CPSS ^o , LAPSS ^o , BE-FAST ^o , MEND ^o , others) _____				
	Advanced Stroke Scale [Predictive of Large Vessel Occlusion (LVO ^o)] <input type="checkbox"/> LAMS ^o <input type="checkbox"/> RACE ^o <input type="checkbox"/> CPSSS ^o <input type="checkbox"/> NIHSS ^o <input type="checkbox"/> VAN ^o <input type="checkbox"/> FAST-ED ^o <input type="checkbox"/> Other Advanced Stroke Scales (Enter Scale and Result: _____)				
Comprehensive Stroke Center (CSC)				YES	NO
If ANY of the following are positive, transport <i>EMERGENTLY</i> to CSC / PSC-E / TSC / Stroke Interventional Hospital:					
1. Onset >3.5 and < 24 hours					
2. High Suspicion of Major Stroke/LVO on Advanced Stroke Scale					
3. High suspicion of SAH/ICH – see Stroke Alert Criteria below					
4. IV Lytic contraindications					
5. Wake Up Stroke (option to transport to facility capable of required assessment, such as CT Perfusion, or MRI/MRA)					
Thrombolytic Contraindications					
<input type="checkbox"/> TIME – last known normal <input type="checkbox"/> 18 years or greater <input type="checkbox"/> Stroke symptoms: <input type="checkbox"/> facial droop; <input type="checkbox"/> motor weakness; <input type="checkbox"/> speech – slurred words/not expressed clearly <input type="checkbox"/> Symptoms suggesting subarachnoid hemorrhage – worst headache of life with elevated BP <input type="checkbox"/> Elevated blood pressure SBP > 185 or DBP > 110 <input type="checkbox"/> Recent intracranial or intraspinal surgery <input type="checkbox"/> Active bleeding <input type="checkbox"/> Significant head trauma – 3 months <input type="checkbox"/> Prior stroke – 3 months <input type="checkbox"/> History of brain tumor – AV malformation or aneurysm <input type="checkbox"/> Anticoagulation medications: (Warfarin (coumadin) oral; Pradaxa (dabigatran) oral; Xarelto (rivaroxaban) oral; Eliquis (apixaban) oral; Lixiana, Savvsa (edoxaban) oral; Arixtra (fondaparinux) SQ; Heparin (unfractionated heparin) SQ; Lovenox (enoxaparin) SQ; Fragmin (dalteparin) SQ)					
Stroke Alert Criteria				YES	NO
IF ANSWER IS YES TO ALL OF THE FOLLOWING STROKE ALERT CRITERIA, CALL STROKE ALERT & TRANSPORT <i>EMERGENTLY</i> to MOST APPROPRIATE, CLOSEST AVAILABLE STROKE CENTER (if within a reasonable distance), (Acute Stroke Ready Hospital (ASRH), PSC, or CSC / PSC-E / TSC / Stroke Interventional Hospital)					
1. Onset <3.5 hours (ASRH, PSC, PSC-E / TSC, or CSC); <24 hours (CSC ^o , PSC-E / TSC ^o)?					
2. Any abnormal focal neurological finding on examination?					
3. Absence of head trauma causing deficits?					
4. Absence of stroke symptom response to hypoglycemic treatment?					
Additional Stroke Alert Criteria to Consider for Transport to CSC:				✓IF ABNORMAL	
Suspicion of Subarachnoid Hemorrhage?	Sudden worst-ever headache Sudden & unexplained decrease LOC Often: after activity, with severe nausea/vomiting, neck discomfort specially with movement, GCS<15, significantly elevated BP				
EN ROUTE, PERFORM MORE COMPLETE NEURO ASSESSMENT IF TIME ALLOWS					
DESTINATION STROKE CENTER		STROKE CENTER			

CHAPTER 14: Approved Abbreviation List

Do not use + or - signs when describing objective findings**“A”**

abd.	Abdomen
AAA	Abdominal Aortic Aneurysm
ASA	AcetylSalicylic Acid (aspirin)
AIDS	Acquired Immuno-Deficiency Syndrome
AMI	Acute Myocardial Infarction
ACLS	Advanced Cardiac Life Support
ALOC	Altered Level of Consciousness
ALS	Advanced Life Support
\bar{p}	after
AMA	Against Medical Advice
AVPU	Alert, Verbal, Painful, Unresponsive
ATV	All Terrain Vehicle
AC	Antecubital
APGAR	Appearance, Pulse, Grimace, Pulse, and Respirations
Approx.	Approximately
≈	Approximately equal to
APH	Arnold Palmer Hospital
ABG	Arterial Blood Gases
ASHD	Arteriosclerotic Heart Disease
STAT	At once, instantly
A-Fib	Atrial Fibrillation
AV	Atrioventricular node
A/F	Asian Female
A/M	Asian Male
PRN	As needed
@	At
AED	Automatic External Defibrillator

“B”

BOW	Bag of Waters (amniotic fluid)
BVM	Bag Valve Mask
BLS	Basic Life Support
BTLS	Basic Trauma Life Support
\bar{a}	Before
BCP	Birth Control Pill
B/F	Black Female
B/M	Black Male
BP (B.P.)	Blood Pressure
BSA	Body Surface Area
bm	Bowel movement
BCFR	Brevard County Fire Rescue
BCPSD	Brevard County Public Safety Department
BCSO	Brevard County Sheriff's Office
B/L/S	Burns, Laceration, Swelling

per	By
po	By mouth
“C”	
CA or ca	Cancer
CCAFS	Cape Canaveral Air Force Station
CCFD	Cape Canaveral Fire Department
CCH	Cape Canaveral Hospital
cap	Capsule
Capt.	Captain
CO ₂	Carbon Dioxide
CO	Carbon Monoxide
CPR	Cardiopulmonary Resuscitation
CV	Cardiovascular
°C	Celsius (Centigrade)
cm	Centimeter
CNS	Central Nervous System
CSF	Cerebrospinal Fluid
CVA	Cerebrovascular Accident (Stroke)
C-collar	Cervical Collar
CID	Cervical Immobilization Device (any type)
C-#	Cervical Vertebrae
C-Sect	Cesarean Section
Δ	Change
C/C	Chief Complaint
COPD	Chronic Obstructive Pulmonary Disease
CBFD	Cocoa Beach Fire Department
CBPD	Cocoa Beach Police Department
CFD	Cocoa Fire Department
CPD	Cocoa Police Department
C/O	Complain Of
CBC	Complete Blood Count
CAD	Coronary Artery Disease
CCU	Coronary Care Unit
CC or cc	Cubic Centimeter

“D”

DOA	Dead on Arrival
↓	Decreased (NOT LOWER)
Defib	Defibrillation
DCAPP	Deformities, Contusions, Abrasions, Penetrations, Paradoxical motion
DTs	Delirium Tremens
D25W	Dextrose 25% in Water
D5W	Dextrose 5% in Water
D50W	Dextrose 50% in Water
Dx	Diagnosis
D&C	Dilatation and Curettage
D/C	Discontinue
DNRO	Do Not Resuscitate Order

gtts Drops

“E”

ENT	Ears, Nose and Throat
EEG	Electroencephalogram
ECG	Electrocardiogram
ED	Emergency Department
EMS	Emergency Medical Services
EMT	Emergency Medical Technician
ER	Emergency Room
ETT	Endotracheal Tube
E-#	Engine #
epi	Epinephrine
EDC	Estimated Date of Confinement
ETA	Estimated Time of Arrival
ETOH	Ethyl Alcohol (drinking type)
=	Equal to
EENT	Eyes, Ears, Nose and Throat
QD	Every day
\overline{q}	Every

“F”

°F	Fahrenheit
FBI	Federal Bureau of Investigation
F	Female
FUO	Fever of Unknown Origin
fib	Fibrillation
FW&GC	Florida Fresh Water & Game Commission
FHP	Florida Highway Patrol
FHA	Florida Hospital Altamonte
FHS	Florida Hospital South (Orlando)
FMP	Florida Marine Patrol
fl	Fluid
Fx	Fracture
QID	Four times a day

“G”

GI	Gastrointestinal
GCS	Glasgow Coma Scale
GM or g	Grams
GSW	Gun Shot Wound
>	Greater than

“H”

HL	Heparin Lock
H/F	Hispanic Female
H/M	Hispanic Male
HPI	History of the Present Illness/injury
HFF	Holmes First Flight
HPRS	Handtevy Pediatric Resuscitation System
HRMC	Holmes Regional Medical Center
HIV	Human Immunodeficiency Virus
“I”	
↑	Increased (NOT UPPER)
IFD	Indialantic Fire Department
IPD	Indialantic Police Department
IHBPD	Indian Harbour Beach Police Department
IHBVFD	Indian Harbour Beach Volunteer Fire Department
IRMH	Indian River Memorial Hospital
flu	Influenza
ICS	Intercostal Space
IM	Intramuscular Injection
IN	Intranasal
IV	Intravenous
IVP	Intravenous Push
IO	Intraosseous Infusion
IUD	Intra-Uterine Device
“J”	
JVD	Jugular Vein Distention
“K”	
KED	Kendrick Extrication Device
KSC	Kennedy Space Center
KSCFR	Kennedy Space Center Fire Rescue
KSCP	Kennedy Space Center Patrol (Law Enforcement)
kg	kilogram
KVO	Keep Vein Open
“L”	
L&D	Labor and Delivery
lac	Laceration
LMP	Last Menstrual Period
L	Left
LBBS	Left Bundle Branch Block
LLQ	Left Lower Quadrant
LUQ	Left Upper Quadrant

LVF	Left Ventricular Failure
<	Less than
LOC	Loss of Consciousness
Lt.	Lieutenant
L/M	Liters per Minute
L-#	Lumbar Vertebrae

“M”

M	Male
MCL1	Marriott’s Chest Lead (Modified Chest Lead 1)
M.D.	Medical Director
med	Medication
MBPD	Melbourne Beach Police Department
MBVFD	Melbourne Beach Volunteer Fire Department
MFD	Melbourne Fire Department
MPD	Melbourne Police Department
MRMC	Melbourne Regional Medical Center
MIVFD	Merritt Island Volunteer Fire Department
m	Meter
Mic.VFD	Micco Volunteer Fire Department
∟ or mcg	Microgram
MAL	Mid-axillary Line
MCL	Mid-clavicular Line
MSL	Mid-sternal Line
mEq	Milli-Equivalent
mg	Milligram
ml	Milliliter
mm	Millimeter
min	Minute
MS	Morphine Sulfate
MVA	Motor Vehicle Accident
MVC	Motor Vehicle Crash
MI	Myocardial Infarction

“N”

NC	Nasal Cannula
NG	Nasogastric
N/V	Nausea & Vomiting
N/V/D	Nausea & Vomiting & Diarrhea
neg	Negative
NTG	Nitroglycerine
NKA	No Known Allergies
NRB	Non-Re-breather Mask
NS	Normal Saline
NSR	Normal Sinus Rhythm
NPO	Nothing by Mouth

“O”

OB	Obstetrics
OR	Operating Room
ORMC	Orlando Regional Medical Center
oz	Ounce
OD	Overdose
O2	Oxygen

“P”

PBCH	Palm Bay Community Hospital
PBFR	Palm Bay Fire Rescue
PBPD	Palm Bay Police Department
PM	Paramedic
PAT	Paroxysmal Atrial Tachycardia
PMC	Parrish Medical Center
PND	Paroxysmal Nocturnal Dyspnea
pt.	patient
PAFB	Patrick Air Force Base
PAFBFR	Patrick Air Force Base Fire Rescue
PAFBP	Patrick Air Force Base Patrol (Law Enforcement)
PMH	Past Medical History
PALS	Pediatric Advanced Life Support
PID	Pelvic Inflammatory Disease
PPE	Personal Protective Equipment
PCN	Penicillin
PDR	Physicians' Desk Reference
PASG	Pneumatic AntiShock Garment
PMI	Point of Maximal Impulse
poss.	Possible
K+	Potassium
Preg.	Pregnant
PAC	Premature Atrial Contraction
PJC	Premature Junctional Contraction
Rx	Prescriptions
POV	Privately Owned Vehicle
PMS	Pulses, Motor, Sensations
SpO2	Pulse Oximetry
PERRLA	Pupils Equal Round Reactive to Light & Accommodating
PVC	Premature Ventricular Contraction
PTA	Prior To Arrival

“Q”

QA	Quality Assurance
QM	Quality Management

“R”

ROM	Range of Motion
RSI	Rapid Sequence Induction
RBC	Red Blood Cell
RN	Register Nurse
RSR	Regular Sinus Rhythm
Rpt	Reports
R-#	Rescue Unit #
ROS	Review of Systems
R	Right
RBBB	Right Bundle Branch Block
RLQ	Right Lower Quadrant
RFD	Rockledge Fire Department
RPD	Rockledge Police Department
RRMC	Rockledge Regional Medical Center
R/O	Rule Out

“S”

SBFD	Satellite Beach Fire Department
SBPD	Satellite Beach Police Department
SRMC	Sebastian Regional Medical Center
SCBA	Self Contained Breathing Apparatus
SCUBA	Self Contained Underwater Breathing Apparatus
SOB	Shortness of Breath
SA	Sinoatrial Node
ZZZ	Sleeping
Na	Sodium
bicarb	Sodium Bicarbonate
NaCl	Sodium Chloride
Soln	Solution
SNT	Soft and Not Tender
SOT	Special Operations Team
SQ	Subcutaneous injection
SL	Sublingually
SIDS	Sudden Infant Death Syndrome
SVT	Supraventricular Tachycardia
SBP	Systolic Blood Pressure

“T”

tab	Tablet
TID	Three times a day
X	Times
TFES	Titusville Fire and Emergency Services
TPD	Titusville Police Department
TCP	Transcutaneous Pacing
TIA	Transient Ischemic Attack
TKO	To Keep Vein Open

TB	Tuberculosis
BID	Twice a day

“U”

USCG	United States Coast Guard
U	Units of medication
URI	Upper Respiratory Infection
UTI	Urinary Tract Infection

“V”

VD	Venereal Disease
V-Fib	Ventricular Fibrillation
V-Tach	Ventricular Tachycardia
VS	Vital Signs

“W”

W/D	Warm & Dry
WBC	White Blood Cell
W/M	White Male
W/F	White Female
$\frac{c}{s}$	With
	Without
WPW	Wolfe Parkinson White Syndrome
WMH	Wuesthoff Medical Center

“X”**“Y”**

Y/O	Years Old
-----	-----------

“Z”

CHAPTER 15: Drug Manual

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

Adenosine

(Adenocard)

Therapeutic Effects:

- Converts PSVT to a NSR by slowing conduction through the A-V node.

Indications:

- Paroxysmal Supraventricular Tachycardia

Contraindications:

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

Adverse Reactions:

- Facial Flushing
- Nausea

Administration and Dosage:

- Adults:
 - 12 mg very rapid IVP or IO, followed without delay by a very rapid 20 ml saline bolus.
 - A second dose of 12 mg very rapid IVP or IO, followed without delay by a very rapid 20 ml saline bolus may be given.
 - Maximum total dose is 24 mg.
- Pediatric:
 - 0.1 mg / kg (max 6mg) very rapid IVP or IO, followed without delay by a very rapid 5-10 ml saline bolus.
 - Second dose of 0.2 mg / kg (max 12mg) very rapid IVP or IO, followed without delay by a very rapid 20ml saline bolus.
 - Refer to the appropriate Handtevy guide for the volume of medication to be administered to pediatrics.

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

Albuterol

(Proventil, Proventil Syrup, Ventolin)

Therapeutic Effects:

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

Indications:

- Bronchospasms, in patients with reversible obstructive airway disease.

Contraindications:

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

Adverse Reactions:

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

Precautions:

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

Administration and Dosage:

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

Amiodarone

(Cordarone)

Therapeutic Effects:

- Suppresses ventricular dysrhythmia

Indications:

- Recurrent or persistent ventricular fibrillation
- Recurrent or persistent hemodynamically unstable ventricular tachycardia
- Atrial Fibrillation/flutter with heart rate > 150 bpm

Contraindications:

- Known hypersensitivity to amiodarone
- Marked sinus bradycardia
- 2nd or 3rd degree AV block unless functional pacemaker is available
- Cardiogenic shock

Precautions:

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

Adverse Reactions:

- Hypotension
- Arrhythmias
- Electrolyte disturbances

Administration and Dosage:

- Adults
 - VF/Pulseless VT: 300 mg in 30 ml normal saline IV push or IO over 30 seconds. IV push rates under 30 seconds may lead to irreversible brady-asystole.
 - A repeat dose of 150 mg over 30 seconds may be given for recurrent VF/Pulseless VT.
 - VT (stable): 150 mg in 100 mL normal saline over 10 minutes.
 - PVCs greater than 6 bpm or multifocal PVC 150 mg of 100 mL NS 10 min
 - AF/Flutter: 150 mg in 100 ml NS over 10 minutes
- Pediatrics
 - VF/Pulseless VT: 5 mg/kg in 30 mL normal saline IV push or IO over 30 seconds. Single dose only.
 - VT (stable): 5mg/kg in NS given over 30 minutes
 - Refer to the appropriate Handtevy guide for the volume of medication to be administered to pediatrics.

Aspirin

Therapeutic Effects:

- Inhibits platelet aggregation and thereby reduces thrombus formation.

Indications:

- Acute chest pain related myocardial ischemia

Contraindications:

- Hypersensitivity to Aspirin
- Hemophilia
- Current GI Bleeding
- Multi-system Trauma
- Pregnancy
- Pt has taken Aspirin within 4 hours or is currently taking any anticoagulants.

NOTE: *If the patient is currently taking Coumadin or any other anticoagulant therapy and the 12-Lead ECG shows ischemic changes such as S-T elevation/depression or inverted T-waves, 324 mg of chewable ASA should be administered. If the patient is taking Coumadin or any other anticoagulant therapy and the 12-Lead ECG does not show ischemic changes such as S-T elevation/depression or inverted T-waves, ASA should be withheld.*

Adverse Reactions:

- Dyspepsia
- Rash
- Anaphylaxis

Administration and Dosage:

- Adult:
 - 81mg x4 chewable tablets

Atropine

Therapeutic Effects:

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

Indications:

- Symptomatic bradycardia
- Organophosphate exposure, Nerve Agent exposure

Contraindications:

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

Adverse Reactions:

- Ventricular irritability, tachycardia, hypertension, hypotension, angina
- Atrial or ventricular fibrillation, Paradoxical bradycardia

Administration and Dosage:

- Adults:
 - For pulse producing symptomatic bradycardia, atropine is given 0.5 mg IV/IO every 3 - 5 minutes.
 - Maximum dosage is 3 mg.
 - For Organophosphate or Nerve Agent exposure, >10 yrs. 2 mg via Auto Injector pen (green) x 1 for mild symptoms, x 2 pens for moderate symptoms, x 3 pens for severe symptoms.
- Pediatric:
 - For Bradycardia, 0.02-0.05mg/kg IV/IO. May repeat once up to a maximum total dose of 0.5 mg.
 - For Organophosphate or Nerve Agent exposure, 4 to 10 yrs. 1 mg via Auto Injector pen (dark red) x 1 for mild symptoms, x 2 pens for moderate symptoms, x 3 pens for severe symptoms.
 - For Organophosphate or Nerve Agent exposure, 6months to 4 yrs. 0.5 mg via Auto Injector pen (blue) x 1 for mild symptoms, x 2 pens for moderate symptoms, x 3 pens for severe symptoms.
 - Refer to the appropriate Handtevy guide for the volume of medication to be administered to pediatrics.

NOTE: Never administer less than 0.1 mg of Atropine for any pediatric patient. Neonates and most children under 1 month of age would receive < 0.1mg of Atropine and therefore should not receive Atropine.

Calcium Chloride

Therapeutic Effects:

- Increases myocardial contractile function.

Indications:

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

Contraindications:

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

Adverse Reactions:

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

Administration and Dosage:

- A 10 ml pre-filled syringe or ampule of 10% solution of calcium chloride contains 1 gram Calcium Chloride (100 mg = 1 ml).
- Adult
 - 10ml = 1gram
- Pediatric
 - 0.2 ml/kg = 20mg/kg
 - Refer to the appropriate Handtevy guide for the volume of medication to be administered to pediatrics.

Calcium Gluconate

CLASS:

- Cation

ACTIONS:

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

INDICATIONS:

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

CONTRAINDICATIONS:

- Hypercalcemia
- Ventricular fibrillation
- Digitalized patients

CAUTION:

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

DRUG INTERACTIONS:

- Do not administer to digitalized patients.

DOSAGE:

- Topical:
 - Mix 1 gram 10% calcium gluconate with 5 oz. water soluble lubricant (KY or Surgilube) and apply over painful areas.
 - Cover with sterile dressings.
- Intravenous:
 - Adult: 1 gram over 5 minutes (10% solution)
 - Pediatric: 0.5 gram over 5 minutes (10% solution) Refer to the appropriate Handtevy guide for the volume of medication to be administered.

SUPPLIED:

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

ROUTES OF ADMINISTRATION:

- Topically, IV

Dextrose

Therapeutic Effects:

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

Indications:

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

Contraindications:

- Intracranial hemorrhage

Adverse Reactions:

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

How Supplied:

- Pre-filled syringes and vials containing 50 ml of 50% dextrose = 25G of dextrose (D50W).
- For pediatrics dextrose is supplied in D10 following the directions below.

Administration and Dosage:

- Adults:
 - 50 ml of 50% dextrose (25G) IVP. May repeat once if necessary.
 - Can be administered through IOs (Adults Only)
 - In the event that 50% Dextrose is unavailable, the administration of D10 in the 250ml of normal saline may be administered using a large bore IV catheter and a maxi infusion set (10gtts/ml or 15gtts/ml). The entire 250ml (25 grams) must be infused as quickly as possible.
- Pediatrics:
 - For the administration of D10 in the 250ml of normal saline, see the Handtevy manual for dosages.

Diazepam **(Valium)**

Therapeutic Effects:

- Through its depressant action on the CNS, it can terminate some seizures, is an anxiolytic and antispasmodic medication.

Indications:

- To treat active seizures.
- Severe anxiety state.
- Given as a sedative prior to cardioversion or pacing in conscious patients.

Contraindications:

- Pregnancy
- Patients who have ingested alcohol or other sedatives drugs.
- Respiratory depression from any source.
- Hypotension.

Adverse Reactions:

- Possible hypotension
- Confusion, stupor.

How Supplied:

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

Administration and Dosage:

- Adult:
 - For seizure activity administer 5mg IV/IO increments, maximum dose 10mg.
 - For severe anxiety that must be treated in the field, after consultation with medical control, administer intramuscularly at 2-5mg IM.
 - For sedation prior to cardioversion or pacing administer 5-10mg IV.
- Pediatric:
 - 0.1 mg/kg IV/IO/IM (not reflected in Handtevy Pediatric Resuscitation System, must be calculated).

Monitoring:

- ECO2 monitoring with nasal cannula
- Pulse oximetry monitoring

Diltiazem

(Cardizem)

Therapeutic Effects:

- Slows heart rate in tachyarrhythmia by depression of the A-V node conduction.

Indications:

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

Contraindications:

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

Adverse Reactions:

- Hypotension
- Heart blocks

Administration and Dosage:

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

Monitoring:

- ECO₂ monitoring with nasal cannula
- Pulse oximetry monitoring

Diphenhydramine **(Benadryl)**

Therapeutic Effects:

- Blocks histamine effects in allergic reactions.
- Sedative
- Inhibits motion sickness (antiemetic).

Indications:

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

Contraindications:

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

Adverse Reactions:

- Drowsiness, confusion
- Blurring of vision
- Dry mouth
- Wheezing; thickening of bronchial secretions

How Supplied:

- In vials of 1ml containing 50mg/ml

Administration and Dosage:

- For most purposes, diphenhydramine can be given by intramuscular injection.
- Adults:
 - 0.5mg/kg IV/IO/IM, Maximum dose 50mg
- Pediatric:
 - 0.5mg/kg IV/IO/IM, Maximum dose 50mg
 - Refer to the appropriate Handtevy guide for the volume of medication to be administered.

Dopamine

Therapeutic Effects:

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

Indications:

- Hemodynamically significant hypotension in the absence of hypovolemia

Contraindications:

- Patients with pheochromocytoma should not be given Dopamine as it may result in malignant hypertension.
- Individuals on psychiatric medication including Marplan, Eutonyl, Parnate or Nardil should not receive any more than one-tenth the usual Dopamine dose as there may be a synergistic effect.

Adverse Reactions:

- Nausea and vomiting
- Exacerbated myocardial ischemic
- Will increase heart rate and may induce or exacerbate supraventricular and ventricular dysrhythmia

Administration and Dosage:

- Adults:
 - Is available for intravenous use only. The contents of 2 ampules (200 mg/ampule) should be mixed in 250ml of NS. This yields a concentration of 1,600mcg/ml. The initial rate of infusion is 2mcg/kg/min (maximum rate is 20mcg/kg/min). This rate may be increased until blood pressure, urine output, and other parameters of organ perfusion improve. The lowest infusion rate that results in satisfactory hemodynamic performance should be used to minimize side effects. Monitoring central hemodynamics is essential for proper use of Dopamine in patients who have ischemic heart disease or congestive heart failure and should be instituted prior to, or as soon as possible after the initiation of treatment.
 - ROSC after Cardiac Arrest and hypothermia candidate: 5-20mcg/kg/min to keep SBP >120 or MAP 80-90.
 - Cardiogenic Shock: 5-20mcg/kg/min for hypotension not corrected by fluid challenge.
 - Can be administered with physician's orders for Traumatic Shock.
 - Symptomatic Bradycardia: 2-10mcg/kg/min
- Pediatrics:
 - Only with physicians orders. Administer dopamine 5-20mcg/kg/min for Neurogenic Shock after volume replacement. Titrate dopamine to maintain a SBP >90.
 - Only with physician's order administer 2-20mcg/kg/min for symptomatic bradycardia.

Street rule: Take patient's weight in pounds, drop last digit and subtract one. Starting the infusion at this drip rate administers 5mcg/kg/min. (This method applies when mixing 400 mg of Dopamine in 250 mL of Normal Saline)

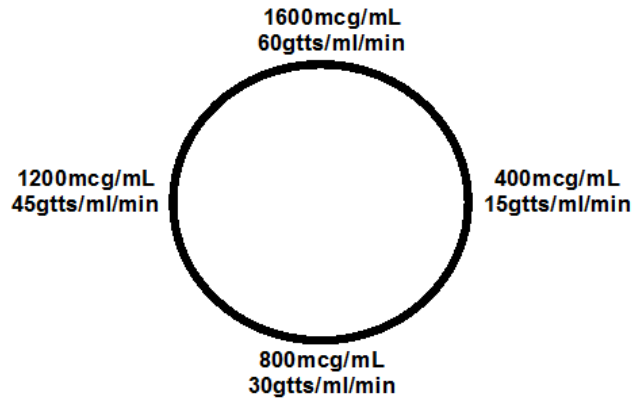
Drip Procedure: (Concentration is 1600mcg/mL) (Pre-Mixed)

Dose is 2-20mcg/kg/min titrated to maintain a systolic BP > 90mmHg

Street Rule:

- | | |
|---|------------|
| 1. Obtain the patient's weight in pounds (lbs) | 170lbs |
| 2. Drop the last digit in the patient's weight | 17 |
| 3. Subtract 1 from the remaining number | 17-1=16 |
| 4. This will be the Flow Rate for 5mcg/min | 16gtts/min |

Clock Method:



Epinephrine

Therapeutic Effects:

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

Indications:

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

Contraindications:

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

Precautions:

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

Administration and Dosage:

- **Adult:**
 - **Cardiopulmonary Arrest**
 - 1:10,000 1mg IV/IO. Repeat as needed every 5 minutes
 - Given IV/IO every 3-5 min. Refer to appropriate Protocol for proper dosage
 - **Cardiogenic Shock**
 - Infuse 2-10 mcg/min IV/IO for hypotension not corrected by fluid challenge
 - **Anaphylaxis:**
 - 1:1,000 0.3 mL IM for severe respiratory compromise
 - 1:10,000 0.1mg IV/IO. Repeat as needed to a maximum of 0.5 mg for extreme respiratory compromise (complete or almost complete airway obstruction) or profound hypotension due to bronchospasm or tongue/oral pharynx swelling with stridor or hypotensive shock after IVF bolus
 - **Asthma/COPD:**
 - Consider 1:1,000 0.1-0.3 mg IM
 - Consider 1:10,000 0.5-1.0 ml IV/IO for extreme respiratory compromise
 - Additional Epinephrine doses IV/IO only with physician orders
 - **Bradycardia:**
 - 1 mg of Epinephrine drip is mixed with 250mL of NS, or 2mg of Epinephrine drip is mixed with 500mL NS, infusion rate 2-10mcg/min (titrated to effect)
 - Dopamine drip is mixed (titrate to effect)
- **Pediatrics:**
 - **Cardiac Arrest**
 - Initial dose in the pulseless patient is 0.01mg/kg 1:10,000 IV/IO

- **Anaphylaxis**
- 0.01 mg/kg (1:10,000) IV/IO. Max dose 0.5 mg (5ml)
- **Asthma/Severe Bronchospasm**
- 1:1,000 IM 0.01-0.03 mg/kg not improving with Albuterol. Max dose 0.3mg.
- Additional Epinephrine as needed per online medical control.
- Refer to the appropriate Handtevy guide for the volume of medication to be administered for pediatrics.
- **Bradycardia**
- 0.01 mg/kg (1:10,000) IV/IO. May repeat every 3 to 5 minutes

Precautions:

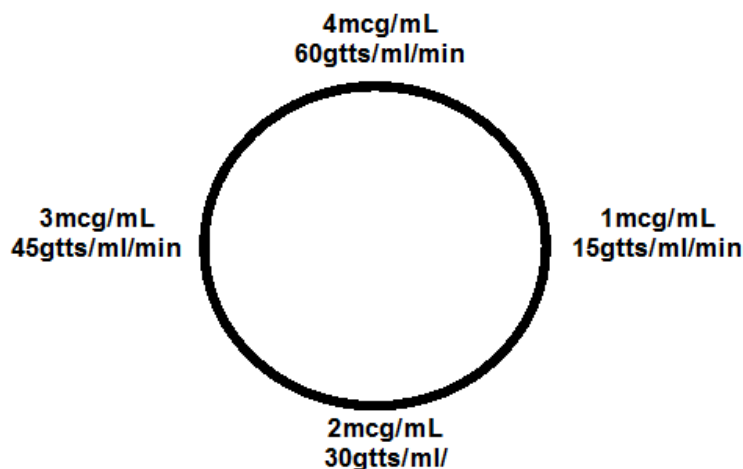
- Epinephrine or other related sympathomimetic drugs should not be mixed in the same infusion bag or bottle with alkaline solutions, such as sodium bicarbonate.

Drip Procedure:**(Concentration is 4mcg/1mL)**

Dose is 2-10mcg/min titrated to maintain a systolic BP > 90mmHg

Street Rule:

1. Insert 1mg of Epinephrine (1:1,000) into a 250mL NS bag or 2mg of Epinephrine (1:1,000) into a 500mL NS bag
2. This will yield a concentration of 4mcg/mL
3. You are to begin the infusion at **2mcg/min** = 30gtts/minute
4. **You may titrate to effect to achieve a BP > 90mmHg**

Clock Method:

Etomidate

Therapeutic Effects:

- Etomidate is a hypnotic drug without analgesic activity. Intravenous injection of Etomidate produces hypnosis characterized by a rapid onset of action, usually within one minute. Duration of hypnosis is dose dependent but relatively brief.

Indications:

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

Contraindications:

- Known hypersensitivity

Precautions:

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

Adverse Reactions:

- The most frequent adverse reaction is skeletal muscle movements. Most movements are bilateral. Hyperventilation, hypoventilation, and apnea of short duration (50 to 90 seconds) with spontaneous recovery can occur. Hypertension, hypotension, tachycardia, bradycardia, and other arrhythmias have occasionally been observed.

Overdosage:

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

Administration and Dosage:

- Adult
 - **RSI:** 20mg IV/IO (**For very large adults, up to a maximum dose of 40mg IV/IO**).
 - **Sedation prior to cardioversion:** 5-10mg IV.
- Pediatric
 - **RSI** – Handtevy guide dosage should be followed. For pediatric patients approaching adult size, 0.3mg/kg IV/IO should be administered with a maximum dose of 20mg.
 - **Sedation prior to cardioversion** – 0.15mg/kg IV/IO. Maximum dose is 10mg.

*Refer to the appropriate Handtevy guide for the volume of medication to be administered.

Monitoring:

- ECO₂ monitoring with nasal cannula
- Pulse oximetry monitoring

Fentanyl

Therapeutic Effect:

- A potent anesthetic and analgesic often used for pain management in operating rooms and for analgesia, deep sedation in intensive care units, emergency departments, and in EMS.
- Fentanyl has a very rapid onset of action, resulting in near-immediate sedation and analgesia.

Indications:

- For sedation prior to intubation if Etomidate and Versed are not available.
- For deep sedation to facilitate intubation if Succinylcholine and Etomidate are not available.
- For severe pain resulting from significant musculoskeletal injuries and burns.

Contraindications:

- Known hypersensitivity

Adverse Reactions:

- Narcosis/deep sedation with higher doses. This is desirable, however, for sedation prior to intubation.
- Hypotension – much less common than with other opioid medications such as Morphine.
- Rigid Chest Wall
- Nausea/vomiting
- Confusion
- Respiratory depression with higher doses.

Administration and Dosage:

- **Adults:**

- Sedation for RSI if Etomidate and Versed are not available

- 100-300mcg IV/IO (3mcg/kg max dose)

- Anesthesia to facilitate intubation if Succinylcholine and Etomidate are not available

- 100-300mcg IV/IO
 - May repeat X ½ dose if inadequately sedated for the purpose of intubation.

- Anesthesia to facilitate intubation if Succinylcholine is not available

- Use Etomidate only

- For pain management (fractures, burns)

- 50-100mcg IV/IO/IM (1mcg/kg)
 - 100-200mcg IN if unable to establish and IV/IO.

- **Pediatrics:**

- Sedation for RSI if Etomidate and Versed are not available

- 1mcg/kg IV/IO

- Anesthesia to facilitate intubation if Succinylcholine and Etomidate are not available

- 1mcg/kg IV/IO
 - May repeat dos X 1 if necessary for adequate sedation.

- For pain management (fractures, burns)

- 1mcg/kg IV/IO
 - 1-2mcg/kg IN if unable to establish IV/IO.

Monitoring:

- ECO2 monitoring with nasal cannula
- Pulse oximetry monitoring

Glucagon

Therapeutic Effects:

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

Indications:

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

Contraindications:

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

Administration and Dosage:

- Adults:
 - 1mg IM, 1 hour after coma develops; may repeat within 25 min, if necessary. When patient responds, give additional carbohydrates as soon as possible.
- Pediatrics:
 - 0.5mg IM for patients < 20kg
 - 1 mg IM for patients > 20kg
 - Refer to the appropriate Handtevy guide for the volume of medication to be administered.

DuoNeb (Ipratropium bromide/Albuterol)

Therapeutic Effects:

DuoNeb (ipratropium bromide and albuterol sulfate) is expected to maximize the response to treatment in patients with chronic obstructive pulmonary disease (COPD) by reducing bronchospasms through two distinctly different mechanisms: sympathomimetic (albuterol) and anticholinergic/parasympatholytic (ipratropium bromide). Simultaneous administration of both an anticholinergic and a β 2-sympathomimetic is designed to produce greater bronchodilation effects than when either drug is utilized alone at its recommended dosage.

Indications:

- Bronchospasms in patients with reversible obstructive airway disease, including asthma and COPD.

Contraindications:

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

Adverse Reactions:

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

Precautions:

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

Administration and Dosage:

- Nebulized - Adults and pediatric: Add 3ml (premix) of DuoNeb to the Nebulizer. Each vial contains 3.0mg of Albuterol Sulfate and 0.5mg of Ipratropium Bromide. May repeat as necessary.

NOTES: *DouNeb is a premixed medication of Albuterol and Ipatropium Bromide(Atrovent).*

Ketamine

(Ketamine Hydrochloride, Ketalar)

Therapeutic Effects:

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

Indications:

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

Contraindications:

- Combative patients with agitated delirium will be tachycardic, hypertensive, frequently dehydrated, and even febrile. However, it should be noted that Ketamine is **relatively contraindicated** in patients with any condition in which a significant elevation of blood pressure would be hazardous such as:
 - Severe cardiovascular disease.
 - Heart failure.
 - Severe or poorly controlled hypertension.
 - Recent myocardial infarction.
 - History of stroke.
 - Cerebral trauma.
 - Intracerebral mass or hemorrhage.
- The benefit of administering Ketamine to the combative patient with agitated delirium generally outweighs the risks.
- Known hypersensitivity to the drug.

Adverse Reactions:

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

Precautions:

- Use with caution in the chronic alcoholic and the acutely alcohol-intoxicated patient.
- The intravenous dose should be administered over a period of 60 seconds.
- Although respiratory depression is uncommon, however it is seen in patients with prior ingestion of other sedative drugs. Resuscitative equipment should be readily available for use.

Administration and Dosage:

- Supplied in 10mL vials in a concentration of 50mg/mL.
- Dosage: 4mg/kg IM. Maximum single dose is 200mg or 4mL. **DO NOT** attempt to place an IV in a severely combative patient.
- Ketamine - 4mg/kg IN half dose in each nostril May repeat one time if uncontrollable agitation persists

Monitoring:

- ECO₂ monitoring with nasal cannula
- Pulse oximetry monitoring

Lidocaine

Therapeutic Effects:

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

Indications:

- Suppression of ventricular ectopy, including ventricular tachycardia and ventricular fibrillation, as well as premature ventricular complexes in critically ill patients, especially those with acute ischemic heart disease.

Contraindications:

- Known allergy to Lidocaine

Precautions:

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

Adverse Reactions:

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

Administration and Dosage:

- Adults:
 - For VF/VT: 1-1.5mg/kg IV/IO repeat in 3-5 minutes to total dose of 3mg/kg
 - For Pulse Producing VT: 1.5mg/kg IV/IO. Repeat 0.75mg/kg every 5 minutes as needed to maximum of 3mg/kg.
 - For PVC treatment: 1 mg/kg IV/IO, repeat at 0.5mg/kg to total dose of 3mg/kg. (NOTE: PVC's in an otherwise slow heart rate represent ventricular escape beats, and if eliminated with Lidocaine, may lead to asystole.)
- Pediatrics:
 - 1mg/kg IV/IO. Repeat Lidocaine 1mg/kg IV/IO as needed every 3-5 minutes to maximum dose 3mg/kg.
 - **For Ectopy and V-Tach with a pulse:** 1 mg/kg IV/IO. Repeat IV 0.5 mg/kg as needed every 10 minutes to a max dose of 3 mg/kg.

Magnesium Sulfate

Therapeutic Effects:

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

Indications:

- Ventricular fibrillation and ventricular tachycardia refractory to Lidocaine and Amiodarone
- Unstable or pulseless ventricular tachycardia with Torsades de Pointes refractory to defibrillation.
- Eclampsia and pre-eclampsia-seizure immediately pre-partum or post-partum in patient not having seizure history

Contraindications:

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

Precautions:

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

How Supplied:

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

Administration and Dosage:

- Torsades de Pointes-magnesium 2 grams IV/IO in 100ml NS over 2-3 mins. 2 vials = 2 grams
- For cardiac arrest with VF/VT refractory to Lidocaine and Amiodarone 2G given very slow IV or IO (over 2-3 minutes).
- For Eclamptic seizures: 2g IV/IO diluted in 20ml NS given over 20-30 minutes (**rapid infusion can lead to cardiac arrest**) with physician order only

Midazolam

(Versed)

Therapeutic Effects:

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

Indications:

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

Contraindications:

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

Precautions:

- Continuously monitor patient's respiratory status and have resuscitative equipment immediately available.
- When used for conscious sedation, Versed should not be administered by rapid or single bolus IV.
- Serious cardiopulmonary adverse events have occurred; including: hypotension, respiratory depression, apnea, respiratory arrest, and / or cardiac arrest, sometimes resulting in death.
- Concomitant use of barbiturate, alcohol or other CNS depressants may increase risk of hypoventilation or apnea and may contribute to profound and/or prolonged drug effect.
- Patients with COPD are unusually sensitive to the respiratory depressant effects of Versed.
- Patients with chronic renal failure and patients with congestive heart failure eliminate Midazolam more slowly. Therefore, a reduced initial dosage is recommended.
- There is a potential hazard to the fetus when used in the pregnant patient.

Administration and Dosage:

- Adult:
 - 1-2mg IV/IO/IM. May be repeated as needed to maintain sedation to a maximum total dose of 15mg.
 - If ROSC occurs with patients that receive cold fluids, administer Versed for sedation 2-5mg IV/IO/IM if the patient is not hypotensive
 - If actively seizing, consider IM/IN Versed 1-2mg (maximum dose 5mg.) while attempting IV access
 - If patient has uncontrolled combative agitated delirium

- Pediatrics:
 - 0.1mg/kg IM/IN. may repeat once for max total dose of 4mg.
 - For sedation: 0.05mg/kg IV/IO May be repeated one time to a maximum total dose of 2 mg. Max single dose 1 mg.
 - For seizures: 0.1mg/kg IM/IN Versed and repeat once for persistent or recurrent seizures.
 - Refer to the appropriate Handtevy guide for the volume of medication to be administered for pediatrics.

Drug Preparation:

- Expel 2mL of a pre-filled 10cc syringe of NS, then take 1 vial of Versed (10mg/2mL) and add it to the remaining 8mL NS pre-filled syringe. This will then yield a concentration of 1mg/mL.

Monitoring:

- ECO2 monitoring with nasal cannula
- Pulse oximetry monitoring

Morphine

Therapeutic Effects:

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

Indications:

- For the treatment of pain and anxiety associated with acute myocardial infarction.
- For anxiety associated with CPAP masks

Contraindications:

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

Adverse Reactions:

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

Administration and Dosage:

- Adults
 - Administer Morphine 5mg IV/IO or IM for burns that meet trauma alert criteria and for isolated long bone fractures.
 - May repeat 5mg dose one time for burns that meet trauma alert criteria and for isolated long bone fractures.
 - CP or AMI: 2mg IV/IO PRN. Repeat at 5 minute intervals to a total of 10mg.
 - 2mg to 4mg IV/IO CPAP for respiratory distress not well tolerated
 - Morphine's effects may be acutely reversed with Narcan.
- Pediatrics
 - Burns: Morphine IV/IO/IM 0.1mg/kg (max dose 5mg) for burns exceeding 10% (2nd or 3rd degree) BSA.
 - Fractures: Morphine IV/IO/IM 0.1mg/kg (max 5mg).

(Must obtain physician's orders before administering Morphine to pediatric patients)

*Refer to the appropriate Handtevy guide for the volume of medication to be administered for pediatrics.

Drug Preparation:

- Expel 1mL of a pre-filled 10cc syringe of NS, then take 1 vial of Morphine (10mg/mL) and add it to the remaining 9mL NS pre-filled syringe. This will then yield a concentration of 1mg/mL.

Monitoring:

- ECO₂ monitoring with nasal cannula
- Pulse oximetry monitoring

Naloxone

(Narcan)

Therapeutic Effects:

- Narcan is the specific antidote for narcotic agents. Reverses the actions of all opiate based drugs, including Fentanyl, Heroin, Morphine, Methadone, Sulbaxone, Codeine, Hydrocodone, oxycodone, oxycoten, Opana, MS Contin, Lomotil, Demerol, Dilaudid, Paregoric and Percodan. Naloxone is effective in counteracting the effects of overdose from any of these agents. Naloxone will reverse stupor, coma, respiratory depression, etc., WHEN THESE ARE DUE-OPIATE OVERDOSE. It is not effective in reversing coma from other causes.

Indications:

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

Contraindications:

- None

Adverse Reactions:

- Administration to people who are physically dependent on opiate based medication may cause an acute withdrawal syndrome including hyper alert agitation, vomiting, and tachy arrhythmias. For this reason, Naloxone should be given very slowly, using improvement of respiratory status as an end point.
- In general, the duration of action of Naloxone is shorter than that of the narcosis it is used to counteract. Thus, the patient who has been successfully aroused with Naloxone may fall back into stupor or coma as the Naloxone wears off. These patients must therefore be watched closely and in an emergency department. They are not allowed to refuse transport.

How Supplied:

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

Administration and Dosage:

- Adults:
 - Adequate oxygenation and ventilation is priority.
 - If unresponsive and / or respirations are compromised, administer Narcan IV/IO/IN in increments of 0.5mg every 30 seconds until respiratory effort and LOC improves. Max dose is 2mg.
 - Some agents such as Fentanyl, synthetic Fentanyl, Methadone, Sulboxane, Darvocet may require higher doses of Narcan to reverse narcotic effects (up to 4mg).
 - Administer this solution very slowly IV/IO while monitoring the rate and depth of the patient's respirations. As soon as there is improvement in the respirations and responsiveness, stop giving the drug.
 - It is preferable that the patient NOT wake up fully in the field, as these patients may be violent when brought abruptly out of coma. USE RESPIRATIONS AS A GUIDE.
 - AMS: For moderately obtunded patients with minimal respiratory depression, a trial of Narcan 0.2mg IV/IO may be adequate to improve LOC and diagnostics for narcosis.
 - Repeat as needed.
- Pediatrics:
 - Administer Narcan 0.1mg/kg IV/IO; if no IV access or 0.2mg/kg IN as needed for respiratory depression. Repeat 1x as needed. Total max dose 4 mg.

Refer to the appropriate Handtevy guide for the volume of medication to be administered for pediatrics.

Nitroglycerin

(Nitrostat)

Therapeutic Effects:

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

Indications:

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

Contraindications:

- Increased intracranial pressure
- Glaucoma
- Hypotension
- Male or female use of Viagra (within 24 hours) and Viagra like medications (within 48 hours).

Adverse Reactions:

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

How Supplied:

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

Administration and Dosage:

- Given sublingual (under the tongue).
- The patient should be semi sitting or recumbent.
- Administer 0.4mg (one metered dose or tablet) sublingual.
- Repeat every 3-5 minutes PRN, keeping SBP > 100.
- See chest pain and AMI protocols for specific uses.

Norepinephrine (Levophed)

Therapeutic Effects:

- Stimulates alpha receptors in the peripheral vasculature, producing vasoconstriction-related increase in systemic blood pressure.
- Concurrent beta receptor stimulation may produce increases in heart rate and mild bronchodilation, though norepinephrine is a weaker beta stimulator than dopamine.

Indications:

- Post cardiac arrest (Cardiogenic Shock)
- Fever (Septic Shock)
- Dialysis-Related Issues
- For all listed situations, indication is hypotension (adult = systolic < 90 mmHg) due to cardiogenic, septic, or neurogenic shock either refractory to intravascular fluid boluses or in which intravascular fluid bolusing is contraindicated (e.g. pulmonary edema)

Contraindications:

- Hypertension

Adverse Reactions:

Few, though at higher doses, symptoms may include:

- headache,
- palpitations
- tachycardia
- chest pain
- eventual hypertension
- Bradycardia can result reflexively from an increase in blood pressure

Precautions:

- In the setting of tachydysrhythmia-induced cardiogenic shock, treat per A-Fib/A-Flutter/RVR, SVT and VT protocols. Ensure that aggressive fluid resuscitation is accomplished (unless contraindicated) prior to norepinephrine use.
- Norepinephrine should be given into a large vein. The vein of choice for EMS is the antecubital vein, as this will decrease the risk of overlying skin necrosis. Do not administer norepinephrine through an IV in the hand or foot. Administration through IO in the proximal tibia or proximal humerus is permitted.
- If local extravasation occurs, notify the receiving physician.
- Safety in pregnancy not firmly established, though when clinically indicated - the benefits outweigh risks.

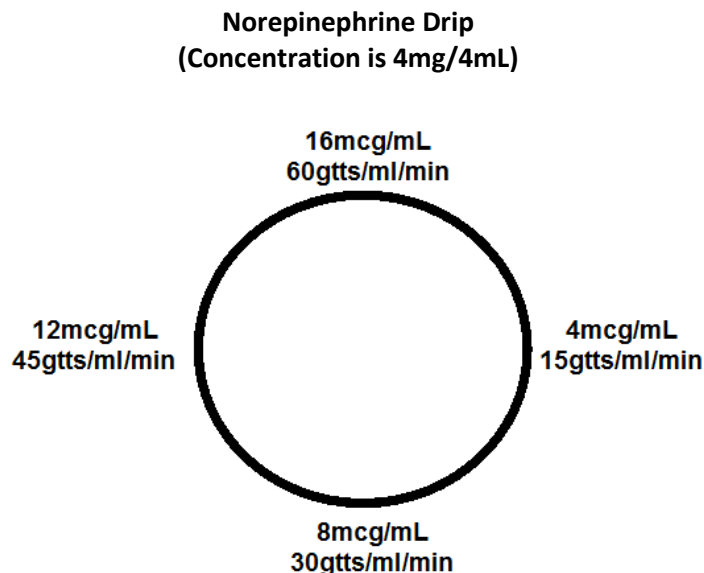
- Safety in pediatrics not firmly established and medical control is to be consulted prior to pediatric usage.

Administration and Dosage:

- **Adults:**

- Is available for IV/IO use
- 4mg from a 4mg/4 mL ampule should be mixed in 250mL of Normal Saline. This yields a concentration of 16mcg/mL. The initial rate of infusion is 8 - 16mcg/min. This rate may be increased until blood pressure improves. The lowest infusion rate that results in satisfaction hemodynamic performance should be used to minimize side effects.
- ROSC after cardiac arrest: 8-16mcg/minute keep SBP >120 or MAP 80-90
- Cardiogenic shock: 8-16mcg/minute for hypotension not corrected by fluid challenge

For hypotension (shock) refractory to fluids or fluids contraindicated - start at 8mcg/minute - see dosage chart - titrated to a systolic B/P \geq 100 mmHg. Maximum infusion rate is 16mcg/minute Norepinephrine infusion adult dosage chart rates reflects using a microdrip (60 gtts/mL) set:



Pediatrics (> 5 years old): Refer to the appropriate Handtevy guide for the volume of medication to be administered. **Only with physician's orders.**

HOW TO MAKE THE DRIP:

Take 1mg (or 1ml) of Norepinephrine and add it to a 100ml IV bag of Normal Saline.

DOSE:

2mcg/min= 15gtt/min or 3gtt every 15 seconds (actual 2.5gtt)
 4mcg/min= 30gtt/min or 6gtt every 15 seconds (actual 5gtt)
 8mcg/min= 45gtt/min or 11gtt every 15 seconds (actual 11.25)
 12mcg/min= 60gtt/min or 15gtt every 15 seconds

Oxygen

Therapeutic Effects:

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

Indications:

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

Adverse Reactions:

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

Administration and Dosage:

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

Precautions:

- For patients with chronic pulmonary disease (e.g., pulmonary emphysema), it may be necessary to assist ventilation during the administration of oxygen if reversal of hypoxemia reduces respiratory drive in a patient with a chronically high PaCO₂.

DuoDote Auto-Injector (Pralidoxime Chloride/Atropine)

Class

- Cholinesterase reactivator

Mechanism of action:

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

Indications:

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

Contraindications:

- Known hypersensitivity

Drug Interactions:

- When atropine and pralidoxime are used together, the signs of atropinization may occur earlier than expected.
- Barbiturates are potentiated.
- It is not recommended in the treatment of carbamate poisonings.

Supplied:

- Each auto-injector delivers 2.1mg of atropine and 600mg of pralidoxime chloride

Routes of administration:

- IM

Sodium Bicarbonate

Therapeutic Effects:

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

Indications:

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

Contraindications:

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

Adverse Reactions:

- Acid rebound
- Hypercalcemia
- Metabolic alkalosis
- Renal dysfunction

Administration and Dosage:

Adult:

- 1 mEq/kg for cardiac arrest with prolonged downtime (>10 min and the patient is intubated).
- Should be administered to all arrested dialysis patients (1mEq/kg).
- Tricyclic Overdose: with physician's orders.
- Mix 3ml of 8.4% Sodium Bicarbonate with 2ml NS. Give by nebulizer at 6 lpm for chlorine gas inhalation

Pediatric:

- 1 mEq/kg. Refer to the appropriate Handtevy guide for the volume of medication to be administered.
- **PREEMIE- 6MONTH:** Dilute the 8.4% Bicarb 1:1 with normal saline to make 4.2% Bicarb. Then give 1mEq/kg.

Solu-Medrol **(Methylprednisolone)**

Therapeutic Effects:

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

Indications:

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

Contraindications:

- Known hypersensitivity to steroid medications.

Adverse Reactions:

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

Administration and Dosage:

Adult:

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

Pediatric:

- 2 mg/kg up to a max dose of 125mg
- Refer to the appropriate Handtevy guide for the volume of medication to be administered.

Succinylcholine

(Anectine)

Therapeutic Effects:

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

Indications:

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

Contraindications:

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

Precautions:

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

Adverse Reactions:

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

Administration and Dosage:

- Adult:
 - 1.5 mg/kg IV/IO
- Pediatric:
 - 2 mg / kg IV/IO

*Refer to the appropriate Handtevy guide for the volume of medication to be administered for pediatrics.

DO NOT GIVE REPEAT DOSES OF ANECTINE

NOTE: Max Dosage of 200mg

Tranexamic Acid (TXA)

Class:

- Antifibrinolytic Agents

Therapeutic Effects:

- Blocks the action of plasminogen, an enzyme that dissolves blood clots.

Indications:

- Severe traumatic hemorrhagic shock with sustained SBP <90, HR > 110
- Obvious signs of sustained traumatic hemorrhagic shock following 1L NS
- Trauma arrest if loss of pulses AFTER patient contact with PEA > 30 complexes/min ETCO2 > 10mmHg

Contraindications:

- Isolated head injury
- Known hypersensitivity
- less than 16 years old
- History of known thromboembolic disease i.e. DVT, PE

Precautions:

- Must be started within 3 hours from time of injury
- Best results if started within 1st hour of time of injury

Adverse Reactions:

- Seizure, visual changes, renal impairment, hypotension (with rapid infusion)

Administration and Dosage:

- Route : IV or IO
- Dosage: 1 gram
- Administration: 1 gram in 100ml NS/LR infused over 10 minutes
- **Trauma Arrest: 1 gram IV Push**

Zofran **(Ondansetron)**

Therapeutic Effects:

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

Indications:

- Prevention of nausea/vomiting

Contraindications:

- Hypersensitivity to Zofran

Adverse Reactions:

- Severe adverse reactions include syncope and visual disturbance

Administration and Dosage:

- Adult:
 - 4mg IV/IO/IM. May repeat once in 2-5 minutes, if needed.
 - 4mg ODT (Orally disintegrating tablet)
- Pediatric:
 - 0.15mg/kg IV/IO/IM. Max dose 4mg
 - 4mg ODT (Orally disintegrating tablet) for age 4 and above.
 - Refer to the appropriate Handtevy guide for the volume of medication to be administered.