

# Palm Beach County Fire Rescue

# EMMS

## PATIENT CARE PROTOCOLS 2016



These protocols are intended to serve as a guideline. If any treatment falls outside of these protocols, immediately contact Medical Control for guidance.

**THIS PAGE INTENTIONALLY LEFT BLANK**



<b>BLS STANDING ORDERS</b>	<b>12-14</b>
<b>ALS STANDING ORDERS</b>	<b>16-25</b>
<b>ALS STANDING ORDERS</b>	<b>17-21</b>
<b>TRANSPORT DESTINATIONS</b>	<b>22-25</b>
<b>BASIC LIFE SUPPORT</b>	<b>26-31</b>
<b>BLS MEDICAL EMERGENCIES</b>	<b>27-28</b>
<b>BLS TRAUMA EMERGENCIES</b>	<b>29-30</b>
<b>BLS ENVIRONMENTAL</b>	<b>31</b>
<b>ALS MEDICAL EMERGENCIES</b>	<b>32-50</b>
<b>ALLERGIC REACTIONS</b>	<b>33-34</b>
<b>ALTERED MENTAL STATUS</b>	<b>35</b>
<b>DIABETIC EMERGENCIES</b>	<b>36-37</b>
<b>DYSTONIC REACTION</b>	<b>38</b>
<b>FLUID RESUSCITATION</b>	<b>39</b>
<b>HYPERKALEMIA</b>	<b>40</b>
<b>NAUSEA/VOMITING</b>	<b>41</b>
<b>RESPIRATORY DISTRESS</b>	<b>42-44</b>
<b>SEIZURES</b>	<b>45</b>
<b>SEPSIS</b>	<b>46-47</b>
<b>STROKE</b>	<b>48-50</b>



## **CARDIAC EMERGENCIES 52-66**

<b>ATRIAL FIB/FLUTTER</b>	<b>53</b>
<b>BRADYCARDIA</b>	<b>54-55</b>
<b>CARDIOGENIC SHOCK</b>	<b>56</b>
<b>CHEST PAIN</b>	<b>57</b>
<b>STEMI ALERT</b>	<b>58-59</b>
<b>CHF/PULMONARY EDEMA</b>	<b>60</b>
<b>SVT</b>	<b>61-62</b>
<b>WIDE COMPLEX TACHYCARDIA</b>	<b>63-64</b>
<b>POLYMORPHIC V-TACH</b>	<b>65</b>
<b>LVAD</b>	<b>66</b>

## **CARDIAC ARREST 68-78**

<b>STANDING ORDERS</b>	<b>69-71</b>
<b>ADULT ALGORITHM</b>	<b>72</b>
<b>PEDIATRIC ALGORITHM</b>	<b>73</b>
<b>SPECIAL CONSIDERATIONS</b>	<b>74-75</b>
<b>POST RESUSCITATION</b>	<b>76-77</b>
<b>INDUCED COOLING (ICE)</b>	<b>78</b>



<b>OVERDOSE</b>	<b>80-87</b>
STANDING ORDERS	81-82
BETA BLOCKER	83
CALCIUM CHANNEL BLOCKER	84
COCAINE	85
NARCOTIC	86
TRICYCLIC	87
<b>CHEMICAL CONTROL</b>	<b>88-95</b>
PHYSICAL RESTRAINT	89
EXCITED DELIRIUM	90
VIOLENT/COMBATIVE PATIENT	91
PAIN MANAGEMENT	92-93
ADVANCED AIRWAY	94-95
<b>ENVIRONMENTAL</b>	<b>96-105</b>
DECOMPRESSION SICKNESS	97
FATAL/NON-FATAL DROWNING	98-99
HEAT EMERGENCIES	100-101
BITES AND STINGS	102-103
CARBON MONOXIDE EXPOSURE	104
CYANIDE EXPOSURE	105



# PALM BEACH COUNTY FIRE RESCUE



<b>TRAUMA</b>	<b>106-130</b>
STANDING ORDERS	107
START TRIAGE	108
JUMP START TRIAGE	109
SCORECARDS	110-112
TRAUMA ARREST	113
ABDOMINAL TRAUMA	114
BURN INJURIES	115-116
CHEST TRAUMA	117-118
EXTREMITY TRAUMA	119
EYE INJURIES	120
FEMUR FRACTURES	121
HEAD INJURIES	122-123
HIP FRACTURE/DISLOCATION	124
PELVIC FRACTURE	125
HEMORRHAGIC SHOCK	126-127
SPINAL MOTION RESTRICTION	128-129
TRAUMA IN PREGNANCY	130
<b>OBSTETRICAL</b>	<b>132-142</b>
STANDING ORDERS	133
BREECH BIRTH	134
COMPLICATIONS	135-136
ECLAMPSIA	137
MECONIUM STAINING	138
NORMAL DELIVERY	139-140
NUCHAL CORD	141
PROLAPSED CORD	142
<b>PHARMACOLOGY</b>	<b>144-176</b>

**THIS PAGE INTENTIONALLY LEFT BLANK**

# *EDITORS and CONTRIBUTORS*

---



## **FIRE RESCUE ADMINISTRATOR**

- Chief Jeffrey Collins

## **CHIEF OF EMS**

- Chief Rich Ellis

## **MEDICAL DIRECTORS**

- Dr. Kenneth Schepcke, MD, Chief Medical Officer
- Dr. Peter Antevy, MD, Medical Director Pediatric Division
- Dr. Paul Pepe, MD, Medical Director Education & Research

## **EDITORS**

- Dan Millstone, Division Chief of Training
- Charlie Coyle, Lieutenant, EMS Training
- Craig Prusansky, EMS Captain, Continuous Quality Improvement
- Houston Park, Captain Rescue Division
- James Ippolito, EMS Chief of Palm Beach Gardens Fire Rescue
- This document is approved for: Palm Beach County Fire Rescue, Palm Beach Gardens Fire Rescue, West Palm Beach Fire Rescue, Boynton Beach Fire Rescue, Greenacres Fire Rescue and Town of Palm Beach Fire Rescue. All edits were made by the field personnel of Palm Beach County Fire Rescue.

## **CONTRIBUTORS**

- Dr. Ali Malek, Interventional Neurologist
- Dr. Nicholas Sama, Orthopedic Surgeon
- Dawn Altman, RN
- Candice Politi, CNM, ARNP





## *MEDICAL DIRECTOR'S PAGE*

---



The following Emergency Medical Services Protocols are the Official Advanced and Basic Life Support Protocols for Palm Beach County Fire Rescue and are approved for such use by Paramedics and EMTs of the department to care for the sick and injured. Only those Paramedics and EMTs approved by the Medical Director shall be authorized to utilize these protocols.



**Kenneth A. Scheppke, MD**  
Chief Medical Officer



**Peter M. Antevy, MD**  
Medical Director of  
Pediatric Care



**Paul E. Pepe, MD**  
Medical Director of  
Research & Education



## STATEMENT OF PURPOSE

The following protocols shall serve as a guideline for the treatment and transport of the sick and injured. Because it would be impossible to develop a set of protocols that addresses every possible patient encounter, Palm Beach County Fire Rescue relies on the judgment of the treating Paramedics and EMTs to provide emergency care in the best interest of the patient.

*Our goals are to provide rapid assessment, stabilization and transportation to the appropriate care facility.* Above all else, Paramedics and EMTs should ensure that a patient arrives at the appropriate facility with a patent airway, oxygenated and ventilated with a perfusing blood pressure. Any deviation from these protocols must be approved by the Medical Director or the receiving physician.

## AUTHORIZATION

These protocols are granted under the authority of Chapter 401 of the Florida Statutes, and 64J-1.004 of the Florida Administrative Code. The Medical Director for Palm Beach County Fire Rescue shall be the only one authorized to make changes to these protocols. At the discretion of the receiving physician, these protocols may be altered, provided they are within the standard of care.

**THIS PAGE INTENTIONALLY LEFT BLANK**

# BLS STANDING ORDERS



# BLS STANDING ORDERS



In mutual aid circumstances, personnel should follow the transporting agency's patient treatment protocols.

## BLS

### AIRWAY



- Positioning: Head-tilt/chin-lift or modified jaw thrust for suspected spinal cord injury.
- Semi-conscious patients with an intact gag reflex shall have a nasopharyngeal airway inserted, unless contraindicated.
- Unresponsive patients without a gag reflex shall have an oropharyngeal airway inserted, unless contraindicated. If ventilation is required for more than two minutes, a Supraglottic Airway (SGA) should be inserted with the exception of primary cardiac arrest.
- Recovery position for spontaneously breathing patients: Altered mental status, postictal, suspected drug overdose, etc., if no suspected spinal cord injury.
- Suction as needed.

### OXYGEN ADMINISTRATION

- Except as noted below, oxygen should **ONLY** be administered in order to maintain SpO<sub>2</sub> of 95% or 90% for COPD & asthma patients. Do not withhold oxygen if the patient is dyspneic or hypoxic.
- All stroke patients will be treated with a minimum of 2 Lpm NC regardless of pulse oximetry reading. Increase oxygen therapy as needed.
- All suspected Traumatic Brain Injury (TBI) patients shall receive 15 Lpm via NRB.
- All 3<sup>rd</sup> trimester pregnancy trauma patients shall receive 15 Lpm via NRB.
- Pulse oximetry should be documented (pre and post oxygen administration) and applied for continuous monitoring on all ALS patients.
- If oxygen saturation cannot be maintained, ventilatory support should be provided.

### VENTILATION WITH A BAG VALVE MASK

- Adults: 10 breaths/minute (1 breath every 6 seconds) with a pulse.
- Children: 20 breaths/minute (1 breath every 3 seconds) with a pulse.
- Neonates: 40 breaths/minute
- Patients with a pulse that have an advanced airway should be ventilated at a rate of 8-10 breaths/minute (1 breath every 6-8 seconds) with a pulse.

### CIRCULATION

- Carotid and radial pulse present, assess capillary refill, assess skin color, condition and temperature.
- Apply AED/LP 15 on all unconscious patients.
- Perform Minimally Interrupted Cardio-Cerebral Resuscitation (MICCR) on all cardiac arrest patients and defibrillate as needed.
- After oxygenation and ventilation of 1 minute for infants/children and 30 seconds for neonates (birth to 1 month), begin chest compressions if the heart rate remains below 60 BPM with signs of poor perfusion (AMS).





## MENTAL STATUS (AVPU)

- **A**lert: to person, place, time, and event (AAOX4)
- **V**erbal: responds only to verbal stimuli
- **P**ain: responds only to painful stimuli
- **U**nresponsive

## VITAL SIGNS

- Pulse (rate and quality)
- Respiratory (rate and quality)
- Skin (color, condition, and temperature)
- Pulse Oximetry
- Blood Pressure/Capillary Refill

## GLUCOSE

- ❑ A BGL shall be documented for patients with any of the following: history of diabetes, an altered mental status, general weakness, seizure, syncope/lightheadedness, dizziness, poisoning, stroke, and cardiac arrest.

## PATIENT HISTORY

- ❑ **CHIEF COMPLAINT:** Why did the person call 911
- ❑ **HISTORY OF THE PRESENT ILLNESS (O,P,Q,R,S,T,A)**
  - **ONSET:** Did the symptoms appear gradually or suddenly?
  - **PALLIATIVE:** What makes the symptoms better?
  - **PROVOKE:** What makes the symptoms worse?
  - **PREVIOUS:** Previous similar episodes?
  - **QUALITY:** (What kind of pain?) pressure, squeezing, aching, dull, etc.
  - **RADIATION:** Does the pain or discomfort radiate? Where?
  - **Severity of pain:** 1-10 scale, Faces pain scale for pediatrics.
  - **Time:** What time did the symptoms begin?
  - **Associated:** What are the associated signs and symptoms?
- ❑ **S.A.M.P.L.E HISTORY**
  - **SIGNS & SYMPTOMS**
  - **ALLERGIES**
  - **MEDICATIONS:** Prescribed, over the counter, or not prescribed to patient
  - **PAST MEDICAL HISTORY:** Heart attack, asthma, COPD, diabetes, hypertension, stroke, etc.
  - **LAST ORAL INTAKE**
  - **EVENTS PRECEDING**

**THIS PAGE INTENTIONALLY LEFT BLANK**

# ALS STANDING ORDERS




## ALS STANDING ORDERS TRANSPORT DESTINATIONS

# ALS STANDING ORDERS



## INFORMATION

The following ALS standard requirements shall be performed on all ALS patients. Whenever possible, verbal consent should be obtained prior to treatment.



It is recognized that the EMS protocols cannot address every possible scenario. Therefore, District Captains and Trauma Hawk personnel are given the authority to deviate from the ALS protocols as required. Good judgment and the patient's best interest must be considered at all times.

## AIRWAY

- Semi-conscious or unresponsive patients with an intact gag reflex shall have an NPA inserted unless contraindicated.
- Unresponsive patients without a gag reflex shall have an OPA inserted.
- Patients who require ventilatory support (and are unlikely to regain consciousness) for more than two minutes should be intubated (or other advanced airway), with the exception of patients in cardiac arrest.
- If an airway cannot be secured with two ETT intubation attempts, a SGA should be inserted. District Captains and Flight Crew may perform an additional attempt if necessary.
- If an airway cannot be secured by any other means, and the patient can not be effectively oxygenated or ventilated, a surgical cricothyrotomy should be performed on adult patients (or needle cricothyrotomy for pediatrics).

An intubation attempt is defined as the laryngoscope blade passing the patient's lips.



## BREATHING

### OXYGENATION

- Oxygen should **ONLY** be administered in order to maintain SpO<sub>2</sub> of 95% or 90% for COPD & asthma patients. Do not withhold oxygen if the patient is dyspneic or hypoxic.
- All stroke patients will be treated with a minimum of 2 Lpm NC regardless of pulse oximetry reading. Increase oxygen therapy as needed.
- All suspected Traumatic Brain Injury (TBI) patients shall receive 15 Lpm via NRB.
- All 3<sup>rd</sup> trimester pregnancy trauma patients shall receive 15 Lpm via NRB.
- Pulse oximetry should be documented (pre and post oxygen administration) and applied for continuous monitoring on all ALS patients.
- If oxygen saturation cannot be maintained, ventilatory support should be provided.

### VENTILATION

- Ventilatory support shall be accomplished via BVM with either an NPA/OPA, SGA, or ETT intubation.
- The goal is to maintain an SpO<sub>2</sub> of 95% and EtCO<sub>2</sub> levels between 35-45 mmHg (with the exception of COPD and asthma patients).
- Any patient with a pulse who requires ventilation with a BVM for greater than two minutes, should be intubated (**excluding pediatrics**).
- Endotracheal intubation shall be confirmed by: visualization of the ETT passing through the vocal cords and **continuous EtCO<sub>2</sub> monitoring**.

### VENTILATORY RATES

- Adults: 10 breaths/minute **(1 breath every 6 seconds) with a pulse.**
- Children: 20 breaths/minute **(1 breath every 3 seconds) with a pulse.**
- Neonates: 40 breaths/minute
- Patients with a pulse that have an advanced airway should be ventilated at a rate of 8-10 breaths/minute **(1 breath every 6-8 seconds) with a pulse.**

## CIRCULATION

- Carotid and radial pulse present, assess capillary refill, assess skin color, condition and temperature.
- Apply AED/LP 15 on all unconscious patients.
- Perform MICCR on all cardiac arrest patients and defibrillate as needed.
- After oxygenation and ventilation of 1 minute for infants/children and 30 seconds for neonates (birth to 1 month), begin chest compressions if the heart rate remains below 60 BPM with signs of poor perfusion (AMS).





## EtCO<sub>2</sub> MONITORING

- Should be applied to all patients meeting the following criteria:
  - Requiring ventilatory support (ETT, SGA, CPAP, etc) **MANDATORY**.
  - The following patients should be monitored if the EtCO<sub>2</sub> nasal cannula sampling device is available:
    - Patients in respiratory distress
    - Patients with an altered mental status
    - Sedated patients or patients receiving pain medication
    - Patients who have been administered Ketamine
    - Seizure patients

## ECG MONITORING

- All ALS patients shall be continuously monitored in lead II.
- Patients who present with any of the following cardiac or possible cardiac symptoms shall have a 12 lead ECG performed:
  - Chest/arm/neck/jaw/upper back/shoulder/epigastric pain or discomfort
  - Palpitations
  - Syncope, lightheadedness, general weakness, or fatigue
  - CHF, SOB, hypertension or hypotension
  - Unexplained diaphoresis or nausea
- 12 lead ECGs shall be repeated every 10 minutes and upon a ROSC (if transporting leave cables connected until patient is turned over to the ED staff).

## GLUCOSE

- A BGL shall be documented for patients with any of the following: history of diabetes, altered mental status, general weakness, seizure, syncope/lightheadedness, dizziness, poisoning, stroke, and cardiac arrest.

## VITAL SIGNS

- A complete set of vital signs shall be documented as follows (BP, HR, RR, Skin, Temp, O<sub>2</sub> Sat.):
  - Priority 3 patients at least two sets or every 15 minutes
  - Priority 2 patients every 5 minutes
- A blood pressure shall be checked before and after the administration of a drug known to effect blood pressure.
- For the purposes of these protocols, adult hypotension is defined as a systolic blood pressure less than 90 mmHg.
- Initially, all blood pressures shall be taken manually. A manual blood pressure should be taken to confirm any abnormal or significant change of an automatic blood pressure cuff reading.



## PEDIATRIC

- Patients who have not reached puberty are considered pediatric patients and shall be treated under the pediatric guideline section of these protocols.
- Patients who have reached puberty shall be treated under the adult section of these protocols.
- An IO should be placed for patients with emergency medical conditions that require urgent vascular access in whom an IV is not immediately obtainable or is deemed to have insufficient access. IO is the preferred method of vascular access during pediatric cardiac arrest.
- Fluid boluses are 20mL/kg and may be repeated 2x prn for hypotension; maximum 60mL/kg (for non-trauma related hypotension).
- Infants and children with a heart rate less than 60 beats/minute after adequate ventilation has occurred with signs of poor perfusion shall have CPR initiated (continuous compressions).
- The preferred method for ventilating pediatric patients is with a BVM in conjunction with an oral or nasal airway. Pediatric patients who can not protect their airway, are unable to maintain oxygen saturation despite BVM ventilation, and/or can not be effectively ventilated with a BVM, should be upgraded to a Supraglottic Airway (SGA) (age specific) followed by intubation if needed. Infants and children who have an advanced airway placed during CPR should be ventilated at a rate of 1 breath every 6 seconds. Coordinate compressions and ventilations to avoid simultaneous delivery.
- Maintain an SpO<sub>2</sub> of 95% and an EtCO<sub>2</sub> between 35-45 mmHg.

## THE "HANDTEVY" SYSTEM

- The "Handtevy" system shall be utilized in the resuscitation and treatment of all pediatric patients.
- The child's age should be used as the primary reference point for determining the appropriate patient care. Alternatively use the Handtevy length based tape to determine appropriate care if the child appears shorter or taller than stated age or if the age is unknown.

## PEDIATRIC AGE CLASSIFICATIONS

- Neonates: Birth to 1 month
- Infants: 1 month to 1 year
- Children: 1 year to puberty

*Puberty is defined as breast development for females and underarm, chest or facial hair on males. Once a child reaches puberty, use the adult guidelines.*



## PEDIATRIC RESPIRATORY RATES

- Neonate: Birth to 1 month (40-60 breaths/min)
- Infants: 1 month to 1 year (30-60 breaths/minute)
- Toddlers: 1-3 y/o (24-40 breaths/minute)
- Preschooler: 4-5 y/o (22-34 breaths/minute)
- School age: 6-12 y/o (18-30 breaths/minute)
- Adolescent ages: 13-18 y/o (12-16 breaths/minute)

## PEDIATRIC HEART RATES

- Newborn to 3 months: 85-205, mean 140 beats/minute
- 3 months to 2 years: 100-190, mean 130 beats/minute
- 2 years to 10 years: 60-140, mean 80 beats/minute
- Greater than 10 years old: 60-100, mean 75 beats/minute

## PEDIATRIC HYPOTENSION

- Neonates: SBP less than 60
- Infants: SBP less than 70
- Children 1-10 years: SBP less than  $70 + (\text{age in years} \times 2)$
- Children greater than 10 years: SBP less than 90

# TRANSPORT DESTINATIONS



**Priority One: Patients in Cardiac or Respiratory Arrest**

**Priority Two: Unstable patients with immediate life-threatening conditions**

**Priority Three: Stable patients with no immediate life-threatening conditions**

## ☐ ALL PRIORITY ONE MEDICAL PATIENTS

- All Primary cardiac arrest patients will be transported to the closest approved STEMI Facility if transport time is less than 20 minutes.
- Pediatric patients who have regained a ROSC shall be transported to a comprehensive pediatric emergency department. Pulseless pediatric patients shall be transported to closest approved pediatric emergency department primary or comprehensive.
- Pediatric respiratory arrest cases that have successful airway management (i.e good compliance with the BVM and airway adjuncts, positive EtCO<sub>2</sub> waveform, improving pulse oximetry) shall be transported to the closest comprehensive pediatric emergency department. All other pediatric respiratory arrest patients who have an unstable airway (unable to ventilate or oxygenate) shall be transported to closest approved pediatric emergency department primary or comprehensive.
- All others patients shall be transported to the closest hospital emergency department (excluding Free Standing ED's).

## ☐ ALL PRIORITY TWO MEDICAL PATIENTS

- Shall be transported to the closest appropriate emergency department.

## ☐ ALL PRIORITY THREE PATIENTS

- Should be transported to the closest appropriate emergency department.

## ☐ TRAUMA PATIENTS

- All adult and pediatric trauma alert patients meeting trauma alert criteria, shall be transported to the closest Trauma Center.
- Trauma patients who arrest in the presence of Fire Rescue personnel, shall be transported to the closest Trauma Center.
- All pregnant (visibly or by history of gestation >20 weeks) patients meeting Trauma Alert criteria that are transported by air, shall go to St. Mary's. All patients who meet the same criteria but are ground transported shall be taken to the closest Trauma Center.
- All intubated interfacility transfers should be both paralyzed and sedated by the sending facility. If the sending facility physician refuses to administer paralytics, the District Captain must be contacted and is to follow the Advanced Airway (RSI) protocol. The District Captain must then accompany the patient to the receiving facility..



## ❑ STEMI ALERTS

- Once a STEMI Alert has been determined, the 12 lead must be transmitted and the patient should have transport expedited to the closest approved STEMI Facility.
- The patient shall be transported by air (if available) to the closest approved STEMI facility with surgical backup if the ground transport time to the closest approved STEMI Facility is greater than 40 minutes. Refer to the Hospital Capabilities List for the approved STEMI Facilities and STEMI Facilities with surgical backup.

## ❑ STROKE ALERTS

Transport to the closest Primary Stroke Center only if all of the following are met:

- Transport time is **greater than 20 minutes to a Comprehensive Stroke Care Center AND**
- Onset of symptoms is **less than 3.5 hours AND**
- The patient is **not complaining of a severe headache AND**
- There are **no tPA exclusions**

All other Stroke Alerts shall be transported to a Comprehensive Stroke Center

- If the ground transport time to the closest Stroke Center (Primary or Comprehensive) is greater than 40 minutes, then the patient shall be transported by air (if available) to the closest Comprehensive Stroke Center. If air transport is not available and the patient is a candidate for tPA (see above) then transport the patient to the closest Stroke Center (Primary or Comprehensive) by ground. If not a candidate for tPA, transport to the closest Comprehensive Stroke Center.

## ❑ PEDIATRIC PATIENTS

- For the purposes of transport, a pediatric patient is considered less than 18 y/o.
- All ALS Pediatric patients (excluding Trauma Alerts) shall be transported to an approved Pediatric Emergency Facility.

## ❑ OBSTETRICAL PATIENTS (DEFINED AS PREGANCY 20 WEEKS OR GREATER)

- If in labor/ABD pain transport to the closest OB hospital.
- Over 20 weeks with a NON OB related minor concern can go to the closest ED.
- Stable patients over 20 weeks may go to the OB hospital of their choice within 40 minutes.
- Patients less than 20 weeks are GYN cases and can be transported to closest ED

### Primary Pediatric Emergency Department:

These hospitals do not have inpatient pediatric capabilities but are comfortable treating minor pediatric illnesses and injuries in their emergency department.

### Comprehensive Pediatric Emergency Department:

These hospitals have pediatric admitting capabilities and surgery options. They also have pediatric intensive care units (PICU).







## ❑ DECOMPRESSION SICKNESS & CARBON MONOXIDE POISONING

- Patients with decompression sickness or carbon monoxide poisoning shall be transported to St. Mary's Medical Center Hyperbaric Chamber (encode prior to transport to confirm availability of Hyperbaric chamber). If unavailable transport to closest ED.

## ❑ PSYCHIATRIC PATIENTS

- Stable psychiatric patients shall be transported to the closest appropriate facility.
- Unstable psychiatric patients shall be transported to the closest emergency department for stabilization.

### FREE STANDING EMERGENCY DEPARTMENT

*Patients may be transported to a "Free Standing ED" upon the patient's request and:*

- Critically ill patients such as Priority 1 or 2 patients should not be transported to the Free Standing ED.
- Patient must be informed that if transported to a Free Standing ED and they subsequently require admission, they may need to be transferred to another facility.
- Patient must sign an Emergency Transport Disclaimer.



## HELICOPTER OPERATIONAL CRITERIA

- The guidelines for air ambulance transport include, but are not limited to the following:
- Trauma patients that meet the trauma scorecard methodology and criteria as set forth in the rules and regulations of Palm Beach County Trauma Ordinance, Palm Beach County Trauma Agency TTP's, and Rule 64J-1.014, F.A.C.; and,
- Pre-hospital ground transport to a Trauma Center is greater than 20 minutes; or,
- Pre-hospital scene extrication time of a trauma patient is greater than 15 minutes; or,
- Pre-hospital ground response time to the scene is greater than 10 minutes; or,
- Mass Casualty Incidents (MCI) involving multiple patients with traumatic injuries; or,
- To augment or expedite pre-hospital ground transport, or
- To transport a patient upon request by the EMS provider.

## HELICOPTER WILL NOT BE USED (GROUND TRANSPORT WILL BE REQUIRED)

- Bariatric patient known or estimated to be three-hundred fifty (350) lbs (159kg) or greater.
- Patient who is combative and cannot be physically and/or chemically restrained.
- Hazmat contaminated patient.

# BASIC LIFE SUPPORT



BLS MEDICAL EMERGENCIES

BLS TRAUMA EMERGENCIES

BLS ENVIRONMENTAL EMERGENCIES



## INFORMATION

N/A



## BLS

### ALLERGIC REACTION

- BLS Standard Requirements
- Determine the source of the allergic reaction (insect, food, medications, etc.).
- Assist patient with EpiPen administration under the following circumstances:
  - Patient is prescribed the EpiPen
  - Patient presents with respiratory distress and/or hypotension (shock)
- Paramedic assist: Set up breathing treatment, IV, vitals, ECG.

### ALTERED MENTAL STATUS

- BLS Standard Requirements.
- Check and record BGL, if less than 60 mg/dL, and patient is able to protect their airway/swallow, give oral glucose. **Not recommended for patients less than 2 years old.**
- Identify possible causes: stroke, seizures, diabetic problem, drugs, EtOH, CO poisoning.
- Place unresponsive patients in the recovery position (if no suspected spinal cord injury), and suction as needed.
- Paramedic assist: Vitals, glucose, IV, ECG.

### CARDIAC ARREST

- Begin MICCR for adults and pediatrics & Apply AED/ LP15.

### CHEST PAIN

- BLS Standard Requirements.
- Paramedic assist: Vitals, IV, ECG.

### DIABETIC EMERGENCIES

- BLS Standard Requirements.
- Check and record BGL, if less than 60 mg/dL, and patient is able to protect their airway/swallow, give oral glucose. **Not recommended for patients less than 2 years old.**
- Place unresponsive patients in the recovery position (if no suspected spinal injury), and suction as needed.



## OVERDOSE/POISONING

- BLS Standard Requirements
- Try to identify source of the overdose/poisoning.
- Suction as needed.
- If a patient is unresponsive and spinal cord injury is not suspected, place the patient in the recovery position.
- Check BGL. If less than 60 mg/dL, with an altered mental status, and patient is able to protect their airway/swallow, give oral glucose. **Not recommended for patients less than 2 years old.**

## RESPIRATORY DISTRESS

- BLS Standard Requirements
- Allow patient to maintain position of comfort.
- Apply oxygen, maintain SpO<sub>2</sub> at 95% or 90% for COPD and asthma patients (*"blow by" Oxygen for pediatrics*).
- Assist ventilations with a BVM and an airway adjunct (NPA/OPA) for a respiratory rate of less than 10 or greater than 29 with shallow respirations. If ventilation is required for more than 2 minutes and the patient is unconscious with no gag reflex, insert a SGA.
- Pediatric patients in respiratory distress, who have had a recent illness accompanied by fever, drooling, or stridor, should not have an NPA or OPA inserted. **DO NOT STRESS PATIENT.**
- Paramedic assist: Vitals, nebulizer, CPAP, IV, ECG

## SEIZURES

- BLS Standard Requirements
- Protect patient from injury if actively seizing.
- Suction as needed.
- If a patient is postictal and spinal cord injury is not suspected, place the patient in the recovery position.
- Check BGL. If less than 60 mg/dL, with an altered mental status, and patient is able to protect their airway/swallow, give oral glucose. **Not recommended for patients less than 2 years old.**
- Paramedic assist: Vitals, IV, ECG



# BLS TRAUMA EMERGENCIES



## INFORMATION

N/A



## BLS

### AIRWAY/C-SPINE

- Assess airway
- If patient cannot maintain their airway, open airway with a modified jaw thrust.
- Spinal Motion Restriction (manual c-spine) if indicated.
- Suction blood/secretions.
- Insert an NPA/OPA as needed to maintain airway.

### BREATHING

- For respirations of 10 or less **OR** if tidal volume is inadequate, insert NPA or OPA and assist ventilations via BVM (1 breath every 6-8 seconds).
- For respirations of 12-20 breaths per minute, maintain SpO<sub>2</sub> at 95%.
- Respirations greater than 29 breaths per minute, maintain SpO<sub>2</sub> at 95%. If tidal volume is inadequate, insert NPA or OPA and assist ventilations via BVM (1 breath every 6-8 seconds).

### CIRCULATION

- Control external severe extremity hemorrhage (direct pressure, Combat Application Tourniquet (C.A.T.), apply high and tight until the bleeding stops). Never apply C.A.T. directly over injury site or joint.
- If Hemostatic Agent/Gauze is available, severe junctional hemorrhage (e.g., neck, axillary, thoracic, abdominal, pelvis and groin) and any other severe external hemorrhage that is not able to be easily controlled using C.A.T. shall be controlled using Celox Rapid. Pack wound with Celox Rapid and maintain pressure for a minimum of one minute.
- Assess for shock: Rapid heart rate, diminished/absent radial pulse, pale/cool/diaphoretic skin, AMS (CHECK BGL).

### DISABILITY

- Level of Consciousness, AVPU, moves extremities

### EXPOSE

- As a general rule, only remove as much of the clothing as necessary to determine the presence or absence of an injury. Cover the patient as soon as possible to keep the patient warm.



## BURNS

- Stop the burning process by irrigating with copious amounts of room temperature water or sterile saline.
- Do not attempt to remove tar, clothing, etc., if adhered to the skin.
- Never apply ice directly to burns.
- Remove jewelry and watches from burned area.
- For all burns, apply dry sterile dressing, a burn sheet may be used for large body surface area burns.
- Consider Spinal Motion Restriction for electrical burns associated with spinal pain.

## BLEEDING CONTROL (External Bleeding)

- Control external severe extremity hemorrhage (direct pressure, Combat Application Tourniquet (C.A.T.), apply high and tight until the bleeding stops). Never apply C.A.T. directly over injury site or joint.
- If Celox Rapid is available, severe junctional hemorrhage (e.g., neck, axillary, thoracic, abdominal, pelvis and groin) and any other severe external hemorrhage that is not able to be easily controlled using C.A.T. shall be controlled using Celox Rapid. Pack wound with Celox Rapid and maintain pressure for a minimum of one minute.

## CHEMICAL BURNS

- Remove patient's clothing and ensure that the patient is decontaminated prior to transport in order to avoid contaminating personnel and equipment.
- Irrigate liquid chemical burns with copious amounts of water or sterile saline.
- Brush off dry chemicals prior to irrigation.

## EYE EMERGENCIES

- Remove contact lenses, with the exception of penetrating eye injuries.
- Irrigate affected eye with sterile saline.

## HEAT EXPOSURE

- Move patient to a shaded or air conditioned area, remove excessive clothing.
- Water can be given to responsive patients with an intact gag reflex.
- Place patient in a supine position if they are weak or dizzy.
- Apply ice packs to axilla and groin area for suspected heat stroke (Altered Mental Status).

## MUSCULOSKELETAL AND SPINAL TRAUMA

- Injured extremities shall be immobilized via splint and bleeding controlled with direct pressure, or C.A.T. (see BLEEDING CONTROL). Assess and document PMS before and after splinting.
- If Celox Rapid is available, severe junctional hemorrhage (e.g., neck, axillary, thoracic, abdominal, pelvis and groin) and any other severe external hemorrhage that is not able to be easily controlled using C.A.T. shall be controlled using Celox Rapid. Pack wound with Celox Rapid and maintain pressure for a minimum of one minute.

# BLS ENVIRONMENTAL EMERGENCIES

---



## INFORMATION

N/A



## BLS

### BITES/STINGS

- BLS Standard Requirements
- Remove any jewelry on the affected extremity.
- Remove the venom sack, if still in the skin, by scraping it off. Do not pinch or squeeze.
- Monitor the patient for an allergic reaction.
- Assist patient with EpiPen administration under the following circumstances:
  - Patient is prescribed the EpiPen.
  - Patient presents with respiratory distress and/or hypotension (shock).

### FATAL DROWNING/NON-FATAL DROWNING

- BLS Standard Requirements
- Spinal motion restriction
- MICCR/AED LP15

### SNAKE BITE

- BLS Standard Requirements
- Remove constrictive jewelry.
- Mark initial area of edema with a pen.
- If the **DEAD** snake is on scene, take a picture of the head including the eyes with ePCR device if possible.

# ALS MEDICAL EMERGENCIES



**ALLERGIC REACTIONS**  
**ALTERED MENTAL STATUS**  
**DIABETIC EMERGENCIES**  
**DYSTONIC REACTION**  
**FLUID RESUSCITATION**  
**HYPERKALEMIA**  
**NAUSEA/VOMITING**  
**RESPIRATORY DISTRESS**  
**SEIZURES**  
**SEPSIS**  
**STROKE**

# ALLERGIC REACTION



## INFORMATION

S/S: Allergic reactions are characterized by any of the following: urticaria, mild respiratory distress, difficulty swallowing, or swelling of the tongue and/or face.



## ADULT

### FOR GENERALIZED URTICARIA ONLY

BENADRYL: 50mg IV/IO/IM. Administer over 2 minutes for IV/IO usage. (See Box Below)

### FOR MILD AIRWAY SWELLING / MILD RESPIRATORY DISTRESS / BRONCHOSPASM / TONGUE AND/OR FACIAL SWELLING

EPINEPHRINE: (1:1,000) 0.3mg (0.3mL) IM. May repeat 2x prn in five minute intervals.

- *Do not administer within 5 minutes of Epi-Pen administration*

BENADRYL: 50mg IV/IO/IM. Administer over 2 minutes for IV/IO usage. (See Box Below)

ALBUTEROL: For bronchospasm, 2.5mg via nebulizer, repeat prn.

### ANAPHYLACTIC SHOCK - CHARACTERIZED BY THE SIGNS AND SYMPTOMS OF AN ALLERGIC REACTION, IN ADDITION TO THE LOSS OF A RADIAL PULSE AND/OR SBP OF LESS THAN 90mmHg

Establish a second IV/IO.

EPINEPHRINE: (1:10,000) 0.1mg (diluted in 9mL of Saline), IV/IO over 1-2 minutes. May repeat 2x prn, in five minute intervals. Max total dose 0.3mg (See Box Below)

If patient remains hypotensive: **NORMAL SALINE**: 1-2L. Assess lung sounds and BP every 500 mL.

Administer **BENADRYL** and **ALBUTEROL** as noted above.

Contact medical control, if necessary, for additional orders of EPINEPHRINE (1:10,000) and fluid boluses.

**BENADRYL ADMINISTRATION IV/IO: Dilute with 9 mL of Normal Saline.**

Discard 9 mL of Epi 1:10,000 and draw up 9 mL of Normal Saline and administer over 1-2 minutes. You may repeat 2x prn, in five minute intervals.



## PEDIATRIC

### FOR GENERALIZED URTICARIA ONLY

- BENADRYL:** 1mg/kg IV/IO *or* IM if unable to obtain IV access. Max total dose 50mg. Administer over 2 minutes for IV/IO usage. (See Box Below)

### FOR MILD AIRWAY SWELLING / MILD RESPIRATORY DISTRESS / BRONCHOSPASM / TONGUE AND/OR FACIAL SWELLING

- EPINEPHRINE:** (1:1,000) 0.01mg/kg (0.01mL/kg) IM. Max single dose 0.3mg. May repeat 2x prn, in 5 minute intervals.
- BENADRYL:** 1mg/kg IV/IO *or* IM if unable to obtain IV access. Max total dose 50mg. Administer over 2 minutes for IV/IO usage. (See Box Below)
- ALBUTEROL:** For bronchospasm, 2.5mg via nebulizer, repeat prn.

### ANAPHYLACTIC SHOCK - CHARACTERIZED BY THE SIGNS AND SYMPTOMS OF AN ALLERGIC REACTION, IN ADDITION TO THE LOSS OF DISTAL PULSES

- Establish a second IV/IO.
- EPINEPHRINE:** (1:10,000) 0.1mg (diluted in 9mL of Saline), titrate slowly over 5-10 minutes IV/IO (titrate to effect). May repeat 2x prn, in five minute intervals. (See Box Below)
- If patient remains hypotensive: **NORMAL SALINE:** 20mL/kg bolus IV/IO, may repeat 2x prn for hypotension. Check lung sounds often.
- Administer **BENADRYL** and **ALBUTEROL** as noted above.
- Contact medical control if necessary for additional fluid boluses.

**BENADRYL ADMINISTRATION IV/IO:** Dilute with 9 mL of Normal Saline.

Discard 9 mL of Epi 1:10,000 and draw up 9 mL of Normal Saline and administer over 5-10 minutes (titrate to effect). You may repeat 2x prn, in five minute intervals.



# ALTERED MENTAL STATUS

---



## INFORMATION

Consider the possible causes: AEIOU-TIPS, meningitis, and/or dehydration.



## ADULT & PEDIATRIC



### AEIOU-TIPS

- A **Alcohol**
- E **Epilepsy (Seizures)**
- I **Insulin (Hyper/Hypoglycemic)**
- O **Overdose (and Oxygenation)**
- U **Uremia (Kidney Failure)**
  
- T **Trauma**
- I **Infection (Sepsis)**
- P **Psychiatric (and Poisoning)**
- S **Stroke (and Shock)**

# DIABETIC EMERGENCIES



## INFORMATION

Symptoms of DKA include: nausea/vomiting, abdominal pain, general weakness, Kussmaul Respirations, AMS, hypotension, or tachycardia with an acetone smell on the patient's breath.



## ADULT

### IF BLOOD GLUCOSE IS LESS THAN 60 mg/dL

- ORAL GLUCOSE: (15g) May be given if patient is able to swallow and follow commands. May repeat 1x prn.
- D10: 100 mL IV, retest glucose. If patient remains less than 60 mg/dL, administer another 100 mL of D10.

### IF UNABLE TO OBTAIN IV ACCESS

- Perform Proximal Humerus IO and administer D10: 100mL, retest glucose. If patient remains less than 60 mg/dL, administer another 100 mL of D10.

### IF BLOOD GLUCOSE LEVEL IS GREATER THAN 300 mg/dL WITH S/S OF DKA

- NORMAL SALINE: 1-2L. Assess lung sounds and blood pressure every 500mL.
- ZOFRAN: 4mg IM or slow IV/IO/PO over 2 minutes for nausea/vomiting.

Patients taking oral hypoglycemic mediations should be transported to the ED regardless of post treatment glucose levels. (i.e. Glyburide, Glimepiride, and Glipizide)

### IF UNABLE TO PROVIDE ABOVE TREATMENT

- GLUCAGON: 1mg IN or IM if available.
  - Glucagon may cause nausea/vomiting.
- ZOFRAN: 4mg IM/PO for nausea/vomiting.



## PEDIATRIC

### IF BLOOD GLUCOSE LEVELS ARE LESS THAN 60 mg/dL

- ORAL GLUCOSE: (15g) may be given to conscious patients with an intact gag reflex.
  - *Not recommended for patients less than 2 years old.*
- D10: 5ml/kg IV/IO (max of 100 mL), retest glucose. May repeat 1x prn.

### IF BLOOD GLUCOSE LEVELS ARE GREATER THAN 300 mg/dL with S/S of DKA

- NORMAL SALINE: 20mL/kg IV/IO. Assess lung sounds and blood pressure often.
- ZOFRAN: 0.1mg/kg IM or slow IV/IO/PO for nausea/vomiting. Max dose 4mg.

### IF UNABLE TO PROVIDE ABOVE TREATMENT

- GLUCAGON: Less than 20kg (0.5mg IM or IN), greater than 20kg (1mg IM or IN) if available.
  - *Glucagon may cause nausea/vomiting.*
- ZOFRAN: 0.1mg/kg IM or slow IV/IO/PO for nausea/vomiting. Max dose 4mg.

# DYSTONIC REACTION



## INFORMATION

Dystonic reactions are characterized by intermittent spasmodic or sustained involuntary contractions of muscles in the face, neck, trunk, pelvis, extremities, and even the larynx. Typically, antipsychotic (Haldol, Lithium, etc.), antiemetic (Compazine, Reglan, etc.) or antidepressant (Prozac, Paxil etc.) medications are responsible. A dystonic reaction can occur immediately or be delayed for hours to days.



## ADULT

BENADRYL : 50mg IV/IO/IM. Administer over 2 minutes for IV/IO usage. (See Box Below)



## PEDIATRIC

BENADRYL: 1mg/kg IV/IO *or* IM if unable to obtain IV access. Max total dose 50mg. Administer over 2 minutes for IV/IO usage. (See Box Below)

**BENADRYL ADMINISTRATION IV/IO: Dilute with 9 mL of Normal Saline.**

# FLUID RESUSCITATION



## INFORMATION

For dehydration secondary to: prolonged vomiting and/or diarrhea, DKA, heat illness, pneumonia, non-traumatic bleeding (vaginal or GI), or hypotension secondary to overdose/poisoning.



## ADULT

### NORMOTENSIVE WITH S/S OF DEHYDRATION OR NON-TRAUMATIC BLEEDING

- NORMAL SALINE: 1-2L. Assess lung sounds and blood pressure every 500mL.

### IF PATIENT IS HYPOTENSIVE (SBP LESS THAN 90mmHg)

- NORMAL SALINE: 1-2L. Assess lung sounds and blood pressure every 500mL.

### IF PATIENT REMAINS HYPOTENSIVE AFTER FLUID ADMINISTRATION OR DEVELOPS PULMONARY EDEMA

- DOPAMINE: 5-20mcg/kg/min. Titrate and maintain a SBP of 90 mmHg.



## PEDIATRIC

### NORMOTENSIVE WITH S/S OF DEHYDRATION

- NORMAL SALINE: 20mL/kg IV/IO. Assess lung sounds and blood pressure often.

### IF PATIENT IS HYPOTENSIVE

- NORMAL SALINE: 20mL/kg bolus IV/IO, may repeat 2x prn for continued hypotension. Assess lung sounds and blood pressure often.

### NOTES

- Consider sepsis for all dehydrated patients.
- Patients with a history of renal failure/dialysis or CHF are at increased risk for fluid overload. Monitor these patients carefully.

# HYPERKALEMIA



## INFORMATION

Consider hyperkalemia in patients with a history of renal failure/dialysis who are pre-dialysis and present with: general weakness, hypotension, paresthesia, tall peaked T-waves (most prominent early sign), or arrhythmias (sine wave, wide complex QRS, V-Tach, severe bradycardia, or high degree AV blocks)



## ADULT

### FOR PATIENTS PRESENTING WITH ANY OF THE ABOVE ARRHYTHMIAS

- ALBUTEROL: 2.5mg via nebulizer, continuous treatments.
- CALCIUM CHLORIDE: 1 gram, slow IV/IO over 2 minutes.
- SODIUM BICARBONATE: 50 mEq, slow IV/IO over 2 minutes.
- If patient is intubated, administer Albuterol via BVM.

**Do not administer Calcium Chloride and Sodium Bicarbonate in the same IV line without thoroughly flushing the IV.**

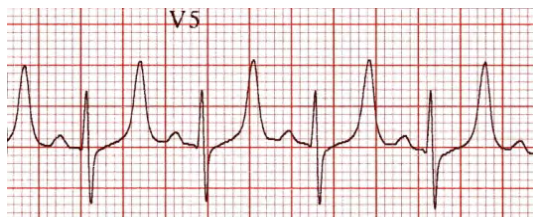
### IF PATIENT IS HYPOTENSIVE

Administer **NORMAL SALINE**: 500mL, may repeat 1x prn. Check lung sounds after each fluid bolus.

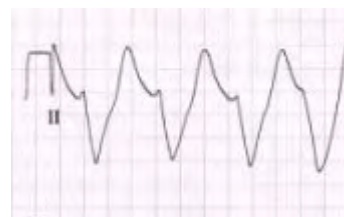


## PEDIATRIC

- Call for Orders.



Peaked T wave



Sine Wave



# NAUSEA/VOMITING



## INFORMATION

Consider differential diagnosis: MI, Stroke, Diabetic, Head Injury, etc.



## ADULT

### IF PATIENT IS NORMOTENSIVE

- NORMAL SALINE: 1-2L. Assess lung sounds and blood pressure every 500mL.
- ZOFRAN: 4mg IM or slow IV/IO/PO (See box below). Can be administered prn.

### IF PATIENT IS HYPOTENSIVE

- NORMAL SALINE: 1-2L. Assess lung sounds and blood pressure every 500mL.
- ZOFRAN: 4mg IM or slow IV/IO/PO (See box below). Can be administered prn.



## PEDIATRIC

### IF PATIENT IS NORMOTENSIVE

- NORMAL SALINE: 20mL/kg bolus. Assess lung sounds often.
- ZOFRAN: 0.1mg/kg IM or slow IV/IO/PO (See box below). Can be administered prn. Max dose 4mg.

### IF PATIENT IS HYPOTENSIVE

- NORMAL SALINE: 20mL/kg bolus. May repeat 2x prn for continued hypotension. Assess lung sounds and blood pressure often.
- ZOFRAN: 0.1mg/kg IM or slow IV/IO/PO (See box below). Can be administered prn. Max dose 4mg.

**ZOFRAN ADMINISTRATION:** If IV access is unobtainable, it is acceptable to administer the IV formulation of Zofran via the PO route to the patient. Using a needleless syringe administer the Zofran under the patient's tongue.



## INFORMATION

Patients with COPD & Asthma have prolonged exhalation secondary to bronchospasm, which causes air trapping resulting in hypercapnia (high levels of CO<sub>2</sub>). Therefore, EtCO<sub>2</sub> guidelines should be disregarded for these patients, as it is more important to maintain SpO<sub>2</sub> levels at 90%. Trying to maintain normal EtCO<sub>2</sub> levels in these patients puts them at risk for developing Auto PEEP, which can result in a pneumothorax or hypotension. Auto PEEP occurs during assisted ventilations when air goes in before the patient is allowed to fully exhale. This causes the lungs to expand like a balloon, putting the patient at risk for a pneumothorax. In addition, increasing intrathoracic pressure decreases venous return to the heart which can result in hypotension.

COPD or Asthma patients who develop poor bag compliance or hypotension during positive pressure ventilations should have positive pressure ventilations discontinued (if intubated, disconnect BVM from ETT) for 20-40 seconds (10-20 seconds for pediatrics) to allow the patient to completely exhale before resuming positive pressure ventilations.



## ADULT

- Consider differential diagnosis (i.e. CHF, allergic reaction, etc.).
- Maintain SpO<sub>2</sub> at 95% or 90% for COPD and asthma patients.
- Provide ventilatory support prn.
- Monitor EtCO<sub>2</sub> (if available).
- CPAP (10 cm H<sub>2</sub>O) is indicated for moderate/severe respiratory distress, including: COPD, asthma and pneumonia patients.
  - *Contraindicated for a SBP less than 90mmHg*
  - *Contraindicated for patients without spontaneous respirations*
  - *Contraindicated for patients with a decreased LOC (lethargic)*
  - *Only for patients 30kg or above*

IMMEDIATELY REMOVE THE CPAP FOR THE ASTHMATIC PATIENT WHOSE CONDITION WORSENS AFTER APPLYING THE CPAP.

ADMINISTER IN-LINE NEBULIZED ALBUTEROL TO ALL INTUBATED ASTHMA PATIENTS WITH BRONCHOSPASM.



## ADULT

### BRONCHOSPASM SECONDARY TO COPD

- ALBUTEROL: 2.5mg via nebulizer. May be administered simultaneously with CPAP. Repeat prn for bronchospasm.

### BRONCHOSPASM SECONDARY TO ASTHMA

- ALBUTEROL: 2.5mg via nebulizer. May be administered simultaneously with CPAP. Repeat prn for bronchospasm.
- If bronchospasm worsens or fails to improve after Albuterol Treatment:  
EPINEPHRINE: (1:1,000) 0.3mg IM. May repeat 2x in five minutes.

### FOR SEVERE ASTHMA NOT RESPONDING TO ABOVE TREATMENT

- MAG SULFATE: 2g IV/IO in 50 mL of Normal Saline over 10 minutes.



## PEDIATRIC

### BRONCHOSPASM

- Oxygenate and/or ventilate prn to maintain SpO<sub>2</sub> at 95% and EtCO<sub>2</sub> levels between 35-45 mmHg. Treatment for asthma patients is based on maintaining an SpO<sub>2</sub> of 90%.
- ALBUTEROL: 2.5mg via nebulizer. Repeat prn for bronchospasm.

### IF BRONCHOSPASM WORSENS AFTER ABOVE ALBUTEROL TREATMENT

- EPINEPHRINE: (1:1,000) 0.01mg/kg (0.01mL/kg) IM. Max single dose 0.3mg. May repeat 2x prn, in five minute intervals.

### FOR SEVERE ASTHMA NOT RESPONDING TO ABOVE TREATMENT

- MAGNESIUM SULFATE: 40 mg/kg in 50 mL of Normal Saline infused over 25 minutes.
- ASSIST VENTILATIONS via BVM prn with appropriate airway adjunct.

### FOR CROUP/EPIGLOTTITIS

- EPINEPHRINE: (1:1,000) 3mL (3mg total) delivered via nebulizer.
- DO NOT STRESS THE PATIENT!
- DO NOT ATTEMPT INTUBATION OR PLACE AN OPA OR NPA. VENTILATE VIA BVM AS NEEDED.
- Expedite transport to closest approved Pediatric Emergency Facility.

#### CROUP

- Usually less than 3 y/o
- "Sick" for a couple of days
- Low grade fever
- Not "toxic" appearing

#### EPIGLOTTITIS

- Usually 3-6 y/o
- Sudden Onset
- High grade fever
- Poor general impression
- Drooling
- Tripod position

**Both will have stridor and/or a "barky" cough.**

# SEIZURES

---



## INFORMATION

Consider the possible causes: meningitis, head trauma, hemorrhagic stroke, diabetic, drugs, alcohol, poisoning, fever, and eclampsia.



## ADULT

### IF ACTIVELY SEIZING

VERSED: 2.5 mg IV/IO **OR** 5mg IN/IM. May repeat either route 1x prn.



## PEDIATRIC

### FEBRILE SEIZURES

- Actively cool the patient by removing the clothing and fanning, being careful not to induce shivering.
- DO NOT cover patient with a wet towel/sheet.
- DO NOT apply ice/cold packs to the patient's body.

### IF ACTIVELY SEIZING, FEBRILE OR NON-FEBRILE

VERSED: 0.1mg/kg IV/IO (max single dose 2.5mg) **OR** 0.2 mg/kg IN/IM (max single dose of 5mg). May repeat either route 1x prn.



## INFORMATION

Recognition and treatment of sepsis is the key to the successful management of sepsis. It is imperative once sepsis is identified, that the patient is kept from becoming hypotensive, as an episode of hypotension significantly increases morbidity and mortality. Sepsis is most common in the elderly, very young, patients confined to bed (bed sores, abscesses, cellulitis, or immobile) and patients with a recent history of surgery or an invasive medical procedure.

### SEPSIS CRITERIA

- Adult and **NOT** pregnant **WITH**
- Suspected or documented infection **AND**
- At least **two** SIRS (Systemic Inflammatory Response Syndrome) criteria:
  - Pulse greater than 90
  - Respirations greater than 20
  - Temperature greater than 100.4°F or less than 96.8°F

### SEVERE SEPSIS CRITERIA

- Patient has met the above Sepsis Criteria **AND**
- Hypoperfusion as manifested by any **one** of the following:
  - SBP less than 90mmHg
  - DBP less than 60mmHg
  - Mean Artrial Pressure (MAP) of less than 70
  - Altered Mental Status
  - EtCO<sub>2</sub> Equal to or less than 25mmHg

### SEPTIC SHOCK CRITERIA

- Patient has met the above Severe Sepsis Criteria **AND** remains hypotensive after initial fluid resuscitation of 2L.

**Two SIRS Criteria and One Hypoperfusion Criteria = SEPSIS ALERT**

#### SUSPECTED INFECTION (EXAMPLES)

- Fever
- UTI (Increased urinary frequency, dysuria, and/or cloudy, bloody, or foul smelling urine)
- Pneumonia (productive cough, green/yellow/brown sputum)
- Wounds or insertion sites that are: painful/red/swollen or have a purulent (pus) discharge
- Patient is on antibiotics
- Recent history of surgery/invasive medical procedure (eg. Foley Catheter, Central Lines, etc.)
- AMS and/or poor oral intake of the past 24-48 hours (especially in the elderly)





## ADULT

### SEPSIS TREATMENT

- Monitor EtCO<sub>2</sub>
- BGL
- Maintain SpO<sub>2</sub> at 95% or 90% for COPD and asthma patients.
- NORMAL SALINE:** 1L, *regardless* of blood pressure. Assess lung sounds every 500mL.

### SEVERE SEPSIS *OR* SEPTIC SHOCK TREATMENT

- Call a Sepsis Alert and limit on-scene time
- Monitor EtCO<sub>2</sub>
- BGL
- Maintain SpO<sub>2</sub> at 95% or 90% for COPD and asthma patients.
- NORMAL SALINE:** 2L, *regardless* of blood pressure. Assess lung sounds every 500mL.
- If patient develops rales *OR* is unable to tolerate the fluid challenge: **DOPAMINE:** 5-20 mcg/kg/min IV/IO, titrate to maintain a SBP of 90mmHg or a MAP greater than or equal to 70.

Patients with a history of renal failure or CHF may not tolerate fluids. These patients should be monitored carefully for the development of rales.



## PEDIATRIC

- NORMAL SALINE:** 20mL/kg IV/IO bolus. Assess lung sounds and blood pressure often. May repeat 1x prn.



## INFORMATION

R.A.C.E. (Risk Assessment of Cerebrovascular Events) **IF ANY SCORE** greater than a zero is found during the assessment, call a stroke alert, expedite transport, notify the hospital ASAP and advise that this is a “Stroke Alert” and include the R.A.C.E exam score. **Determine to the best of your ability the exact time of stroke onset or the last known well time of the patient. Obtain witness information to include: names, phone numbers, and medications. Then relay the information to the ED. Onset of Stroke symptoms must be within 24 hours to call a Stroke Alert.**

ITEM	INSTRUCTION	R.A.C.E. SCORE
Facial Palsy	Ask the patient to show their teeth: “Smile”	0 – Absent (symmetrical movement) 1 – Mild (slightly asymmetrical) 2 – Moderate to Severe (completely asymmetrical)
Arm Motor Function	Extend the arm of the patient 90 degrees (if sitting) or 45 degree (if supine) palms up	0 – Normal to mild (limb upheld more than 10 seconds) 1 – Moderate (limb upheld less than 10 seconds) 2 – Severe (patient unable to raise arm against gravity)
Leg Motor Function	Extend the leg of the patient 30 degrees (if supine) one leg at a time	0 – Normal to mild (limb upheld more than 5 seconds) 1 – Moderate (limb upheld less than 5 seconds) 2 – Severe (patient unable to raise leg against gravity)
Head and Eye Gaze Deviation	Observe range of motion of eyes and look for head turning to one side.	0 – Absent (normal eye movement to both sides, and no head deviation was observed) 1 – Present (eyes and/or head deviation to one side was observed)
Aphasia <b>If patient has Right sided weakness</b>	Ask the patient to follow two verbal orders: “Close your eyes” and “Make a fist”	0 – Normal (performs both tasks correctly) 1 – Moderate (performs one task correctly) 2 – Severe (performs neither task)
Agnosia <b>If patient has Left sided weakness</b>	Ask the patient: “Who’s arm is this?” when showing him or her the weak arm or “Can you move your arm?”	0 – Normal appropriate or correct answer 1 – Moderate (either does not recognize limb or states that they can move it but can’t) 2 – Severe (both of them)
	<b>*Head/Eye Gaze Deviation or if patient is mute and does not follow commands = High likelihood of a large vessel occlusion</b>	R.A.C.E. SCALE TOTAL: <b>Max Score of 9</b>

**Only assess Aphasia if the patient has Right sided weakness and only assess Agnosia if the patient has Left sided weakness. You never perform both during this evaluation.**

Consider differential diagnosis: **Must check BGL, Inspect for Head Trauma, Bell’s Palsy etc...**



## ADULT

- Transport patient in a supine position, unless patient is short of breath or is an interfacility transport with a diagnosis of intracerebral hemorrhage (ICH - see below).
- 2 Lpm NC regardless of pulse oximetry reading. Increase oxygen therapy as needed.
- An 18g catheter in the antecubital is preferred.
- Normal Saline: 500mL bolus (Regardless of BP).
- Complete the Stroke Alert Criteria Check List to determine if patient meets stroke alert criteria.
- Transport to the closest Primary Stroke Center only if all of the following are met:
  - Transport time is greater than 20 minutes to a Comprehensive Stroke Center **AND**
  - Onset of symptoms is less than 3.5 hours **AND**
  - The patient is not complaining of a severe headache **AND**
  - There are no tPA exclusions
- All other Stroke Alerts shall be transported to a Comprehensive Stroke Center.
- All **STROKE ALERTS** shall be transported priority 2.
- The time of onset is determined to be the time that the patient was last seen to be normal (without stroke signs and symptoms).
- Any patient who awakens with stroke symptoms or when it is not able to be determined when stroke symptoms began shall be transported to an approved Comprehensive Stroke Center as a stroke alert.

### **tPA EXCLUSIONS**

- Onset of stroke symptoms greater than 3.5 hours
- Seizure prior to stroke symptoms
- Prior stroke or serious head injury within the previous 3 months
- Major Surgery within 14 days
- Known history of intracranial hemorrhage
- Gastrointestinal or urinary tract bleeding within 21 days.
- Patients currently taking blood thinners (Aspirin is not considered a blood thinner).

### **INTERFACILITY TRANSPORTS WITH ICH (Intracerebral Hemorrhage)**

- All patients transported with a diagnosis of intracerebral hemorrhage (ICH) must be transported in a 30 degrees elevation. **DO NOT LAY THESE PATIENTS SUPINE.**



## PEDIATRIC

- Transport patient in a supine position, unless patient is short of breath.
- 2 Lpm NC regardless of pulse oximetry reading. Increase oxygen therapy as needed.
- An appropriately sized IV catheter. The antecubital is the preferred IV access site.
- Normal Saline: 10 mL/kg bolus (max 250 mL) (Regardless of BP).
- Complete the Stroke Alert Criteria Check List to determine if patient meets stroke alert criteria.
- Transport All suspected Pediatric Strokes to St. Mary's Comprehensive Stroke Center.
- All **STROKE ALERTS** shall be transported Priority 2.
- The time of onset is determined to be the time that the patient was last seen to be normal (without stroke signs and symptoms).
- Any patient who awakens with stroke symptoms or when it is not able to be determined when stroke symptoms began shall be transported to St. Mary's Comprehensive Stroke Center as a stroke alert.

### **tPA EXCLUSIONS**

- Onset of stroke symptoms greater than 3.5 hours
- Seizure prior to stroke symptoms
- Prior stroke or serious head injury within the previous 3 months
- Major Surgery within 14 days
- Known history of intracranial hemorrhage
- Gastrointestinal or urinary tract bleeding within 21 days.
- Patients currently taking blood thinners (Aspirin is not considered a blood thinner).

**THIS PAGE INTENTIONALLY LEFT BLANK**

# CARDIAC EMERGENCIES



ATRIAL FIBRILLATION/FLUTTER

BRADYCARDIA

CARDIOGENIC SHOCK

CHEST PAIN

STEMI ALERT

CHF/PULMONARY EDEMA

SVT

WIDE COMPLEX TACHYCARDIA

POLYMORPHIC V-TACH

LEFT VENTRICULAR ASSIST DEVICE (LVAD)



# RAPID A-FIB & A-FLUTTER



## INFORMATION

S/S: Rapid atrial fibrillation and atrial flutter are defined as ventricular rates greater than 150 BPM.



## ADULT

### STABLE

- CARDIZEM:** 10mg IV/IO over 2 minutes. If no response in 15 minutes, repeat with 15mg IV/IO over 2 minutes.
  - *Contraindicated for hypotension, wide complex QRS, history of WPW or sick sinus syndrome.*
  - *Use with caution for patients taking beta blockers.*
  - *If hypotension develops after Cardizem administration, administer 500mL of Normal Saline and 500mg of Calcium Chloride.*

### UNSTABLE (HYPOTENSION)

- Normal Saline:** 1-2L. Assess lung sounds every 500mL.
- If patient remains hypotensive after fluid administration: **DOPAMINE:** 5-20mcg/kg/min IV/IO, titrated to maintain a SBP of 90 mmHg.
  - *If fluid bolus or Dopamine increases SBP greater than 90mmHg and patient has a ventricular response greater than 150, administer Cardizem as indicated above.*



## PEDIATRIC

- N/A

**DO NOT cardiovert A-Fib/A-Flutter. Cardioversion of unstable A-Fib/A-Flutter may put patients at high risk for embolic stroke.**

# BRADYCARDIA



## INFORMATION

S/S: Bradycardia is defined as a heart rate less than 50 BPM.



## ADULT

### STABLE

- Monitor and transport.

### UNSTABLE: (HYPOTENSION)

- Obtain a 12 LEAD ECG to rule out an MI.
- ATROPINE:** 0.5mg IV/IO. Repeat prn every 3-5 minutes. Max dose 3mg.
- If there is no response to Atropine then begin **TRANSCUTANEOUS PACING:** Initial rate of 60 BPM and increase milliamps until capture is gained.

### SEDATION OF TRANSCUTANEOUS PACING

- ETOMIDATE:** 6mg IV/IO. May repeat 1x prn.
- If unable to establish IV/IO access, begin pacing until an acceptable blood pressure is obtained, then administer **VERSED:** 5mg IN/IM. May repeat 1x prn.
  - *Contraindicated in hypotension.*
  - *Monitor for respiratory depression.*

### IF NO RESPONSE TO ATROPINE OR TRANSCUTANEOUS PACING

- DOPAMINE:** 5-20mcg/kg/minute. Titrate to maintain a systolic blood pressure of 90 mmHg.

#### **BRADYCARDIA IN THE PRESENCE OF AN MI WITH HYPOTENSION**

**Go directly to transcutaneous pacing as Atropine increases myocardial ischemia and may increase the size of the infarct.**

#### **HIGH DEGREE AV BLOCKS WITH HYPOTENSION**

**Immediate transcutaneous pacing is acceptable when IV access is not immediately available.**



## PEDIATRIC

### STABLE

- Monitor and transport

### UNSTABLE: (DEFINED AS A CHILD WITH AMS AND POOR PERFUSION)

- OXYGENATION & VENTILATION:** Ensure adequate oxygenation and ventilation first, as hypoxia is most likely to be the cause of the bradycardia.
- After oxygenation and ventilation of 1 minute for infants/children and 30 seconds for neonates (birth to 1 month), begin chest compressions if the heart rate remains below 60 BPM with signs of poor perfusion (AMS).

### IF NO RESPONSE TO OXYGENATION AND VENTILATION (NO AV HEART BLOCK WITH CPR IN PROGRESS)

- EPINEPHRINE:** (1:10,000) 0.01mg/kg (0.1mL/kg) IV/IO. Repeat every 3-5 minutes prn.
- If no response to Epinephrine, begin **TRANSCUTANEOUS PACING**. Begin pacing at **80** BPM and increase the rate as needed until the patient is hemodynamically stable.

OR

### IF NO RESPONSE TO OXYGENATION AND VENTILATION (2°OR 3° AV HEART BLOCK)

- ATROPINE:** 0.02mg/kg IV/IO (Minimum single dose 0.1mg) . Max single dose 0.5mg. May repeat 1x prn.
- If no response to Atropine, **EPINEPHRINE:** (1:10,000) 0.01mg/kg (0.1mL/kg) IV/IO. Repeat every 3-5 minutes prn.
- If no response to Epinephrine, begin **TRANSCUTANEOUS PACING**. Begin pacing at **80** BPM and increase the rate as needed until the patient is hemodynamically stable.

### SEDATION FOR TRANSCUTANEOUS PACING

- ETOMIDATE:** 0.1mg/kg IV/IO over 15-30 seconds. May repeat 1x prn. Max single dose 6mg.
- If unable to obtain IV/IO access, begin pacing until an acceptable blood pressure is obtained, then administer **VERSED** 0.2mg/kg IN/IM. Max single dose 5mg. May repeat 1x prn.
  - *Contraindicated in hypotension.*
  - *Monitor for respiratory depression.*

# CARDIOGENIC SHOCK



## INFORMATION

Cardiogenic shock is a condition in which the heart suddenly can't pump enough blood to meet the body's needs. This condition is most often caused by a severe heart attack. Cardiogenic shock is rare, but often fatal if not treated immediately.



## ADULT

### LEFT VENTRICULAR FAILURE: PULMONARY EDEMA AND HYPOTENSION

- DOPAMINE:** 5-20mcg/kg/minute. Titrate to maintain a SBP of 90 mmHg.

### RIGHT VENTRICULAR FAILURE: POSITIVE V4R, CLEAR LUNG SOUNDS WITH HYPOTENSION

- NORMAL SALINE:** 1-2L. Assess lung sounds and blood pressure every 500mL.
- If patient remains hypotensive after fluid administration, **DOPAMINE:** 5-20mcg/kg/min. Titrate to maintain a SBP of 90 mmHg.
  - *Do not administer Dopamine to patients who are hypotensive secondary to blood loss.*

Once SBP is 90 mmHg or greater, treat CHF/Pulmonary Edema and/or Chest Pain as applicable.  
**WITHHOLD NTG FOR THESE PATIENTS!**



## PEDIATRIC

- N/A

# CHEST PAIN



## INFORMATION

For STEMI Alerts or suspected STEMI Alerts, the right hand and wrist should be avoided if at all possible for IV ACCESS. The right AC and anywhere on the left is acceptable.



## ADULT

- IMMEDIATE 12 lead ECG
- ASPIRIN: Four 81mg baby aspirin (324 mg total) chewed and swallowed.
  - *Contraindications: allergy, active GI bleeding*
  - Withhold if patient self-administered 324mg of aspirin within 24 hours. If patient self-administered less than 324mg of aspirin within 24 hours, administer full 324mg dose.
- FENTANYL: 50mcg slow IV/IO/IM *OR* 100mcg IN. May repeat every 5-10 minutes prn. Max total dose 200mcg IV/IO/IM or 200mcg IN.
  - In rare occasions, Fentanyl may cause hypotension.
  - If hypotension occurs, **NORMAL SALINE**: 1-2L. Assess lung sounds and blood pressure every 500mL.

*(Nitroglycerine may be given as a first line drug ahead of Fentanyl for stable patients with history of opiate abuse or in whom drug seeking behavior is suspected)*

## IF PAIN/DISCOMFORT PERSISTS AFTER MAXIMUM FENTANYL ADMINISTRATION

- NITROGLYCERINE: 0.4mg SL. May repeat every 3-5 minutes prn for pain (max 3 doses). SBP must be 90 mmHg or greater.
  - A 12 lead ECG must be obtained prior to the administration of NTG to rule out a right ventricular infarction including V4R
  - An IV must be established prior to NTG administration, even in normotensive patients.

## CONTRAINDICATIONS

- *SBP less than 90 mmHg or Heart Rate less than 50 BPM or greater than 100 BPM*
- *EDD (Viagra and Levitra within 24 hours and Cialis within 48 hours)*
- *Right Ventricular Infarction. Positive V4R (in this case, follow the **CARDIOGENIC SHOCK: RIGHT VENTRICULAR FAILURE** protocol).*



## PEDIATRIC

- N/A

Patients *without* pain/discomfort who have ST segment elevation are treated with aspirin *only*. Fentanyl and NTG is only given to relieve ischemic pain/discomfort.

# STEMI ALERT



## INFORMATION

STEMI Symptoms can be variable and include discomfort of the chest, arm, neck, back, shoulder or jaw and also can be painless with syncope/near syncope (lightheadedness), general weakness/fatigue, unexplained diaphoresis, SOB, or nausea/vomiting.

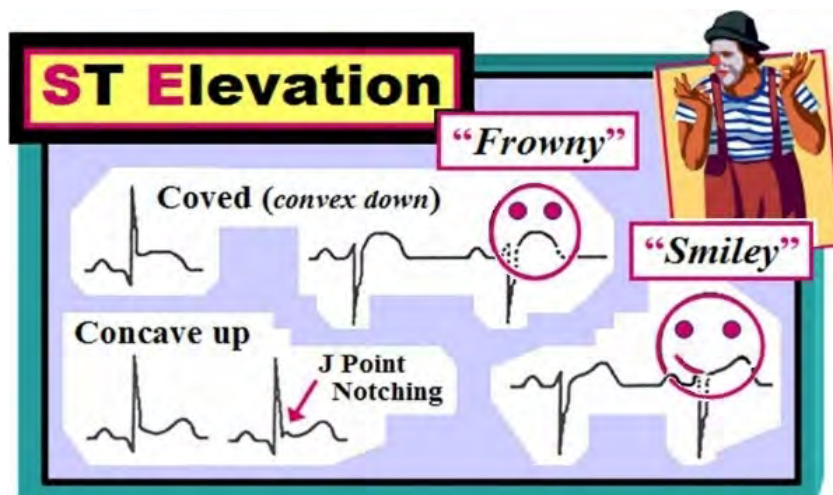


## ADULT

- IMMEDIATE 12 LEAD ECG WITH IMMEDIATE NOTIFICATION TO PCI FACILITY INCLUDING ECG TRANSMISSION.
- ASPIRIN: Four 81mg baby aspirin (324mg total) chewed and swallowed, if not already administered.
  - *Contraindications: allergy, active GI bleeding*
  - Withhold if patient self-administered 324mg of aspirin within 24 hours. If patient self-administered less than 324 mg of aspirin within 24 hours, administer full 324mg dose.
- This protocol may be run concurrent with the Chest Pain Protocol as applicable for ischemic chest pain.

## STEMI ALERT CRITERIA

- ST-Segment Elevation in two or more contiguous leads (**2mm** or greater in V2 and V3 or **1mm** or greater in all other leads) with a “convex” (frown face) or “straight” morphology.
- ST-Segment Elevation in two or more contiguous leads of **2mm** or greater in any lead with a “concave” (smiley face).





## STEMI ALERT DISQUALIFIERS

The following are STEMI mimics:

- QRS complexes greater than 0.12 (LBBB, RBBB, Pacemaker, etc.)
- Left Ventricular Hypertrophy (LVH)
- Pericarditis
- Early Repolarization
- Less than 2mm of elevation with a Concave ST Segment (Smiley Face) Morphology

Patient presentations indicative of myocardial ischemia that do not meet "STEMI Alert Criteria" should still be transported priority 2 to a STEMI facility.

### Left Ventricular Hypertrophy (LVH)

Take the largest negative deflection from the isoelectric line of V1 and V2 ("S" wave), whichever is larger, and count the small boxes. Then take the largest positive deflection of V5 or V6 ("R" wave), whichever is larger, and add it to the total from V1 or V2. If the result is greater than 35, your suspicion for LVH should be high.

### NOTES

Patients with ST segment elevation in two or more Inferior Leads (II, III, AVF) shall have a V4R completed to determine if there is ST segment elevation, indicating a right ventricular infarct (RVI). The V4R ECG shall be labeled on the ECG next to the patient's last name.

*All 12 lead ECGs shall have the patient's last name and first initial entered on the ECG.*

If patient presentation is indicative of a myocardial ischemia and it is uncertain as to whether or not an ECG meets STEMI Criteria **OR** the ECG shows a STEMI mimic, the ECG should be transmitted to the receiving STEMI facility for determination.



# CHF (PULMONARY EDEMA)



## INFORMATION

N/A



## ADULT

- 12 LEAD ECG
- CPAP (10 cm H2O)

### CONTRAINDICATIONS

- *SBP less than 90mmHg*
- *Decreased LOC (Lethargic)*

- NITRO-PASTE: apply 1" to the anterior upper chest.

### CONTRAINDICATIONS

- *SBP less than 90 mmHg or Heart Rate less than 50 BPM or greater than 100 BPM*
- *EDD (Viagra and Levitra within 24 hours and Cialis within 48 hours)*
- *Right Ventricular Infarction*
- *No IV/IO Access*

## IF SYSTOLIC BLOOD PRESSURE IS GREATER THAN 150mmHg

- NITROGLYCERINE: 0.4mg SL. Repeat 2x prn.

### CONTRAINDICATIONS

- *EDD (Viagra and Levitra within 24 hours and Cialis within 48 hours)*
- *Right Ventricular Infarction*
- *No IV/IO Access*
- *SBP less than 90 mmHg or Heart Rate less than 50 BPM or greater than 100 BPM*

- SL NTG may be given concurrently with NTG paste for SBP greater than 150 mmHg.
- Intubate patients with a decreasing level of consciousness.



## PEDIATRIC

- N/A

### CAUTION:

If patient is febrile or from a nursing home and pneumonia is suspected withhold nitrates.

# SUPRAVENTRICULAR TACHYCARDIA



## INFORMATION

SVT is defined as a regular, narrow complex tachycardia of 150 BPM or greater without discernible P-waves and/or flutter waves.



## ADULT

### STABLE

#### VAGAL MANEUVERS

**ADENOSINE:** 12mg rapid IVP, with a simultaneous 20mL Normal Saline flush.

If rhythm fails to convert, **CARDIZEM:** 10mg IVP over 2 minutes. If no response in 15 minutes, administer **CARDIZEM:** 15mg IVP over 2 minutes.

- *Contraindicated for hypotension, wide complex QRS, patients with a history of WPW or sick sinus syndrome.*
- *Use with caution for patients taking beta blockers.*

If hypotension develops after Cardizem administration, **NORMAL SALINE:** 500mL then **CALCIUM CHLORIDE:** 500mg.

### UNSTABLE (HYPOTENSION)

#### *IF PATIENT IS ALERT*

**ADENOSINE:** 12mg rapid IVP, with a simultaneous 20mL Normal Saline flush.

If no change after Adenosine, monitor patient throughout transport for changes in mental status.

#### *IF PATIENT HAS AN ALTERED MENTAL STATUS*

Consider sedation prior to cardioversion. **ETOMIDATE:** 6mg IV/IO. May repeat 1x prn.

**SYNCHRONIZED CARDIOVERSION:** 100j, 200j, 300j, 360j

If cardioversion fails, **CALL FOR ORDERS.**

**CAUTION:**  
DO NOT administer Adenosine to patients with a history of a heart transplant or if taking Tegretol (Carbamazepine). In this case, administer Cardizem as indicated below.

A brief trial of Adenosine can be used prior to cardioversion for a diagnostic tool if you suspect the underlying rhythm to be A-Fib or A-Flutter. The ECG should be printed during administration. If A-Fib or A-Flutter is present, **DO NOT** cardiovert the patient.



**PEDIATRIC**

**STABLE**

- VAGAL MANEUVERS
- ADENOSINE: 0.1mg/kg rapid IV/IO, with a simultaneous 10mL flush. Max dose 6mg.
- If no change in one minute, ADENOSINE: 0.2mg/kg rapid IV/IO, with a simultaneous 10mL flush. Max dose 12mg.

**UNSTABLE (AGE APPROPRIATE HYPOTENSION)**

**IF PATIENT IS ALERT**

- ADENOSINE: Administer as noted above.

**IF PATIENT HAS AN ALTERED MENTAL STATUS**

- Consider sedation prior to cardioversion. ETOMIDATE: 0.1mg/kg IV/IO over 15-30 seconds. Max single dose of 6mg. May repeat 1x prn. Max total dose 12mg.
- SYNCHRONIZED CARDIOVERSION: 0.5j/kg. If not effective, increase to 2j/kg.
- If cardioversion fails, CALL FOR ORDERS.

**PEDIATRIC VAGAL MANEUVERS**

- For young children, place a bag of ice water on the child's face completely obstructing their nose and mouth for at least 15 seconds.
- For older children, ask them to try and blow through a kinked piece of oxygen tubing.

- SVT in infants is considered greater than 220 BPM.
- SVT in children is considered greater than 180 BPM.



# WIDE COMPLEX TACHYCARDIA



## INFORMATION

Wide complex tachycardia (WCT) has a QRS greater than or equal to 0.12 (0.09 for pediatrics) and a heart rate greater than or equal to 100 BPM without discernible P waves.

### CAUTION:

**DO NOT** cardiovert wide complex tachycardias that are irregularly/irregular, as they are most likely to be A-Fib/A-Flutter with an aberrancy and would put the patient at risk for an embolic stroke.

### ECG features that favor a diagnosis of *Ventricular* Tachycardia

- Very wide, bizarre QRS morphology
- Precordial concordance - all chest leads point in the same direction (either positive OR negative)
- Negative Lead V6
- Backward frontal plane axis: II, III, and aVF are negative. aVL and aVR are positive.
- Presence of capture beats or fusion beats (sinus beats that interrupt the WCT)

### ECG features that favor a diagnosis of *supraventricular* origin

- P waves before the QRS complexes
- Normal R wave progression in the chest leads
- Left bundle branch block or right bundle branch block pattern
- Only slight widening of the QRS
- Irregularly-irregular rhythm

**ALL REGULAR WCTs SHOULD BE TREATED AS V-TACH UNLESS PROVEN TO BE SUPRAVENTRICULAR!**

If cardioversion terminates the VT and the patient returns to VT, begin cardioversion at the last successful energy setting and increase as needed.



## ADULT

### STABLE WCT

- AMIODARONE INFUSION:** 150mg IV/IO (150mg into 50mL of Normal Saline) over 10 minutes. May repeat 1x prn.
  - Administer all 150mg, even if the VT terminates.

### UNSTABLE WCT (HYPOTENSION)

- DO NOT DELAY CARDIOVERSION TO ESTABLISH IV ACCESS!**
- Consider sedation prior to cardioversion. **ETOMIDATE:** 6mg IV/IO. May repeat 1x prn.
- SYNCHRONIZED CARDIOVERSION:** 100j, 200j, 300j, 360j
- If unstable WCT fails to convert, **AMIODARONE INFUSION:** 150mg IV (150mg into 50mL of Normal Saline) infuse over 10 minutes. After the 150mg has been infused and the patient remains unstable, cardiovert with 360j every 2 minutes prn.

### SPECIAL CONSIDERATIONS AFTER CARDIOVERSION

- For patient's who convert after two cardioversions **OR** after two or more shocks by their Implantable Cardioverter (ICD) administer **AMIODARONE INFUSION:** 150mg IV/IO (150mg into 50mL of Normal Saline) over 10 minutes (if Amiodarone has not already been administered).



## PEDIATRIC

### STABLE

- AMIODARONE INFUSION:** 5mg/kg in 50mL of Normal Saline, IV/IO infused over 25 minutes. Max single dose 150mg.

### UNSTABLE (AGE APPROPRIATE HYPOTENSION)

- Consider sedation prior to cardioversion. **ETOMIDATE:** 0.1mg/kg IV/IO over 15-30 seconds. Max single dose of 6mg. May repeat 1x prn. Max total dose 12mg.
- SYNCHRONIZED CARDIOVERSION:** 0.5j/kg. If no response, increase to 2j/kg.
- For patient's who convert after two cardioversions **OR** after two or more shocks by their Implantable Cardioverter (ICD) administer **AMIODARONE INFUSION:** 5mg/kg in 50mL of Normal Saline, IV/IO infused over 25 minutes. Max single dose 150mg. (if Amiodarone has not already been administered).

# POLYMORPHIC V-TACH/ TORSADES de POINTES



## INFORMATION

Torsades de Pointes is an uncommon form of V-Tach characterized by a changing in amplitude or “twisting” of the QRS complexes.



## ADULT

### STABLE PVT

- ❑ **MAG SULFATE:** 2g IV/IO, in 50 mL of Normal Saline attached to a 60 gtt set and run wide open.

### UNSTABLE PVT (HYPOTENSION)

- ❑ **DO NOT DELAY DEFIBRILLATION TO ESTABLISH IV ACCESS!**
- ❑ Consider sedation prior to DEFIBRILLATION. **ETOMIDATE:** 6mg IV/IO. May repeat 1x prn.
- ❑ **DEFIBRILLATION:** 200j, 300j, 360j
- ❑ If unstable PVT converts prior to administration of Magnesium Sulfate, administer 2g in 50 mL of Normal Saline over 10 minutes.



## PEDIATRIC

### STABLE PVT

- ❑ **MAG SULFATE:** 40 mg/kg IV/IO, in 50 mL of Normal Saline administered over 10 minutes  
Max of 2g.

### UNSTABLE PVT

- ❑ **DO NOT DELAY DEFIBRILLATION TO ESTABLISH IV ACCESS!**
- ❑ Consider sedation prior to DEFIBRILLATION. **ETOMIDATE:** 0.1 mg/kg max of 6mg IV/IO.  
May repeat 1x prn. Max total dose of 12 mg.
- ❑ **DEFIBRILLATION:** 2j/kg, 4j/kg
- ❑ If unstable PVT converts prior to administration of Magnesium Sulfate, administer 40mg/kg in 50 mL of Normal Saline over 10 minutes.

### CAUTION:

**DO NOT** cardiovert wide complex tachycardias that are irregularly irregular, as they are most likely to be A-Fib/A-Flutter with an aberrancy and would put the patient at risk for an embolic stroke.

If defibrillation terminates the PVT and the patient returns to PVT, begin defibrillation at the last successful energy setting and increase as needed.

# LEFT VENTRICULAR ASSIST DEVICES - LVADs



## INFORMATION

Left Ventricular Assist Devices (LVADs), also known as Heart Pumps, are surgically implanted circulatory support devices designed to assist the pumping action of the heart. Caring for these patients is complicated and every effort should be made to contact the patient's primary caretaker (spouse, guardian etc.) and the LVAD coordinator during your evaluation. **Patients with a properly functioning LVAD may NOT have a detectable pulse, measurable blood pressure or accurate oxygen saturation.**



## ADULT

- Contact the LVAD coordinator immediately; the phone number will be on the device and the equipment carrying bag. Take all equipment associated with the LVAD system to the ED.
- Locate patient's emergency "bag" with backup equipment.
- Treat Non-LVAD associated conditions in accordance with the appropriate protocol.
- Determine the type of device, assess alarms, **auscultate for pump sounds**. if needed, assist patient (caretaker) in replacing the device's batteries or cables.
- Locate the driveline site on the patient's abdomen. **BE CAREFUL** not to cause any trauma to the site or driveline (wires).
- If signs of hypo-perfusion, administer **NORMAL SALINE**: 500mL and reassess.
- If there is bleeding at the site, apply direct pressure.

### AUSCULTATION FOR PUMP FUNCTION:

Auscultate chest and upper abdominal quadrants - Continuous humming sound = pump is working.

## UNRESPONSIVE PATIENTS

- EVALUATE UNRESPONSIVE PATIENTS CAREFULLY FOR REVERSIBLE CAUSES!**
- Perform a blood glucose level, if blood glucose is less than 60 mg/dl administer D10: 100mL. May repeat 1x prn.
- Performing Chest Compressions risks rupturing of the ventricular wall leading to fatal hemorrhage. **ONLY** perform chest compressions when the patient's LVAD is not working and no other options exist to restart the LVAD.

## TRANSPORT

- Transport to the closest appropriate facility based on the patient's chief complaint. If there are any questions contact Delray Medical Center LVAD's coordinator at **(561) 243-5117** or JFK Medical Center LVAD's coordinator **(561) 548-5823**. Any LVAD issue should be transported to Delray Medical Center **OR** JFK Medical Center.

### PACKAGING AN LVAD PATIENT:

Be aware of the cables, controller, and batteries. It may be best to place the stretcher straps under the LVAD cables so you are not creating any torque on the device. At a minimum, be aware of this extra hardware.



**THIS PAGE INTENTIONALLY LEFT BLANK**

# CARDIAC ARREST

---



CARDIAC ARREST STANDING ORDERS  
CARDIAC ARREST ALGORITHM ADULT  
CARDIAC ARREST ALGORITHM PEDIATRIC  
CARDIAC ARREST SPECIAL CONSIDERATIONS  
POST RESUSCITATION  
INDUCED COOLING (ICE)

# CARDIAC ARREST STANDING ORDERS



## INFORMATION

There is no scientific basis in trying to resuscitate an unwitnessed asystolic patient who has succumbed to the dying process of a terminal illness. Consideration should be given to not starting resuscitation efforts in these cases.

**In general, when the scene is safe, all Cardiac Arrests should be worked on scene.**



## ADULT

### MICCR - MINIMALLY INTERRUPTED CARDIO-CEREBRAL RESUSCITATION

- For **PRIMARY ARREST**, administer 2 breaths via BVM to ensure a patent airway. Insert two NPA's and an OPA, place a NC & NRB mask on the patient at 15 Lpm, suction prn and maintain airway with a head-tilt/chin-lift.

**OR**

For **SECONDARY ARREST**, administer 2 breaths via BVM to ensure a patent airway. Insert an SGA followed by the ResQPOD (with the exclusion of signs of trauma) and EtCO<sub>2</sub> filter and ventilate at a rate of **1 ventilation every 10 seconds**, coordinated with simultaneous uninterrupted chest compression.

- Emphasis is placed on minimizing interruptions in compressions to no more than 10 seconds.
- Perform all assignments in Pit Crew fashion and make all efforts to obtain a ROSC prior to leaving the scene.
- Once available, apply the LUCAS 2 with minimal interruptions to chest compressions and set to continuous compressions. Patient should be placed on the scoop stretcher for transport purposes.
- When possible elevate the patients head 30°.
- The ResQPOD should be used on all pulseless patients with no signs of trauma.

### MEDICATIONS

- Medications should be delivered as soon as possible after the rhythm check (during compressions) and circulated for 2 minutes.
- Follow all IVP medication administrations with a 20ml flush of **Normal Saline**.
- Search for possible causes and treat accordingly (i.e. H's & T's, BGL, etc.).

### PRIMARY VS. SECONDARY CARDIAC ARREST (ADULT ONLY)

**Primary Arrest** - Cardiac arrest caused by a cardiac problem (AMI, Arrhythmias, etc.)

**Secondary Arrest** - Cardiac arrest caused by hypoxia (FBAO, CHF, Drowning, Narcotic OD, Trauma, etc.)

# CARDIAC ARREST STANDING ORDERS *Continued....*



## ADULT (*continued*)

### TERMINATION OF EFFORTS

- Consider terminating efforts when a District Captain is on scene and:
  - Persistent Asystole has been documented for 15 minutes with an EtCO<sub>2</sub> of less than 10 mmHg in the absence of hypothermia. One defibrillation at 360joules and 500mL of Normal Saline have to be administered.
  - All ALS interventions have been completed and reversible causes have been addressed.
  - Social support group is in place for the family if needed.



## PEDIATRIC

### MICCR - MINIMALLY INTERRUPTED CARDIO-CEREBRAL RESUSCITATION

- Consider all pediatrics as "**SECONDARY ARREST**". Administer 2 breaths via BVM to ensure a patent airway. Insert a SGA followed by the ResQPOD (with the exclusion of chest trauma or less than 1 year of age) and EtCO<sub>2</sub> filter and ventilate at a rate of **1 ventilation every 6 seconds**, coordinated with simultaneous uninterrupted chest compressions.

**OR**

- If no appropriately sized SGA is available, insert an OPA and ventilate at a rate of **1 ventilation every 6 seconds**, coordinated with simultaneous uninterrupted chest compressions. Every attempt should be made to coordinate each breath with the upstroke of chest compressions.
- Emphasis is placed on minimizing interruptions in compressions to no more than 10 seconds.
- If applicable and once available, apply the LUCAS 2 with minimal interruptions to compressions and set to continuous compressions. Patient should be placed on the scoop stretcher for transport purposes.
- Perform all assignments in Pit Crew fashion and make all efforts to obtain a ROSC prior to leaving the scene.
- When possible elevate the patients head 30°.
- The ResQPOD should be used on all pulseless patients **1 year of age and older** with no signs of trauma.

### MEDICATIONS

- Medications should be delivered as soon as possible after the rhythm check (during compressions) and circulated for 2 minutes.
- Follow all IVP medication administrations with a 10ml flush of Normal Saline.
- Search for possible causes and treat accordingly (i.e. H's & T's, BGL, etc.).



**ALL WITNESSED CARDIAC ARREST PATIENTS MUST BE TRANSPORTED.**

## **EtCO<sub>2</sub> LEVELS**

During arrest, maintain EtCO<sub>2</sub> levels greater than, 10mmHg. If EtCO<sub>2</sub> levels are less than 10mmHg, increase effectiveness of compressions. Levels of less than 10mmHg have virtually no chance of achieving ROSC. An EtCO<sub>2</sub> level of approximately 20mmHg is ideal.

## **UNDETERMINED CAUSE**

When the cause of the cardiac arrest cannot be determined as primary or secondary, or there is an undetermined down time, assume that it is a primary cardiac arrest and treat accordingly.

## **UNABLE TO SECURE AN ETT OR SGA**

If unable to secure an ETT or properly ventilate with an SGA, ventilate via BVM/OPA & 2 NPA's and switch to a 30:2 compression to ventilation ratio, until an advanced airway can be secured.

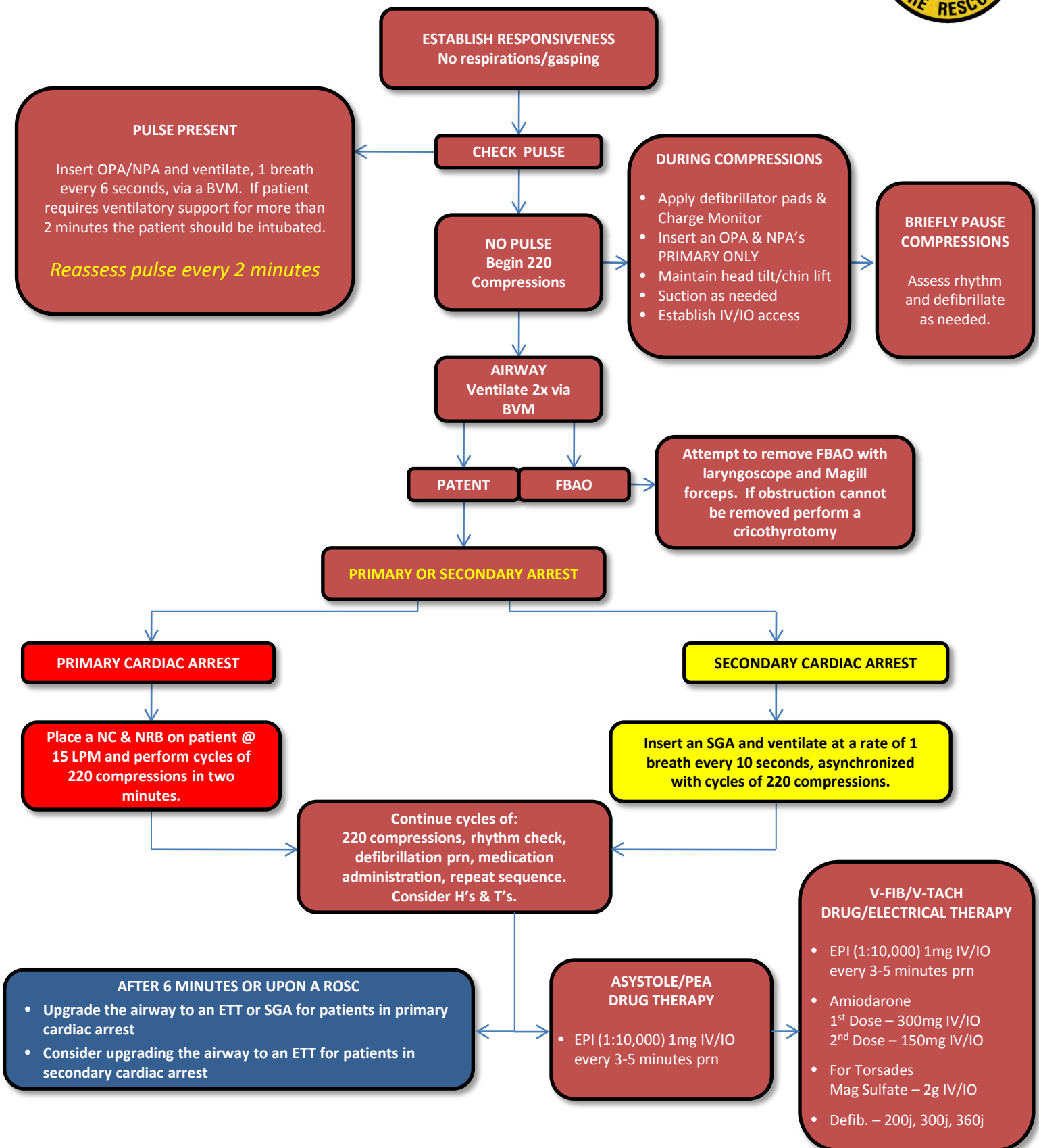
## **H's**

- Hydrogen Ion (Acidosis): *Ventilation*
- Hyperkalemia (Renal Failure): *Calcium Chloride, Sodium Bicarb, Albuterol*
- Hypoglycemia: *Glucose*
- Hypoxia: *Oxygen & Ventilate*
- Hypovolemia: *Fluid Bolus*
- Hypothermia: *Warming*

## **T's**

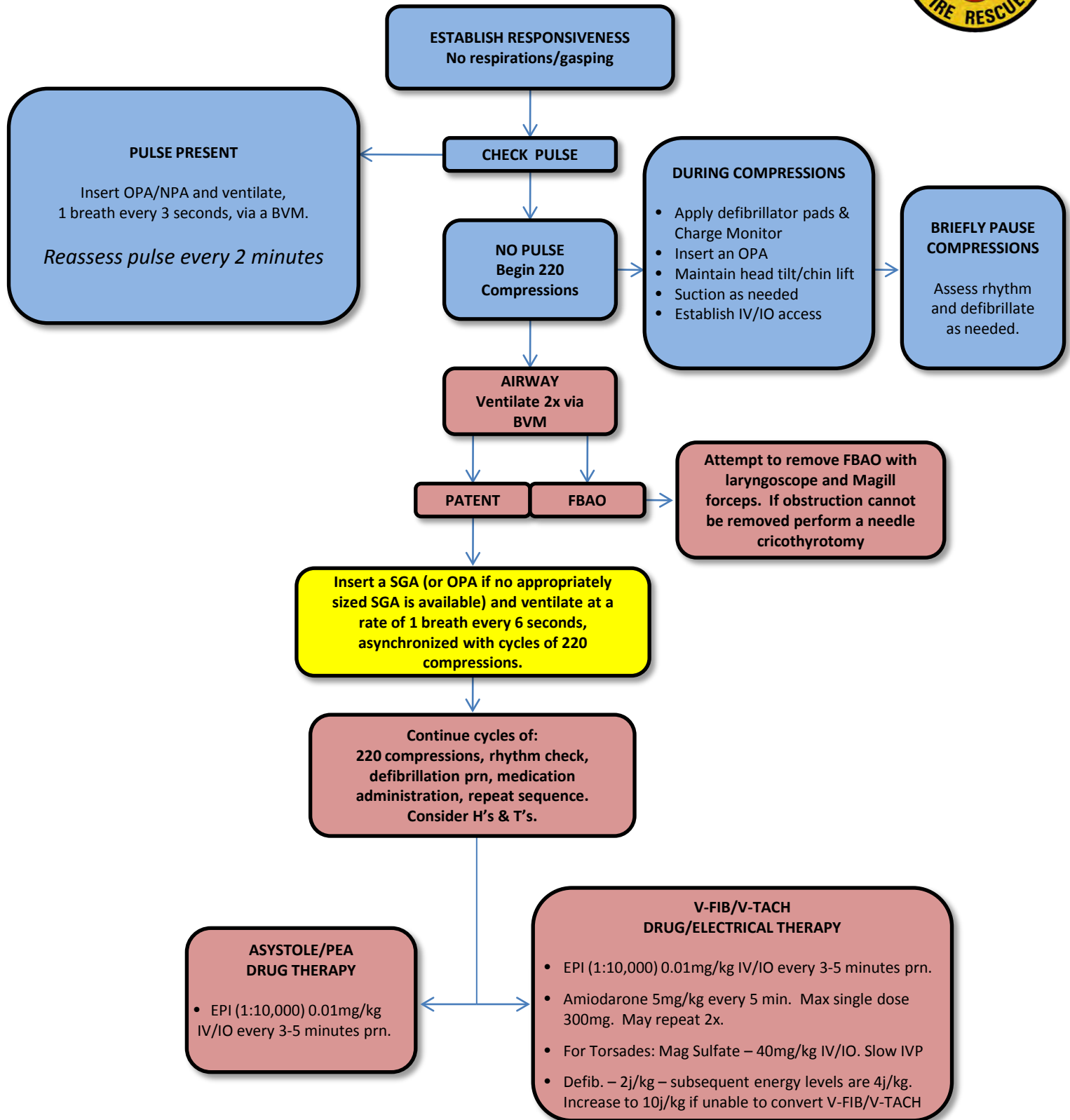
- Toxins or Tablets (OD):
  - Opiates (Narcan)*
  - Beta Blockers (Glucagon)*
  - Tricyclic Antidepressants (Sodium Bicarb)*
  - Calcium Channel Blocker (Calcium Chloride)*
- Tension Pneumothorax: *Bilateral Pleural Decompression*

# CARDIAC ARREST ALGORITHM (ADULT)





# CARDIAC ARREST ALGORITHM (PEDIATRIC)





# CARDIAC ARREST SPECIAL CONSIDERATIONS

---



## INFORMATION

The below treatments are in addition to standard therapy.



## ADULT

### HYPERKALEMIA

- CALCIUM CHLORIDE: 1 gram, slow IV/IO over 2 minutes.
- SODIUM BICARBONATE: 50 mEq, slow IV/IO over 2 minutes.
- Once intubated, ALBUTEROL: 2.5mg via nebulizer, continuous treatments.

### EXCITED DELIRIUM

- SODIUM BICARBONATE: 100 mEq IV/IO, each amp administered slow over 2 minutes.
- COLD NORMAL SALINE (if available): 30mL/kg IV/IO. Maximum of 2L. Assess lung sounds every 500mL.

### DROWNING

- Immediate **VENTILATION** is a priority and treat as a **SECONDARY ARREST**.

### THIRD TRIMESTER CARDIAC ARREST

- Manually **DISPLACE** the uterus to the left, rather than tilting the patient to the left. All third trimester patients in cardiac arrest should be treated as if they are in **SECONDARY ARREST** and transported to the closest OB hospital.

### HANGING

- Treat as a **SECONDARY ARREST**.
- Consider spinal motion restriction.
- Transport to closest facility.

### DRUG OVERDOSE

- Treat all drug overdoses as a **SECONDARY ARREST** with the exception of **Cocaine** overdoses.
- Treat **Cocaine** overdoses as a **PRIMARY ARREST**

# CARDIAC ARREST SPECIAL CONSIDERATIONS

Continued....



## ADULT (continued)

### HYPOGLYCEMIC PATIENTS

- Administer D10: 250mL IV/IO.

### CPR INDUCED CONSCIOUSNESS

- Defined as patients without a spontaneous heartbeat who gain consciousness while receiving CPR.
- Administer KETAMINE: 200mg IV/IO. May repeat x1 prn. Max single dose 200mg.  
**THIS MUST BE DILUTED IN NORMAL SALINE.**

### ELECTROCUTION / LIGHTNING STRIKE

- Treat as SECONDARY ARREST.
- Immediate DEFIBRILLATION as applicable.
- Consider Spinal Motion Restriction.
- Transport patient as a Trauma Alert

### REFRACTORY V-FIB/V-TACH

- Defined as persistent V-FIB/V-TACH (*with no transient interruption of V-FIB/V-TACH*) that is **NOT CONVERTED** by standard defibrillation (5 or more shocks).
- Initially managed by treating any applicable CORRECTABLE CAUSES (H's & T's) and appropriate antiarrhythmic medications: AMIODARONE: 300mg IV/IO, repeat at 150mg IV/IO after 3-5 minutes.
- If standard defibrillation attempts and 450mg of Amiodarone have failed to convert persistent V-FIB/V-TACH, **DOUBLE SEQUENTIAL DEFIBRILLATION** may be utilized.

#### DOUBLE SEQUENTIAL DEFIBRILLATION

- Emphasis is placed on minimizing interruptions in compressions during this procedure
- Apply an additional set of external defibrillations pads (anterior/posterior).
- Verify both monitors/defibrillators are attached and confirm V-FIB/V-TACH rhythm.
- Charge both monitors to the maximum energy setting and ensure all team members are clear of the patient.
- Defibrillate by pressing both shock button as synchronously as possible.
- Follow defibrillation with immediate chest compressions.

# POST RESUSCITATION



## INFORMATION

N/A



## ADULT

### POST ARREST

- Patients with a ROSC should be managed in the order of:

**RATE:** If patient is Bradycardic, **TRANSCUTANEOUS PACING:** Initial rate of 60 BPM and increase milliamps until capture is gained.

**RHYTHM:** (reference specific protocol)

**BLOOD PRESSURE/ICE:** (Goal is to maintain a SBP of 90mmHg)

### 12 LEAD

- If patient has a ROSC and remains unresponsive, initiate the ICE Protocol.
- Remove ResQPOD from the ETT or SGA.
- If the patient is not a candidate for ICE and is hypotensive, administer a **NORMAL SALINE** 1L bolus, may repeat 1x prn. If no response to fluid boluses, administer **DOPAMINE** 5-20mcg/kg/min IV/IO, titrated to maintain a SBP of 90 mmHg.

### POST V-FIB/V-TACH CONSIDERATIONS

- Administer **AMIODARONE INFUSION:** (150mg into 50mL of Normal Saline, infused over 10 minutes) for patients who converted after two defibrillations and have not received an Amiodarone bolus during arrest.
- If patient converts after initial defibrillation, no antiarrhythmic should be given.

### POST TORSADES CONSIDERATIONS

- Administer **MAG SULFATE:** (2g IV/IO into 50mL of Normal Saline, infused over 10 minutes) if patient did not receive Mag Sulfate during arrest.

### TRANSPORT OF PRIMARY ARREST

All patients in PRIMARY cardiac arrest will be transported to a STEMI facility if the transport time is less than 20 minutes regardless of regaining a ROSC. All other patients will be transported to the closest appropriate facility excluding free standing ED's.



## PEDIATRIC

- Maintain adequate oxygenation and ventilation.
- Patients with a ROSC should be managed in the order of:

## RATE

- If heart rate is less than 60 BPM, provide oxygenation and ventilation for one minute (30 seconds for a neonate).
- If heart rate remains less than 60 BPM with S/S of poor perfusion (Altered Mental Status) despite oxygenation and ventilation for one minute (30 seconds for a neonate), begin CPR.
- If after one minute of CPR the heart rate remains less than 60, administer **EPINEPHRINE: (1:10,000)** 0.01mg/kg (0.1mL/kg) IV/IO. Repeat every 3-5 minutes prn for a heart rate less than 60 BPM.

## RHYTHM

- Reference specific protocol.

## BLOOD PRESSURE

- Minimum Pediatric Systolic Blood Pressure Values
  - Neonates: 60mmHg
  - Infants: 70mmHg
  - Children 1-10 years old: 70 + (age in years x 2) mmHg
  - Children greater than 10 years old: 90mmHg
- NORMAL SALINE:** 20mL/kg bolus, titrated to a SBP as listed above. May repeat 1x prn for hypotension.  
Assess lung sounds and blood pressure often.

## TRANSPORT OF PEDIATRIC CARDIAC ARREST

All patients that have a ROSC shall be transported to the closest approved **COMPREHENSIVE** emergency department. Pulseless pediatric patients shall be transported to closest approved pediatric emergency department primary or comprehensive.

# INDUCED COOLING (ICE)



## INFORMATION

- Patient's undergarments may be left in place to preserve patient's dignity.
- Do not delay transport for the purpose of cooling.
- Do not hyperventilate. Maintain EtCO<sub>2</sub> between 35-45 mmHg.
- Patients should be moved as little and as carefully as possible to avoid inducing VF.
- Discontinue cooling anytime there is a loss of ROSC. **Caution:** medications used for resuscitation in cardiac arrest can not be given via cold saline IV/IO line. An IO is **NOT** the preferred method for administering the cold saline bolus.

### INDICATIONS

- Cardiac arrest patients who have a return of spontaneous circulation (ROSC) and remain unresponsive to painful stimuli.

### CONTRAINDICATIONS

- Cardiac arrest due to trauma
- Not able to secure patient's airway with ETT or SGA
- Cardiac arrest due to non-traumatic hemorrhage (GI bleeding, ruptured AAA)



## ADULT

### TREATMENT

- Apply ice packs to the axilla and groin.
- Ensure that two large bore IVs/IOs are obtained.
- Place cold IV Bag in an IV Coolie (if available).
- If patient begins to shiver during transport, **ETOMIDATE:** 30mg or 0.3mg/kg IV/IO over 30-60 seconds. May repeat 1x prn for continuous shivering.
- COLD SALINE BOLUS (if available):** 1L, IV/IO. Assess lung sounds every 500mL.
  - For patients with a history of renal failure/dialysis or CHF, administer a 500mL bolus, may repeat 1x prn for hypotension. Check lung sounds prior to each fluid bolus, as these patients are at increased risk for fluid overload.

### IF PATIENT REMAINS HYPOTENSIVE AFTER COLD SALINE BOLUS (LESS THAN 90 mmHg)

- DOPAMINE:** 5mcg/kg/min. Titrate to maintain a SBP of 90 mmHg. Dopamine should never be piggybacked with cold saline bolus.



## PEDIATRIC

- Apply ice packs to the axilla and groin.

**THIS PAGE INTENTIONALLY LEFT BLANK**



# OVERDOSE EMERGENCIES



**STANDING ORDERS**

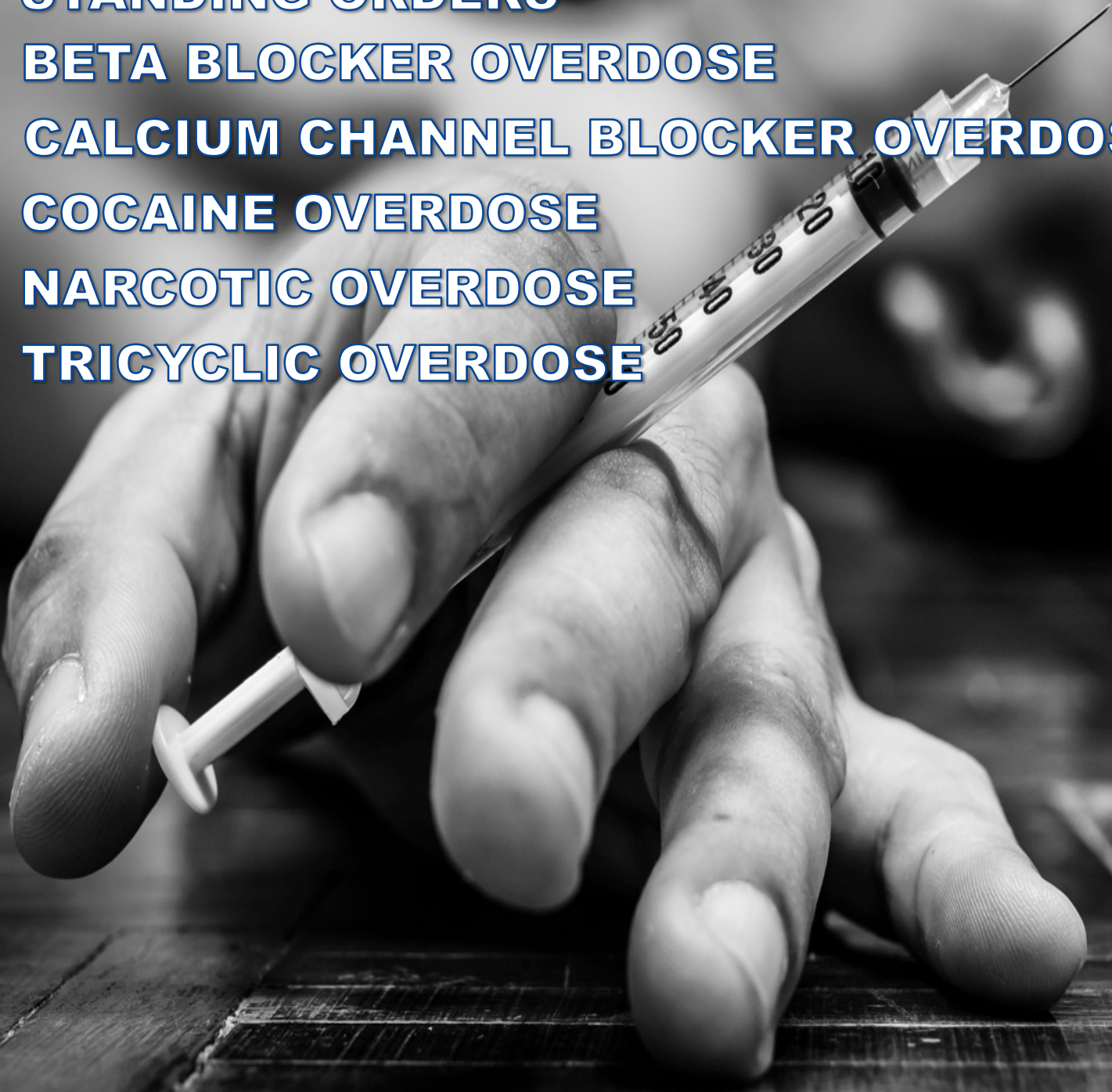
**BETA BLOCKER OVERDOSE**

**CALCIUM CHANNEL BLOCKER OVERDOSE**

**COCAINE OVERDOSE**

**NARCOTIC OVERDOSE**

**TRICYCLIC OVERDOSE**





# OVERDOSE STANDING ORDERS

---



The goal for effectively managing patients with an overdose/poisoning is to support the ABCs, terminate seizures, and reverse the toxic effects of the poison/medication with a specific antidote. The treating paramedic should consider contacting the **Florida Poison Control Center** at **1-800-222-1222** as soon as possible for treatment recommendations. These recommendations are based on the type and severity of the poisoning/overdose and the clinical condition of the patient.

The Poison Control Center representative will ask for the patient's name, the zip code where the call occurred and a contact number (use the Rescue Office's main number, 561-616-7041). Document the treatment and the name of the representative on the ePCR Report.

Resuscitation of cardiac arrest patients should follow BLS and ACLS algorithms.

## MEDICAL CONTROL

Treatment recommendations from Florida Poison Control must be followed and documented whenever possible provided the recommended treatment/medications are available.



## INITIAL MANAGEMENT FOR POISONING/OVERDOSE

- Check **GLUCOSE** and administer D10 as indicated for a BGL less than 60mg/dL.
- Consider contacting Florida Poison Control Center immediately at: **1-800-222-1222**.
- If patient is seizing, administer **VERSED** as per the "**ADULT SEIZURE PROTOCOL**".
- AIRWAY**
  - Positioning, suction, NPA/OPA, intubate or insert a SGA prn
- OXYGENATE/VENTILATE**
  - Maintain an SpO<sub>2</sub> of 95% and EtCO<sub>2</sub> levels between 35-45 mmHg, unless otherwise noted.
  - Ventilate/Intubate as needed.
- CIRCULATION**
  - Support blood pressure initially with fluids. Many medications depress myocardial contractility and heart rate, which predispose the patient to heart failure even with boluses as little as 500mL. Assess lung sounds and blood pressure after each 500mL bolus.

# BETA BLOCKER OVERDOSE



## INFORMATION

Common Beta Blockers include: Atenolol, Carvedilol, Metoprolol, and Propranolol

In addition to the treatment listed below, the Florida Poison Information Center may be contacted at **1-800-222-1222** for further assistance and/or medical control.



## ADULT

### IF PATIENT IS HYPOTENSIVE

- NORMAL SALINE:** 1-2L. Assess lung sounds and blood pressure every 500mL.
- Consult with Poison Control for further orders.

### CONSIDERATIONS POISON CONTROL MAY RECOMMEND

- GLUCAGON:** 1mg/min IV/IO for refractory hypotension. Max dose of 5mg (if available).
  - For nausea/vomiting, **ZOFRAN:** 4mg IM or slow IV/IO, can be administered prn.
- TRANSCUTANEOUS PACING:** For refractory bradycardia and heart blocks, start rate at 60 BPM and increase prn to maintain B/P.
- DOPAMINE:** 5-20mcg/kg/minute. Titrate to maintain a systolic blood pressure of 90 mmHg.



## PEDIATRIC

### IF PATIENT IS HYPOTENSIVE

- NORMAL SALINE:** 20mL/kg bolus IV/IO. May repeat 2x prn for continued hypotension.
- Consult with Poison Control for further orders.

### CONSIDERATIONS POISON CONTROL MAY RECOMMEND

- GLUCAGON:** 1mg IV/IO every minute until hypotension resolves (0.5mg for patients less than 20kg). (if available)
  - Children 20kg or less - Max dose 4mg (if available).
  - Children greater than 20kg - Max dose 5mg (if available).
  - For nausea/vomiting, **ZOFRAN:** 0.1mg/kg IM or slow IV/IO can be administered prn. Max dose 4mg.
- TRANSCUTANEOUS PACING:** For refractory bradycardia, start rate at 80 BPM and increase prn to maintain B/P.

### LUNG SOUNDS

Assess lung sounds frequently. A decrease in myocardial contractility may cause myocardial depression, limiting the amount of fluids the patient can tolerate.

# Ca CHANNEL BLOCKER OVERDOSE



## INFORMATION

Common Calcium Channel Blockers include: Norvasc, Cardizem, Cardene, and Procardia

In addition to the treatment listed below, the Florida Poison Information Center may be contacted at **1-800-222-1222** for further assistance and/or medical control.



## ADULT

### IF PATIENT IS HYPOTENSIVE

- NORMAL SALINE:** 1-2L. Assess lung sounds and blood pressure every 500mL.
- Consult with Poison Control for further orders.

### CONSIDERATIONS POISON CONTROL MAY RECOMMEND

- CALCIUM CHLORIDE:** 1g slow IV/IO.
- TRANSCUTANEOUS PACING:** For refractory bradycardia and heart blocks, start rate at 60 BPM and increase prn to maintain B/P.
- DOPAMINE:** 5-20mcg/kg/minute. Titrate to maintain a systolic blood pressure of 90 mmHg.



## PEDIATRIC

### IF PATIENT IS HYPOTENSIVE

- NORMAL SALINE:** 20mL/kg bolus IV/IO. May repeat 2x prn for continued hypotension.
- Consult with Poison Control for further orders.

### CONSIDERATIONS POISON CONTROL MAY RECOMMEND

- CALCIUM CHLORIDE:** 20mg/kg slow IV/IO every 5-10 minutes until symptoms resolve. Max dose 1gm.
- TRANSCUTANEOUS PACING:** For refractory bradycardia, start rate at 80 BPM and increase prn to maintain B/P.

### LUNG SOUNDS

Assess lung sounds frequently. A decrease in myocardial contractility may cause myocardial depression, limiting the amount of fluids the patient can tolerate.

# COCAINE OVERDOSE



## INFORMATION

Signs of Cocaine overdose include: tachycardia, supraventricular and ventricular arrhythmias, CP/MI, HTN, seizures, excited delirium, and hyperpyrexia. In addition to the treatment listed below, the Florida Poison Information Center may be contacted at **1-800-222-1222** for further assistance and/or medical control.



## ADULT

### PATIENTS PRESENTING WITH SVT, WCT, HTN, OR SEIZURES

- VERSED 2.5 mg IV/IO **OR** 5mg IN/IM. May repeat either route 1x prn.
  - *Contraindicated in hypotension.*
  - *Monitor for respiratory depression.*

### AGITATED PATIENTS

- CONSIDER Violent/Combative or Excited Delirium Protocols.
- KETAMINE: 400mg IM, **OR** KETAMINE: 200mg IV/IO, Max single dose 200mg. May repeat either route 1x prn. (See box below)
- District Captains may consider the need to accompany patient during transport with the exclusion of trauma hawk if Ketamine is administered.
- Follow appropriate arrhythmia protocol if above treatment is unsuccessful.

### FOR PATIENTS PRESENTING WITH CHEST PAIN

- Administer Versed as noted above.
- If no response, refer to "Chest Pain Protocol."



## PEDIATRIC

- Consult with Poison Control for orders.

### IV/IO KETAMINE ADMINISTRATION

ALL 200mg IV/IO Ketamine administration **MUST BE DILUTED IN 8mL of NORMAL SALINE AND ADMINSTERED OVER 1-2 MINUTES**, to avoid laryngospasm.

# NARCOTIC OVERDOSE



## INFORMATION

Common narcotics include: Codeine, Dilaudid, Heroin, Methadone, Oxycontin, Vicodin, Lorcet and Lortab. In addition to the treatment listed below, the Florida Poison Information Center may be contacted at **1-800-222-1222** for further assistance and/or medical control.



## ADULT

- Maintain an SpO<sub>2</sub> of 95% and EtCO<sub>2</sub> levels between 35-45 mmHg.
- NARCAN: 0.5mg IV/IO/IM. Repeat every 1-2 minutes prn for a respiratory rate less than 12 BPM up to 1mg. If no change is noted increase the dose to 2mg increments. Max total dose 10mg.
- NARCAN: 2mg IN. Repeat in 2-3 minutes prn for a respiratory rate less than 12 BPM.
  - For suspected **MULTIPLE DRUG OD non responsive to Narcan**, consider an advanced airway (ETT).



## PEDIATRIC

- Maintain an SpO<sub>2</sub> of 95% and an EtCO<sub>2</sub> between 35-45 mmHg.
- NARCAN: 0.5mg IV/IO/IM or 1mg IN Repeat every 2-3 minutes prn for decreased respirations (less than 20 breaths/minute for children and less than 40 breaths/minute for neonates). Max single dose 0.5mg IV/IO/IM or 1mg IN. Max total dose 2mg.
- Consider intubation for patients who cannot protect their airway.

### GOAL

The goal for managing a narcotic overdose is to maintain adequate respirations, not to fully reverse the sedative effects of the narcotics. Full reversal can cause seizures, non-cardiogenic pulmonary edema, and violent behavior.



# TCA OVERDOSE



## INFORMATION

Common Tricyclic Antidepressants include: Amitriptyline, Desipramine, and Doxepin

Signs of significant TCA overdose include: Coma, Convulsions (seizures), Cardiac arrhythmias & Acidosis. In addition to the treatment listed below, the **Florida Poison Information Center** may be contacted at **1-800-222-1222** for further assistance and/or medical control.



## ADULT

### IF PATIENT IS HYPOTENSIVE

- NORMAL SALINE:** 1-2L, may repeat 1x prn. Assess lung sounds and BP every 500 mL.
- Consult with Poison Control for further orders.

<b>MAD</b>	as a	<b>HATTER</b>
<b>RED</b>	as a	<b>BEET</b>
<b>HOT</b>	as	<b>HELL</b>
<b>DRY</b>	as a	<b>BONE</b>
<b>BLIND</b>	as a	<b>BAT</b>

### FOR PATIENT WITH A QRS COMPLEX GREATER THAN .10 SECONDS (2.5 SMALL BOXES)

- SODIUM BICARBONATE:** 50 mEq slow IV/IO every 5 minutes until ECG changes are resolved. Maximum 150 mEq.



## PEDIATRIC

### IF PATIENT IS HYPOTENSIVE

- NORMAL SALINE:** 20mL/kg bolus IV/IO. May repeat 2x prn for continued hypotension.
- Consult with Poison Control for further orders.

### CONSIDERATIONS POISON CONTROL MAY RECOMMEND

- For patients with a QRS complex greater than 0.08 seconds (2 small boxes) or for patients who remain hypotensive after 20ml/kg fluid bolus, **SODIUM BICARBONATE 8.4%:** 1mEq/kg slow IV/IO.
- For neonates, **SODIUM BICARBONATE 4.2%:** 1mEq/kg slow IV/IO (Discard 25mL of 8.4% and draw up 25 mL of Normal Saline).
- TRANSCUTANEOUS PACING:** For refractory bradycardia, start rate at 80 BPM and increase prn to maintain B/P.

### WIDE QRS COMPLEX

TCA's cause death primarily through lethal arrhythmias. A wide QRS is an ominous sign and must be treated with Sodium Bicarbonate. Sodium Bicarbonate may be administered as indicated above, while simultaneously contacting Poison Control for further orders.



# CHEMICAL CONTROL



**PHYSICAL RESTRAINT**

**EXCITED DELIRIUM**

**VIOLENT / COMBATIVE PATIENT**

**PAIN MANAGEMENT**

**ADVANCED AIRWAY**



# PHYSICAL RESTRAINT

---



## INFORMATION

Restrain patients only if necessary to protect the patient or personnel from harm. Restrained patients shall be positioned in a supine, Semi-Fowler's or lateral position.

**RESTRAINED PATIENTS SHALL NOT BE PLACED IN A PRONE POSITION.**



## ADULT & PEDIATRIC



## PHYSICAL RESTRAINT

- Do not hogtie the patient.
- Do not compress the head or neck with a knee, foot, etc.
- Keep patient in an upright position to allow for hyperventilation (excited delirium only).
- Restrained patients shall not be left unattended.
- Frequently monitor and document vital signs, airway, and neurovascular status.

# EXCITED DELIRIUM



## INFORMATION

"Excited Delirium" presents as bizarre, aggressive behavior which may be associated with cocaine or "crack", PCP or "angel dust", methamphetamine or amphetamine use.



## ADULT

### PROCEDURE

- Law enforcement must first gain physical control of the patient.
- KETAMINE:** 400mg IM. May repeat 1x prn. Max single dose 400mg.
- District Captains may consider the need to accompany patient during transport if Ketamine is administered.
- Allow patient to hyperventilate.
- Do not hold the patient in a prone position.
- Once calm, physical restraints may be unnecessary, but may be used as an added precaution.

### AFTER KETAMINE ADMINISTRATION

- Continuously monitor and maintain patient's SpO<sub>2</sub> at 95% and EtCO<sub>2</sub> between 35-45mmHg.
- Obtain IV access.
- If patient begins to wake up: **VERSED 2.5mg IV/IO slowly over 2 minutes OR VERSED 5mg IN/IM.**  
**BE PREPARED FOR RESPIRATORY DEPRESSION AND HYPOTENSION.**
- Obtain a temperature.

### ADVERSE REACTION TO KETAMINE

- Hypersalivation: Administer **ATROPINE 0.5mg IV/IM/IO.**
- Laryngospasm (Stridor): Try these interventions in the following order: High flow O<sub>2</sub>, BVM, rapid sequence intubation.
  - *Laryngospasm is uncommon and is usually self-limiting. It almost always resolves with high flow O<sub>2</sub> or brief ventilation via BVM.*

### RAPID COOLING FOR A TEMPERATURE OF GREATER THAN 103 DEGREES F

- Apply ice packs to axilla and groin area.
- COLD NORMAL SALINE:** (If available) 30mL/kg IV/IO, assess lung sounds and blood pressure every 500mL. Maximum 2L.
- SODIUM BICARBONATE 8.4%:** 50 mEq slow IV/IO.



## PEDIATRIC

- N/A



# VIOLENT / COMBATIVE PATIENT



## INFORMATION

Indicated for violent, agitated patients who place themselves and/or crew in danger

## ADULT

### PROCEDURE

- If possible, Law enforcement must first gain physical control of the patient.
- KETAMINE:** 400mg, Max single dose 400mg **OR** **KETAMINE:** 200mg IV/IO, Max single dose 200mg. May repeat either route 1x prn. (See box below)
- District Captain may consider the need to accompany patient during transport if Ketamine is administered.
- Allow patient to hyperventilate.
- Do not hold the patient in a prone position.
- Once calm, physical restraints may be unnecessary, but may be used as an added precaution.

### AFTER KETAMINE ADMINISTRATION

- Continuously monitor and maintain patient's SpO<sub>2</sub> at 95% and EtCO<sub>2</sub> between 35-45mmHg.
- Obtain IV access.
- If patient begins to wake up: **VERSED** 2.5mg IV/IO slowly over 2 minutes **OR** **VERSED** 5mg IN/IM.

**BE PREPARED FOR RESPIRATORY DEPRESSION AND HYPOTENSION.**

### ADVERSE REACTION TO KETAMINE

- Hypersalivation: Administer **ATROPINE** 0.5mg IV/IM/IO.
- Laryngospasm (Stridor): Try the following interventions in the order of: High flow O<sub>2</sub>, BVM, rapid sequence intubation.
  - *Laryngospasm is uncommon and is usually self-limiting. It almost always resolves with high flow O<sub>2</sub> or brief ventilation via BVM.*



## PEDIATRIC

- N/A

### IV/IO KETAMINE ADMINISTRATION

**ALL 200mg IV/IO Ketamine administration MUST BE DILUTED IN 8mL of NORMAL SALINE AND ADMINISTERED OVER 1-2 MINUTES, to avoid laryngospasm.**

# PAIN MANAGEMENT



## INFORMATION

When administering pain medications continuously monitor the ECG. Maintain the SpO<sub>2</sub> at 95% and the EtCO<sub>2</sub> between 35-45 mmHg. Monitor patient's blood pressure and respirations prior to and after administering Fentanyl and/or Ketamine. Pain management can be administered to all patients complaining of pain **with the exception of pregnant women near term (32 weeks or greater) or in active labor.**



## ADULT

- Fentanyl is the front line medication for pain, however Ketamine is preferred for hypotensive patients or patients who have opiate contraindications (allergy, history of abuse, etc.)
- FENTANYL: 50mcg slow IV/IO **OR** 100mcg IM/IN. May repeat every 5 minutes prn. Max total dose 200mcg.
  - **Monitor patient for respiratory depression.**
  - **Discontinue if patient becomes drowsy.**
- To reverse respiratory depression or chest wall rigidity: **NARCAN**: 0.5mg IV/IO/IM every 2-3 minutes prn or 2mg IN. Max total dose 10mg.

## FOR CONTINUED PAIN MANAGEMENT

- Ketamine may be given concurrently with or instead of Fentanyl for severe pain.
- KETAMINE: 25mg IV/IO. May repeat 2x every 5 minutes prn. Max total dose 75mg IV/IO. *Refer to the box at the bottom of the page for administration instructions.*
  - **Rapid IV administration is associated with respiratory depression, apnea, and higher than usual increases in blood pressures.**
  - **Ketamine is contraindicated for non-traumatic Chest Pain and pregnant patients.**

## IO INFUSION PAIN MANAGEMENT

- LIDOCAINE: 40mg IO over one minute. Allow Lidocaine to dwell in IO space for one minute and flush with **NORMAL SALINE** 10mL. May administer additional LIDOCAINE: 20mg IO over one minute prn.

### KETAMINE ADMINISTRATION INSTRUCTIONS:

Using a 1mL syringe, draw up **0.25mL** of Ketamine followed by **0.75mL** of Normal Saline. This will equal a concentration of **25mgs** in 1mL. Administer this slowly over **1 minute**. This may be repeated in 5 minutes 2x prn to a max total dose of **75mgs**.

### CHEST WALL RIGIDITY

Fentanyl administration can cause rigidity in the chest wall which can result in difficulty ventilating the patient and respiratory failure. Although rare, it can occur at any age. Administering Fentanyl too fast can increase the risk. If chest wall rigidity occurs after the administration of Fentanyl, it can be reversed with Narcan.



## PEDIATRIC

- ❑ FENTANYL: (Greater than 6 months old) 1mcg/kg slow IV/IO/IM May repeat every 5-10 mins prn. Max single dose 50mcg. Max total dose 150mcg.
- ❑ FENTANYL: (Greater than 6 months old) 1.5mcg/kg IN. May repeat every 5-10 mins prn. Max single dose 50mcg. Max total dose 150mcg.
  - Monitor patient for respiratory depression.
  - Discontinue if patient becomes drowsy.
  - Contraindicated in age appropriate hypotension.
  - To reverse respiratory depression or chest wall rigidity, administer NARCAN 0.5mg IV/IO/IM or 1mg IN every 2-3 minutes prn. Max total dose 2mg.
- ❑ ZOFRAN: 0.1mg/kg, IM, or slow IV/IO/PO over 2 minutes prn nausea/vomiting secondary to Fentanyl administration. Max dose 4mg.

**ZOFRAN ADMINISTRATION:** If IV access is unobtainable, it is acceptable to administer the IV formulation of Zofran via the PO route to the patient.

### CHEST WALL RIGIDITY

Fentanyl administration can cause rigidity in the chest wall which can result in difficulty ventilating the patient and respiratory failure. Although rare, it can occur at any age. Administering Fentanyl too fast can increase the risk. If chest wall rigidity occurs after the administration of Fentanyl, it can be reversed with Narcan.



# ADVANCED AIRWAY



## INFORMATION

Once paralytics are administered, the District Captain/Flight Crew shall be responsible for ensuring an airway is obtained & accompany the patient to the emergency room (excluding air rescue transport). In the event of multiple patients, the District Captain should accompany the most critical patient and turn over the additional patients to the next most experienced paramedic.

### INDICATIONS FOR PARALYTICS

- Status Epilepticus
- Multi-System Trauma
- Head Injury / GCS 8 or Less
- Trismus (Lock-Jaw) or clenched teeth
- Burn injuries to the upper airway
- District Captain or Flight Crew Discretion

### CONTRAINDICATIONS FOR SUCCINYLCHOLINE

- Predicted difficult intubation: obesity, short neck, small mouth
- Thyromental distance of less than 3 finger widths
- Major facial or laryngeal trauma
- Patient who cannot be assisted with a BVM
- Penetrating eye injuries, Glaucoma
- Organophosphate poisoning
- Renal failure (dialysis / hyperkalemia)
- Known hypersensitivity or history of malignant hyperthermia
- Preexisting neuromuscular disease
- Chronic paralysis



## ADULT

### INDUCTION FOR AIRWAY CONTROL

ETOMIDATE: 30mg or 0.3mg/kg IV/IO over 30-60 seconds. May repeat 1x prn.

**OR**

KETAMINE: 200mg IV/IO. May repeat 1x prn. Max single dose 200mg. **THIS MUST BE DILUTED IN NORMAL SALINE.**

### PARALYTIC (**DISTRICT CAPTAINS AND FLIGHT CREW**)

SUCCINYLCHOLINE: 100mg IV/IO

Once successfully intubated: NORCURON: 0.1mg/kg IV/IO. Max dose 10mg **OR**

ROCURONIUM: 50mg IV/IO. May repeat 1x prn.

### POST INTUBATION SEDATION (**ALL PATIENTS THAT RECEIVED A PARALYTIC MUST BE TREATED WITH EITHER OF THE FOLLOWING MEDICATIONS, REGARDLESS OF THE INDUCTION MEDICATION OR DOSE**)

KETAMINE: 200mg IV/IO as needed to maintain sedation. May repeat 1x prn. Max single dose 200mg. **THIS MUST BE DILUTED IN NORMAL SALINE.**

**OR**

VERSED: 2.5 mg IV/IO as needed to maintain sedation. May repeat 1x prn. Ketamine is a better option for hypotensive patients.

**ADULT AND PEDIATRIC PATIENTS SHALL RECEIVE HIGH FLOW O2 VIA NASAL CANNULA PRIOR TO AND DURING THE PROCEDURE**





## PEDIATRIC

### UNDER 36 MONTHS

#### INDUCTION FOR AIRWAY CONTROL

- ETOMIDATE: 0.3mg/kg IV/IO over 30-60 seconds. Max single dose 20mg. May repeat 1x prn.

#### PRE-TREATMENT FOR PARALYTIC

- ATROPINE: 0.02mg/kg IV/IO. Minimum single dose 0.1mg. Max single dose 0.5mg.

#### PARALYTIC *(DISTRICT CAPTAINS AND FLIGHT CREW)*

- SUCCINYLCHOLINE: 2mg/kg IV/IO. Max dose 100mg
- Once successfully intubated: NORCURON: 0.1mg/kg IV/IO. Max dose 10mg **OR**  
ROCURONIUM: 1mg/kg IV/IO. May repeat 1x prn. Max single dose of 50mg.

#### POST INTUBATION SEDATION *(REQUIRED FOR ALL PATIENTS)*

- All patients must receive additional sedation with:** VERSED: 0.1mg/kg IV/IO/IM max single dose of 2.5mg. May repeat 1x prn. Max total dose 5 mg.

### 36 MONTHS AND OVER

#### INDUCTION FOR AIRWAY CONTROL

- ETOMIDATE: 0.3mg/kg IV/IO over 30-60 seconds. Max single dose 20mg. May repeat 1x prn.

**OR**

- KETAMINE 1mg/kg IV/IO/IM. May repeat 1x prn. Max single dose 50mg. **THIS MUST BE DILUTED IN NORMAL SALINE**

#### PARALYTIC *(DISTRICT CAPTAINS AND FLIGHT CREW)*

- SUCCINYLCHOLINE 1mg/kg IV/IO. Max dose 100mg
- Once successfully intubated: NORCURON 0.1mg/kg IV/IO. Max dose 10mg **OR**  
ROCURONIUM: 1mg/kg IV/IO. May repeat 1x prn. Max single dose of 50mg.

#### POST INTUBATION SEDATION *(REQUIRED FOR ALL PATIENTS)*

- VERSED: 0.1mg/kg IV/IO/IM max single dose of 2.5mg. May repeat 1x prn. Max total dose 5mg.

**OR**

- If patient is hypotensive, KETAMINE: 1mg/kg IV/IO/IM. May repeat 1x prn. Max single dose 50mg. **THIS MUST BE DILUTED IN NORMAL SALINE**

# ENVIRONMENTAL EMERGENCIES

---



**DECOMPRESSION SICKNESS**

**FATAL DROWNING / NON-FATAL DROWNING**

**HEAT EMERGENCIES**

**BITES AND STINGS**

**CARBON MONOXIDE EXPOSURE**

**CYANIDE EXPOSURE**





# DECOMPRESSION SICKNESS



## INFORMATION

Signs and symptoms of decompression sickness include stroke-like signs and symptoms such as: visual disturbances, AMS, paralysis or weakness, numbness/tingling, bowel/bladder dysfunction. Any patient with these signs and symptoms who has used SCUBA gear or compressed air within a 48-hour period shall be considered a dive emergency, unless it is certain that the patient has had an unrelated trauma. Divers in cardiac arrest should be transported to St. Mary's Medical Center for hyperbaric treatment (encode prior to transport to confirm availability of Hyperbaric chamber). If unavailable transport to closest ED.



## ADULT & PEDIATRIC



- Apply high flow oxygen.
- Maintain the EtCO<sub>2</sub> between 35-45 mmHg.
- If patient is apneic or obtunded, assist respirations and intubate prn.
- Place the patient in a supine position.
- Treat arrhythmias as per appropriate protocol.
- Rule out a tension pneumothorax.
- NORMAL SALINE: 500mL bolus (Regardless of BP). May repeat 1x to a max of 1L.**
  - If patient has SOB, decreased breath sounds or hemoptysis, fluids should be decreased to a KVO rate.
- Transport all patients with suspected decompression sickness to St. Mary's Hyperbaric Chamber (encode prior to transport to confirm availability of Hyperbaric chamber). If unavailable transport to closest ED.
- Contact DAN (Diver Alert Network) at **(919) 684-4326** for medical consultation as needed.

### DIVE HISTORY

Try to obtain an accurate history of the dive; i.e., number of dives, depth of dives, interval between dives and type of air mixture in tanks.

# FATAL DROWNING / NON-FATAL DROWNING



## INFORMATION

Spinal Motion Restriction: routine stabilization of the cervical spine is not necessary in the absence of circumstances that suggest a spinal injury occurred, such as: diving, rough surf, vehicle accident with subsequent submersion, etc.



## ADULT

### FATAL DROWNING

- Follow appropriate cardiac arrest protocol. Drowning is treated as a **SECONDARY ARREST**. Immediate **VENTILATION** is a priority.
- If ROSC is obtained, induce hypothermia (ICE) only if patient's temperature is normothermic or hyperthermic
- No drowning victim is to be pronounced dead at the scene if the possibility of hypothermia exists. Remove patient's wet clothes, dry, and cover with blankets.

### NON-FATAL DROWNING

- All non-fatal drowning patients must be transported to the hospital.
- Follow appropriate cardiac arrhythmia protocol prn.
- CPAP: (10 cm H<sub>2</sub>O) for pulmonary edema secondary to near drowning (For patients greater than 30 kg).

### IF PATIENT IS HYPOTENSIVE WITH CLEAR LUNG SOUNDS

- NORMAL SALINE:** 1-2L. Assess lung sounds and blood pressure every 500mL.

### IF PATIENT IS HYPOTENSIVE WITH PULMONARY EDEMA

- DOPAMINE:** 5-20mcg/kg/min, titrated to maintain a SBP of 90 mmHg.

# FATAL DROWNING / NON-FATAL DROWNING

Continued....



## PEDIATRIC

### FATAL DROWNING

- Follow appropriate cardiac arrest protocol.
- No drowning victim is to be pronounced dead at the scene if the possibility of hypothermia exists. Remove patient's wet clothes, dry, and cover with blankets.

### NON-FATAL DROWNING

- All non-fatal drowning patients must be transported to the hospital.
- Follow appropriate cardiac arrhythmia protocol prn.

### IF PATIENT IS HYPOTENSIVE WITH CLEAR LUNG SOUNDS

- NORMAL SALINE:** 20ml/kg bolus IV/IO. May repeat 2x prn. Assess lung sounds and blood pressure frequently.

# HEAT EMERGENCIES



## INFORMATION

Signs & Symptoms of heat stroke include: AMS; seizures; hypotension; tachycardia; red, hot, flushed skin. Sweating may be absent.



## ADULT

### HEAT CRAMPS & HEAT EXHAUSTION

- Move patient into a shaded or air conditioned area. Remove excessive clothing.
- Provide **ORAL HYDRATION** (preferably water) if available.
- Monitor patient for an altered mental status, which may indicate a heat stroke.
- NORMAL SALINE:** 1L IV/IO. Assess lung sounds and blood pressure every 500mL.

### HEAT STROKE

- Patients with a heat-related illness associated with an altered mental status should be considered to have heat stroke once all the other possibilities for the AMS have been ruled out (hypoglycemia, drugs/alcohol, trauma, etc.)
- Move patient into the back of the rescue as soon as possible. Decrease the air-conditioning temperature in the patient compartment.
- Obtain a temperature.

### IF THE PATIENT IS HYPOTENSIVE WITH A TEMPERATURE LESS THAN 103 DEGREES F

- NORMAL SALINE:** 1-2L. Assess lung sounds and blood pressure every 500mL.

### IF THE PATIENT HAS A TEMPERATURE OF GREATER THAN 103 DEGREES F BEGIN RAPID COOLING

- Apply **ICE PACKS** to axilla and groin area. Do **NOT** cool to the point of shivering.
- CHILLED NORMAL SALINE:** (if available) 30mL/kg IV/IO, assess lung sounds and blood pressure every 500mL, maximum 2L.

### IF PATIENT IS SEIZING

- VERSED** 2.5 mg IV/IO **OR** 5mg IN/IM. May repeat either route 1x prn.



## PEDIATRIC

### HEAT CRAMPS & HEAT EXHAUSTION

- Move patient into a shaded or air conditioned area. Remove excessive clothing.
- Provide **ORAL HYDRATION** (preferably water) if available.
- Monitor patient for an altered mental status, which may indicate a heat stroke.
- NORMAL SALINE:** 20ml/kg bolus IV/IO. May repeat 2x prn. Assess lung sounds frequently.

### HEAT STROKE

- Patients with a heat-related illness associated with an altered mental status should be considered to have heat stroke once all the other possibilities for the AMS have been ruled out (hypoglycemia, drugs/alcohol, trauma, etc.).
- Move patient into the back of the rescue as soon as possible. Decrease the air-conditioning temperature in the patient compartment.
- Obtain a temperature.

### IF THE PATIENT IS HYPOTENSIVE WITH A TEMPERATURE LESS THAN 103 DEGREES F

- NORMAL SALINE:** 20ml/kg bolus IV/IO. May repeat 2x prn. Assess lung sounds and blood pressure frequently.

### IF THE PATIENT HAS A TEMPERATURE OF GREATER THAN 103 DEGREES F BEGIN RAPID COOLING

- Apply **ICE PACKS** to axilla and groin area. Do not cool to the point of shivering.
- CHILLED NORMAL SALINE: (If available)** 30mL/kg IV/IO. May repeat 2x prn for hypotension. Assess lung sounds and blood pressure frequently.

### IF PATIENT IS SEIZING

- VERSED:** 0.1mg/kg IV/IO (max single dose 2.5mg) **OR** 0.2 mg/kg IN/IM (max single dose of 5mg). May repeat either route 1x prn.



# BITES AND STINGS



## INFORMATION

This protocol includes the treatment for snake bites, dog and cat bites, insect stings, and marine animal envenomations and stings. Florida Poison Information Center may be contacted at **1-800-222-1222** OR DAN (Divers Alert Network) at **(919) 684-4326** for further assistance and/or medical control.



## ADULT & PEDIATRIC



### SNAKE BITES

- Mark area of edema with a pen.
- DO NOT** apply ice packs, tourniquets or constrictive bands.
- Remove any constrictive jewelry or clothing.
- If the **DEAD** snake is on scene, take a picture of the head including the eyes with the ePCR device if possible.
- ADULT:** If patient is hypotensive, **NORMAL SALINE:** 1-2L. Assess lung sounds and blood pressure every 500mL.
- PEDIATRIC:** If patient is hypotensive, **NORMAL SALINE:** 20ml/kg bolus IV/IO. May repeat 2x prn. Assess lung sounds and blood pressure frequently.
- Splint any extremity that has received a bite and ensure it remains below the heart.
- Consider Pain Management Protocol.

### DOG, CAT AND WILD ANIMAL BITES

- Wound care as appropriate (**DO NOT** use hydrogen peroxide on deep puncture wounds or wounds exposing fat).
- Clean the wound area with soap and water or sterile water.
- Advise dispatch to contact animal control and the police department for identification and quarantine of the animal if necessary.
- Consider Pain Management Protocol.

### INSECT STINGS

- Consider the need for Allergic Reaction Protocol if appropriate.
- Remove the stinger by scraping the patient's skin with the edge of a flat surface (i.e. a credit card). **DO NOT** attempt to pull the stinger out, as this action may release more venom.
- Clean the wound area with soap and water or sterile water.
- Consider Pain Management Protocol.



## ADULT & PEDIATRIC



### MARINE ANIMAL ENVENOMATIONS: STINGRAY, SCORPIONFISH, LIONFISH, ZEBRAFISH, STONEFISH, CATFISH, WEEVERFISH, STARFISH, SEA URCHIN

- Consider the need for Allergic Reaction Protocol if appropriate.
- Immerse the punctures in non-scalding hot water (if available) to achieve pain relief.
- Gently wash the wound with soap and water, and then irrigate it vigorously with sterile water (avoid scrubbing).
- Consider Pain Management Protocol.

### MARINE ANIMAL STINGS: JELLYFISH, MAN-OF-WAR, SEA NETTLE, IRUKANDJI, ANEMONE, HYDROID, FIRE CORAL

- Consider the need for Allergic Reaction Protocol if appropriate.
- Rinse the skin with sea water (if available). (DO NOT use fresh or sterile water; DO NOT apply ice; DO NOT rub the skin.)
- Apply white vinegar (if available) topically to involve area until the pain is relieved.
- Remove large tentacle fragments using forceps. Make sure to have proper PPE on and be standing upwind when performing this procedure.
- Consider Pain Management Protocol.

### HUMAN BITES

- Clean the wound area with soap and water or sterile water. (DO NOT use hydrogen peroxide on deep puncture wounds or wounds exposing fat).
- Consider contacting the police department for investigation if appropriate.
- Consider Pain Management Protocol.

# CARBON MONOXIDE EXPOSURE



## INFORMATION

Carbon Monoxide (CO) is a chemical asphyxiant. It is a colorless, odorless and tasteless gas that is slightly less dense than air. It is toxic to humans when encountered in concentrations above 35 parts per million (ppm). Lower doses of CO can also be harmful due to a cumulative effect. Patients exposed to carbon monoxide (smoke inhalation, etc.) require a full head to toe patient examination with SpCO monitoring with the rainbow sensor if available.



## ADULT & PEDIATRIC



### REMOVE FROM HAZARDOUS ATMOSPHERE PRIOR TO TREATMENT

- All rescuing crew members shall wear their SCBA if the patient is in a hazardous environment
- Consider Cyanide Toxicity

### MEASURE SpCO LEVELS (THIS REQUIRES THE RAINBOW SENSOR)

- If 20% **OR** greater **OR** less than 20% with any of the following Signs and Symptoms of Carbon Monoxide poisoning, administer high flow oxygen and transport to St. Mary's Medical Center Hyperbaric Chamber (encode prior to transport to confirm availability of Hyperbaric chamber). If unavailable transport to closest ED.

- Headache
- Nausea/Vomiting
- Dizziness
- Altered Mental Status
- Chest pain
- Dyspnea
- Visual Disturbances
- Seizures
- Syncope

Patients with CO poisoning can have normal pulse oximetry readings and still be hypoxic. Strong consideration for hyperbaric treatment should be given to all pediatric and obstetrical patients with confirmed CO exposure due to their higher susceptibility to the effects of CO poisoning regardless of SpCO level or symptoms.

# CYANIDE EXPOSURE



## INFORMATION

AMS and/or pupil dilation are highly suggestive of a true cyanide poisoning. Other symptoms may include: general weakness, confusion, bizarre behavior, excessive sleepiness, coma, shortness of breath, headache, dizziness and seizures.



## ADULT

### CONFIRMED OR SUSPECTED CYANIDE POISONING

- OXYGEN: NRB @ 15 liters/min
- CYANOKIT: 5g IV/IO, infused over 10-15 minutes. May repeat 1x prn for a max total dose of 10g for severe cases.
- The CYANNOKIT should be administered through a separate/dedicated IV/IO line.
  - CYANOKITS are located on the District Captain's or Special Operations vehicles



## PEDIATRIC

### CONFIRMED OR SUSPECTED CYANIDE POISONING

- OXYGEN: NRB @ 15 L/min
- CYANOKIT: Refer to the Handtevy toxicology page for instructions on dosing
- The CYANNOKIT should be administered through a separate/dedicated IV/IO line.
  - CYANOKITS are located on the District Captain's or Special Operations vehicles

**CARDIAC ARREST:** All patients that are suspected to be in cardiac arrest secondary to cyanide poisoning should be treated as a SECONDARY cardiac arrest and administered the CYANOKIT.

Cyanide poisoning may result from inhalation, ingestion or absorption from various cyanide containing compounds, including exposure to fire or smoke in an enclosed space.

Direct cyanide exposure (non-smoke inhalation) is a Hazardous Materials Incident.



# TRAUMA



**TRAUMA STANDING ORDERS**  
**START TRIAGE**  
**JUMP START TRIAGE**  
**TRAUMA SCORECARDS**  
**TRAUMA ARREST**  
**ABDOMINAL TRAUMA**  
**BURN INJURIES**  
**CHEST TRAUMA**  
**EXTREMITY TRAUMA**  
**EYE INJURIES**  
**FEMUR FRACTURES**  
**HEAD INJURIES**  
**HIP FRACTURE/DISLOCATION**  
**PELVIC TRAUMA**  
**HEMORRHAGIC SHOCK**  
**SPINAL MOTION RESTRICTION**  
**TRAUMA IN PREGNANCY**

# TRAUMA STANDING ORDERS



## INFORMATION

### SCENE MANAGEMENT

- When appropriate, use the START or JumpSTART (ages 1-8) Triage System to triage patients.
- Trauma Alert patients shall be transported to closest appropriate Trauma Center, unless they are on bypass. Then go to next closest approved Trauma facility.
- On-scene times for Trauma Alert patients should be 10 minutes or less. On-scene times greater than 10 minutes shall have the reason for the delay documented in the ePCR report.
- IV attempts shall not delay transport. A minimum of two large bore IV's should be initiated for all Trauma Alert patients. IO's are not recommended for trauma patients requiring aggressive fluid resuscitation; however, if unable to establish an IV, an IO (preferably Proximal Humerus) should be placed.
- Unless otherwise noted, IV fluids should be given for a SBP less than 90 mmHg and should be given at a rate (boluses) necessary to maintain peripheral pulses (which is typically a SBP of 80-90 mmHg).
- A minimum of 1 paramedic and 1 EMT must accompany a trauma alert patient in the back of the rescue, provided it does not cause a significant delay in transport.
- The only things that can cause the treating paramedic to interrupt the primary survey are an unsafe scene or airway obstruction. Respiratory arrest, dyspnea, or bleeding control should be delegated to a crew member so that the treating paramedic does not have to interrupt the primary survey.

**THE FOLLOWING CONDITIONS SHOULD BE MANAGED AS SOON AS THEY ARE DISCOVERED. THESE INTERVENTIONS SHOULD BE COMPLETED BY ANOTHER TEAM MEMBER SO THAT THE PRIMARY SURVEY IS NOT DISRUPTED.**

- Maintain airway (positioning, suctioning, ETT/SGA, cricothyrotomy)
- Assist respirations for a respiratory rate less than 10 or EtCO<sub>2</sub> greater than 45
- Apply Spinal Motion Restriction for neck tenderness or an AMS with MOI present
- Control major bleeding (direct pressure or a C-A-T)
- Tension Pneumothorax (needle decompression)

### MASS CASUALTY INCIDENTS

- Level I = 5-10 patients
- Level II= 11-20 patients
- Level III= 21-100 patients
- Level IV= 101-1000 patients
- Level V= Greater than 1000 patients



# START TRIAGE - ADULT



Move the walking wounded

**MINOR**

No respirations after head tilt

**DEAD**

**R**espirations > 30/min.

**IMMEDIATE**

**P**erfusion

No radial pulse

Cap refill > 2 sec (*Control Bleeding*)

**IMMEDIATE**

**M**ental Status

Unable to follow simple commands

**IMMEDIATE**

Otherwise

**DELAYED**

**C  
O  
N  
T  
A  
M  
I  
N  
A  
T  
E  
D**

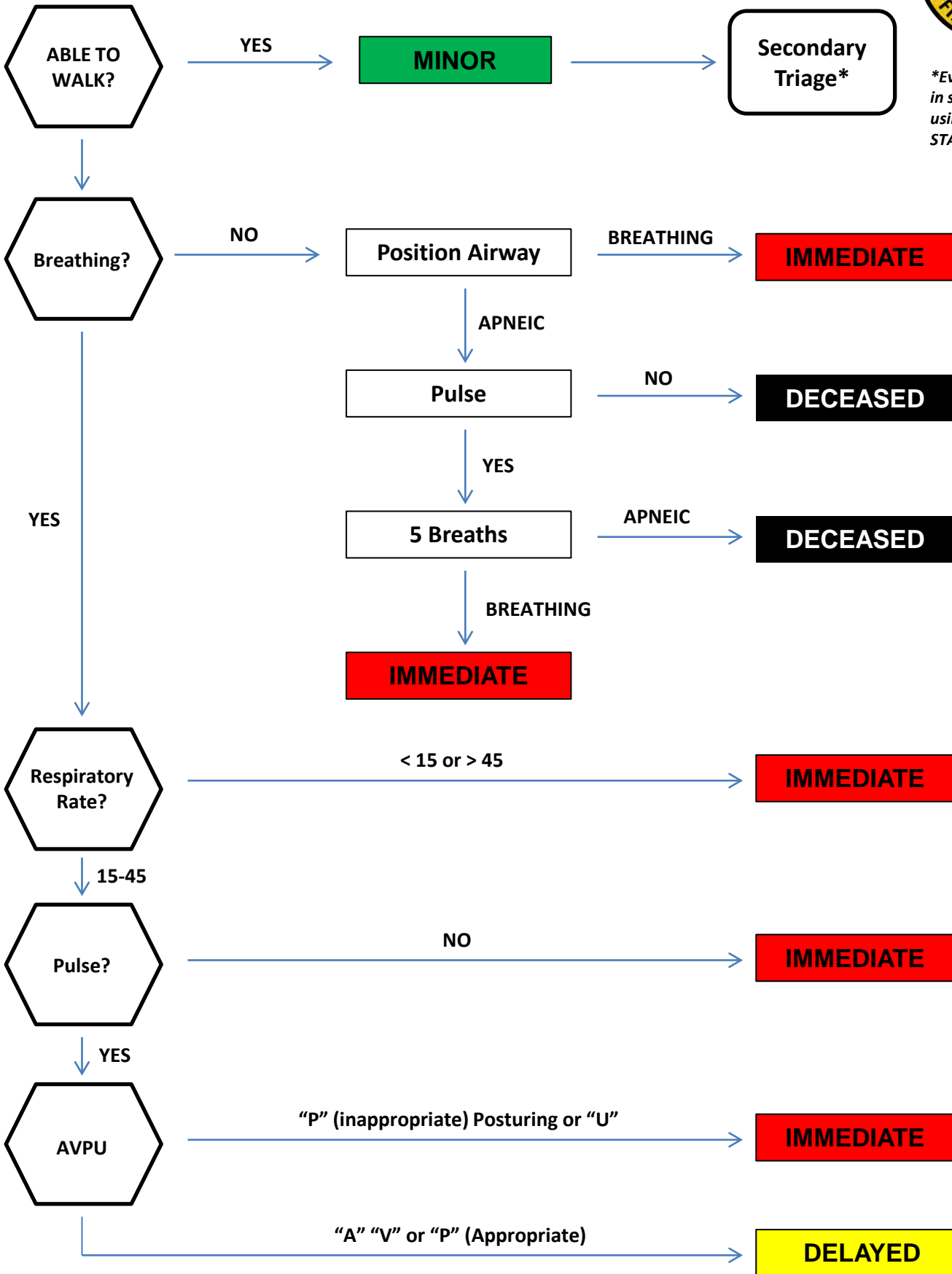
The goal of the START program is to provide the  
"greatest good for the greatest number of patients."



# JUMP START TRIAGE - AGES: 1-8



*\*Evaluate infants first in secondary triage using the entire Jump-START algorithm*





## INFORMATION

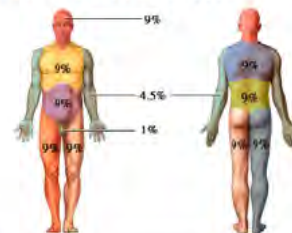
### TRAUMA CRITERIA

#### GRAY CRITERIA

*Patients who do not meet "Trauma Alert" criteria, but meet one (1) or more of the following criteria may be at risk of serious injury and special consideration should be given to them, including bypass of a local hospital and transport to the nearest Trauma Center:*

- Blunt head, chest or abdominal trauma on blood thinners with high risk of bleeding or history of a bleeding disorder
- 65 years or older sustaining blunt trauma exhibiting minimal symptoms or borderline criteria
- 65 years or older with SBP <110 mmHg
- MVC > 20 mph, with seatbelt marks on the torso
- MVC with partial ejection from an automobile
- End stage renal disease on dialysis

GLASCOW COMA SCALE		
EYE OPENING	VERBAL RESPONSE	MOTOR RESPONSE
4 Spontaneous	5 Oriented	6 Obeys
3 To Voice	4 Confused	5 Localize
2 To Pain	3 Inappro. Words	4 Withdraw
1 None	2 Unintelligible	3 Flexion
	1 None	2 Extend
		1 None



**ADULT TRAUMA TRIAGE CRITERIA**  
(adult = 16 years of age or older)

**ANY 1 IN THIS CATEGORY (RED)**

- Active airway assistance or Respiratory rate <10 or > 29 BPM
- Lack of radial pulse with a sustained HR > 120 BPM or BP <90 mmHg
- Glasgow Coma Scale (GCS) ≤ 13 or presence of paralysis or suspicion of spinal cord injury or loss of sensation
- 2nd or 3rd degree burns to 15% or more TBSA
- Amputation at or above the wrist or ankle
- Any penetrating injury to head, neck, or torso (excludes superficial wounds with known depth)
- GSW or penetrating injury to the extremity at or above the elbow or knee
- Chest wall instability or deformity (flail chest)
- Crushed, mangled, degloved or pulseless extremity
- Fracture of two or more long bones
- Unstable pelvic fractures
- Severe facial injury/fractures with potential airway compromise
- Electrocution or lightning injury with loss of consciousness or visible signs of injury
- Blunt abdominal or chest trauma in patient with history of paralysis (paraplegia or quadriplegia)
- Pregnancy ≥20 wks with abdominal pain after blunt trauma\*

**ANY 2 IN THIS CATEGORY (BLUE)**

- Sustained heart rate ≥ 120 beats/min
- Head injury with loss of consciousness, amnesia or new altered mental status
- Soft tissue loss
- Penetrating injury to the extremities distal to the elbow or distal to the knee (excludes superficial wounds with known depth)
- Single long bone fracture site due to MVC
- Single long bone or pelvic fracture in patient with bleeding disorder or anticoagulant
- 55 years or older
- Ejection or thrown from automobile, motorcycle, or golf cart
- Ejection or thrown from a horse with anatomical injury
- Death in same passenger compartment
- Intrusion into roof: >12 inches at occupant site or >18 inches at any other site into the passenger compartment
- Vehicle telemetry data consistent with high risk of injury
- Fall 20 ft or more
- Auto vs. pedestrian/bicyclist thrown, run over with impact ≥ 20 mph
- Motorcycle, golf cart or ATV crash >20 mph

**LOCAL CRITERIA - ANY 1, CONSIDER TRAUMA TRANSPORT (GREY)**

- Blunt head, chest or abdominal trauma on blood thinners with high risk of bleeding or with history of a bleeding disorder
- 65 years or older sustaining blunt trauma exhibiting minimal symptoms or borderline criteria
- 65 years or older with BP < 110 mmHg
- MVC > 20 mph with seatbelt marks in the torso
- MVC with partial ejection from an automobile
- End stage renal disease on dialysis

\* Pregnant patients requiring air transport will be taken to St. Mary's Trauma Center

\* In the event that a patient does not meet either 1 Red or 1 Blue criterion during the assessment of the trauma patient, the paramedic can call a trauma alert, if in his/her judgment, the patient's condition warrants such an action. Where paramedic judgment is used, it shall be documented.



# PBCFR - 2014 TRAUMA TRANSPORT PROTOCOL SCORECARD

GLASCOW COMA SCALE		
EYE OPENING	VERBAL RESPONSE	MOTOR RESPONSE
4 Spontaneous	5 Oriented	6 Obeys
3 To Voice	4 Confused	5 Localize
2 To Pain	3 Inappro. Words	4 Withdraw
1 None	2 Unintelligible	3 Flexion
	1 None	2 Extend
		1 None



## PEDIATRIC TRAUMA TRIAGE CRITERIA (pediatric = 15 years of age or younger)

### ANY 1 IN THIS CATEGORY (RED)

- Active airway assistance, respiratory rate <20 in infant < 1 year, respiratory rate <10 in children 1 year to 15 years
- Faint or non-palpable carotid or femoral pulse or systolic BP <50 mmHg
- Altered mental status or presence of paralysis or suspicion of spinal cord injury or loss of sensation
- Major tissue disruption or major flap avulsion
- 2nd or 3rd degree burns to 10% or more TBSA
- Any penetrating injury to head, neck, or torso (excludes superficial wounds with known depth)
- GSW or penetrating injury to the extremity at or above the elbow or knee
- Amputation at or above the wrist or ankle
- Major degloving injury
- Open long bone fracture or unstable pelvic fracture or multiple fracture sites or multiple dislocations
- Electrocution or lightning injury with loss of consciousness or visible signs of injury
- Severe facial injury/fractures with airway compromise
- Blunt abdominal or chest trauma in patient with history of paralysis (paraplegia or quadriplegia)
- Blunt head, chest, abdominal trauma in patients with bleeding disorders or on anticoagulants with a high risk of bleeding.
- Auto vs. Pedestrian/Bicyclist thrown, run over or with impact greater than 20 mph
- Ejection from an automobile, ATV, golf cart or horse with signs of anatomical injury

### ANY 2 IN THIS CATEGORY (BLUE)

- Weight ≤ 20 kg
- Carotid or femoral pulses palpable, but the radial or pedal pulse not palpable or SBP < 90 mmHg
- Loss of consciousness or amnesia
- Penetrating injury to the extremities distal to the elbow or distal to the knee (excludes superficial wounds with known depth)
- Single long bone fracture due to MVC or pelvic fracture in patients on Coumadin/anticoagulants with high risk of bleeding
- Ejection (partial or complete) from automobile
- Death in same passenger compartment
- Intrusion into roof: >12 inches at occupant site or >18 inches at any other site into the passenger compartment
- Vehicle telemetry data consistent with high risk of injury
- Fall >10 ft or 2-3 times the height of the child

### LOCAL CRITERIA - ANY 1, CONSIDER TRAUMA TRANSPORT (GREY)

- Musculoskeletal trauma on blood thinners with high risk of bleeding or with history of bleeding disorder

\* In the event that a patient does not meet either 1 Red or 1 Blue criterion during the assessment of the trauma patient, the paramedic can call a trauma alert, if in his/her judgment, the patient's condition warrants such an action. Where paramedic judgment is used, it shall be documented.

# TRAUMA ARREST



## INFORMATION

Any patient that is in cardiac arrest as a result of electrocution or lightning injury should receive immediate defibrillation, if applicable.



## ADULT & PEDIATRIC



RESUSCITATION SHOULD NOT BE ATTEMPTED FOR TRAUMA PATIENTS THAT HAVE **ALL THREE OF THE FOLLOWING PRESUMPTIVE SIGNS OF DEATH PRESENT:**

- Apneic
- Pulseless
- Fixed and dilated pupils

- Patients with injuries incompatible with life (e.g., decapitation, massive crush injury, incineration, etc.) shall not be resuscitated.
- Resuscitation should not be attempted for trauma patients **found** in cardiac arrest, *unless* the arrest occurred in the presence of Fire Rescue personnel, has regained pulses after needle decompression (see below) or is in arrest as a result of electrocution or lightning injury. Patients being resuscitated should be transported to the closest appropriate Trauma Center. If bystander CPR was administered prior to Fire Rescue's arrival and Fire Rescue crews find the patient to be pulseless, then further resuscitation should not be attempted.
- Trauma Arrest should be treated the same as medical cardiac arrest in regards to medication administration with the exception of ICE post resuscitation.

Trauma patients who have sustained penetrating chest trauma and are in cardiac arrest (either found to be in arrest or have arrested in the presence of Fire Rescue personnel), prophylactic bilateral needle decompression may be performed.

If the patient was found in arrest and has sustained penetrating chest trauma, resuscitation efforts do not need to be started if the patient did not regain pulses immediately following the bilateral needle decompression.

# ABDOMINAL TRAUMA

---



## INFORMATION

N/A



## ADULT & PEDIATRIC



### IMPALED OBJECTS

- Impaled objects shall be stabilized to prevent movement and subsequent further damage.
- If bleeding occurs around the impaled object, it should be controlled by holding direct pressure, avoid excessive pressure.
- Do not palpate the abdomen, as it may cause further organ injury from the distal tip of the object.
- If the patient's systolic blood pressure drops below 90 mmHg with signs of shock, administer IV fluids at a rate sufficient to maintain peripheral pulses (which is typically a SBP of 80-90 mmHg).

### EVISCERATION

- Do not attempt to replace or move the protruding tissue.
- Protect the tissue from further damage.
- Cover the protruding tissue with a moist sterile dressing and cover with a dry sterile dressing.
- Keep the patient calm, as crying, screaming or coughing can force more of the tissue outward.

### PREGNANCY

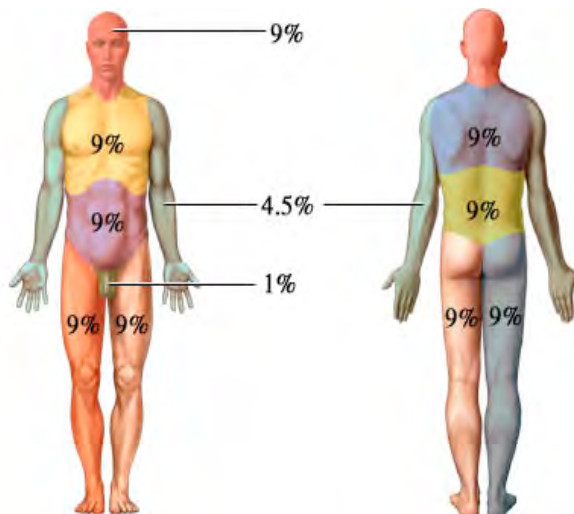
*See Trauma in Pregnancy*

If Celox Rapid is available, severe junctional hemorrhage (e.g., neck, axillary, thoracic, abdominal, pelvis and groin) that is not able to be easily controlled using direct pressure shall be controlled using Celox Rapid. Pack wound with Celox Rapid and maintain pressure for a minimum of one minute.

# BURN INJURIES



## INFORMATION



## ADULT

- Stop the burning process by irrigating with copious amounts of room temperature water or normal saline for 1-2 minutes. **Never apply ice directly to burns.**
- Do not attempt to remove tar, clothing, etc., if adhered to the skin.
- Monitor the airway closely and consider early intubation for patients with respiratory involvement: hoarse voice, singed nasal hairs, carbonaceous sputum in the nose or mouth, stridor or facial burns.
- Remove jewelry and watches from burned area.
- Consider Pain Management Protocol, avoiding IM route for medication administration.
- Consider CO and/or Cyanide Poisoning.

### 1<sup>st</sup> & 2<sup>nd</sup> DEGREE BURNS LESS THAN 15% BSA or 3<sup>rd</sup> DEGREE BURNS LESS THAN 5% BSA

- Apply a dry sterile dressing.

### 2<sup>nd</sup> DEGREE BURNS GREATER THAN 15% BSA or 3<sup>rd</sup> DEGREE BURNS GREATER THAN 5% BSA

- Apply a dry sterile burn sheet.
- NORMAL SALINE: 500mL.

## ELECTRICAL BURNS

- Treat associated burns as indicated.
- If patient is in cardiac arrest, follow appropriate protocol.

## CHEMICAL BURNS

- Irrigate liquid chemical burns with copious amounts of water or sterile saline. Brush off dry chemicals prior to irrigation.
- Remove patient's clothing and ensure that the patient is decontaminated prior to transport, in order to avoid contaminating personnel and equipment. Personnel shall wear protective clothing and/or respiratory protection as needed when removing chemicals.





## PEDIATRIC

- Stop the burning process by irrigating with copious amounts of room temperature water or normal saline.
- Do not attempt to remove tar, clothing, etc., if adhered to the skin.
- INTUBATE EARLY FOR RESPIRATORY INVOLVEMENT**
  - Tripod position/drooling, singed nasal hairs, hoarse voice/stridor and carbonaceous sputum are all indications for early airway intervention. Consider RSI (it may be necessary to use an ETT 0.5 -1.0 mm smaller to accommodate for swelling).
- Consider Pain Management Protocol, avoiding IM route for medication administration.

### 1<sup>st</sup> and 2<sup>nd</sup> DEGREE LESS THAN 15% of BSA or 3<sup>rd</sup> DEGREE BURNS LESS THAN 5% BSA

- Apply a dry sterile dressing.
- Do not apply ice directly to burns.

### 2<sup>nd</sup> DEGREE BURNS GREATER THAN 15% BSA or 3<sup>rd</sup> DEGREE BURNS GREATER THAN 5% BSA

- Apply a dry sterile burn sheet and keep the patient warm.
- NORMAL SALINE:** 10mL/kg (max of 250mL).

### ELECTRICAL:

- Treat associated burns as indicated.
- If patient is in cardiac arrest, follow appropriate protocol.



# CHEST TRAUMA



## INFORMATION

N/A



## ADULT & PEDIATRIC



- Ensure adequate oxygenation and ventilation. Maintain an SpO<sub>2</sub> of 95% and EtCO<sub>2</sub> levels between 35-45 mmHg.
- If the patient's systolic blood pressure drops below age appropriate level, with signs of shock, administer IV fluids at a rate sufficient to maintain peripheral pulses, (which is typically a SBP of 80-90 mmHg) once a tension pneumothorax is ruled out.
- Stabilize penetrating objects with a bulky dressing.

## FLAIL CHEST

- Stabilize flail segment with a bulky dressing.

## OPEN PNEUMOTHORAX (SUCKING CHEST WOUND)

- Apply a vented chest seal or occlusive dressing to all open chest wounds and monitor for signs & symptoms of a tension pneumothorax. Apply on expiration if possible.

Trauma patients who have sustained penetrating chest trauma and are in cardiac arrest (either found to be in arrest or have arrested in the presence of Fire Rescue personnel), prophylactic bilateral needle decompression may be performed.

If the patient was found in arrest and has sustained penetrating chest trauma, resuscitation efforts do not need to be started if the patient did not regain pulses immediately following the bilateral needle decompression.

If Celox Rapid is available, severe junctional hemorrhage (e.g., neck, axillary, thoracic, abdominal, pelvis and groin) that is not able to be easily controlled using direct pressure shall be controlled using Celox Rapid. Pack wound with Celox Rapid and maintain pressure for a minimum of one minute.



## TENSION PNEUMOTHORAX

Patients with a tension pneumothorax present with diminished or absent breath sounds on the affected side with any or all of the following associated signs and symptoms:

- Shortness of breath
- Pleuritic chest pain
- Tracheal deviation (not always present)
- Hyperresonance on the affected side
- Distended neck veins (may not be present if there is severe blood loss)
- Poor compliance when attempting to ventilate with a BVM
- Hypotension

## NEEDLE DECOMPRESSION

The indication for performing an emergency needle decompression is the presence of a tension pneumothorax as indicated above accompanied by *more than one* of the following:

- Respiratory distress *and* cyanosis
- Decreasing level of consciousness
- Loss of radial pulse (late sign)

The anterior approach (second or third intercostal space, midclavicular line) is the preferred site when performing a needle decompression.

# EXTREMITY TRAUMA



## INFORMATION

N/A



## ADULT & PEDIATRIC

### DETERMINE MECHANISM OF INJURY (MOI) AND EVALUATE

- PMS, color, temperature, capillary refill, crepitus

### TREATMENT

- Gross contamination such as leaves or gravel should be removed if possible.
- Control external severe extremity hemorrhage (direct pressure, Combat Application Tourniquet (C.A.T.), apply high and tight until the bleeding stops). Never apply C.A.T. directly over injury site or joint.
- If Celox Rapid is available, severe junctional hemorrhage (e.g., neck, axillary, thoracic, abdominal, pelvis and groin) and any other severe external hemorrhage that is not able to be easily controlled using C.A.T. shall be controlled using Celox Rapid. Pack wound with Celox Rapid and maintain pressure for a minimum of one minute.
- Treat and assess for shock for suspected femur fractures.
- Immobilize the entire limb for all suspected extremity fractures or dislocations (document PMS before and after splinting). For critical patients, splinting can be accomplished via backboard.
- Fractures should be splinted in the position found, unless there is no pulse present or the patient cannot be transported due to the extremity's unusual position. No more than two attempts can be made to place the injured extremity in a normal anatomical position. Discontinue attempts if the patient C/O severe pain or if there is resistance to movement felt. Reassess neurovascular status after repositioning of patient's extremity.
- Elevate extremity and apply ice packs.
- Consider Pain Management Protocol.
- Open wounds, exposed bone ends or amputations should be covered with a moist sterile dressing.
- Remove jewelry or watches from the affected extremity.
- Small amputated parts should be rinsed off, wrapped in sterile gauze and placed in a plastic bag. If ice is available, place the sealed bag in a larger container with ice & water or chilled saline. Label the bag with the patient's name, date, and time of the amputation, and the time the part was wrapped and cooled.

# EYE INJURIES

---



## INFORMATION

N/A



## ADULT & PEDIATRIC



### CHEMICAL EXPOSURES

- Remove contact lens if present.
- Irrigate the affected eye(s) with Normal Saline.
  - Be careful not to contaminate the unaffected eye with runoff.
- Consider Pain Management.

### PENETRATING EYE INJURIES

- Stabilize any penetrating object.
- Cover both eyes with gauze and an eye shield.
- Consider Pain Management.

# FEMUR FRACTURES

---



## INFORMATION

N/A



## ADULT & PEDIATRIC



## TREATMENT

- Assess and treat for shock.
- Cover open femur fractures with a moist sterile dressing.
- Consider Pain Management.
- Apply a Sager Traction Splint for mid-shaft femur fractures unless:
  - Patient has additional life-threatening injuries
  - There is also a suspected pelvic fracture
  - There is an open femur fracture
  - There is also a suspected hip fracture
  - There is an avulsion/amputation of the ankle or foot
  - Suspected fracture distal to mid shaft femur
- Reassess neurovascular status after repositioning of patient's extremity.
- Document PMS before and after application of the Sager Splint.

# HEAD INJURIES



## INFORMATION

Assess GCS, pupillary response to light, and BGL.



## ADULT

### MANAGEMENT

- Head injury patients are at increased risk for vomiting and seizures.
- Ensure adequate oxygenation and ventilation.
- Administer high flow oxygen and maintain EtCO<sub>2</sub> levels between 35-45 mmHg.
  - Ventilatory rate for adults: 10 breaths/min
- Head injury patients with a GCS of 8 or less should be intubated.
- Spinal Motion Restriction. If patient is combative, administer **KETAMINE** as per the "VIOLENT/COMBATIVE PATIENT PROTOCOL" to decrease the risk of increasing ICP and spinal injury.
- Bleeding from scalp lacerations can usually be controlled by applying a pressure dressing or by applying direct pressure along the wound edges.
  - Pressure dressings should not be applied to depressed or open skull fractures unless there is significant hemorrhage present, as this can cause an increase in ICP.

### FLUID RESUSCITATION

- A SBP of 110-120 should be maintained for patients with a severe head injury (GCS of 8 or less), even if the patient has associated penetrating trauma with hemorrhage.

### INCREASED ICP AND/OR HERNIATION

- Signs of increased ICP and herniation include:
  - A decline in the GCS of two or more points
  - Development of a sluggish or nonreactive pupil
  - Paralysis or weakness on one side of the body
  - Cushing's Triad: A widening pulse pressure (increasing systolic, decreasing diastolic), change in respiratory pattern (irregular respirations), and bradycardia
- Provide controlled mild hyperventilation at 20 breaths/minute (1 breath every 3 seconds)
- Maintain EtCO<sub>2</sub> at 30-35 mmHg
- Consider Advanced Airway Management
- Patients with increased ICP and/or herniation shall be transported with the head of the stretcher at a 30 degree incline.

**A SINGLE INSTANCE OF HYPOTENSION IN AN ADULT WITH A BRAIN INJURY MAY INCREASE THE MORTALITY RATE BY 150%. THE INCREASE IN MORTALITY RATE FOR HYPOTENSION AND A SEVERE TBI IS EVEN WORSE IN CHILDREN.**





## PEDIATRIC

### ASSESSMENT

- Infants with a bulging fontanelle are considered to have a more severe head injury.

### MANAGEMENT

- Head injury patients are at increased risk for vomiting and seizures.
- Maintain an SpO<sub>2</sub> of 95% and EtCO<sub>2</sub> levels between 35-45 mmHg.
  - Ventilatory rate for children: 20 breaths/min
  - Ventilatory rate for infants: 25 breaths/min
- Head injury patients with a GCS of 8 or less should be intubated, avoid prolonged attempts.
- Spinal Motion Restriction
- Bleeding from scalp lacerations can usually be controlled by applying a pressure dressing or by applying direct pressure along the wound edges.
  - Pressure dressings should not be applied to depressed or open skull fractures unless there is significant hemorrhage present, as this can cause an increase in ICP.

### FLUID RESUSCITATION

- Children with severe TBI should have their SBP maintained at the normal range for their age. Administer fluid boluses of 20 ml/kg of NS and repeat prn to maintain systolic blood pressure normal for age.
- If patient is normotensive, administer NS at a KVO rate.

Age	Normal Systolic BP	
	Female	Male
1 day	60-76	60-74
4 days	67-83	68-84
1 month	73-91	74-94
3 months	78-100	81-103
6 months	82-102	87-105
1 year	68-104	67-103
2 years	71-105	70-106
7 years	79-113	79-115
15 years	93-127	95-131

### INCREASED ICP AND/OR HERNIATION INCLUDE:

- Signs of increased ICP and herniation include:
  - Hypertension for patient's age
  - Development of a sluggish or non-reactive pupil
  - Bradycardia
  - Abnormal breathing patterns
  - Paralysis or weakness on one side of the body
- Provide controlled mild hyperventilation at the following rates:
  - CHILDREN: 25 breaths/minute
  - INFANTS: 30 breaths/minute
- Maintain EtCO<sub>2</sub> at 30-35 mmHg.
- Consider Advanced Airway Management
- Patients with increased ICP and/or herniation shall be transported with the head of the stretcher at a 30 degree incline.

# HIP FRACTURE / DISLOCATION



## INFORMATION

Avoid rough handling



## ADULT & PEDIATRIC



### HIP FRACTURES

- Consider hip fractures in any elderly patient who falls and complains of pain in the knee, hip or pelvis.
- A scoop stretcher should be used whenever possible to move patients with a suspected hip fracture. Splint in position of comfort with pillows and blankets. Reassess neurovascular status after repositioning of patient's extremity.
- Sager Traction splints should not be used on suspected hip fractures.
- Assess and treat for pelvic fractures and shock prn.
- Consider Pain Management Protocol.

### HIP DISLOCATIONS

- Patients with posterior hip dislocations most often present with the leg flexed and internally rotated, and will not tolerate having the extremity straightened. Anterior dislocations present with lateral rotation and shortening of the affected leg.
- A scoop stretcher should be used whenever possible to move patients with suspected hip dislocations. Splint in position of comfort with pillow and blankets. Reassess neurovascular status after repositioning of patient's extremity.
- Traction splints should **not** be used on suspected hip dislocations.
- Assess and treat for pelvic fractures and shock prn.
- Consider Pain Management.

# PELVIC FRACTURE

---



## INFORMATION

N/A



## ADULT & PEDIATRIC



- Assess and treat for shock.
- Do not perform a pelvic rock. Assess the pelvis by applying gentle pressure anterior to posterior and from the sides to identify crepitus or instability. Do not repeat.
- Stabilize if possible.
- A scoop stretcher should be used whenever possible to move patients with suspected pelvic fracture. Splint in position of comfort with pillow and blankets. Reassess neurovascular status after repositioning of patient's extremity.
- Consider Pain Management Protocol

If Celox Rapid is available, severe junctional hemorrhage (e.g., neck, axillary, thoracic, abdominal, pelvis and groin) that is not able to be easily controlled using direct pressure shall be controlled using Celox Rapid. Pack wound with Celox Rapid and maintain pressure for a minimum of one minute.

# HEMORRHAGIC SHOCK



## INFORMATION

N/A



## ADULT

### MANAGEMENT

- Rapid transport: Keep on-scene times less than 10 minutes.
- Maintain an SpO<sub>2</sub> of 95% and EtCO<sub>2</sub> levels between 35-45 mmHg.
- Control external severe extremity hemorrhage (direct pressure, Combat Application Tourniquet (C.A.T.), apply high and tight until the bleeding stops). Never apply C.A.T. directly over injury site or joint.
- If Celox Rapid is available, severe junctional hemorrhage (e.g., neck, axillary, thoracic, abdominal, pelvis and groin) and any other severe external hemorrhage that is not able to be easily controlled using C.A.T. shall be controlled using Celox Rapid. Pack wound with Celox Rapid and maintain pressure for a minimum of one minute.
- Spinal Motion Restriction if indicated.
- Maintain body temperature with blankets and consider increasing the temperature in the patient compartment.

### FLUID RESUSCITATION

- Establish two large bore IVs while en route. NEVER delay transport to start IVs on scene.
- Internal hemorrhage
  - Give only enough normal saline to maintain a blood pressure high enough for adequate peripheral perfusion (radial pulse). The presence of a radial pulse equates to a SBP of 80-90 mmHg, which is the goal of fluid resuscitation for a patient with suspected internal hemorrhage.
  - Bolus of Normal Saline 500mL, reassess blood pressure and lung sounds prior to each bolus. Maximum 2L.
- Isolated external hemorrhage controlled with direct pressure or Combat Application Tourniquet (C.A.T.)
  - Give only enough normal saline to maintain a blood pressure high enough for adequate peripheral perfusion (radial pulse). The presence of a radial pulse equates to a SBP of 80-90 mmHg.
  - Bolus of Normal Saline 1-2L, reassess blood pressure and lung sounds prior to each bolus. Maximum 2L.



## PEDIATRIC

### MANAGEMENT

- Rapid transport: Keep on-scene times less than 10 minutes.
- Maintain an SpO<sub>2</sub> at 95% and EtCO<sub>2</sub> levels between 35-45 mmHg.
- Control external severe extremity hemorrhage (direct pressure, Combat Application Tourniquet (C.A.T.), apply high and tight until the bleeding stops). Never apply C.A.T. directly over injury site or joint.
- If Celox Rapid is available, severe junctional hemorrhage (e.g., neck, axillary, thoracic, abdominal, pelvis and groin) and any other severe external hemorrhage that is not able to be easily controlled using C.A.T. shall be controlled using Celox Rapid. Pack wound with Celox Rapid and maintain pressure for a minimum of one minute.
- Spinal Motion Restriction if indicated.
- Maintain body temperature with blankets.

### FLUID RESUSCITATION

- Establish two large bore IV's or an IO if unable to obtain IV access. Do not delay transport!

### FLUID RESUSCITATION FOR SUSPECTED INTRATHORACIC, INTRA-ABDOMINAL OR RETROPERITONEAL HEMORRHAGE OR ISOLATED EXTERNAL HEMORRHAGE

- NORMAL SALINE:** 20mL/kg bolus, titrated to maintain a SBP as listed below. May repeat 1x prn for hypotension.

Assess lung sounds and blood pressure often.

- Minimum Pediatric Systolic Blood Pressure Values**

- Neonates: 60mmHg
- Infants: 70mmHg
- Children 1-10 years old: 70 + (age in years x 2) mmHg
- Children greater than 10 years old: 90mmHg

#### SIGNS & SYMPTOMS OF COMPENSATED SHOCK

- Anxiety, agitation, restlessness, normotensive, capillary refill normal to delayed
- Tachycardia (a weak rapid pulse greater than 130 beats/min is usually a sign of shock in children of all ages except neonates)

#### SIGNS & SYMPTOMS OF DECOMPENSATED SHOCK

- Decreased LOC, hypotension, peripheral cyanosis, delayed capillary refill, inequality of central/distal pulses, and tachycardia (later progressing to bradycardia)

# SPINAL MOTION RESTRICTION



## INFORMATION

This protocol will be applied to all patients sustaining a traumatic injury or having a mechanism of injury. All patients are to be moved and or transported in a position of comfort. If extrication is required, i.e. trapped in vehicle, tight space, compromised position, etc., the key objective is to move the patient in the safest, most anatomically neutral position possible.



## ADULT & PEDIATRIC



Perform manual Spinal Motion Restriction by providing manual cervical stabilization and apply an appropriately sized cervical collar as appropriate if the patient meets any of the following criteria:

- Complaint or finding of focal neurologic deficit on motor or sensory exam.
- Complaint or finding of pain to the neck or back.
- Presence of a distracting injury.
- Altered level of consciousness with an MOI (Mechanism of Injury).
- Intoxication with an MOI present. The cervical collar should not cause the patient discomfort such that they are compelled to move.

If an **appropriately sized** collar is not available or if the collar compels the patient to move, remove the collar and provide Spinal Motion Restriction by placing rolled towels on the sides of the patient's head and neck, secured with tape or other similar devices to allow for comfortable cervical stabilization/immobilization.

Place the patient on the stretcher cushion, supine, flat as possible. If the patient is unable to tolerate this position, place in a position of comfort, that also respects normal anatomical alignment.

Patient must be secured to stretcher with manufacturer approved stretcher straps.





## LIFTING OR MOVING OF PATIENTS

- Manual cervical and spinal stabilization/immobilization must be performed for all patient movement as appropriate.
- A scoop-type stretcher may be employed to facilitate the lifting or movement of a patient for transit to or from the stretcher.
- Once the patient has been placed on the stretcher, the scoop-type stretcher is to be removed.
- In a combative patient, the same principles as above apply.
- All obtunded patients must be considered to have a spinal injury. Position patient in the most anatomically neutral position possible while providing emergency medical care.
- Placing patients in the prone position is contraindicated due to the risks of asphyxiation. However, impalement or other situations may mandate the prone position. In these instances, clear documentation of justification and attention to airway maintenance is mandatory.
- Patients that are transported in the prone position must have continuous SpO<sub>2</sub> monitoring, EtCO<sub>2</sub> monitoring if available, and be under constant surveillance by PBCFR EMS personnel at all times.

## HELMET REMOVAL

- Helmets should be removed for all patients.
- If applicable, protective pads should also be removed.
- Athletic trainers should be consulted in the helmet/protective pad removal process if applicable.
- C-SPINE should be manually stabilized during the removal process.

### SIGNS, SYMPTOMS & TREATMENT OF NEUROGENIC SHOCK

- Skin - Warm/Dry
- Hypotension with a heart rate within normal limits
- Paralysis

#### IF PATIENT IS HYPOTENSIVE (SBP LESS THAN 90mmHg)

- NORMAL SALINE:** 1-2L. Assess lung sounds and blood pressure every 500mL.

#### IF PATIENT REMAINS HYPOTENSIVE AFTER FLUID ADMINISTRATION

- DOPAMINE:** 5-20mcg/kg/min. Titrate to maintain a SBP of 90 mmHg.



# TRAUMA IN PREGNANCY



## INFORMATION

Remember, there are two (or more) patients. The condition of the fetus often depends on the condition of the mother. Trauma patients > 20 weeks pregnant in cardiac arrest should be transported to closest Trauma Center by ground or to St Mary's Trauma Center if by air. Begin MICCR and manually displace uterus to the left during transport.



## ADULT

### PHYSIOLOGICAL CHANGES DURING PREGNANCY

*Due to the following physiological changes in pregnancy, it is often difficult to assess for shock:*

- Throughout the pregnancy the mother's heart rate increases. By the third trimester, the HR can be 15-20 BPM above normal.
- Both the systolic and diastolic blood pressures drop 5-15 mmHg during the second trimester, but may return to normal at term (36 weeks).
- The mother's cardiac output and blood volume increases. Therefore, the pregnant patient may lose 30-35% of her blood volume before the signs & symptoms of shock become apparent.

### SUPINE HYPOTENSION

- Usually occurs in the third trimester.
- Pregnant patients not requiring spinal motion restriction shall be transported on their left side.
- If a pregnant patient requires spinal motion restriction, place 4-6 inches of padding under the right side of the patient while maintaining normal anatomical alignment as much as possible.

### MANAGEMENT

- Assess for vaginal bleeding and a rigid abdomen. In the third trimester, this could indicate abruptio placenta or a ruptured uterus.
- Ensure adequate oxygenation and ventilation. Maintain an SpO<sub>2</sub> of 95% or greater and EtCO<sub>2</sub> levels between 35-45 mmHg.
- Anticipate vomiting. Have suction readily available.
- Assess and treat for shock.
- All 3<sup>rd</sup> trimester pregnancy trauma patients shall receive 15 Lpm of oxygen via NRB.

If patient remains hypotensive after the uterus has been displaced to the left, consider the patient to have a significant amount blood loss.

**THIS PAGE INTENTIONALLY LEFT BLANK**

# **OBSTETRICAL EMERGENCIES**

---



**OBSTETRICAL STANDING ORDERS**

**BREECH BIRTH**

**COMPLICATIONS OF PREGNANCY**

**ECLAMPSIA**

**MECONIUM STAINING**

**NORMAL DELIVERY**

**NUCHAL CORD**

**PROLAPSED CORD**

# OBSTETRICAL STANDING ORDERS

---



## INFORMATION

N/A



## ADULT

### ASSESSMENT

- Perform Initial Assessment
- Obtain Focused History
  - Number of previous pregnancies (**GRAVIDA**)
  - Number of previous viable births (**PARA**)
  - Show of blood: document time, amount, etc.
  - Water broke: document time, color of water, etc.
  - Documented multiple births
  - Gestational Diabetes
  - Narcotic use
  - Due date
  - Frequency and length of contractions
  - Feeling of having to push or have a bowel movement
  - If crowning, prepare for a field delivery, but do not delay transport to the closest appropriate hospital.
  - Transport patients in their third trimester not in active labor on their left side

### OBSTETRICAL PATIENTS (DEFINED AS PREGNANCY 20 WEEKS OR GREATER)

- If in labor/ABD pain transport to the closest OB hospital.
- Over 20 weeks with a NON OB related minor concern can go to the closest ED.
- Stable patients over 20 weeks may go to the OB hospital of their choice within 40 minutes.
- Patients less than 20 weeks are GYN cases and can be transported to the closest ED.

# BREECH BIRTH



## INFORMATION

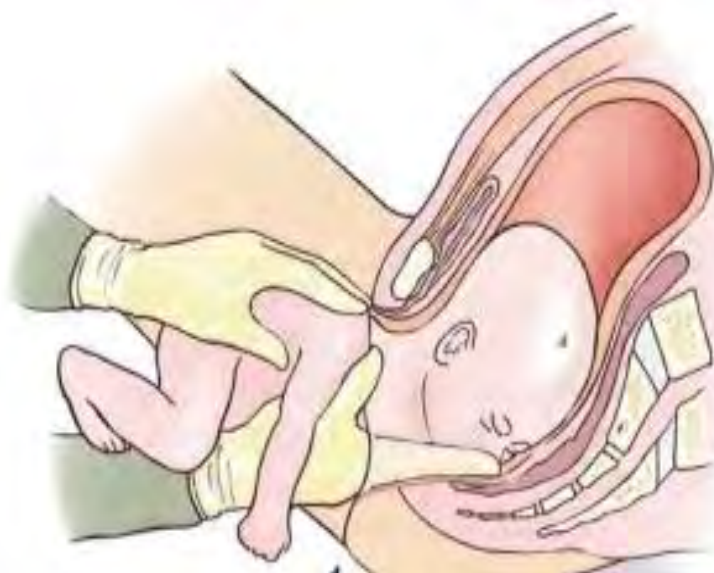
N/A



## ADULT

### BREECH BIRTH (FEET OR BUTTOCKS PRESENTATION)

- If the head does not deliver within 3 minutes of the body, elevate the mother's hips (knee to chest position) and insert a gloved hand into the vagina and push the vaginal wall away from the baby's nose and mouth.
- Expedite transport while maintaining the knee to chest position and the baby's airway.
- Administer blow by oxygen to the newborn.





# COMPLICATIONS OF PREGNANCY

---



## INFORMATION

N/A



## ADULT

### COMPLICATIONS OF EARLY PREGNANCY

#### *ECTOPIC PREGNANCY*

- Ectopic pregnancies usually occur in the first trimester and may present with sudden onset of severe lower abdominal pain and/or vaginal bleeding.
- Patients with amenorrhea, vaginal bleeding and abdominal pain are highly suspicious for an ectopic pregnancy.
- Other signs & symptoms of an ectopic pregnancy include: referred pain to the left shoulder, Cullen's Sign (periumbilical ecchymosis) or Grey Turner's sign (ecchymosis of the flanks), abdominal distention and tenderness.

#### *SPONTANEOUS ABORTION*

- Spontaneous abortions usually occur before 20 weeks of gestation. Signs and symptoms include: abdominal cramping, vaginal bleeding and the passage of tissue or fetus.

#### TREATMENT FOR COMPLICATIONS OF EARLY PREGNANCY

- Assess and treat for shock.
- Rapid transport to any approved OB or GYN facility.



## THIRD TRIMESTER COMPLICATIONS

### *PLACENTA ABRUPTIO*

- Sudden onset of severe abdominal pain and tenderness
- Painful uterine contractions
- Vaginal bleeding with dark red blood
- Patient may present in shock

### *PLACENTA PREVIA*

- Characterized by painless vaginal bleeding (bright red blood)

### *UTERINE RUPTURE*

- Sudden, intense abdominal pain and vaginal bleeding

### ☐ TREATMENT FOR THIRD TRIMESTER COMPLICATIONS

- Treatment for third trimester bleeding is aimed at the prevention or treatment of shock.
- Transport patients in their third trimester on left side by elevating the right side of their body 4-6 inches with towels or pillows or by manually displacing the uterus to the left.
- All patients with third trimester bleeding shall be transported to approved OB facility.
- If it is necessary to perform MICCR on a pregnant patient in their third trimester, manually displace the uterus to the left rather than tilting the patient to the left. All third trimester patients in cardiac arrest should be treated as if they are in **SECONDARY CARDIAC ARREST** and transported to the closest OB hospital.

# ECLAMPSIA

---



## INFORMATION

Severe pre-eclampsia occurs and is characterized by HTN, AMS, visual disturbances, HA, and/or pulmonary edema. Eclampsia is characterized by any of the severe pre-eclampsia signs/symptoms associated with seizures or coma. Either condition can occur for up to 30 days postpartum.



## ADULT

- Check Blood Glucose

### SEVERE PRE-ECLAMPSIA

Defined as a SBP greater than 160 mmHg **OR** a DBP of greater than 110 mmHg on two consecutive blood pressures, 5 minutes apart, with one of the following signs/symptoms:

- AMS
- Headache
- Visual Disturbances
- Pulmonary Edema

- MAGNESIUM SULFATE:** 2g in 50mL of Normal Saline, infuse over 10 minutes. **MUST REPEAT 1x.**

### ECLAMPSIA

- MAGNESIUM SULFATE:** 4g IV/IO, in 50 mL of Normal Saline attached to a 60 gtt set and run wide open. Max total dose 4g.
- If seizures are **NOT** resolved after Magnesium Sulfate: **VERSED:** 2.5 mg IV/IO **OR** 5mg IN/IM. May repeat either route 1x prn.

# MECONIUM STAINING

---



## INFORMATION

N/A



## NEONATE

### MECONIUM STAINING

- Meconium will appear as a yellow to dark green substance that may be noted as a greenish tint to the amniotic fluid or a thick dark green substance coming from the vagina or covering the neonate's head.
- If upon delivery of the head there is meconium staining present, use a bulb syringe to clear secretions from the mouth and then nose before delivery of the shoulders.
- Meconium aspirators are rarely needed, however consideration for usage may be given in patients whose airway is obstructed by meconium that cannot be cleared by simpler methods.

# NORMAL DELIVERY



## ADULT

### NORMAL DELIVERY

- Position patient on her back with knees flexed and feet flat on the floor.
- Control delivery of the head, with gentle perineal pressure.
- Do not apply manual pressure to the uterine fundus prior to the birth of the child.
- Do not pull or push on the fetus.
- Do not allow sudden hyperextension of the newborn's head.
- Once the head delivers, support the newborn's head and suction the mouth and then the nose.
- Support the newborn's head as it rotates to align with the shoulders, gently guide the newborn's head downward to deliver the anterior shoulder.
- Once the anterior shoulder delivers, gently guide the newborn's head upward to deliver the posterior shoulder and the rest of the body.

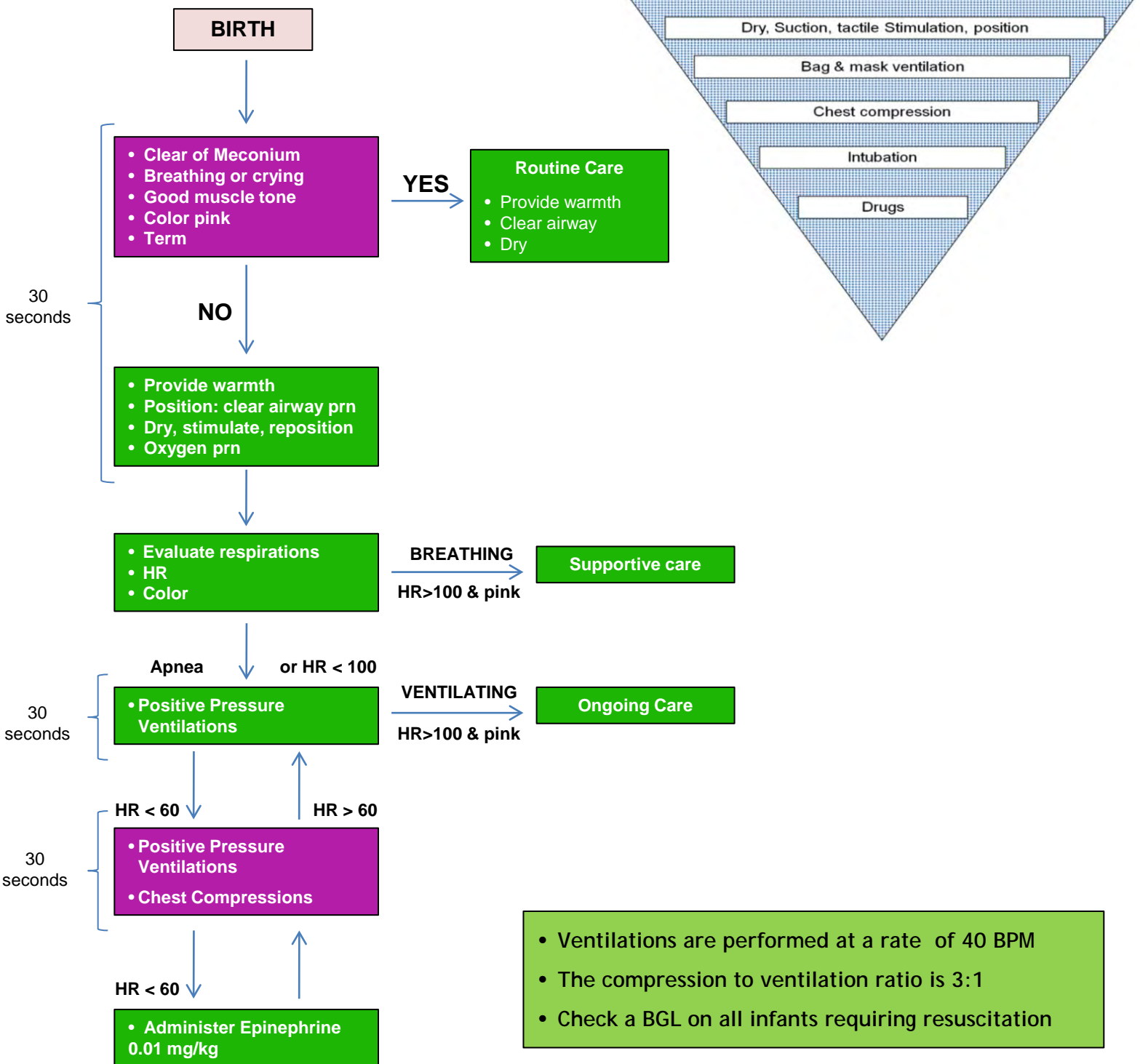
### UPON DELIVERY OF THE NEWBORN

- Dry, warm, and stimulate the newborn.
- Wait until the cord stops pulsating before clamping the cord (usually 3-5 minutes).
- Clamp the umbilical cord in the following fashion:
  - Place the first clamp 4" away from the newborn's body.
  - Milk the cord away from the newborn and towards the mother (this will minimize splatter).
  - Place the second clamp 2" away from the first, towards the mother.
  - Cut the cord between the two clamps.
- The newborn can be placed on the mother's chest or abdomen. This will keep the newborn's umbilical cord at about the level of the placenta.
- Record an APGAR score at 1 and 5 minutes and document the delivery time.
- Apply firm continuous pressure, manually massaging the uterine fundus after the placenta delivers.
- Preserve the placenta in the bag provided with the OB Kit or a "Red Bio-Hazard bag" for inspection by the receiving hospital.

APGAR SCORE	0	1	2
Appearance	Blue/Pale	Body pink extremities blue	Completely Pink
Pulse	Absent	Below 100	Above 100
Grimace	No Response	Grimaces	Cries
Activity	Limp	Some flexion of extremities	Active Motion
Respirations	Absent	Slow/Irregular	Good Strong Cry



## NEONATAL RESUSCITATION





# NUCHAL CORD

---



## INFORMATION

N/A



## ADULT

### NUCHAL CORD

- Check for the presence of a nuchal cord after delivery of the head.
- If the cord is around the neck, gently hook your finger under the loop and pull it over the newborns head. You may have to repeat this if there is more than one loop present.
- If you are unable to free the cord, clamp the cord in two places and cut the cord between the clamps.



# PROLAPSED CORD

---



## INFORMATION

N/A



## ADULT

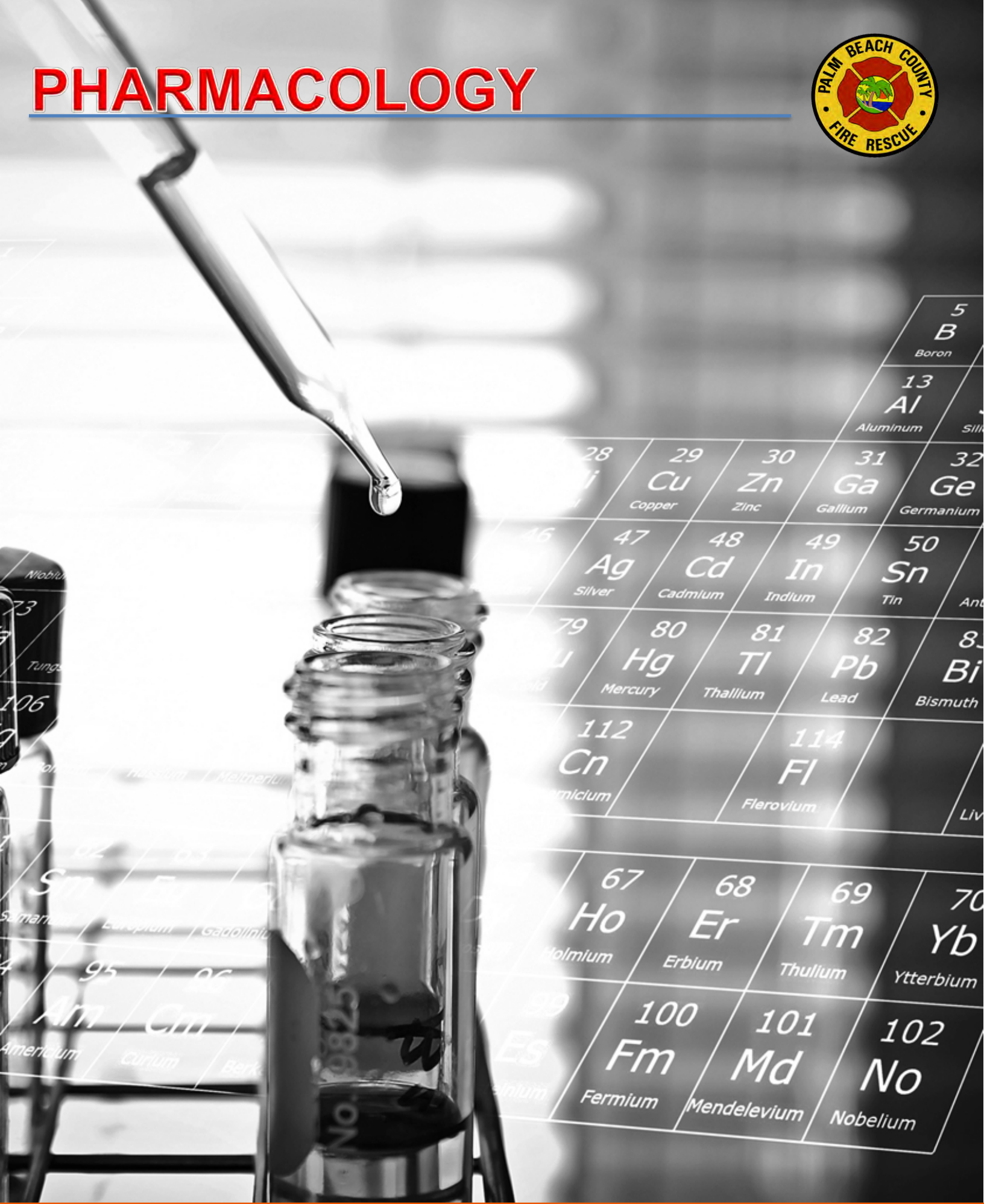
### PROLAPSED UMBILICAL CORD

- Place mother in the knee to chest position and manually displace the uterus to the left.
- Insert a gloved hand into the vagina, pushing the newborn up and away from the umbilical cord regardless if there is a pulse present or not. Maintain this position during transport and frequently reassess the umbilical cord for the presence of a pulse, as contractions are likely to compress the umbilical cord.
- Wrap the exposed cord in a moist sterile dressing and expedite transport to closest OB facility.



**THIS PAGE INTENTIONALLY LEFT BLANK**

# PHARMACOLOGY





- ❑ Prior to administering any medication, inquire about medication allergies or adverse reactions to medications.
- ❑ Check the medication's name, date of expiration, color and clarity before administration.
- ❑ Medications administered during cardiac arrest should be administered during compressions and followed by a 20mL Normal Saline flush for adults and a 10mL Normal Saline flush for pediatric patients with elevation of the extremity to facilitate entry into the central circulation.
- ❑ A true allergy to a medication causes a rash, SOB, swelling of the tongue, face and/or throat.
- ❑ An IO should be placed for patients with emergency medical conditions that require urgent vascular access in whom an IV is not immediately obtainable or is deemed to have insufficient access. IO is the preferred method of vascular access during pediatric cardiac arrest.
- ❑ Fluid resuscitation for all patients with a history of renal failure/dialysis or CHF shall be limited to 1L of Normal Saline and administered as follows: 500mL bolus, may repeat 1x. Check lung sounds before and after each 500mL bolus. Monitor these patients carefully as they are at risk for fluid overload (pulmonary edema).
- ❑ Pediatric fluid resuscitation, 20mL/kg bolus, may repeat 2x prn for a maximum of 60mL/kg (repeat 1x for trauma patients).
- ❑ All medications administered to patients with a pulse should be given slow IV (over 2 minutes), unless otherwise stated.

## ❑ IM INJECTIONS

- Infants less than 1, use a 23 gauge 1 inch needle. The injection site is the lateral thigh (0.5-1mL maximum), depending on the size of the muscle. If greater than 1mL needs to be administered, split the dose between both thighs.
- Infants greater than 1 and children, use a 23 gauge 1 inch needle. The injection site is the lateral thigh (1mL maximum). If greater than 1mL needs to be administered, split the dose between both thighs.
- Adults and large children, use a 21 gauge 1.5 inch needle. The injection site is the lateral thigh (4mL maximum). If greater than 4mL needs to be administered, split the dose between both thighs. A 23 gauge 1 inch needle may be sufficient for small adults or the elderly.

## ❑ MUCOSAL ATOMIZATION DEVICE (MAD)

- Versed, Narcan, Glucagon & Fentanyl can all be administered via the MAD.
- Ideal dose is .3mL to .5mL per nostril. Maximum of 1mL per nostril

## ❑ INTRAOSSEOUS SITES (EZ-IO) ADULTS

- ❑ Proximal Humerus, Proximal Tibia, Distal Tibia

## ❑ INTRAOSSEOUS SITES (EZ-IO) PEDIATRIC

- ❑ Distal Femur, Proximal Tibia, Distal Tibia, Proximal Humerus (only if the surgical neck can be palpated)



# ADENOSINE (ADENOCARD)



## INDICATIONS

- SVT with ventricular rates greater than 150

## CONTRAINDICATIONS

- Patients with a history of second or third degree AV block (except in patients with a functioning artificial pacemaker)
- Sick Sinus Syndrome without cardiac pacemaker in place
- Persons taking Carbamazepine (Tegretol)
- Active bronchospasm
- Patients with a heart transplant.

## SIDE EFFECTS

- Flushing, headache, chest pain, and dyspnea are transient and will abate in 1-2 minutes after administration.
- Transient periods of sinus bradycardia and ventricular ectopy are common after the termination of SVT.

## ADMINISTRATION

### ADULT

- 12mg rapid IV/IO, over 1-2 seconds with a simultaneous 20mL flush.

### PEDIATRIC



- 0.1mg/kg rapid IVP with simultaneous 10mL flush. Max single dose 6mg.
- If no change in one minute, administer 0.2mg/kg rapid IVP with simultaneous 10mL flush. Max single dose 12mg.

It is imperative that Adenosine rapidly reaches the central circulation. In order to ensure proper administration, an 18g IV in the AC is preferable. An extension set should be used due to the close proximity of the medication ports.

Attach the Adenosine to the port closest to the IV site. Begin recording the ECG and simultaneously push the Adenosine and a 20mL Normal Saline flush rapidly (over 1-2 seconds).



# ALBUTEROL

---



## INDICATIONS

- Bronchospasm
- Hyperkalemia

## CONTRAINDICATIONS

- None

## ADMINISTRATION

### ADULTS & PEDIATRICS

- 2.5mg via nebulizer. May repeat prn for bronchospasm.
- 2.5mg via nebulizer. Continuous treatments for Hyperkalemia.

# AMIODARONE (CORDARONE)

---



## INDICATIONS

- Ventricular Fibrillation/ Pulseless V-Tach
- Ventricular Tachycardia

## CONTRAINDICATIONS

- Cardiogenic Shock
- Marked sinus bradycardia and second or third degree AV blocks

## PRECAUTIONS

- Used in conjunction with beta and calcium channel blockers could increase the risk of hypotension and bradycardia.
- Do not shake the vial as the solution will foam up and will not be able to be drawn up.

## SIDE EFFECTS

- Hypotension
- Bradycardia

## ADMINISTRATION

### ADULT

- VF/Pulseless V-Tach: 300mg slow IV/IO. Repeat with 150mg in 3-5 minutes prn for continued VF/Pulseless V-Tach.
- V-Tach with a Pulse: 150mg in a 50mL bag of Normal Saline, infuse over 10 minutes. May repeat 1x prn. Administer entire 150mg bolus, even if the rhythm terminates.

### PEDIATRIC



- VF/Pulseless V-Tach: 5mg/kg slow IVP. May repeat up to 15mg/kg. Max single dose 300mg.
- V-Tach with a Pulse: 5mg/kg in a 50mL bag of Normal Saline infused over 25 minutes. Max single dose 150mg.

# ASPIRIN

---



## INDICATIONS

- Chest pain
- STEMI Alerts

## CONTRAINDICATIONS

- Allergy to aspirin
- Active GI bleeding
- Children under 16 years of age

## ADMINISTRATION

### ADULT

- Chew and swallow four 81mg tablets

# ATROPINE

---



## INDICATIONS

- Symptomatic bradycardia
- Organophosphate poisonings
- Adverse reaction to Ketamine

## CONTRAINDICATIONS

- None in emergency situations

## SIDE EFFECTS

- Increased heart rate may worsen ischemia and increase the size of a myocardial infarction.

## PRECAUTIONS

- Do not administer less than 0.5mg to an adult or 0.1mg to a pediatric.
- If pushed too slowly, Atropine may initially cause the heart rate to decrease.

## ADMINISTRATION

### ❑ ADULT

- Bradycardia: 0.5mg IV/IO. Repeat every 5 minutes prn to a maximum dose of 3mg.
- Adverse reaction to Ketamine (hypersalivation): 0.5 mg IV/IM/IO.

### ❑ PEDIATRIC



- Bradycardia: 0.02mg/kg IV/IO every 3-5 minutes. Minimum single dose 0.1mg. Maximum single dose 0.5mg. Max total dose 1mg.
- **ADVANCED AIRWAY MANAGEMENT: UNDER 36 MONTHS** : 0.02mg/kg IV/IO. Minimum single dose 0.1mg. Max single dose 0.5mg.

# BENADRYL (DIPHENYDRAMINE)



## INDICATIONS

- Allergic Reaction
- Anaphylaxis
- Dystonic Reaction

## CONTRAINDICATIONS

- Newborn infants

## SIDE EFFECTS

- Drowsiness

## PRECAUTIONS

- Potentiated with alcohol and other CNS depressants

## ADMINISTRATION

### ❑ ADULT

- Allergic and Dystonic Reaction: 50mg IV/IO/IM. Administer over 2 minutes for IV/IO usage. (See Box Below)
- Anaphylaxis: 50mg IV/IO/IM. Administer over 2 minutes for IV/IO usage. (See Box Below)

### ❑ PEDIATRIC



- Allergic and Dystonic Reaction: 1mg/kg IV/IO *or* IM if unable to obtain IV access. Max total dose 50mg. Administer over 2 minutes for IV/IO usage. (See Box Below)
- Anaphylaxis: 1mg/kg IV/IO *or* IM if unable to obtain IV access. Max total dose 50mg. Administer over 2 minutes for IV/IO usage. (See Box Below)

**BENADRYL ADMINISTRATION IV/IO: Dilute with 9 mL of Normal Saline.**

# CALCIUM CHLORIDE

---



## INDICATIONS

- Calcium Channel Blocker overdose
- Hyperkalemia
- Cardizem-induced hypotension

## CONTRAINDICATIONS

- V-Fib, not associated with hyperkalemia (Patients with a history of renal failure/dialysis), Digitalis toxicity or hypercalcemia

## SIDE EFFECTS

- Hypotension, bradycardia, heart block, asystole, tissue necrosis

## PRECAUTIONS

- Calcium Chloride should not be administered in the same infusion with sodium bicarbonate without thoroughly flushing the IV line.

## ADMINISTRATION

### ADULT

- Calcium Channel Blocker Overdose : 1g slow IV/IO
- Hyperkalemia: 1g slow IV/IO
- Cardizem-induced hypotension: 500mg slow IV/IO

### PEDIATRIC

- Calcium Channel Blocker Overdose: 20mg/kg, slow IV/IO. Max dose 1g.





# CARDIZEM (DILTIAZEM)

---



## INDICATIONS

- Atrial Fibrillation & Atrial Flutter with a rapid ventricular response
- Stable SVT when vagal maneuvers and Adenosine fail to convert the rhythm

## CONTRAINDICATIONS

- Hypotension
- Wide complex QRS
- Heart Blocks
- WPW
- Sick Sinus Syndrome

## SIDE EFFECTS

- Hypotension: If hypotension develops, administer 500mg of Calcium Chloride and 500mL of Normal Saline.

## ADMINISTRATION

### ADULT

- 10mg (2mL) IV push over 2 minutes. May repeat in 15 minutes prn with 15mg (3mL).



## INDICATIONS

- Treatment of known or suspected cyanide poisoning

## CONTRAINDICATIONS

- None

## SIDE EFFECTS

- Allergic reaction, increased blood pressure

## PRECAUTIONS

- Do not administer Cyanokit simultaneously through the same IV line as: Valium, Dopamine or NTG.
- If the reconstitution solution is not dark red, or if particulate matter is seen after it has been appropriately mixed, the solution should be discarded.
- The CYANOKIT should be administered through a separate/dedicated IV/IO line.

## PREPARATION

- Reconstitute 5g vial by adding 200 mL of normal saline to the vial using the transfer spike. With the vial in the upright position, fill to the "fill line". Mix by rocking or rotating the vial for 30 seconds. **DO NOT SHAKE.**
- Infuse the first vial: Use vented IV tubing and infuse as indicated below.

## ADMINISTRATION

### ADULT

- 5g IV/IO, infused over 10-15 minutes. May repeat 1x prn for a max total dose of 10g for severe cases.

### PEDIATRIC

- Refer to the Handtevy toxicology page for instructions on dosing

**CARDIAC ARREST:** All patients that are suspected to be in cardiac arrest secondary to cyanide poisoning should be treated as a **SECONDARY** cardiac arrest and administered the CYANOKIT.



# DEXTROSE

---



## INDICATIONS

- Hypoglycemia (BGL less than 60mg/dL)

## CONTRAINDICATIONS

- None for a glucose less than 60mg/dL

## PRECAUTIONS

- Tissue necrosis due to infiltration (Less likely to occur when using D10)

## ADMINISTRATION

### ADULT

- **D10:** 100 mL IV/IO, retest glucose. If patient remains less than 60 mg/dL, administer another 100 mL of D10.

### PEDIATRIC

- **D10:** 5mL/kg IV/IO max single dose of 100mL. Retest glucose may repeat 1x prn if BGL remains less than 60 mg/dL.



### NEONATE

- **D10:** 5mL/kg IV/IO. Retest glucose may repeat 1x prn if BGL remains less than 60mg/dL.

**HYPOGLYCEMIC CARDIAC ARREST:** Administer 250mL of D10



## INDICATIONS

- Post resuscitation maintenance of blood pressure, after fluid challenges
- Cardiogenic shock
- Hypotension, unresponsive to fluid challenges
- Neurogenic (Spinal) Shock, if fluid challenges fail to increase blood pressure, if multi-systems trauma is not suspected
- Adult Bradycardia, if no response to Atropine or transcutaneous pacing

## CONTRAINDICATIONS

- Patients with pheochromocytoma (adrenal gland tumor)
- Hypotension secondary to blood loss

## SIDE EFFECTS

- Severe tissue necrosis and sloughing with extravasations from an infiltrating IV

## PRECAUTIONS

- Dopamine is inactivated by Sodium Bicarbonate. Do not administer through the same IV/IO line without thoroughly flushing the IV line.
- For patients on monoamine oxidase (MAO) inhibitors, decrease the dose to 1/10<sup>th</sup> of the regular dose.

## PREPARATION

### ADULT

- Adult preparation: Mix 400mg of Dopamine in 250mL of Normal Saline, which yields a concentration of 1600mcg/mL.
- Alternate preparation: Mix 200mg of Dopamine in 125mL of Normal Saline which yields a concentration of 1600 mcg/mL.

## ADMINISTRATION

### ADULT

- 5-20mcg/kg/minute titrated to maintain a SBP of 90 mmHg systolic

# EPINEPHRINE (1:1,000)

---



## INDICATIONS

- Bronchospasm
- Allergic Reaction
- Anaphylaxis

## CONTRAINDICATIONS

- None

## SIDE EFFECTS

- Cardiac arrhythmias, nervousness, HTN, chest pain

## ADMINISTRATION

### ADULT

- Adult Dose 0.3mg IM. May repeat 2x prn, in 5 minutes prn.

### PEDIATRIC



- Pediatric Allergic Reactions/Anaphylaxis: 0.01 mg/kg (0.01mL/kg). May repeat 2x prn, in 5 minutes if needed. Max dose 0.3mg IM.
- For Croup and Epiglottitis: (1:1,000) 3mL (3mg total) delivered via nebulizer

# EPINEPHRINE (1:10,000)



## INDICATIONS

- Cardiopulmonary arrest
- Severe anaphylactic reactions
- Pediatric Bradycardia

## CONTRAINDICATIONS:

- None

## SIDE EFFECTS

- Tachycardia, ventricular dysrhythmias, hypertension, angina, and palpitations

## PRECAUTIONS

- Epinephrine is inactivated by alkaline solutions. Never mix with Sodium Bicarbonate.

## ADMINISTRATION

### ❑ ADULT

- Cardiac Arrest: 1mg IV/IO, push every 3-5 minutes during cardiac arrest.
- Anaphylaxis: (1:10,000) 0.1mg (diluted in 9mL of Saline), IV/IO over 1-2 mins. May repeat 2x prn, in five minute intervals. Max total dose 0.3mg (See Box Below)

Discard 9 mL of Epi 1:10,000 and draw up 9 mL of Saline and administer over 1-2 minutes. You may repeat 2x prn, in five minute intervals.

### ❑ PEDIATRIC



- Cardiac Arrest: 0.01mg/kg (0.1mL/kg) IV/IO, repeat every 3-5 minutes prn. Max single dose 1mg.
- EPINEPHRINE: (1:10,000) 0.1mg (diluted in 9mL of Saline), titrate slowly over 5-10 minutes IV/IO (titrate to effect). May repeat 2x prn, in five minute intervals. (See Box Below)

Discard 9 mL of Epi 1:10,000 and draw up 9 mL of Saline and administer over 5-10 minutes (titrate to effect) .You may repeat 2x prn, in five minute intervals



# ETOMIDATE (AMIDATE)

---



## INDICATIONS

- Sedation for: Cardioversion/Pacing, Ventilatory Management, RSI, ICE

## CONTRAINDICATIONS:

- None

## PRECAUTIONS



- May cause respiratory arrest. Continuously monitor ventilatory status.
- Use with caution in patients with severe hypotension, severe asthma or severe cardiovascular disease.

## SIDE EFFECTS



- Apnea, hypoventilation, laryngospasm, N/V, tachycardia, muscle jerking

## ADMINISTRATION

### SEDATION FOR AIRWAY CONTROL

-  **ADULT:** 30mg or 0.3mg/kg IV/IO over 30-60 seconds. May repeat 1x prn.
-  **PEDIATRIC:** 0.3mg/kg, IV/IO over 30-60 seconds. Max single dose 20mg. May repeat 1x prn.

### SEDATION FOR CARDIOVERSION/PACING

-  **ADULT** 6mg IV/IO, over 15-30 seconds. May repeat 1x prn.
-  **PEDIATRIC:** 0.1mg/kg IV/IO over 15-30 seconds. Max single dose 6mg. May repeat 1x prn.

# FENTANYL

---



## INDICATIONS

- Moderate to severe pain relief

## CONTRAINDICATIONS:

- Respiratory Depression
- Less than 6 months old

## PRECAUTIONS

- Push slowly to prevent rigid chest wall syndrome which can be reversed with Narcan.
- Head injuries due to risk of respiratory depression and increased ICP

## SIDE EFFECTS

- Respiratory depression, hypotension, increased ICP, N/V, chest wall rigidity

## ADMINISTRATION

### ADULTS

- FENTANYL: 50mcg slow IV/IO **OR** 100mcg IM/IN. May repeat every 5 minutes prn. Max total dose 200mcg.

### PEDIATRIC (Greater than 6 months old)

- FENTANYL: (Greater than 6 months old) 1mcg/kg slow IV/IO/IM May repeat every 5-10 mins prn. Max single dose 50mcg. Max total dose 150mcg.
- FENTANYL: (Greater than 6 months old) 1.5mcg/kg IN. May repeat every 5-10 mins prn. Max single dose 50mcg. Max total dose 150mcg.



**Narcan reverses all adverse reactions of Fentanyl.**

# GLUCAGON



## INDICATIONS

- Hypoglycemia when unable to establish IV access and the patient is too obtunded for oral glucose administration.
- Beta Blocker Overdose

## CONTRAINDICATIONS

- Pheochromocytoma (adrenal gland tumor)

## SIDE EFFECTS

- Nausea and vomiting, ensure airway is protected for patients with a decreased level of consciousness.

## ADMINISTRATION

### ❑ ADULT

- Hypoglycemia: 1mg IN/IM
- Beta Blocker OD: 1mg/minute, slow IV/IO. Max dose of 5mg.

### ❑ PEDIATRIC

- Hypoglycemia: Less than 20kg (0.5mg IN/IM), greater than 20kg (1mg IN/IM)
- Beta Blocker Overdose: 1mg IV/IO every minute until hypotension resolves or max dose.
  - *Children 20kg or less, maximum dose 4mg*
  - *Children greater than 20kg, maximum dose 5mg*



## WARNING

The needle that comes with the Glucagon is NOT for IM use. Draw up the medication in a syringe and attach the appropriate size needle for an IM injection.



## INDICATIONS

- Violent Agitated Patient
- Suspected Excited Delirium
- Advanced Airway Management
- Post Intubation Sedation
- CPR Induced Consciousness
- Pain Control

## CONTRAINDICATIONS

- Allergy
- Pregnant patients
- Cardiac chest pain
- Penetrating eye injury

## ADVERSE REACTIONS

- Hypertension and tachycardia, generally self limited
- Laryngospasm may produce mild stridor. Correct in the order of:
  1. High Flow O<sub>2</sub>
  2. Ventilation with a BVM
  3. Advanced Airway (RSI)
- Hypersalivation
- Nausea and vomiting
- Tonic and clonic muscle movements
- Transient respiratory depression occasionally occurs
- Roving eye movements and nystagmus

## PSYCHOLOGICAL ADVERSE REACTIONS

- Visual Hallucinations
- Emergence Delirium
- Sensation of detachment from the body

## ADMINISTRATION CPR INDUCED CONSCIOUSNESS / VIOLENT AND COMBATIVE

### ADULT

- 200mg IV/IO. May repeat x1 prn. Max single dose 200mg. **THIS MUST BE DILUTED**

### PEDIATRIC N/A



## EXCITED DELIRUM / VIOLENT AND COMBATIVE

### ADULT

- 400mg IM. May repeat 1x prn. Max single dose 400mg.

### PEDIATRIC N/A

## PAIN MANAGEMENT

### ADULT

- 25mg IV/IO. May repeat 2x every 5 minutes prn. Max total dose 75mg IV/IO. **THIS MUST BE DILUTED**

### PEDIATRIC N/A

## ADVANCED AIRWAY MANAGEMENT

### ADULT

- 200mg IV/IO. May repeat 1x prn. Max single dose 200mg. **THIS MUST BE DILUTED**

### PEDIATRIC 36 MONTHS AND OVER



1mg/kg IV/IO/IM. May repeat 1x prn. Max single dose 50mg. **THIS MUST BE DILUTED**

## POST INTUBATION SEDATION

### ADULT

- 200mg IV/IO as needed to maintain sedation. May repeat 1x prn. Max single dose 200mg. **THIS MUST BE DILUTED**

### PEDIATRIC 36 MONTHS AND OVER



1mg/kg IV/IO/IM. May repeat 1x prn. Max single dose 50mg. **THIS MUST BE DILUTED**

**WARNING: DELIVER THIS MEDICATION SLOWLY UNLESS GIVING IT IM**

**ALL IV/IO KETAMINE MUST BE DILUTED IN NORMAL SALINE:**

**PAIN MANAGEMENT: FOLLOW INSTRUCTIONS PER THAT PROTOCOL PAGE.**

**ALL ADULT: 200mg IV/IO MUST BE DILUTED IN 8mL of NORMAL SALINE.**

**ALL PEDIATRIC: DILUTE DOSE IN 1mL and ADMINISTER OVER 1 MINUTE.**

# LIDOCAINE 1%

---



## INDICATIONS

- EZ IO for the conscious patient

## CONTRAINDICATIONS

- 2<sup>nd</sup> and 3<sup>rd</sup> degree heart block

## SIDE EFFECTS

- Dizziness
- Blurred vision
- Muscle Twitching
- Seizures

## DOSAGE

### ☐ ADULT

- **LIDOCAINE:** 40MG IO over one minute. Allow Lidocaine to dwell in IO space for one minute and flush with **NORMAL SALINE** 10mL. May administer additional **LIDOCAINE:** 20mg IO over one minute prn.

# MAGNESIUM SULFATE



## INDICATIONS

- Pre- Eclampsia
- Eclampsia
- Torsades de Pointes
- Severe Asthma

## CONTRAINDICATIONS

- 2<sup>nd</sup> and 3<sup>rd</sup> Degree Heart Blocks

## SIDE EFFECTS

- Circulatory Collapse, respiratory paralysis, heart block

## ADMINISTRATION

### ❑ ADULTS

- **With a Pulse Torsades de Pointes Stable:** 2g IV/IO, in 50 mL of Normal Saline attached to a 60 gtt set and run wide open.
- **Pulseless Torsade:** 2g IV/IO IVP Slowly
- Torsades de Pointes Post Cardiac Arrest or Defibrillation of a patient **with a PULSE:** (2g IV/IO into 50mL of Normal Saline, infused over 10 minutes) if patient did not receive Mag Sulfate during arrest.
- Severe Pre-Eclampsia: 2g in 50mL of Normal Saline, infuse over 10 minutes. **MUST REPEAT 1x.**
- Eclampsia: 4g IV/IO, in 50 mL of Normal Saline attached to a 60 gtt set and run wide open.. Max total dose 4g.
- For severe asthma not responding to other treatments: 2g IV/IO in 50 mL of Normal Saline over 10 minutes.

### ❑ PEDIATRIC



- **Pulseless Torsades de Pointes:** 40 mg/kg IV/IO, Slow IVP
- Stable PVT 40mg/kg IV/IO, in 50 mL of Normal Saline over 10 minutes. Max of 2g.
- Severe Asthma: 40 mg/kg in 50 mL of Normal Saline over 25 minutes. Max of 2g.



# NARCAN (NALOXONE)



## INDICATIONS

- Reversal of respiratory depression and/or hypotension secondary to a narcotic overdose
- Reverse rigid chest wall syndrome secondary to Fentanyl administration

## CONTRAINDICATIONS

- None

## PRECAUTIONS

- Administered cautiously to patients who are known to be or suspected to be physically dependent on opiates, as Narcan administration can cause withdrawals in these patients, including newborns of addicted mothers.
- Use caution during administration, as patient may become violent as level of consciousness increases.

## ADMINISTRATION

### ADULT

- 0.5mg IV/IO/IM. Repeat every 1-2 minutes prn for a respiratory rate less than 12 BPM up to 2mg. If no change is noted increase the dose to 2mg increments. Max total dose 10mg.
- 2 mg IN. May repeat in 2-3 minutes prn for a respiratory rate less than 12 BPM.

### PEDIATRIC



- 0.5mg IV/IO/IM or 1mg IN. May repeat every 2-3 minutes prn for a respiratory rate less than 20 BPM for children and less than 40 BPM for neonates. Max single dose 0.5mg IV/IO/IM or 1mg IN. Max total dose 2mg.

### NOTE

Methadone, Darvon, Talwin and Fentanyl may require higher doses of Narcan, contact medical control.

# NITROGLYCERIN PASTE

---



## INDICATIONS

- Pulmonary edema

## CONTRAINDICATIONS

- Hypotension
- Erectile Dysfunction Drugs (Viagra and Levitra within 24 hours and Cialis within 48 hours)
- Right Ventricular Infarction
- No IV/IO access

## SIDE EFFECTS

- Headache, nausea and vomiting, hypotension, reflex tachycardia
- For NTG-induced hypotension, place patient in a supine position and administer a 500mL fluid bolus of Normal Saline, and remove the NTG paste.

## ADMINISTRATION

### ADULT

- Apply 1" of nitro paste to patient's anterior upper chest.

### PEDIATRIC

- N/A

# NITROGLYCERIN SL

---



## INDICATIONS

- Ischemic chest pain after maximum Fentanyl administration
- Pulmonary edema

## CONTRAINDICATIONS

- Hypotension
- Erectile Dysfunction Drugs (Viagra and Levitra within 24 hours and Cialis within 48 hours)
- Right Ventricular Infarction
- For Chest Pain/MI Only - Heart Rate less than 50 BPM or greater than 100 BPM

## SIDE EFFECTS

- Headache, nausea and vomiting, hypotension, reflex tachycardia
- For NTG-induced hypotension, place patient in a supine position and administer a 500mL fluid bolus of Normal Saline.

## ADMINISTRATION

### ☐ ADULT

- Chest Pain: 0.4mg every 3-5 minutes. Maximum 3 doses.
- CHF: 0.4mg every 3-5 minutes for an SBP greater than 150mmHg. Maximum 3 doses.

## PEDIATRIC

N/A

# NORCURON (VECURONIUM)

---



## INDICATIONS

- RSI

## CONTRAINDICATIONS

- None

## PRECAUTIONS

- Cardiovascular disease or advanced age may slow onset time.
- Use with caution and even consider using a lower dose for patients with renal failure.
- Reconstitute with 10mL of Normal Saline.

## ADMINISTRATION

### ADULT

- 0.1mg/kg IV/IO after successful intubation. Max dose 10mg.

### PEDIATRIC

- 0.1mg/kg IV/IO after successful intubation. Max dose 10mg.



# ORAL GLUCOSE

---



## INDICATIONS

- For documented hypoglycemia (less than 60 mg/dL), before unconsciousness occurs.

## CONTRAINDICATIONS

- Patients who are not conscious enough to swallow
- Patients less than 2 years old

## PRECAUTIONS

- Patient must be conscious enough to be able to swallow.

## ADMINISTRATION

### ADULT & PEDIATRIC

- 15g PO, squeeze the entire tube of glucose in the patient's mouth and have them swallow. May repeat 1x in 15 minutes prn.

# ROCURONIUM BROMIDE (ZEMURON)

---



## INDICATIONS

- RSI

## CONTRAINDICATIONS

- Hypersensitivity (eg, anaphylaxis) to rocuronium or other neuromuscular blocking agents.

## PRECAUTIONS

- Onset of action may be delayed in patients with conditions, such as cardiovascular disease and advanced age, associated with slowed circulation

## ADMINISTRATION

### ADULT

- 50mg IV/IO after successful intubation. May repeat 1x prn.

### PEDIATRIC

- 1mg/kg IV/IO after successful intubation. May repeat 1x prn. Max single dose 50mg.



# SODIUM BICARBONATE

---



## INDICATIONS

- Hyperkalemia
- TCA Overdose
- Excited Delirium

## CONTRAINDICATIONS

- None, if given for above indications.

## PRECAUTIONS

- Do not administer Sodium Bicarbonate in the same IV line as other medications without adequately flushing the IV line.

## ADMINISTRATION

### ☐ ADULT

- Hyperkalemia: 50 mEq slow IV/IO.
- TCA Overdose: 50 mEq slow IV/IO every 5 minutes until ECG changes are resolved. Maximum 150 mEq.
- Excited Delirium: 50 mEq slow IV/IO. If patient is in cardiac arrest, 100mEq as first line drug.

### ☐ PEDIATRIC

- Hyperkalemia/TCA Overdose: 1 mEq/kg of an 8.4% solution. For neonates, 1 mEq/kg of a 4.2% solution.

**SODIUM BICARBONATE 4.2%: Discard 25mL of 8.4% and draw up 25mL of Normal Saline.**



# SUCCINYLCHOLINE

---



## INDICATIONS

- Rapid Sequence Intubation "RSI"

## CONTRAINDICATIONS

- Predicted difficult intubation: obesity, short neck, small mouth
- Thyromental distance of less than 3 finger widths
- Major facial or laryngeal trauma
- Patient who cannot be assisted with a BVM
- Penetrating eye injuries, Glaucoma
- Organophosphate poisoning
- Renal failure (dialysis / hyperkalemia)
- Known hypersensitivity or history of malignant hyperthermia
- Preexisting neuromuscular disease
- Chronic paralysis

## SIDE EFFECTS

- Prolonged apnea, hypotension, arrhythmias, bronchospasm

## ADMINISTRATION

### ADULT

- 100mg IV/IO

### PEDIATRIC



- UNDER 36 MONTHS: 2mg/kg IV/IO. Max dose 100mg
- 36 MONTHS AND OVER: 1mg/kg IV/IO. Max dose 100mg



# VERSED (MIDAZOLAM)

---

## INDICATION

- Seizures
- Airway Management
- Cocaine Overdose
- Excited Delirium/Violent Patient

## CONTRAINDICATIONS

- Hypotension

## PRECAUTIONS

- Respiratory depression
- Push IV/IO slowly over 2 minutes

## SIDE EFFECTS

- Nausea and vomiting
- Hypotension

## ADMINISTRATION

### ADULT

- VERSED: 2.5 mg IV/IO **OR** 5mg IN/IM. May repeat either route 1x prn.

### PEDIATRIC



- VERSED: 0.1mg/kg IV/IO (max single dose 2.5mg) **OR** 0.2 mg/kg IN/IM (max single dose of 5mg). May repeat either route 1x prn.

# ZOFRAN (ONDANSETRON)

---



## INDICATION

- Nausea
- Vomiting

## CONTRAINDICATION

- None

## SIDE EFFECTS

- Blurred Vision
- Dizziness
- Anxiety
- Headache

## ADMINISTRATION

### ADULT

- 4mg IM or slow IV/IO over 2 minutes.

### PEDIATRIC



- 0.1mg/kg IM or slow IV/IO over 2 minutes. Max dose 4mg.

**ZOFRAN ADMINISTRATION:** If IV access is unobtainable, it is acceptable to administer the IV formulation of Zofran via the PO route to the patient. Using a needleless syringe administer the Zofran under the patient's tongue.

# ADULT INFUSIONS



DRUG	MIXTURE	DOSE	ADMINISTRATION
Amiodarone	150mg in 50mL	150mg	75gtts/min with a 15gtt set 1.25 gtts/sec
Dopamine	400mg in 250ml (1600mcg/mL)	5mcg/kg/min	Use a 60gtt set. Take Pt.'s weight in lbs and drop the last number. This number is the gtts/min to start at. This will achieve 5mcg/kg/min.
Magnesium Sulfate Pre-Eclampsia <b>MUST REPEAT 1x</b>	2g in 50mL	2g over 10 minutes	75gtts/min with 15gtt set 1.25 gtts/sec
Magnesium Sulfate Eclampsia	4g in 50mL	4g over 2 minutes	60 gtt set run wide open
Magnesium Sulfate Torsades de Pointes <b>Stable with a Pulse</b>	2g in 50 mL	2g over 2 minutes	60 gtt set run wide open
Magnesium Sulfate Torsades de Pointes Post conversion (if Magnesium Sulfate was not administered)	2g in 50 mL	2g over 10 minutes	75 gtts/min with 15 gtt set 1.25 gtts/sec
Magnesium Sulfate Severe Asthma	2g in 50 mL	2g over 10 mins	75 gtts/min with 15 gtt set 1.25 gtts/sec



DRUG	MIXTURE	DOSE	ADMINISTRATION
Amiodarone	5mg/kg in 50mL Max of 150mg	5mg/kg over 25 minutes	30gtts/min with a 15gtt set 1 gtt every 2 secs
Magnesium Sulfate Severe Asthma	40 mg/kg in 50mL Max of 2g	40 mg/kg over 25 minutes	30gtts/min with a 15gtt set 1 gtt every 2 secs
Magnesium Sulfate Torsades de Pointes <b>Stable with a Pulse</b>	40 mg/kg in 50mL Max of 2g	40 mg/kg over 10 minutes	75gtts/min with a 15gtt set 1.25 gtt/sec