T2 TRAUMATIC CARDIAC ARREST

ADULT and PEDIATRIC	GOALS OF CARE
	Quality CPR, treat reversible causes, and rapid transport to nearest hospital ER

BLS

- Perform Primary Trauma Assessment (ABCDE) and implement initial interventions as needed:
  - Open airway (BLS maneuvers), provide oxygen and assist ventilations at 12 breaths per minute with bag-valve-mask (BVM) device and appropriate airway adjunct
  - Initiate chest compressions
  - Control hemorrhage with direct pressure followed by appropriate device or procedure, when indicated (Ref. CP16, CP18)
  - Seal chest wounds (Ref. CP17)
  - Implement Spinal Precautions, as indicated (Ref. CP15, CT11)
  - Expose patient and protect from environment
- Declare "Trauma Alert" (Ref. CT9, CT10)

- Notify Receiving Facility as soon as possible

ALS

- Ensure airway control (Ref. CP1, CP2, CP3, CP4)
- Perform bilateral Needle Thoracostomy if any evidence of chest trauma (Ref. CP7)
- Establish vascular access and initiate fluid resuscitation:
  - Adults: 2000 mL 0.9% sodium chloride
  - 14-15 years old: 1500 mL 0.9% sodium chloride
  - 13 years of age and younger: 0.9% sodium chloride Per Handtevy
- Assess patient for underlying or co-morbid medical conditions and initiate appropriate pharmacologic and electrical ACLS treatment (Ref. C1, P3)
- Repeat Primary Trauma Assessment (ABCDE) after treatments and frequently during transport

OLMC

- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS
• Resuscitation must be attempted in all cases unless the patient is confirmed pulseless and apneic on arrival (i.e. no signs of life) **and** meets the specific criteria listed in CS14 • EMS Providers may elect to perform resuscitative efforts on trauma arrest patients for a variety of reasons, including scene safety concerns, even though the patient meets criteria for withholding resuscitative efforts • ACLS is secondary to addressing reversible causes in traumatic arrest • A Traumatic Cardiac Arrest patient should not be transported to a freestanding ER. • Refer to CS18 for alterations in standard of care during Major Incidents with Ongoing Threats (e.g. Active Shooter Response)

QUALITY MEASURES
• Pending

REFERENCES
• http://nasemso.org/Projects/ModelEMSClinicalGuidelines/index.asp

T3 ELECTROCUTION/LIGHTNING STRIKE

ADULT and PEDIATRIC	GOALS OF CARE
	Rapidly assess and intervene to resuscitate a victim of electrocution and understand that these patients often survive initial cardiac arrest

BLS

- If in cardiac arrest, initiate Compression Performance Resuscitation/CPR (Ref. C1, P3, CP9)
- Assess neurologic function and implement Spinal Precautions, as indicated (Ref. CP15, CT11)
- Manage Burn injuries as needed (Ref. T6)

ALS

- If in cardiac arrest **or** evidence of significant electrical burns, ensure intravenous/intraosseous access and initiate fluid resuscitation:
    - Adults: 2000 mL 0.9% sodium chloride
    - 14-15 years old: 1500 mL 0.9% sodium chloride
    - 13 years of age or younger: 0.9% sodium chloride Per Handtevy
- If ***NOT*** in cardiac arrest:
    - Establish vascular access
    - Assess for and treat cardiac dysrhythmias (Ref. C4, C5, P6, P7)
    - Obtain 12-Lead ECG
    - Provide Seizure control as needed (Ref. M14, P16)
    - Provide Pain Management as needed (Ref. M13, P15)
    - Perform Airway Management as indicated (Ref. CP1, CP3)
    - Consider need for Trauma Center and/or Burn Center (Ref. CT9, CT10, CT11, CT12, T6)

OLMC

- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

- Lightning strike victims found in cardiac arrest should be considered among our most salvageable patients and every effort should be made at resuscitation!
    - Although burn injuries in lightning patients often look severe, there may be very little internal damage due to current conduction superficially along wet skin and clothes.
    - Electrical shock may cause tetany, seizure, or muscle paralysis including of the diaphragm and pupils. Evidence of respiratory effort and pupillary response are unreliable!
- Large electrical burns may cause electrolyte disturbances such as hyperkalemia

QUALITY MEASURES

- Pending

REFERENCES

- http://nasemso.org/Projects/ModelEMSClinicalGuidelines/index.asp
- Wilderness Medical Society Practice Guidelines for the Prevention and Treatment of Lightning Injuries: 2014 Update https://www.wemjournal.org/article/S1080-6032(14)00274-9/fulltext

T4 EYE INJURY

ADULT and PEDIATRIC	GOALS OF CARE
	Accurate assessment of ocular trauma, prevention of further injury, and safe pain management

BLS

- Collect information regarding mechanism of injury or type of exposure
- Assess for pain, loss of vision and eye muscle function (side-to-side and up-and-down eye motion)
- Encourage and assist patient to remove contact lenses, if possible
- If surface foreign body or chemical exposure is suspected, initiate continuous irrigation with sterile water or 0.9% sodium chloride—may use nasal cannula on bridge of nose
- ***DO NOT*** remove impaled object(s). Secure/stabilize without placing additional pressure on object
- Transport patient in upright position, if possible

ALS

- Establish vascular access
- Provide Pain Management as needed (Ref. M13, P15)

OLMC

- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

- Patients who suffer eye injuries or develop eye pain after using power tools (e.g. metal grinders, etc.) or welding equipment should always be encouraged to seek care immediately due to possibility of severe but initially unapparent injury

QUALITY MEASURES

- Pending

REFERENCES

- http://nasemso.org/Projects/ModelEMSClinicalGuidelines/index.asp

T5 BITES/STINGS/ENVENOMATION

ADULT and PEDIATRIC	GOALS OF CARE
	Recognize specific types of envenomation and provided appropriate supportive care and pain management

BLS

- Monitor for and treat signs of allergic reaction/anaphylaxis (Ref. M2, P8)
- Specific Management:
  - Stingray:
    - Refer to T1, P17, or other appropriate trauma protocols for injuries other than isolated distal extremity or if any major hemorrhage
    - Control any active bleeding with pressure over wound
    - Apply hot pack to wound, or if available, submerge injured extremity in hot water

    - Assess for remnants of barb remaining in wound (***DO NOT*** remove)
    - Clean and dress wound appropriately

  - Jellyfish/Man-o-War:
    - *AVOID SELF-CONTAMINATION*
    - Remove stinging cells by scraping with rigid edge (e.g. credit card)
    - Rinse thoroughly with seawater or 0.9% Sodium Chloride IV fluid
    - Apply copious amounts of rubbing alcohol if available

  - Snakebites:
    - Attempt to identify species of snake (***DO NOT*** attempt to capture/kill)
    - Remove all constricting clothing/jewelry from affected extremity
    - Mark area of envenomation to track progression
    - Maintain affected extremity at or below level of heart
    - Splint affected extremity in neutral position

  - Insect Stings:
    - Attempt to identify species of insect, if possible
    - Remove visible stinger via rigid edge (e.g. credit card). ***DO NOT*** use tweezers/forceps
    - Apply cold pack to injury site

ALS
• Consider need for pain management (Ref. M13, P15)

OLMC
• Consult Online Medical Control Physician if needed.

PEARLS
• Stingray: o Consider adding soap or ammonia to hot water, if available • Jellyfish/Man-o-War or Insect Stings: o Consider applying paste of baking soda or flour and water to wound site, if available • Snakebites: o Do not apply tourniquet or use cold pack o If snake is dead/destroyed prior to EMS arrival, transport snake with patient in a closed container, or take a photo of snake

QUALITY MEASURES
• Pending

REFERENCES
• http://nasemso.org/Projects/ModelEMSClinicalGuidelines/index.asp • https://www.diversalertnetwork.org/health/hazardous-marine-life

T6 BURNS

ADULT and PEDIATRIC	GOALS OF CARE
	Assessment of type and extent of burn, initiation of fluid resuscitation and pain management, and transport to appropriate receiving facility

BLS

- STOP the burning process
  - Thermal – Remove any sources of heat or burning clothes and cool the area
  - Chemical burns –
    - Consider Hazmat Team consult or response
    - If able to do so safely, brush off chemical and flush copiously with water
- Cover the burns with a clean dry dressing and keep the patient warm
- Monitor the patient's airway closely and provide ventilation assistance with BVM and airway adjunct, if needed (Ref. CP1.1, CP3.1)
- Assess burn extent and determine appropriate destination (Ref. CT12):
  - For a 2nd and/or 3rd degree burn with a total body surface area (TBSA) greater than 15%, along with multi system trauma, declare trauma alert and transport to the closest trauma center unless the Burn Center at Tampa General Hospital is closer or equal distance by ground or air
  - Any 2nd and/or 3rd degree burns to high risk areas, such as the face/airway, hands, feet, perineum or circumferential burns to the chest or extremities, transport to the Burn Center at Tampa General Hospital
  - For an isolated 2nd and/or 3rd degree burn with a total body surface area (TBSA) greater than 15%, declare trauma alert and transport to the Burn Center at Tampa General Hospital
- Evaluate for blast injury or other associated trauma (Ref. T1, P17)

ALS

- Establish vascular access
- Monitor respiratory status closely with SpO2 and EtCO2
- Perform advanced airway management as needed (Ref. CP1, CP3)
  - Be prepared for immediate airway intervention if there are signs of airway burn and/or edema
- Initiate fluid resuscitation:
  - Adults: 2000 mL 0.9% sodium chloride
  - 14-15 years old: 1500 mL 0.9% sodium chloride
  - 13 years of age or younger: 0.9% sodium chloride Per Handtevy
- Provide appropriate Pain Management (Ref. M13, P15)
- Consider Cyanokit treatment (Ref. A5) see Handtevy for pediatric dosing
- Consider Carbon Monoxide (CO) treatment (Ref. A4)
- Evaluate and treat cardiac dysrhythmias (Ref. C4, C5, P6, P7)
- Obtain 12-lead ECG

OLMC
• Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS
• None

QUALITY MEASURES
• Pending

REFERENCES
• http://nasemso.org/Projects/ModelEMSClinicalGuidelines/index.asp

T7 BAROTRAUMA/DIVING INJURIES

ADULT and PEDIATRIC	GOALS OF CARE
	Recognize possible barotrauma/diving injuries and initiate appropriate care

BLS

- Obtain baseline and repeat vital signs and assess mental status
- Administer O2, 15 liters via non-rebreather mask
- Provide ventilation assistance with BVM and airway adjunct, if needed (Ref. CP1.1 CP3.1)
- Obtain and document a thorough dive history
  - Maximum depth and length of dives
  - Number of dives in the last 48 hours
  - Any air travel in last 24 hours
  - Type of compressed air (e.g. oxygen, helium, nitrogen, argon)
  - Was there a rapid ascent or any other emergencies under water
- Assess for and treat other traumatic injuries (Ref. T1, P17)
- Remove wet clothes, keep the patient warm

ALS

- Establish IV access
- Monitor respiratory status closely with SpO2 and EtCO2, ensure high flow O2
- Perform advanced airway management as needed (Ref. CP1, CP3)
- Initiate fluid resuscitation:
  - Adults: 2000 mL 0.9% sodium chloride
  - 14-15 years old: 1500 mL 0.9% sodium chloride
  - 13 years of age or younger: 0.9% sodium chloride Per Handtevy
- Provide appropriate pain management (Ref. M13, P15)
- Evaluate and treat cardiac dysrhythmias (Ref. C4, C5, P6, P7)
- Obtain 12-lead ECG (concern for gas embolism in coronary artery→MI)
- Administer antiemetic for nausea and vomiting as needed:
  - Adults: ondansetron 4 mg slow intravenous push (IVP) ***or*** ondansetron oral dissolving tablet 4 mg. May repeat once in fifteen (15) minutes as needed
  - Peds: ondansetron slow intravenous push (IVP) ***or*** ondansetron oral dissolving tablet. May repeat once in fifteen (15) minutes as needed

OLMC

- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

• Signs and symptoms can occur during dive and up to 48 hours afterwards
• Barotrauma
  o Pneumothorax, Mediastinal Emphysema – pain, dyspnea, decreased of absent lung sounds. Breath holding on ascent, even for 6 – 10 feet may cause.
  o Ears - ruptured ear drum, vertigo, ringing in the ears (tinnitus), partial deafness, nausea/vomiting
• Decompression sickness
  o "The bends " Gas embolisms – symptoms depend on location of bubble blocking blood flow (joint pain, headache, vision change, stroke, PE, MI)
• Bring the patients diving gear if possible
• May contact DAN (Divers Alert Network) 919-684-9111 in consultation with OLMC for hyperbaric chamber resources

QUALITY MEASURES
1. Pending

REFERENCES
• http://nasemso.org/Projects/ModelEMSClinicalGuidelines/index.asp • https://www.diversalertnetwork.org/

PEDIATRIC

PEDIATRIC

P1 PEDIATRIC FOREIGN BODY AIRWAY OBSTRUCTION

PEDIATRIC ONLY	GOALS OF CARE
	Rapidly intervene to relieve severe or complete airway obstructions

BLS

- Have suction readily available
- Mild / partial obstruction:
  - ***DO NOT interfere.*** Monitor the patient for signs of worsening or severe/complete foreign body airway obstruction
  - Allow the patient to clear the airway by coughing
  - Reassure the patient and allow for position of comfort
- Severe/complete obstruction:
  - If responsive:
    - Child - Perform abdominal thrusts until the object is expelled or becomes unresponsive
    - Infant - Deliver repeated cycles of 5 back blows (slaps) then 5 chest compressions until the object is expelled or becomes unresponsive
  - If unresponsive:
    - Start cardiopulmonary resuscitation - after 30 chest compressions, open the airway. If a foreign body is visible, remove it.
    - ***DO NOT perform blind finger sweeps***

ALS

- If unresponsive:
  1. Perform direct laryngoscopy:
     a. Attempt to remove foreign body at or above cords with Magill forceps
     b. If unable to visualize foreign body (e.g. below cords), perform endotracheal intubation (Ref. CP3.2)
  2. If still unable to ventilate after above maneuvers:
     a. Ensure cuff is deflated, then attempt to push the obstruction deeper with the endotracheal tube, then retract endotracheal tube to original position, re-inflate cuff and attempt ventilation
  3. If all prior interventions unsuccessful:
     a. Age less than or equal to 10: Needle Cricothyrotomy (Ref. CP4)
     b. Age greater than 10: Surgical Cricothyrotomy (Ref. CP2)

OLMC

- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS
• Signs of foreign body airway obstruction include an acute onset of respiratory distress with coughing, gagging, stridor or wheezing • Sudden onset of respiratory distress in the absence of fever or other respiratory symptoms suggests foreign body airway obstruction rather than an infectious cause of respiratory distress, such as croup • A severe obstruction develops when a cough becomes silent, respiratory effort increases and is accompanied by stridor or unresponsiveness • ***DO NOT delay transport for multiple intubation attempts*** • Transport to the closest hospital is mandatory for an unmanageable/uncontrolled airway (Ref. CS4)

QUALITY MEASURES
• Pending

REFERENCES
• https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/

P2 PEDIATRIC ASTHMA

PEDIATRIC ONLY	GOALS OF CARE
	Recognize and treat obstructive respiratory pathophysiology in an aggressive and safe manner

BLS

- Allow the patient to assume position of comfort
- Administer supplemental oxygen
- Assist patient with their own medication, as needed (e.g. Albuterol)
- If severe symptoms, and epinephrine auto-injector is available, may administer as below and repeat once if needed in 5 minutes (Ref. CP22.1):
  - Adult auto-injector (0.3 mg) for patients 9 years or older (greater than 30 kg/66 lbs.)
  - Pediatric auto-injector (0.15 mg) for patients 3-9 years old (15-30 kg/33-66 lbs.)
- Provide ventilation assistance with BVM and airway adjunct, if needed (Ref. CP3.1)

ALS

- Aerosol therapy:
  - Albuterol mixed with ipratropium. May repeat x 1 ***followed by***
  - Albuterol, repeat as needed/continuously
- Administer methylprednisolone sodium succinate slow intravenous push (IVP)
- Monitor EtCO2 and SpO2
- If no improvement with initial aerosol treatment, may initiate CPAP (Ref. CP6) and continue aerosol therapy via t-piece (Ref. CP8)
- If patient does not improve or is **in extremis at patient contact:**
  - Epinephrine intramuscular (1 mg/mL concentration) in the mid-anterolateral thigh, may repeat once in 3-5 minutes if needed.
- If patient progresses to respiratory failure, perform airway management (Ref. CP3) and continue aerosol therapy via t-piece (Ref. CP8)

OLMC

- Additional doses of epinephrine intramuscular (1 mg/mL concentration)
- Epinephrine drip infusion (Ref. CT20)
- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

- Asthma is a deadly disease
- A pediatric patient can tolerate an elevated high heart rate. Do not let a high heart rate deter you from administering Albuterol
- Do not attempt invasive airway procedures unless the patient is in respiratory arrest
- Patients with a history of being intubated in the past may deteriorate rapidly
- A silent chest = pre-respiratory arrest
- Think of tension pneumothorax if patient decompensates after intubation/CPAP

QUALITY MEASURES
• Bilateral lung sounds documented at least twice (min 4 minutes apart) • EtCO2 monitored • Respiratory rate improved (if initial less than 8 was final greater than 14 or if initial greater than 35 was final decreased) • SpO2 improved (if initial less than 94 was final greater than 94%) • Methylprednisolone sodium succinate administered • CPAP not applied if contraindicated (SBP less than 90 or GCS greater than 14 prior to application) • Both nitroglycerin and albuterol not given to same patient

REFERENCES
• https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/ • Pinellas County EMS Medical Quality Management Plan

P3 PEDIATRIC MEDICAL CARDIAC ARREST

PEDIATRIC ONLY	GOALS OF CARE
	Provide high quality, evidence based, resuscitation focusing on maximizing perfusion and correction of reversible causes of medical cardiac arrest

BLS

- Open airway and initiate ventilation assistance with BVM and appropriate airway adjunct (Ref. CP3.1)
- Establish Compression Performance Resuscitation procedure and Pit Crew Model (Ref. CP9.2, CP9.3, CP10, CT5)
- Continue Compression Performance Resuscitation and reassess rhythm every two (2) minutes and defibrillate when indicated by AED/Philips MRx
- Document any bystander (non-911 responder) interventions (e.g. CPR, rescue breathing, AED use) that occurred prior to arrival
- Document any occurrence of ROSC and last known patient status at hospital, if transported

ALS

- Ensure BLS resuscitation steps completed
- Secure airway if unable to adequately ventilate with BVM (Ref. CP3) and establish vascular access per Compression Performance Resuscitation procedure (Ref. CP9.2 CP9.3)
- Assess rhythm and defibrillate as indicated for ventricular fibrillation or pulseless ventricular tachycardia (escalate joules per Handtevy)
- Administer medications as indicated:
  - Epinephrine (0.1 mg/mL concentration), repeat every 3-5 minutes through arrest
  - If continued ventricular fibrillation or pulseless ventricular tachycardia administer amiodarone, may repeat twice as needed
- Place orogastric tube to decompress stomach and facilitate ventilation (Ref. CP20)
- Ensure establishment of effective resuscitation procedures including compressions, ventilations, electrical, and pharmacologic therapy **prior** to initiating transport
- Monitor progress of resuscitation using EtCO2
- Identify and treat potential reversible causes:
  - Suspected hyperkalemia – sodium bicarbonate 4.2% (Dilute 8.4% 1:1 with NS) and calcium chloride
  - Hypoglycemia – dextrose 10%
  - Opioid Overdose – naloxone
  - Suspected Cyanide exposure – Cyanokit (see dosing table in rear of Handtevy)
  - Suspected Tension Pneumothorax – Perform Needle Thoracostomy (Ref. CP7)

OLMC

- Consult for unusual circumstances or other specific treatment request (e.g. Lidocaine, etc.)
- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS
• If 13 years of age or older, greater than 60 kg, or signs of puberty present, refer to adult cardiac arrest • Hand bore intraosseous (NO DRILL) needle on children less than one (1) year of age

QUALITY MEASURES
• Pending

REFERENCES
• http://circ.ahajournals.org/content/132/18_suppl_2/S519/tab-figures-data • http://circ.ahajournals.org/content/132/18_suppl_2/S526/tab-figures-data

P4 PEDIATRIC POST MEDICAL CARDIAC ARREST

PEDIATRIC ONLY	GOALS OF CARE
	Aggressively manage post-arrest cardiogenic shock and ensure transport to appropriate receiving hospital

BLS

- Assess post-ROSC vital signs and mental status
- Initiate CPR if pulses lost again (Ref. CP9)
- Assist ventilations with BVM if needed - **Avoid Hyperventilation!** (Ref. CP3.1)
- Transport patient to a pediatric receiving facility (Ref. CS4)

ALS

- Assess cardiac rhythm and treat dysrhythmias as needed (Ref. P6, P7)
- Obtain 12-Lead ECG
- If SBP less than 90 mmHg:
  - 0.9% sodium chloride bolus
  - Epinephrine drip infusion - titrate to achieve SBP greater than 90 mmHg (Ref. CT20)
- If patient with RONF and apparent discomfort from airway or fighting ventilations, may administer midazolam intravenous/intraosseous and Fentanyl intravenous/intraosseous. May repeat once in 5 minutes if needed

OLMC

- Additional doses of sedation/pain management
- Norepinephrine drip infusion 1 – 10 mcg/min (Ref. CT21)
- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

- Aggressive post cardiac care is essential to ensure continued perfusion of vital organs and to maximize outcomes

QUALITY MEASURES

- Pending

REFERENCES

- Pending

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P5 NEONATAL RESUSCITATION

PEDIATRIC ONLY	GOALS OF CARE
	Perform aggressive neonatal resuscitation in accordance with established guidelines

BLS

- Stimulate, position and warm infant
- Gather gestational and birth history
- Assess for good activity/muscle tone and respiratory effort/strength of cry and initiate resuscitation efforts as below (Ref. CT16):
    - If normal:
        - continue warming and drying, clear secretions and position airway as needed
        - Allow infant to stay with mother prior to transport
    - If abnormal:
        - Position airway, clear secretions, and provide supplemental Oxygen
        - If HR less than 100 provide ventilation assistance with BVM and adjunct (Ref. CP3.1)
        - If HR less than 60 initiate chest compressions as per cardiac arrest protocol (Ref. P3)
- Document Apgar Score at 1 and 10 minutes (Ref. CT16)
- Transport to appropriate facility (Ref. CS4)

ALS

- Ensure BLS treatment as above
- Assess and monitor cardiac rhythm, SpO2, EtCO2
- Continue resuscitation per algorithm (Ref. CP9.3, CT5):
    - If SpO2 not improving perform airway management as indicated (Ref. CP3)
    - If heart rate not improving with ventilation support, establish vascular access as indicated
    - If heart rate remains less than 60, administer epinephrine (0.1 mg/mL concentration)

OLMC

- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

- None

QUALITY MEASURES

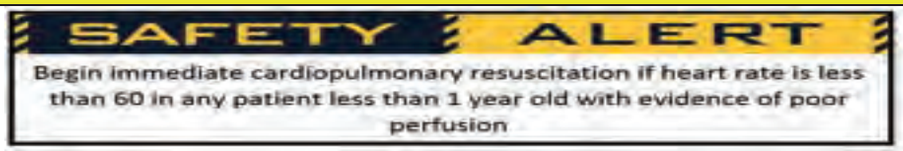
- Pending

REFERENCES
• https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines • http://circ.ahajournals.org/content/132/18_suppl_2/S543 • https://www2.aap.org/NRP/docs/15535_NRP%20Guidelines%20Flyer_English_FINAL.pdf

P6 PEDIATRIC BRADYCARDIA

PEDIATRIC ONLY	GOALS OF CARE
	Recognize and treat primary and secondary bradycardias

BLS



- If signs of poor perfusion (BP less than Handtevy minimum for age, poor capillary refill, change in mental status) place patient in shock position
- If patient has evidence of dyspnea, apply supplemental O2
- Provide ventilation assistance with BVM and airway adjunct if needed (Ref. CP3.1)
- If patient remains symptomatic after assuring adequate oxygenation and ventilation as above, assess for other underlying causes:
  - Suspected hypoglycemia (Ref. P11)
  - If suspected opioid overdose and Narcan™ 4 mg prepackaged nasal spray available, administer as directed, may repeat one time in three (3) minutes, as needed

ALS

- Establish vascular access
- Assess cardiac rhythm
- Assess for and treat common quickly reversible causes:
  - Hypoxia/hypoventilation (Ref. CP3)
  - Suspected hypoglycemia (Ref. P11)
  - Suspected opioid overdose – administer Naloxone, may repeat in 3-5 minutes as needed
- If patient remains bradycardic after addressing above, initiate treatment as follows:
  - Epinephrine (0.1 mg/mL concentration) intravenous/intraosseous, repeat every 3 -5 minutes as needed
  - Atropine intravenous/intraosseous if primary AV block, increased vagal tone, or cholinergic drug toxicity (e.g. organophosphates)
  - Pace patients with 3rd degree AV block (Ref. CP14)
  - 0.9% sodium chloride bolus, may repeat once if needed
- Obtain 12-lead ECG (do not delay therapy to obtain)

OLMC

- Consideration for the administration of sodium bicarbonate, calcium chloride, or additional epinephrine to treat reversible causes.
- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

- A pediatric patient is heart rate dependent for their cardiac output because they are unable to adjust their stroke volume like an adult patient
- Reversible causes of bradycardia: Hypoxia, Hydrogen Ions (acidosis), Hyperkalemia, Hypothermia, Hypokalemia, Hypoglycemia, Hypovolemia, Toxins/poisons/drugs

QUALITY MEASURES
• Pending

REFERENCES
• https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/

P7 PEDIATRIC TACHYCARDIA (WIDE/NARROW)

PEDIATRIC ONLY	GOALS OF CARE
	Identification and treatment of tachydysrhythmias

BLS

- Shock position as required

ALS

- Consider underlying causes
- Establish vascular access
- Determine stability/instability: Unstable = persistent tachyarrhythmia causing hypotension (SBP less than 90 mm Hg), acutely altered mental status, signs of shock, chest discomfort, acute heart failure
- Assess cardiac rhythm and treat as follows:
    - Stable (narrow or wide rhythm)
        - Administer 0.9% sodium chloride bolus intravenous or intraosseous
        - If HR greater than or equal to 220 for infants or greater than or equal to 180 for children:
            - Vagal maneuvers
            - Adenosine rapid intravenous push
            - Adenosine rapid intravenous push
            - Amiodarone drip infusion intravenous over 20 minutes
    - Unstable (narrow or wide rhythm)
        - May sedate with midazolam intravenous
        - Synchronized cardioversion (Ref. CP13). May repeat until cardioversion is successful and rhythm corrects.

OLMC

- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

- You must quickly determine whether the patient's tachycardia is primary (that is producing hemodynamic instability due to the rate) or secondary (that is tachycardia produced as the result of an underlying process such as dehydration, fever, pain, anxiety, drugs, etc.)
- Primary tachycardia rates are generally over 150/minute
- Secondary tachycardia rates are usually but not always lower
- Ventricular rates less than 150/minute usually do not cause signs or symptoms
- DO NOT delay immediate cardioversion for the acquisition of the twelve lead or sedation if the patient is unstable
- Keys to management
  - Determine if pulses are present
  - If pulses are present, is the patient stable, borderline unstable or obviously unstable
  - Provide treatment based on the patient's condition and rhythm. It may be best to monitor the patient versus treat the patient if they are minimally symptomatic
- Unstable:
  - Poor systemic perfusion
  - Respiratory distress or respiratory failure
  - Acutely altered mental status
  - Hypotension
- Signs and symptoms of SVT
  - History of vague or nonspecific symptoms
  - P waves are absent or abnormal
  - Heart rate does not vary with activity or stimulation
- Vagal Maneuvers
  - Place a bag of ice over the upper half of the infant's face (without obstructing the airway)
  - If the child can follow commands have them attempt to blow the plunger of a syringe at you

QUALITY MEASURES

<u>If Midazolam given:</u>

- Complete set of vital signs before and after each administration
- EtCO2 documented after each administration
- Waste documented if name of administering clinician matches crew on PCR
- Midazolam dose does not exceed max or OLMC contact initiated
- Benzodiazepines and Opiates not mixed
- Any pediatric administration

REFERENCES

- https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/
- Pinellas County EMS Medical Quality Management Plan

P8 PEDIATRIC ALLERGIC REACTION AND ANAPHYLAXIS

PEDIATRIC ONLY	GOALS OF CARE
	Reverse allergic reactions and provide early and aggressive treatment of anaphylaxis

BLS

- Assess for presence and extent of skin changes (rash, hives, swelling, etc.)
- Assess for signs of severe reaction/anaphylaxis:
  - Mucosal – severe swelling of lips, tongue, or throat
  - Respiratory—severe wheezing, stridor, or respiratory distress
  - Cardiovascular—SBP less than Handtevy minimum for age, poor capillary refill, severe tachycardia, change in mental status
- If severe reaction/anaphylaxis, and epinephrine auto-injector is available, may administer as below and repeat once if needed in 5 minutes (Ref. CP22.1):
  - Adult auto-injector (0.3 mg) for patients 9 years or older (greater than 30 kg/66 lbs.)
  - Pediatric auto-injector (0.15 mg) for patients 3-9 years old (15-30 kg/33-66 lbs.)
- Provide ventilation assistance with BVM and airway adjunct if needed (Ref. CP3.1)

ALS

- If severe symptoms/anaphylaxis immediately initiate:
  - Epinephrine intramuscular (1 mg/mL concentration) in the mid-anterolateral thigh, may repeat once in 3 – 5 minutes, if needed.
  - Administer 0.9% sodium chloride bolus, may repeat once if needed with no evidence of pulmonary edema
- Diphenhydramine intravenous/intraosseous or intramuscular
- Methylprednisolone sodium succinate intravenous push (IVP)
- Albuterol nebulized for wheezing/shortness of breath, may repeat once.
- Perform airway management as needed (Ref. CP3)

OLMC

- Additional doses of Epinephrine intramuscular (1 mg/mL concentration)
- Epinephrine drip infusion 1 - 4 mcg/min (Ref. CT20)
- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

- Epinephrine should be the first treatment in patients with severe symptoms/anaphylaxis (e.g. prior to diphenhydramine and methylprednisolone sodium succinate)

QUALITY MEASURES
• Pending

REFERENCES
• https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/

P9 PEDIATRIC ALTERED MENTAL STATUS

PEDIATRIC ONLY	GOALS OF CARE
	Recognize altered mental status in the pediatric patient, provide appropriate stabilizing/supportive care, and search for potential underlying causes

BLS

- Maintain cervical spine if trauma is known or suspected and immobilize per protocol (Ref. P17, CP15, CT11)
- Administer Oxygen (O2) minimum 15 L via non-rebreather mask
- Open airway and assist ventilations with bag-valve-mask (BVM) device and appropriate airway adjunct, if indicated (Ref. CP3.1)
- Consider hypoglycemia as cause of AMS (Ref. P11)
- If suspected opioid overdose and Narcan™ 4 mg prepackaged nasal spray available, administer as directed, may repeat one time in three (3) minutes, as needed
- If patient's temperature is high or low and is at risk for heat or cold exposure refer to hypothermia or hyperthermia protocols (Ref. P13, P14)

ALS

- Assess for and treat cardiac dysrhythmias (Ref. P6, P7)
- Establish vascular access
- If signs of shock (SBP less than minimum for age per Handtevy, poor capillary refill, etc.) administer 0.9% Sodium Chloride bolus intravenous, may repeat once if needed
- Determine capillary blood glucose level and treat according to diabetic emergencies protocol (Ref. P11)
- Administer Naloxone for patients with suspected opioid overdose and are unable to protect their own airway and/or has ineffective respirations. May repeat in 3 - 5 minutes if respiratory depression continues
- Consider advanced airway **ONLY** if immediately reversible causes have been treated (hypoglycemia, narcotic ingestion, dehydration, seizure) **and** ventilations with a bag-valve-mask (BVM) are ineffective (Ref. CP3)

OLMC

- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

- Listening to the caregiver's opinion about alteration from a child's norm is key to your assessment
- Accidental ingestion of household products, medication, or a foreign body is very common in young children (especially when they are in a non-child proofed environment). Always consider an accidental ingestion in a pediatric patient with unexplained altered mental status
- Use Naloxone cautiously in an infant patient with a history of maternal drug addiction

QUALITY MEASURES
• Pending

REFERENCES
• https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/

P10 PEDIATRIC BRIEF RESOLVED UNEXPLAINED EVENT (BRUE)

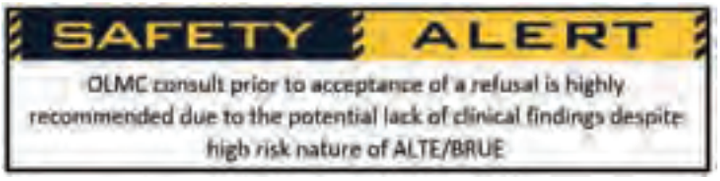
PEDIATRIC ONLY	GOALS OF CARE
	Recognize the presence and significance of an ALTE/BRUE and search for potential underlying causes

BLS

- Obtain and document a full history including gestational age and problems during pregnancy/delivery
- Perform full head to toe assessment on bare skin paying special attention for signs of airway compromise, trauma, infection, and dehydration
- Consider hypoglycemia (Ref. P11)
- Proceed to appropriate treatment protocol for any conditions identified
- Transport to appropriate facility (Ref. CS4)

ALS

- Assess for and treat cardiac dysrhythmias (Ref. P6, P7)
- Establish continuous cardiac monitoring with pulse oximetry
- Determine capillary blood glucose level and treat according to diabetic emergencies Protocol (Ref. P11)
- Search for any abnormal history/exam findings that may reveal underlying cause of episode
- Proceed to appropriate treatment protocol for any conditions identified



OLMC

- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

- Even though patients usually look fine on EMS arrival, BRUE is SERIOUS!
  - BRUE is an episode that is frightening to the observer and characterized by some combination of apnea, color change, change in muscle tone, choking, or gagging that resolves quickly.
  - Occurs in infants under 1 year of age, most common in infants 10 - 12 weeks of age
  - 50% of infants with BRUE are found to have an underlying medical condition and 10% get admitted to ICU!

QUALITY MEASURES

- Pending

REFERENCES
• https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/ • https://pediatrics.aappublications.org/content/pediatrics/137/5/e20160590.full.pdf • https://www.merckmanuals.com/professional/pediatrics/miscellaneous-disorders-in-infants-and-children/alte-and-brue • https://www.ncbi.nlm.nih.gov/books/NBK441897/

P11 PEDIATRIC DIABETIC EMERGENCY

PEDIATRIC ONLY	GOALS OF CARE
	Rapidly reverse hypoglycemia and provide supportive care to patients experiencing diabetic emergencies

BLS

- Determine capillary blood glucose level
  - Determine capillary blood glucose level
  - If less than 60 mg/dL (less than 45 mg/dL for neonate) or if symptomatic and able to protect their own airway administer 15 g Oral glucose gel
  - May repeat once in 5-10 minutes as needed
- If suspected hypoglycemia and patient has an insulin pump, turn it off
- Assess for and treat possible underlying conditions (hypoxia, overdose, head injury, etc.)
- Provide ventilation assistance with BVM and airway adjunct, if needed (Ref. CP3.1)

ALS

- Establish vascular access (Ref. CP21, CP25)
- If hypoglycemia (less than 45 mg/dL for a neonate or less than 60 mg/dL for a patient less than 12 years of age) or symptomatic:
  - Oral Glucose Gel if conscious and able to protect their own airway ***OR***
  - Dextrose 10% intravenous ***OR***
  - Glucagon intramuscular, if unable to complete either above option
  - Repeat capillary blood glucose level 5 - 10 minutes after treatment and if still less than 45 mg/dL for a neonate or less than 60 mg/dL for a patient less than 12 years of age or symptomatic, repeat treatment once
- If hyperglycemia (greater than 300 mg/dL):
  - Single 0.9% Sodium Chloride bolus intravenus
- Assess for and treat possible underlying conditions (e.g. hypoxia, overdose, head injury, etc.)
- Perform airway management as needed (Ref. CP3)

OLMC

- Requests for utilization of IO or indwelling catheter access
- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

- A neonate born to a diabetic mother is at extremely high risk for hypoglycemia immediately after birth
- A pediatric patient in diabetic ketoacidosis is a neuro patient. He is at high risk for cerebral edema and herniation. DO NOT allow parents to administer insulin because a rapid drop in blood glucose can cause permanent brain damage or death

QUALITY MEASURES
• Pending

REFERENCES
• https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/

P12 PEDIATRIC DROWNING/SUBMERSION

PEDIATRIC ONLY	GOALS OF CARE
	Rapidly intervene to remove patient from hazard and minimize impact

BLS

- Consider Spinal Precautions (Ref. CP15, CT11)
- Remove wet clothing and keep warm
- Administer O2 minimum 15 L via NRBM
- Provide ventilation assistance (BVM and airway adjunct) as needed (Ref. CP3.1)
    - If excessive fluid in airway/lungs is preventing adequate oxygenation/ventilation, may disengage popoff valve on BVM taking care not to generate pressures in the RED (greater than 40 cmH2O)
- Suction as needed
    - ***DO NOT*** delay BVM for suction

ALS

- Establish vascular access
- If evidence of bronchospasm, initiate treatment per Asthma Protocol (Ref. P2)
- If rales, decreased Sp02, significant dyspnea initiate CPAP (Ref. CP6)
    - May continue aerosol therapy with t-piece (Ref. CP8)
- If respiratory failure, perform airway management (Ref. CP3)
    - May continue aerosol therapy with Superset/t-piece (Ref. CP8.2)
    - Do not delay ventilation and oxygenation for suctioning of foam
- Place an orogastric tube if assisting ventilations (Ref. CP20)
- Assess and treat cardiac dysrhythmias (Ref. P3, P6, P7)
- Obtain 12-lead ECG, if able

OLMC

- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

- The long spine board currently in the system will float, but will not support a patient
- Be prepared to turn an immobilized patient due to the high occurrence of vomiting
- Drowning alone doesn't meet defined trauma alert criteria
- If return of spontaneous circulation (ROSC) is achieved, transport to a pediatric specialty facility

QUALITY MEASURES

- Pending

REFERENCES
• https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/ • https://www.heart.org/-/media/data-import/downloadables/resuscitating-the-drowning-victim-and-other-environmental-emergencies-ucm_486065.pdf?la=en&hash=DC93F7D179A95817BAF666D47DBEFA0C3FB7B5B8 • https://derangedphysiology.com/main/required-reading/trauma-burns-and-drowning/Chapter%204.0.7/immersion-submersion-and-drowning

P13 PEDIATRIC COLD EMERGENCY

PEDIATRIC ONLY	GOALS OF CARE
	Remove patient from environment then initiate warming and appropriate supportive care

BLS

- Remove the patient from the cold environment
- Remove wet clothing and gently dry the skin by patting, not rubbing, with dry towels
- Initiate rewarming with blankets on top of and underneath the patient; insulate the patient from the ground, backboard/scoop, or stretcher. Apply hot packs in the axilla and groin

- Minimize movement during transport and consider transport to a burn center if evidence of frostbite
- Consider hypoglycemia (Ref. P11)
- Provide ventilation assistance (BVM and airway adjunct) as needed (Ref. CP3.1)

ALS

- Establish vascular access
- Determine capillary blood glucose level and treat as needed (Ref. P11)
- If signs of shock (SBP less than minimum for age per Handtevy, poor capillary refill etc.) administer 0.9% Sodium Chloride bolus intravenous, may repeat once if needed
- Assess cardiac rhythm and treat dysrhythmias as needed (Ref. P6, P7)
- Obtain 12-lead ECG
- Consider pain management for frostbite if needed (Ref. P15)
- Perform airway management as needed (Ref. CP3)
- *DO NOT* pronounce a hypothermic patient deceased. Always transport to the hospital

OLMC

- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS
• Peripheral vascular access may be difficult to establish in a hypothermic patient; IO is acceptable for patients in extremis • Extended exposure to a patient's environment (e.g. water, air, and ground/floor) even in normal temperatures can cause the loss of body heat • Hypothermia is an emergency resulting from exposure to cold temperatures. It most often occurs in association with submersions (even in Florida), but may be the result of prolonged exposure to a cold ambient environment. • Neonates often cannot mount the immune response to be febrile when they have an infection. A low temperature can often be a sign of sepsis. • Aggressive rewarming in the field can do more harm than good. Hypothermia can be protective of brain function and rapid rewarming can induce arrhythmias • Hypothermia can cause bradycardia by slowing the sinus node pacemaker or slowing the conduction through the AV node. • Shivering can increase glucose consumption and lead to hypoglycemia.

QUALITY MEASURES
• Pending

REFERENCES
• https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/

P14 PEDIATRIC HYPERTHERMIA

PEDIATRIC ONLY	GOALS OF CARE
	Remove patient from environment then initiate cooling and appropriate supportive care

BLS

- Move patient into an area with shade, air conditioning, air movement, etc.
- Remove excessive clothing
- If no altered mental status:
  - Provide oral fluids (e.g. cool water, Gatorade, Pedialyte, etc.) if patient able to tolerate
- If altered mental status (heat stroke):
  - Begin rapid cooling, but avoid inducing shivering
  - Apply ice packs to neck, armpits, and groin
  - May cover patient with cool wet sheets
- Provide ventilation assistance (BVM and airway adjunct) as needed (Ref. CP3.1)

ALS

- Establish vascular access
- If nauseated/vomiting:
  - Ondansetron intravenous/intraosseous slow push (2+ minutes) ***OR***
  - Ondansetron ODT
  - May repeat once in 15 minutes as needed
- If hypotensive, tachycardic, or altered mental status (heat stroke):
  - Bolus 0.9% Sodium Chloride, may repeat once
- Monitor for seizures and treat per protocol (Ref. P16)
- Assess and treat cardiac dysrhythmias as needed (Ref. P3, P6, P7)
- Obtain 12-lead ECG
- Perform airway management as needed (Ref. CP3)

OLMC

- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

- Heat Stroke is a neurological event and rapid assessment; treatment and transport is essential for good patient outcome
- An increased temperature can result in dehydration, hypoxia and hypoglycemia due to increased metabolic rate.

QUALITY MEASURES
• Pending

REFERENCES
• https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/

P15 PEDIATRIC ACUTE PAIN MANAGEMENT

PEDIATRIC ONLY	GOALS OF CARE
	Provide reasonable and safe pain management

BLS

- Obtain baseline and repeat vital signs including pain scores (may use the Wong-Baker Faces scale for patients unable to give a number) (Ref. CT15)
- Allow patient to assume position of comfort unless spinal precautions or splinting is required (Ref. CP15, CT11)
- Treat specific injuries as needed with splinting/immobilization/cold pack (Ref. P17)
- Refer to appropriate protocol for underlying cause

ALS

- Establish vascular access (Ref. CP21, CP25)
- Monitor EtCO2 and SpO2
- Administer Fentanyl:
  - Intravenous or intraosseous to a maximum single dose of 50 mcg. May repeat every 10 minutes to a maximum combined total dose of 3 mcg/kg
  - Intranasal to a maximum single dose of 100 mcg (max 1 mL per nare/side). May repeat every 5 minutes to a maximum combined total dose of 3 mcg/kg
- If nauseated and/or vomiting because of an opioid administration, administer:
  - Ondansetron slow intravenous push over at least two (2) minutes or intramuscular ***OR***
  - Ondansetron orally dissolving tablet
  - May repeat either option once in 15 minutes as needed
- Refer to appropriate protocol for underlying cause

OLMC

- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

- The objective of pain management is not the complete removal of pain, but rather to make the pain tolerable
- Note that the maximum Fentanyl intranasal single dose is limited to 100 mcg or 1 mL per side and the dose is not doubled as in other intranasal medications due to limitations on the amount of fluid able to be absorbed across mucosa at one time. Frequency of dosing is increased to every 5 minutes to ensure adequate pain management when using the intranasal route. OLMC consult is still required for cumulative doses greater than 3 mcg/kg.
- The co-administration of opioids and benzodiazepines should be avoided as it increases the risk of adverse events (e.g. respiratory depression)

QUALITY MEASURES
• Complete set of V/S with pain scale before and after each administration • EtCO2 documented after each administration • Waste documented if name of administering clinician matches crew on PCR • Single Fentanyl dose does not exceed max or OLMC contact initiated • Total Fentanyl dose does not exceed max or OLMC contact initiated • Benzodiazepines and opiates not combined • Any pediatric administration

REFERENCES
• https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/ • Pinellas County EMS Medical Quality Management Plan

P16 PEDIATRIC SEIZURE

PEDIATRIC ONLY	GOALS OF CARE
	Protect actively seizing patients, address reversible causes, and control seizure activity

BLS

- Obtain baseline and repeat vital signs and assess mental status
- If seizing:
  - Protect patient from injury if actively seizing
  - Provide supplemental Oxygen at 15L via non-rebreather mask
  - May assist with administration of patient's own seizure medication (e.g. Diastat)
- If post-ictal:
  - Provide supplemental Oxygen at 15L via non-rebreather mask
  - Suction as needed
  - Consider need for Spinal Precautions (Ref. CP15, CT11)
- Assist ventilations with (BVM) device and airway adjunct if needed (Ref. CP3.1)
- Consider hypoglycemia as reversible cause of seizure (Ref. P11)
- Consider trauma as cause of seizure (Ref. P17)

ALS

- If seizing:
  - Midazolam intranasal (no more than 1 mL of medication per nare)
  - May repeat once with continued or repeat seizure activity

- Measure blood glucose level and treat as needed (Ref. P11)
- If no response to intranasal Midazolam:
  - Administer midazolam intravenous/intramuscular – may repeat once with continued or repeat seizure activity
- Perform airway management as needed (Ref. CP3)

OLMC

- Additional Midazolam doses
- Pharmaceutical treatment above stated dosing in the Pinellas County EMS Handtevy Medication Guidebook
- Administration of medication for atypical seizures
- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

- Intubating a seizing patient is extremely difficult and the complication rates are high

QUALITY MEASURES
If Midazolam given: 1. Complete set of vital signs before and after each administration 2. EtCO2 documented after each administration 3. Waste documented if name of administering clinician matches crew on PCR 4. Midazolam dose does not exceed max or OLMC contact initiated 5. Benzodiazepines and opiates not mixed 6. Any pediatric administration

REFERENCES
• http://www.teleflex.com/en/usa/productAreas/ems/documents/AN_ATM_MAD-Nasal-Usage_Guide_AI_2012-1528.pdf • http://wongbakerfaces.org/ • https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/ • http://www.fda.gov/Drugs/DrugSafety/InformationbyDrugClass/ucm518110.htm • Pinellas County EMS Medical Quality Management Plan

P17 PEDIATRIC GENERAL TRAUMA CARE

PEDIATRIC ONLY	GOALS OF CARE
	Accurate assessment, appropriate stabilization, and rapid transport to definitive care

BLS

- Perform Primary Trauma Assessment (ABCDE) and implement initial treatments as needed:
  - Open Airway (BLS maneuvers), provide oxygen and assist ventilations with bag-valve-mask (BVM) device and appropriate airway adjunct (Ref. CP3)
  - Control hemorrhage with direct pressure followed by appropriate device or procedure when indicated – Ref. CP16 (if older child/device fits) and CP18
  - Seal chest wounds – Ref. CP17
  - Assess neurologic function and implement Spinal Precautions as indicated – Ref. CP15, CT11
  - Expose patient and protect from environment
- Assess trauma transport criteria, declare "Trauma Alert" if indicated – Ref. CT10

- Perform Secondary Trauma Assessment (head-to-toe physical exam on exposed skin)
- Implement additional appropriate stabilizing care:
  - All major trauma patients should receive supplemental oxygen
  - Stabilize impaled objects in place – ***DO NOT REMOVE***
  - Stabilize flail chest segments
  - Dress wounds - Moist sterile for eviscerations, dry and clean for burns
  - Amputated body parts – Moist sterile inner packaging, ice/cold pack outer packaging
- Splint fractures and dislocations and document distal motor function, circulation, and sensation before and after; Elevate and apply cold packs when practical
- Implement injury-specific additional BLS care as indicated (Ref. T3-T7)

ALS

- Maintain EtCO2 of 35-45 mmHg. (hyperventilation to 30-35 mmHg allowed *ONLY* with signs of ACTIVE herniation – see PEARLS)
- Intubate only if unable to provide adequate ventilation/oxygenation with bag-valve-mask (BVM) device and airway adjuncts
- Decompress tension pneumothorax, if indicated (Ref. CP7)
- Establish intravenous/intraosseous access for altered mental status, signs of poor perfusion and/or need for intravenous/intraosseous medications
- Initiate fluid resuscitation with 0.9% Sodium Chloride bolus if SBP < Handtevy minimum for age or if signs of poor perfusion. May repeat twice as needed.
- Implement appropriate pain management (Ref. P15)
- Repeat Primary Trauma Assessment (ABCDE) after treatments and frequently during transport
- Implement injury-specific additional ALS care as indicated (Ref. T3-T7)

OLMC

- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

- A pediatric patient requires a complete head to toe assessment due to being unreliable historians
- Keep the patient warm
- A Sager Splint will fit a patient > 4 years old. For patients < 4 years of age requiring traction, use manual traction
- A head injury should be considered in a pediatric patient with altered mental status.
- Maintain a high index of suspicion for "non-accidental trauma" (child-abuse) and document all details including what the caregivers state happened in quotation and a complete physical exam including details of all bruises and marks.
- Every healthcare provider that suspects child abuse is required by law to file a report with the Florida Department of Children and Families Abuse Hotline at 1-800-96-ABUSE (1-800-962-2873) (Ref. CS8)
- Refer to CS18 for alterations in standard of care during Major Incidents with Ongoing Threats (e.g. Active Shooter Response)

QUALITY MEASURES

- Pending

REFERENCES

- https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/

P18 PEDIATRIC FEVER/SUSPECTED SEPSIS

PEDIATRIC ONLY	GOALS OF CARE
	Early recognition and aggressive treatment of suspected sepsis

BLS

- Place in Shock position if hypotensive (Ref. Handtevy Pediatric vital sign ranges)
- Provide ventilation assistance with BVM and airway adjunct if needed (Ref. CP3.1)
- Assess for and document suspicion/evidence of infection and/or high-risk condition including:
  - Indwelling catheters (e.g. vascular or foley)
  - Immunosuppression or compromise (e.g. cancer with chemo, radiation or BMT, or sickle cell disease)
  - Other significant medical history
- Obtain information from caregiver on baseline status, encourage caregiver to accompany patient to hospital, obtain contact information (cell number) if they will be traveling separately so that ER staff may contact as needed.
- Determine capillary blood glucose

ALS

- Evaluate for evidence of physiologic response to infection
  - Tachycardia or thready/weak pulse
  - Tachypnea or EtCO2 less than or equal to thirty (30)
  - Hypotension, capillary refill greater than three (3) seconds or mottled skin
  - Acute decreased mental status, confusion, or other significant alteration from baseline as described by caregiver
- If suspected infection and greater than or equal to two (2) criteria above, declare *Sepsis Alert*, notify receiving hospital, and initiate early emergency transport
  - If High Risk Condition present may initiate based on suspected infection and 1+ above criteria
- Establish IV access and initiate fluid bolus (intraosseous may be used if unable to obtain intravenous access and patient meets alert criteria above):
  - 0.9% sodium chloride bolus — use syringe push for infants less than 1 year of age
  - Re-assess after 10 mL/kg, if cardiac history and consult OLMC prior to additional fluids if pulmonary edema/significant worsening
  - If no resolution of above criteria may repeat 0.9% sodium chloride
- If SBP hypotension persists initiate pressor:
  - Epinephrine drip infusion (Ref. CT20)
- Determine capillary blood glucose and test according to Diabetic Emergency Protocol (Ref. P11)
- Assess for and treat cardiac dysrhythmias (Ref. P6, P7)
- ***DO NOT*** treat secondary tachycardias
- Perform Airway Management as needed (Ref CP3)

OLMC

- Consult Online Medical Control Physician as needed or required (Ref. CS10)
- Accessing indwelling catheters if intravenous/intraosseous unsuccessful (generally to be avoided)
- Fluid direction in cardiac patients

PEARLS
• Pts with genetic disorders, immunocompromised, indwelling catheters (IV/Foley/etc), or medical devices are at significantly increased risk of sepsis • Caregivers will be your best source of information • Caution in fluids if cardiac history (10 mL/kg at a time) due to high sensitivity to small fluid volume changes • Children are at high risk for sudden decompensation

QUALITY MEASURES
• Pending

REFERENCES
• https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/ • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5072914/

CLINICAL PROCEDURE

CLINICAL PROCEDURE

CP1 ADULT AIRWAY MGMT. & ADVANCED AIRWAY PLACEMENT

NOTES
Because of the uncontrolled environments encountered in prehospital care and the fact that all our airways are "Crash Airways" every attempt at prehospital airway management should be considered a "Difficult Airway". Success in management is predicted on an algorithmic approach focused on preparedness and thinking several steps ahead. The six (6) steps below outline this approach and are followed by the specifics of the individual procedures Prehospital adult airway management will be approached in the following stepwise fashion always being prepared to rapidly move to the next step if unsuccessful: 1. All patients requiring ventilation assistance will be bag-valve-mask (BVM) and airway adjunct (OPA/NPA) until choice of advanced airway device is made and preparations for placement are completed 2. Patients in cardiac arrest or in whom endotracheal intubation is anticipated to be especially difficult will have the King airway device employed primarily 3. Other patients may receive a maximum of 2 total attempts at endotracheal intubation, with facilitated medication, if indicated 4. If Step #2 or #3 is unsuccessful, the alternate may be attempted 5. If both Step #2 and Step #3 are unsuccessful, bag-valve-mask (BVM) ventilations should be employed as a temporizing measure until arrival at the hospital 6. If endotracheal intubation, King Airway placement and bag-valve-mask (BVM) ventilations are all unsuccessful, emergency cricothyrotomy (Ref. CP2) will be performed as a last resort.

EQUIPMENT	

• Bag-valve-mask device
• Appropriately sized:
  o OPA & NPA
  o EtCO2 filterline set
  o King LTD-S airway
  o Laryngoscope blade
  o Endotracheal tube
• Suction
• Lubrication gel
	• 60 mL luer lock syringe
	• 18 Fr orogastric tube
	• 60 mL catheter tip syringe
	• Laryngoscope handle
	• 10 mL luer lock syringe
	• Bougie
	• Scalpel
	• Kelly curved forceps

CP1.1 BAG-VALVE-MASK VENTILATION

INDICATIONS	
• Respiratory insufficiency/failure/arrest	• Pre-oxygenation prior to advanced airway placement attempt

CONTRAINDICATIONS
• None

CAUTIONS
• Effective seal may be difficult in patients with facial abnormalities, beards, lack of teeth, and facial trauma

PROCEDURE
1. Assemble equipment per manufacturer's instructions and connect to Oxygen source 2. Attach EtCO2 filterline set between mask and bag-valve device (ALS ONLY) 3. Place NPA/OPA if patient tolerates and not contraindicated (NPA in head/facial trauma) 4. Utilizing 2-person technique whenever possible, ventilate at a baseline rate of 12 – 16 breaths per minute. 5. Adjust ventilation rate to achieve adequate SpO2 and EtCO2 of 35 – 45 mmH_2O (ALS ONLY)

COMPLICATIONS	
• Inability to maintain adequate seal • Inappropriate hyperventilation	• Gastric distention • Hypotension and/or pneumothorax resulting from positive pressure ventilation

CP1.2 KING AIRWAY PLACEMENT (ALS ONLY)

INDICATIONS	
• Cardiac arrest	• Respiratory insufficiency/failure/arrest

CONTRAINDICATIONS	
• Known esophageal disease (varices) • Caustic substance ingestion	• Height less than four (4) feet

CAUTIONS
• May be difficult or ineffective in patients with significant head/neck face structure abnormalities or trauma causing instability of the face or oropharynx

PROCEDURE
1. Choose appropriate size device, assemble equipment per manufacturer's directions, test balloon and lubricate 2. Grasp jaw and tongue and lift anteriorly 3. Place device from corner of mouth with device rotated 45 – 90 degrees laterally 4. Insert device and advance along the posterior tongue while rotating back to midline until hub is at lip/gum line 5. Inflate balloon with up to 60 mL air to achieve seal 6. Attach EtCO2 between tube and bag-valve device 7. Begin ventilations while gently retracting tube until it seats, and ventilations are easy. If air leaking is still noted, instill up to an additional 20 mL air into balloon

8. Secure with tape or appropriately sized commercial tube holder device
9. Ventilate at a baseline rate of 12 – 16 breaths per minute. Adjust ventilation to maintain adequate SpO2 and EtCO2 of 35 – 45 mmH_2O

COMPLICATIONS

- Failure to insert device to appropriate depth prior to inflating balloon may cause it to not seat properly
- The device may inadvertently enter the trachea, in a very small percentage of patients, instead of the esophagus and will be ineffective
- Multiple placement attempts, to forceful manipulation or over-inflation of the balloon may cause trauma to the oropharynx, esophagus or trachea
- Hypotension and/or pneumothorax resulting from positive pressure ventilation

CP1.3 ENDOTRACHEAL INTUBATION

INDICATIONS

- Respiratory insufficiency/failure/arrest

CONTRAINDICATIONS

- None

CAUTIONS

- May be difficult in patients with facial/neck trauma, blood or other secretions in the airway
- Difficulty with patients who lack teeth
- Limited mobility or congenital malformation of the neck or jaw
- Patients with beards and/or excess soft tissue of the face and neck

PROCEDURE

1. Assemble all needed equipment within reach of operator and test endotracheal tube cuff
2. Pre-oxygenate the patient
3. Perform direct laryngoscopy and pass endotracheal tube so the cuff is just distal to the vocal cords.
   - Maximum of 15 seconds per attempt
   - Maximum of 2 total combined attempts by all clinicians
4. Inflate endotracheal tube cuff, attach EtCO2 filterline set and ventilate to check for bilateral breath sounds, quiet epigastrium and confirm placement with EtCO2
5. If suspected mainstem intubation (diminished sounds unilaterally), retract 1 – 2 cm and reassess
6. Secure endotracheal tube with commercial tube holder device
7. Ventilate at a baseline rate of 12 – 16 breaths per minute. Adjust ventilation to maintain adequate SpO2 and EtCO2 of 35 – 45 mmH_2O

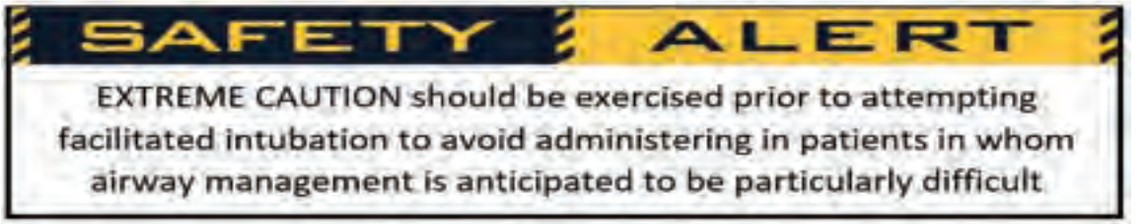
COMPLICATIONS	
• Inability to place tube • Esophageal placement • Mainstem placement	• Unrecognized displacement • Hypotension and/or pneumothorax resulting from positive pressure ventilation

CP1.4 MEDICATION FACILITATED INTUBATION

INDICATIONS
• Respiratory insufficiency/failure/arrest requiring airway management in patients with retained consciousness, gag reflex or jaw clenching

CONTRAINDICATIONS
• Allergic or adverse reaction history to any of the medications

CAUTIONS



PROCEDURE

1. Prepare all equipment as per "CP1.3 Endotracheal Intubation"
2. Ensure patent IV/IO access and prepare medications
3. Fentanyl 2 mcg/kg IVP followed by Etomidate 0.3 mg/kg SLOW IVP (over > 20 seconds)
4. Perform "CP1.3 Endotracheal Intubation" as listed above
5. Following confirmation of successful intubation, Midazolam 2.5 mg, may repeat one time

COMPLICATIONS
• Adverse reactions to medications (e.g. trismus due to rapid administration of etomidate) • Ineffectiveness of medications • Sedation with failure to secure airway

QUALITY MEASURES	
• Ventilation assistance provided • Single airway type used • Confirmation of placement with EtCO2	• Airway re-confirmed • Multiple EtCO2 values

REFERENCES
• https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/ • Pinellas County EMS Medical Quality Management Plan

CP2 ADULT SURGICAL CRICOTHYROTOMY AIRWAY ACCESS

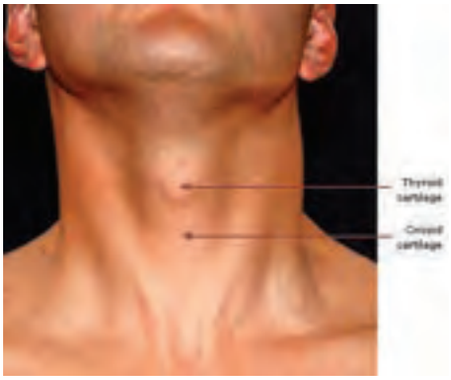
INDICATIONS
• 10 years of age or older • Respiratory insufficiency/failure/arrest with inability to adequately provide oxygenation or ventilation by bag-valve-mask (BVM), endotracheal tube or extraglottic airway device

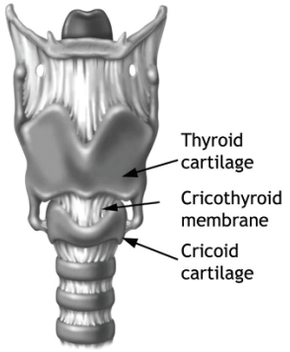
CONTRAINDICATIONS
• Less than ten (10) years of age • Inability to find landmarks

CAUTIONS
• Anticipate difficulty with excess soft tissue and previous scarring to neck

PROCEDURE

- Prep area with alcohol preps and chlorprep or betadine (if available)
- Grasp larynx with thumb and middle finger to stabilize the thyroid cartilage and locate laryngeal prominence (point of the Adam's apple). Slide finger downward to locate the cricothyroid membrane





- Make 3-4 cm vertical midline incision overlying the cricothyroid membrane
- Locate the cricothyroid membrane with index finger and make transverse incision through the cricothyroid membrane the width of the cricothyroid space
- Insert a bougie (coude tip first) and gently advance no more than 5 cm feeling for tracheal rings to confirm location and stopping immediately if any resistance is encountered.
- Insert a 6.0 mm endotracheal tube by sliding over the bougie (may require a twisting motion and gentle pressure) until the cuff is just inside the trachea and inflate. Remove bougie once endotracheal tube is in place being careful not to displace tube.
- If unable to pass tube without using excessive force, dilate a tract using curved Kelly forceps with bougie still in place.

- Manually stabilize tube and begin ventilations at baseline rate of 12-16 breaths per minute. Adjust ventilate rate to achieve adequate oxygen (O2) saturation and EtCO2 35-45 mmHg
- May secure the endotracheal tube using tape, but manual stabilization should be maintained until transfer of care at the receiving facility

COMPLICATIONS

- Inability to find landmarks
- Bleeding
- Paratracheal tracking of the endotracheal tube
- Subcutaneous emphysema

NOTES

- None

REFERENCES

- https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/

CP3 PEDIATRIC AIRWAY MGMT. & ADVANCED AIRWAY PLACEMENT

BACKGROUND

Because of the uncontrolled environments encountered in prehospital care and the fact that all our airways are "Crash Airways" every attempt at prehospital airway management should be considered a "Difficult Airway". Success in management is predicted on an algorithmic approach focused on preparedness and thinking several steps ahead.

Pediatric prehospital airway management is particularly anxiety inducing and requires an organized stepwise approach. It is important to remember that research has demonstrated that outcomes are equivalent in pediatric patients managed with either prehospital BVM or ETI. Pediatric facilitated intubation is not to be performed except in exceptional circumstances and after OLMC consultation.

Prehospital pediatric airway management will be approached in the following stepwise fashion:

1. All pediatric patients requiring ventilatory assistance will be primarily managed with appropriate positioning, bag-valve-mask (BVM) and airway adjunct (OPA/NPA) when such a device is not contraindicated.
2. Clinicians may attempt endotracheal intubation with a cuffed (***Do Not Inflate***) endotracheal tube, if bag-valve-mask (BVM) is inadequate to maintain ventilation and/or oxygenation. Equipment size will be determined by the patient's length, not the weight.
3. No more than two (2) total attempts at direct laryngoscopy may be performed.
4. Needle cricothyrotomy (Ref. CP4) shall be performed as a last resort on the pediatric patient whose airway is unable to be managed using any other means.
5. Pediatric patients who are receiving positive pressure ventilation (bag-valve-mask [BVM] or intubated) should have an orogastric tube placed (Reference CP20) to decompress the stomach and facilitate ventilation, unless contraindicated

EQUIPMENT

- Handtevy Pediatric bag
- Bay-valve-mask device
- Appropriately sized OPA & NPA
- Approrpiately sized EtCO2 filterline set
- Suction
- Lubrication gel
- Apppropriately sized OG Tube
- Laryngoscope handle
- Appropriately sized laryngoscope blade
- Appropriately sized endotracheal tube
- 10 mL Syringe
- Needle cricothyrotomy kit

CP3.1 PEDIATRIC BAG-VALVE-MASK VENTILATION

INDICATIONS
• Respiratory insufficiency/failure/arrest • Pre-oxygenation prior to advanced airway placement attempt

CONTRAINDICATIONS
• None

CAUTIONS
• Effective seal is crucial and may be difficult in pediatric patients • Facial trauma may further complicate

PROCEDURE
1. Assemble equipment per manufacturer's instructions and connect to Oxygen source 2. Attach EtCO2 filterline set (appropriate size) between mask and bag-valve device (ALS Only) 3. Position patient in a "sniffing position" (place a folded sheet under the scapulae for a patient less than two (2) years old or under the occiput for a patient older than two (2) years old 4. Place NPA/OPA if patient tolerates and not contraindicated (e.g. no NPA in head/facial trauma) 5. Utilizing 2-person technique whenever possible, ventilate at a baseline rate of 12 – 16 breaths per minute 6. Adjust ventilation rate to achieve adequate SpO2 and EtCO2 of 35 – 45 mmHg (ALS Only)

COMPLICATIONS
• Inability to maintain adequate seal • Inappropriate hyperventilation • Gastric distention • Hypotension and/or pneumothorax resulting from positive pressure ventilation

CP3.2 PEDIATRIC ENDOTRACHEAL INTUBATION

INDICATIONS
• Respiratory insufficiency/failure/arrest

CONTRAINDICATIONS
• Ability to effectively manage with bag-valve-mask ventilation

CAUTIONS
• Endotracheal intubation in children will alter hemodynamic status • May be difficult with facial/neck trauma, blood or other secretions in the airway • Limited mobility or congenital malformation of the neck or jaw

PROCEDURE
1. Assemble all needed equipment within reach of operator and test endotracheal tube cuff 2. Pre-oxygenate the patient 3. Choose appropriately sized equipment using the Pinellas County Handtevy Medication and Equipment Guidebook 4. Perform direct laryngoscopy and pass endotracheal tube so the cuff is just distal to the vocal cords. o Maximum of 15 seconds per attempt o Maximum of 2 total combined attempts by all clinicians 5. ***DO NOT*** inflate the cuff 6. Attach EtCO2 filterline set and ventilate to check for bilateral breath sounds, quiet epigastrium, and confirm placement with EtCO2 7. Secure endotracheal tube with commercial tube holder device (if appropriately sized) 8. Ventilate at a baseline rate of 12 – 16 breaths per minute. Adjust ventilation to maintain adequate SpO2 and EtCO2 of 35 – 45 mmHg

COMPLICATIONS
• Inability to place tube • Esophageal placement • Unrecognized displacement • Hypotension and/or pneumothorax resulting from positive pressure ventilation

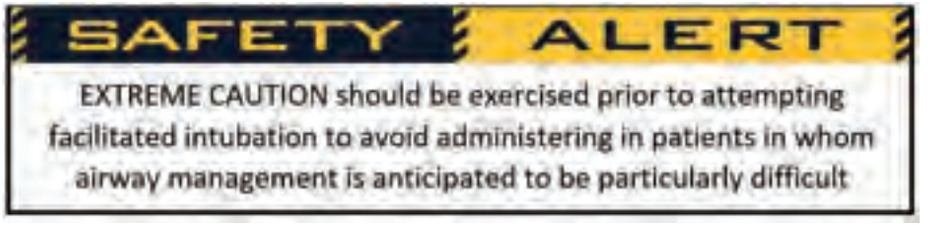
CP3.3 PEDIATRIC FACILITATED INTUBATION

INDICATIONS
• Respiratory insufficiency/failure/arrest requiring airway management in patients with retained consciousness, gag reflex or jaw clenching

CONTRAINDICATIONS

- Allergic or adverse reaction history to any of the medications

CAUTIONS



- ***OLMC consult is mandatory prior to attempting facilitated intubation***

PROCEDURE

1. Prepare all equipment as per "CP3.2 Pediatric Endotracheal Intubation"
2. Ensure patent intravenous/intraosseous access and prepare medications
3. Fentanyl 2 mcg/kg intravenous push followed by etomidate 0.3 mg/kg ***SLOW*** intravenous push (over greater than 20 seconds)
4. Perform "CP3.2 Pediatric Endotracheal Intubation" as listed above
5. Following confirmation of successful intubation, Midazolam, may repeat one time

COMPLICATIONS

- Adverse reactions to medications (e.g. trismus due to rapid administration of etomidate)
- Ineffectiveness of medications
- Sedation with failure to secure airway

QUALITY MEASURES

- Ventilation assistance provided
- Single airway type used
- Confirmation of placement with EtCO2
- Airway re-confirmed
- Multiple EtCO2 values

NOTES

- ***OLMC CONSULT IS MANDATORY PRIOR TO ATTEMPTING FACILITATED INTUBATION***
- Prehospital pediatric facilitated intubation is generally not indicated and should only be considered in exceptional circumstances in consultation with the OLMC physician
- Extreme caution should be exercised prior to attempting facilitated intubation to avoid administration in patients who airway management is anticipated to be particularly difficult

REFERENCES

- https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/
- Pinellas County EMS Medical Quality Management Plan

CP4 PEDIATRIC NEEDLE CRICOTHYROTOMY

INDICATIONS

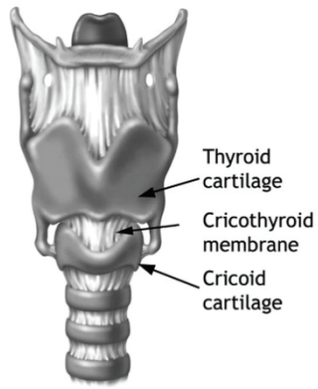
• Pediatric patient up to the age of 10 years' old
• Inability to adequately ventilate with an established airway of other means (e.g. bag-valve-mask device with adjunct, endotracheal tube) due to:
  o Severe oral or facia trauma
  o Airway obstruction unable to be cleared by other techniques

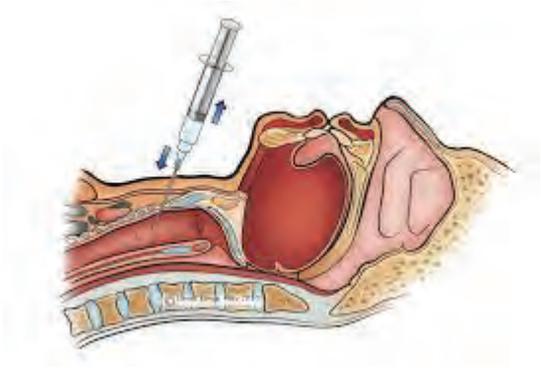
CONTRAINDICATIONS
• Neck tumor that obstructs the ability to identify anatomical landmarks • Inability to identify anatomical landmarks

CAUTIONS
• This is a rescue procedure ONLY

EQUIPMENT
• Alcohol prep pads • Chlorprep or betadine (if available) • 14 gauge – 1-inch IV catheter • 10 mL syringe • 3.0 mm Endotracheal tube • Pediatric bag-valve-mask (BVM)

PROCEDURE
• Position patient in a supine position. Slightly hyperextend neck (without suspicion of a c-spine injury) • Secure larynx laterally between the thumb and forefinger • Identify the cricothyroid membrane utilizing anatomical landmarks





- Prep area well with alcohol preps and chlorprep or betadine (if available)
- Insert the 14-gauge IV catheter t a 45-degree angle caudally (towards feet)
- Pull back on syringe while inserting the catheter. Once you can freely pull back air, you are in the trachea
- Once placement in the trachea is confirmed, advance the plastic cannula along the needle into the trachea, until the hub rests against the neck

- Carefully remove the IV needle while maintaining the catheter securely in place
- Attach the 15 mm adapter (removed from the 3.0 endotracheal tube) to the IV catheter hub

- Ventilate at a baseline rate of 12 – 16 breaths per minute
- Adjust the ventilation rate to achieve a SpO2 greater than 94% and EtCO2 of 35- 45 mmHg. Ensure adequate time for exhalation
- Secure the catheter by the best method available, recognizing that this method may be by direct control with hands on the device

COMPLICATIONS

- Inability to identify anatomical landmarks
- Tracheal perforation
- Bleeding
- Inability to access the trachea

NOTES

- A skill required in less than 1% of all pediatric patients

References

- https://www.vdh.virginia.gov/OEMS/Files_Page/symposium/2012Presentations/ALS-309.pdf
- http://www.orangecountyfl.net/emsref/EMSrefMainMenu/ProcedureManual/AirwayProcedures.aspx
- http://www.orangecountyfl.net/emsref/EMSrefMainMenu/ProcedureManual/AirwayProcedures.aspx
- https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/

CP5 CONTINUOUS WAVEFORM CAPNOGRAPHY

INDICATIONS
• Continuous waveform capnography use is ***mandatory*** in: o Advanced airway placement (endotracheal tube or King airway) ▪ Continuous waveform capnography is the only acceptable method of confirmation for endotracheal tube placement o Altered mental status o Sedating medication administration o BVM ventilations – unless EtCO2 capability is unavailable o Patient experiencing respiratory distress (e.g. asthma, COPD, etc.)

CONTRAINDICATIONS
• None

CAUTIONS
• There is a moisture sensitive filter in the sensor tubing that is designed to occlude the tubing to prevent secretions from entering the pump in the Philips MRx. The sensor may need to be periodically changed out due to occlusion even in the absence of copious secretions

PROCEDURE
1. Attach adult/pediatric or infant/neonate (4.5 mm ET tube or less) EtCO2 filterline set between mask or advanced airway device (endotracheal tube or King) and bag-valve device or ventilator circuit and connect to the monitor 2. If no advanced airway, may use appropriate (adult or pediatric) EtCO2 nasal cannula 3. Continuously monitor capnometry (numeric value) and reassess capnography (waveform) 4. Document numeric value and interpretation of waveform shape multiple times throughout patient care encounter (e.g. after each new intervention, change in patient condition, patient movement, etc.)

COMPLICATIONS
• None

NOTES
• ***Failure to continuously monitor and appropriately interpret data may result in misplacement or unrecognized displacement of advanced airways and respiratory compromise in patients receiving sedating medications and is grounds for immediate clinical suspension***

REFERENCES
• https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/

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CP6 CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

INDICATIONS
• Congestive heart failure (CHF)/Acute pulmonary edema • Reactive airway disease (Asthma/COPD) • Drowning/near drowning • Selected toxic inhalations

CONTRAINDICATIONS
• Hypotension (SBP < 90 mmHg) • Altered mental status • Respiratory arrest/respiratory rate < 8 • Suspected or known pneumothorax • Tracheostomy/cricothyrotomy • Vomiting

CAUTIONS
• None

PROCEDURE
• Assemble device according to manufacturer's instructions and connect to oxygen source • Explain procedure to the patient and encourage them to work with the mask • Place the delivery device over the mouth and nose and secure the mask with provided straps and ensure no air leaks • Begin at 5 cmH_2O and titrate by 2.5 cmH_2O pressure every 3 – 5 minutes to maximum 10 cmH_2O pressure as patient tolerates and symptoms require • Monitoring for worsening respiratory status and decreasing mental status continuously and document vital signs at least every five minutes

COMPLICATIONS	
• Pneumothorax	• Apnea
• Hypotension	• Inability to tolerate

NOTES
• CPAP therapy needs to be continuous and shouldn't be removed except for medication administration (e.g. nitroglycerin) or unless the patient can't tolerate the mask or experiences continued or worsening respiratory failure or other complication.

REFERENCES
• https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/

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CP7 NEEDLE THORACOSTOMY

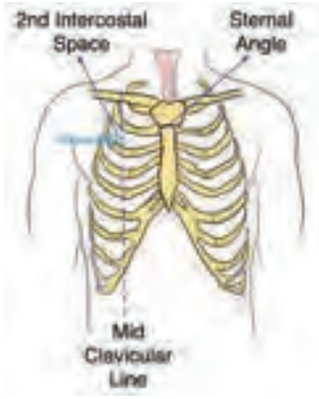
INDICATIONS
• Suspected pneumothorax with severe respiratory distress, hypotension or cardiovascular collapse • Traumatic cardiac arrest with chest or abdominal injury

CONTRAINDICATIONS
• Simple pneumothorax

CAUTIONS
• None

PROCEDURE

- Expose entire chest and identify landmarks
- Prep area well with alcohol preps and chlorprep or betadine (if available)
- Adult
  - Insert 10 gauge 3.25-inch decompression needle into one of the following:
    - 2nd intercostal space, mid-clavicular *(preferred)*
    - 5th intercostal space, mid-axillary
- Pediatric (age less than 13 y/o)
  - Insert 16 gauge 1.16-inch IV catheter into:
    - 2nd intercostal space, mid-clavicular
- Remove needle leaving angiocath in place
- Notify receiving facility of needle thoracostomy
- Reassess patient and interventions frequently (minimum every 5 minutes)



COMPLICATIONS
• Inability to find landmarks • Bleeding • Failure to penetrate the pleural cavity • Clogging of needle by blood or soft tissue • Subcutaneous emphysema • Internal bleeding due to incorrect placement

NOTES
• None

REFERENCES

- https://www.narescue.com/ars-for-needle-decompression-3-25-in
- https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/

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CP8 NEBULIZER INHALATION THERAPY

CP8.1 Nebulizer Inhalation Therapy - mouthpiece or aerosol mask

INDICATIONS
• Bronchospasm

CONTRAINDICATIONS
• Allergy to medication

CAUTIONS
• Nebulized administration of sympathomimetic medications may cause tachycardia and increased myocardial oxygen demand

PROCEDURE
• Assemble device according to manufacturer's instructions • Instill premixed drug in the reservoir well of the nebulizer • Explain procedure to the patient • Connect the nebulizer device to oxygen at eight (8) liters per minute • Instruct the patient to inhale normally through the mouthpiece of the nebulizer (primary method for use). The patient needs to have a good lip seal around the mouthpiece • For pediatric patients or those unable to hold the mouthpiece with good seal, may use mask • The treatment should last until the solution is depleted. Tapping the reservoir well near the end of the treatment will assist in utilizing all the solution. • Monitor the patient for medication effects. This should include the patient's assessment of his/her response to the treatment and reassessment of vital signs, ECG, and breath sounds.

COMPLICATIONS
• Pneumothorax • Hypotension • Apnea • Inability to tolerate • Severe Tachycardia • Myocardial Ischemia

CP8.2 Nebulizer Inhalation Therapy with CPAP

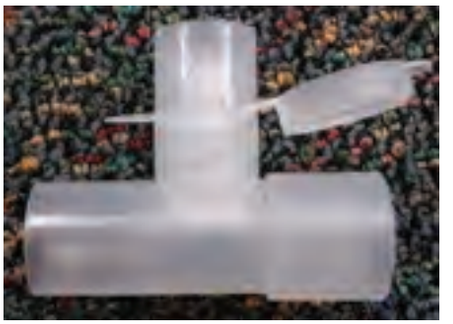
INDICATIONS
• Patients experiencing bronchospasm who are receiving CPAP treatment

CONTRAINDICATIONS	
• Altered Mental Status • Hypotension	• Inadequate tidal volumes/respiratory failure

CAUTIONS
• Nebulized administration of sympathomimetic medications may cause tachycardia and increased myocardial oxygen demand

PROCEDURE

- ***THIS PROCEDURE REQUIRES TWO OXYGEN SOURCES WITH INDEPENDENT REGULATORS***
- Assemble nebulizer and CPAP device according to manufacturer's instructions
- Attach nebulizer device to CPAP device with tee piece adapter
- Instill premixed drug in the reservoir well of the nebulizer
- Explain procedure to the patient
- Connect the nebulizer device to oxygen at eight (8) liters per minute



- Instruct the patient to breath normally
- The treatment should last until the solution is depleted. Tapping the reservoir well near the end of the treatment will assist in utilizing all the solution.
- Monitor the patient for medication effects. This should include the patient's assessment of his/her response to the treatment and reassessment of vital signs, ECG, and breath sounds.

COMPLICATIONS	
• Pneumothorax • Hypotension • Apnea	• Inability to tolerate • Severe Tachycardia • Myocardial Ischemia

NOTES

- CPAP therapy needs to be continuous and shouldn't be removed except:
  - for medication administration (e.g. nitroglycerin)
  - the patient can't tolerate the mask
  - The patient experiences continued or worsening respiratory failure or other complication.

CP8.3 Nebulizer Inhalation Therapy – Intubated Patient

INDICATIONS
• Patients experiencing bronchospasm who are being ventilated through an advanced airway (ETI, King Airway, trach/cric)

CONTRAINDICATIONS
• Allergy to medication

CAUTIONS
• Nebulized administration of sympathomimetic medications may cause tachycardia and increased myocardial oxygen demand

PROCEDURE

- THIS PROCEDURE REQUIRES TWO OXYGEN SOURCES WITH INDEPENDENT REGULATORS
- Assemble nebulizer device according to manufacturer's instructions
- Attach nebulizer device to BVM device with tee piece adapter and Superset adapter

- Instill premixed drug in the reservoir well of the nebulizer
- Explain procedure to the patient
- Connect the nebulizer device to oxygen at eight (8) liters per minute
- The treatment should last until the solution is depleted. Tapping the reservoir well near the end of the treatment will assist in utilizing all the solution.
- Monitor the patient for medication effects.

COMPLICATIONS	
• Pneumothorax • Hypotension	• Severe Tachycardia • Myocardial Ischemia

NOTES
• None

REFERENCES
• https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/

CP9 COMPRESSION PERFORMANCE RESUSCITATION

CP9.1 Adult CPR

INDICATIONS
• Atraumatic adult cardiac arrest • Atraumatic cardiac arrest in adults and children greater than 13 years old/60 kg

CONTRAINDICATIONS
• Presence of valid DNR (Ref. CS15) • Presence of criteria for withholding resuscitation (Ref. CS14) • Functioning LVAD

CAUTIONS
• Requires adequate room to work around the patient

PROCEDURE

- To ensure the best possible resuscitation, follow the choreography of the Compression Performance Resuscitation (Ref. CT4):
  - Position 1 – Compress/Defib (EMT or Paramedic)
    - Initiate uninterrupted compressions
    - Attach monitor/AED during pauses for ventilations
    - Deliver shock if indicated at conclusion of first two (2) minute cycle and on following cycles
    - Continue providing uninterrupted high-quality compressions alternating with Position 3, verbally announcing count so all rescuers are prepared for switching compressors
  - Position 2—Airway/Ventilation (Paramedic if available)
    - Open/clear airway
    - Position and ready monitor/AED during initial cycle of compressions
    - Attach oxygen and ETCO2 and provide ventilations with BVM and adjunct at appropriate ratio for number of rescuers
    - Insert King Airway (Paramedic Only) and confirm with ETCO2
    - Provide ongoing ventilations at rate of 10-12 per minute
  - Position 3—Compress/Defib (EMT or Paramedic)
    - If present during initial cycle, assist position 1 by attaching monitor/AED
    - Initiate uninterrupted compressions following initial rhythm/pulse check and shock delivery
    - Deliver subsequent shocks as indicated alternating with Position 1 on following cycles
    - Continue providing uninterrupted high-quality compressions alternating with Position 1, verbally announcing count so all rescuers are prepared for switching compressors

- Position 4—Vascular Access/Meds (Paramedic Only)
  - Establish vascular access with EZ-IO (Ref. CP21) or IV/accessing indwelling catheter if unable to obtain IO (Ref. CP25)
  - Administer medications as indicated
  - Assist with other ALS procedures as needed
- Position 5—Documentation/Family Liaison (EMT or Paramedic/Officer or Supervisor preferred)
  - Gather and document patient information and pre-arrival/Bystander interventions
  - Document EMS care provided
  - Provide family updates
  - Maintain overall situation awareness and prepare for transport logistics

- Utilize the Philips MRx Q-CPR meter to ensure adequate compression depth, rate, and recoil
- "Triangle" position functions have the greatest impact on survival and should not be interfered with for other functions
- Ensure minimization of interruptions for rotation of personnel and around shock delivery
- Provide electrical and pharmacologic therapy as indicated in Protocol C1

COMPLICATIONS

- Chest wall trauma/rib fractures
- Skin tear from Q-CPR meter use
- Return of neurologic function prior to ROSC

NOTES

- Goal of team approach is to minimize interruption of compressions (no more than 5-10 seconds per two (2) minute cycle)
- Transport should generally be deferred until after ROSC unless dictated by scene factors
- "Bystander" is defined as any person who was not dispatched to call as part of the 911 response system
- "ROSC" is defined as persistent presence of patient generated palpable pulse or blood pressure

CP9.2 CHILD CPR

INDICATIONS
• Atraumatic cardiac arrest in patients 1 year to 13 years of age

CONTRAINDICATIONS
• Presence of valid DNR (Ref. CS15) • Presence of criteria for withholding resuscitation (Ref. CS14)

CAUTIONS
• Requires adequate room to work around the patient

PROCEDURE

- To ensure the best possible resuscitation, follow the choreography of the Compression Performance Resuscitation (Ref. CT5):
  - Position 1 – Compress/Defib (EMT or Paramedic)
    - Initiate uninterrupted compressions
    - Attach monitor/AED using age-appropriate pads (and pediatric key when indicated/available) during pauses for ventilations
    - Deliver shock if indicated at conclusion of first two (2) minute cycle and on following cycles
    - Continue providing uninterrupted high-quality compressions alternating with Position 3, verbally announcing count so all rescuers are prepared for switching compressors
  - Position 2—Airway/Ventilation (Paramedic if available)
    - Open/clear airway
    - Attach oxygen and ETCO2 and provide ventilations with BVM and adjunct at appropriate ratio for number of rescuers and age of patient (Ref. CP3)
    - Perform airway management if unable to adequately ventilate with BVM (Ref. CP3)
    - Provide ongoing ventilations at rate of 12-20 per minute
  - Position 3—Compress/Defib (EMT or Paramedic)
    - If present during initial cycle, assist position 1 by attaching monitor/AED
    - Initiate uninterrupted compressions following initial rhythm/pulse check and shock delivery
    - Deliver subsequent shocks as indicated alternating with Position 1 on following cycles
    - Continue providing uninterrupted high-quality compressions alternating with Position 1, verbally announcing count so all rescuers are prepared for switching compressors

  - Position 4—Vascular Access/Meds (Paramedic Only)
    - Establish vascular access with EZ-IO (Ref. CP21) or IV/accessing indwelling catheter if unable to obtain IO (Ref. CP25)
    - Administer medications as indicated
    - Assist with other ALS procedures as needed
  - Position 5—Documentation/Family Liaison (EMT or Paramedic/Officer or Supervisor preferred)
    - Gather and document patient information and pre-arrival/Bystander interventions
    - Document EMS care provided
    - Provide family updates
    - Maintain overall situation awareness and prepare for transport logistics
- Utilize the Philips MRx Q-CPR meter to ensure adequate compression depth, rate, and recoil in patients 8 years and older
- Compress at a rate of 100-120 per minute and a depth of 1/3 the chest diameter ensuring complete recoil in patients 1 – 8 years of age
- "Triangle" position functions have the greatest impact on survival and should not be interfered with for other functions
- Ensure minimization of interruptions for rotation of personnel and around shock delivery
- Provide electrical and pharmacologic therapy as indicated in Protocol
- **"RESTART THE HEART BEFORE YOU DEPART"** -- *EVERY EFFORT SHOULD BE MADE TO ENSURE ESTABLISHMENT OF EFFECTIVE RESUSCITATION (INCLUDING EPINEPRHINE) PRIOR TO TRANPSPORT*

COMPLICATIONS
• Chest wall trauma/rib fractures • Skin tear from Q-CPR meter use

NOTES
• Team approach to minimize interruption of compressions resulting in at least a < 10 second break (< 5 seconds is optimal) during every cycle. • If personnel need rotation out of a position and appropriate personnel are on scene, it may be done as long as there is no interruption in cardiopulmonary resuscitation • Any additional personnel may be added into available positions as the situation dictates as long as it does not interfere with the "triangle" positions that have the greatest impact on patient outcome. • "ROSC" is intended to represent a brief (approximately > 30 seconds) restoration of spontaneous circulation that provides evidence of more than an occasional gasp, occasional fleeting palpable pulse or arterial waveform

CP9.3 Infant CPR

INDICATIONS
• Atraumatic cardiac arrest in patients < 1 year of age • Circulatory collapse (HR<60 and evidence of poor perfusion) in patients < 1 year of age

CONTRAINDICATIONS
• Presence of valid DNR (Ref. CS15) • Presence of criteria for withholding resuscitation (Ref. CS14)

CAUTIONS
• Requires adequate room to work around the patient

PROCEDURE

- To ensure the best possible resuscitation, follow the choreography of the Compression Performance Resuscitation (Ref. CT5):
    - Position 1 – Compress/Defib (EMT or Paramedic)
        - Initiate uninterrupted compressions using fingers or thumb encircling technique
        - Attach monitor/AED using age-appropriate pads (and pediatric key when indicated/available) during pauses for ventilations
        - Deliver shock if indicated at conclusion of first 2-minute cycle and on following cycles
        - Continue providing uninterrupted high-quality compressions alternating with Position 3, verbally announcing count so all rescuers are prepared for switching compressors
    - Position 2—Airway/Ventilation (Paramedic if available)
        - Open/clear airway
        - Attach oxygen and ETCO2 and provide ventilations with BVM and adjunct at appropriate ratio for number of rescuers and age of patient (Ref. CP3.1)
        - Perform airway management if unable to adequately ventilate with BVM (Ref. CP3)
        - Provide ongoing ventilations at rate of 12-20 per minute
    - Position 3—Compress/Defib (EMT or Paramedic)
        - If present during initial cycle, assist position 1 by attaching monitor/AED
        - Initiate uninterrupted compressions following initial rhythm/pulse check and shock delivery
        - Deliver subsequent shocks as indicated alternating with Position 1 on following cycles
        - Continue providing uninterrupted high-quality compressions alternating with Position 1, verbally announcing count so all rescuers are prepared for switching compressors

- Position 4—Vascular Access/Meds (Paramedic Only)
  - Establish vascular access with EZ-IO (Ref. CP21) or IV/accessing indwelling catheter if unable to obtain IO (Ref. CP25)
  - Administer medications as indicated
  - Assist with other ALS procedures as needed
- Position 5—Documentation/Family Liaison (EMT or Paramedic/Officer or Supervisor preferred)
  - Gather and document patient information and pre-arrival/Bystander interventions
  - Document EMS care provided
  - Provide family updates
  - Maintain overall situation awareness and prepare for transport logistics

- Compress at a rate of 100-120 per minute and a depth of 1/3 the chest diameter ensuring complete recoil
- "Triangle" position functions have the greatest impact on survival and should not be interfered with for other functions
- Ensure minimization of interruptions for rotation of personnel and around shock delivery
- Provide electrical and pharmacologic therapy as indicated in Protocol
- **"RESTART THE HEART BEFORE YOU DEPART"** -- *EVERY EFFORT SHOULD BE MADE TO ENSURE ESTABLISHMENT OF EFFECTIVE RESUSCITATION (INCLUDING EPINEPRHINE) PRIOR TO TRANPSPORT*

COMPLICATIONS	
• Chest wall trauma/rib fractures	• Skin tear from Q-CPR meter use

NOTES

- Team approach to minimize interruption of compressions resulting in at least a < 10 second break (< 5 seconds is optimal) during every cycle.
- If personnel need rotation out of a position and appropriate personnel are on scene, it may be done as long as there is no interruption in cardiopulmonary resuscitation
- Any additional personnel may be added into available positions as the situation dictates as long as it does not interfere with the "triangle" positions that have the greatest impact on patient outcome.
- "ROSC" is intended to represent a brief (approximately > 30 seconds) restoration of spontaneous circulation that provides evidence of more than an occasional gasp, occasional fleeting palpable pulse or arterial waveform

REFERENCES

- https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/
- http://circ.ahajournals.org/content/132/18_suppl_2
- https://eccguidelines.heart.org/index.php/circulation/cpr-ecc-guidelines-2/part-12-pediatric-advanced-life-support/
- https://eccguidelines.heart.org/index.php/circulation/cpr-ecc-guidelines-2/part-13-neonatal-resuscitation/

CP10 AUTOMATED EXTERNAL DEFIBRILLATOR (AED)

INDICATIONS
• Cardiac arrest

CONTRAINDICATIONS
• Hazardous environments (e.g. standing water, fire/ignition hazards, etc.)

CAUTIONS

• Transdermal medication patches should be removed and the area wiped clean before an AED electrode pad is attached
• Implanted Pacemakers/ICDs
  o Place electrode pad at least 1 inch away
  o If implanted cardio-defibrillator (ICD) is delivering shocks, allow 30 to 60 seconds for the ICD to complete the treatment cycle

PROCEDURE

- Universal AED
  a. Operation preferred from the patient's left side ear
  b. **POWER ON** the AED – Follow the prompts
  c. **Attach electrode pads** to patient's bare skin
     - Upper right sternal border (directly below the clavicle)
     - Lateral to left nipple and a few inches below the axilla

  d. **Plug electrode pads into device,** if not already preconnected
  e. **Analyze the Rhythm –** clear rescuers and bystanders from patient and ensure no one is touching the patient
  f. **Clear the Patient and Press the SHOCK button**
     - Loudly state "I'm Clear, You're Clear, Everybody Clear"
     - Visually check at the same time that no one is in contact
  g. After first shock, **DO NOT** restart CPR – Follow the device prompts
  h. After three (3) shocks, check signs of circulation and prepare to provide chest compressions
  i. Continue compressions and ventilations for one (1) minute
  j. Continue to follow the voice prompts until ALS personnel arrive and provide direction.
  k. DO NOT discontinue compressions or ventilations until instructed to do so by ALS personnel.

COMPLICATIONS
• If patient noticeably diaphoretic, dry the chest with a cloth or towel before attaching the electrode pads • If patient has a hairy chest and first set of pads will not stick, shave the hair prior to application of the second set of pads • Agonal respirations • Use of radio receivers and transmitters should be avoided during rhythm analysis

NOTES
• It is important to continue to hold the Shock button until the shock is delivered. The defibrillator shocks with the next detected R-wave • If AED equipped with pediatric pads/key, use with patient < 8 years of age

REFERENCES
• http://circ.ahajournals.org/content/102/suppl_1/I-60#sec-17 • https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/

CP11 MANUAL DEFIBRILLATION

INDICATIONS
• Ventricular Fibrillation, Pulseless Ventricular Tachycardia, Polymorphic Ventricular Tachycardia

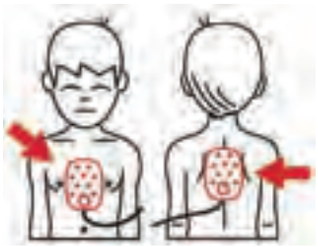
CONTRAINDICATIONS
• Hazardous environments (e.g. standing water, fire/ignition hazards, etc.) • Valid Florida Do Not Resuscitate Order (DNRO)

CAUTIONS
• Oxygen enriched environments

PROCEDURE

1. Prepare patient's chest:
   - Clean and dry skin, remove excess hair, if necessary
   - Determine presence of AICD, pacemaker, other implanted medical devices
2. Apply hands free multi-function pads to patient's skin
   - Pad placement

Adult – Anterior/Anterior **Pediatric – Anterior/Posterior**



3. Connect hands free multi-function pad connector to therapy cable
4. Turn the **Therapy Knob** to **Manual Defib** and select an appropriate energy setting
   - Selected energy can be increased or decreased at any time during charging or after charging is complete; the defibrillator charges to the selected energy level automatically
5. Press the ***CHARGE*** button (a continuous, low-pitched charging tone sounds until the desired energy level is reached, at which point the high-pitched charge sound is heard)
   - Press **[Disarm]** to disarm the device once charged if no shock is indicated

6. Call "I'm Clear", "You're Clear", "Oxygen Clear" and visually verify all clear
7. Confirm that the defibrillator has charged to the desired energy level
8. Press the flashing ***SHOCK*** button

COMPLICATIONS
• Air pockets between patient skin and multifunction pads may cause skin burns • Pain • Burns

NOTES
• *DO NOT* place hands free pads over monitor electrodes, cables, pacemakers, dressings, implantable cardiac rhythm devices or transdermal patches

REFERENCES
• https://www.usa.philips.com/healthcare/medical-specialties/business-and-government/emergency-response/clinical-excellence-in-emergency-care

CP12 VECTOR CHANGE DEFIBRILLATION

INDICATIONS

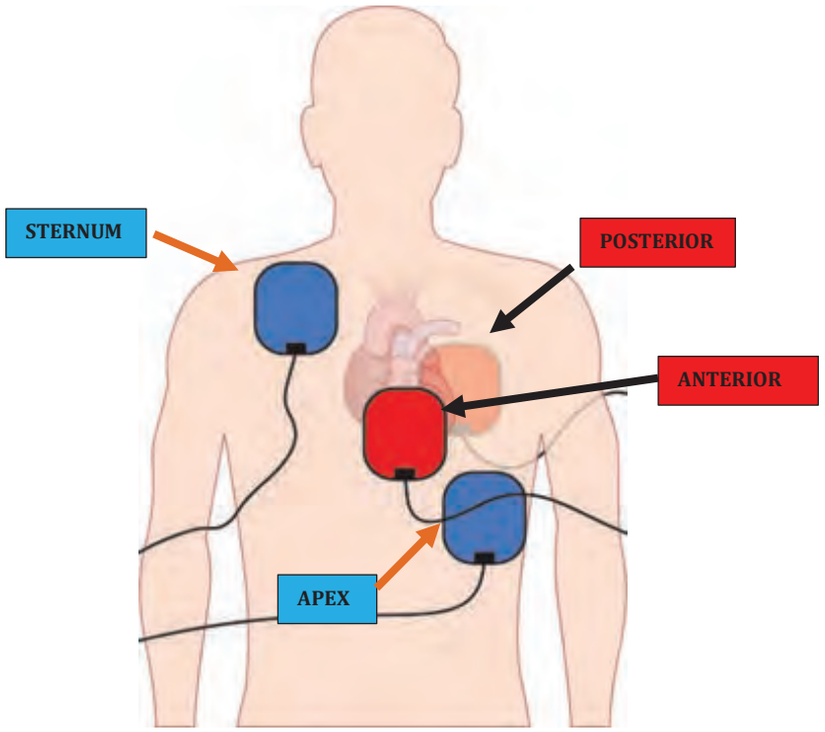
• Adult
• Refractory ventricular fibrillation
  o Has already received 3+ shocks
  o Has already received antiarrythmic drug therapy
• ***OLMC Authorization Required***

CONTRAINDICATIONS
• Hazardous environments (e.g. standing water, fire/ignition hazards, etc.)

CAUTIONS
• Ensure minimal interruption to compressions

PROCEDURE

- Apply a second set of Phillips Hands Free Multi-function Pads in the alternate position (e.g. anterior-posterior vs. apex-sternum) from the initial pads during the next pulse check.



- Switch MRX to the new set of pads after CPR resumes.
- At the next indicated shock, perfrom standard defibrillation using the new pads.
- Continue the remainder of the resuscitation with the new pads.

COMPLICATIONS
• Asystole

NOTES
• Pending

REFERENCES
• Pending

CP13 SYNCHRONIZED CARDIOVERSION

INDICATIONS
• Unstable tachydysrhythmias

CONTRAINDICATIONS
• Hazardous environments (e.g. standing water, fire/ignition hazards, etc.)

CAUTIONS
• **Failure to SYNC may result in "R on T syndrome" and induce asystole**

PROCEDURE

- Philips MRx
  - Turn the **Therapy Knob** to **Monitor** and press the **SYNC** button. A sync message appears in the upper right corner of Wave Sector 1
  - Confirm that the sync marker appears with each R-wave. If the marker does not appear, select another lead
  - Turn the **Therapy Knob** to the desired energy level setting
  - Press the **CHARGE** button on the MRx
    - Wait until the charge has reached the selected energy level at which point you will hear a continuous charge done tone.
    - To disarm the defibrillator prior to discharging the energy, press **(Disarm)**.
    - The selected energy can be changed at any time during charging or after charging is complete. The MRx charges to the selected energy level automatically.
  - Call "I'm Clear", "You're Clear", "Oxygen Clear" and visually verify all clear
  - Continue to hold the **SHOCK** button until the shock is delivered so that the defibrillator shocks the next detected R-wave

COMPLICATIONS
• Pain • Burns • Arrhythmias

NOTES
• None

REFERENCES

- http://incenter.medical.philips.com/doclib/enc/fetch/2000/4504/577242/577243/577245/577817/577891/HeartStart_MRx.pdf%3fnodeid%3d8602907%26vernum%3d-2

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CP14 TRANSCUTANEOUS PACING (TCP)

INDICATIONS
• Unstable bradycardia

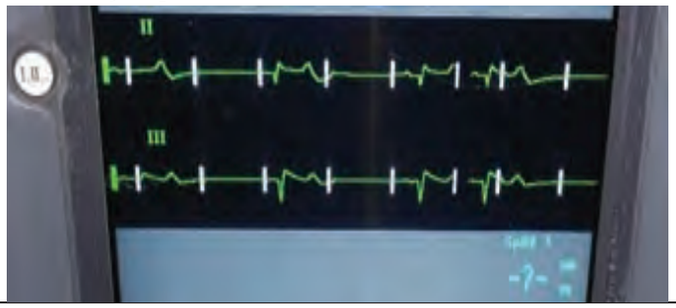
CONTRAINDICATIONS
• Hazardous environments (e.g. standing water, fire/ignition hazards, etc.)

CAUTIONS
• Although TCP is a painful procedure, initiation of pacing must not be delayed for analgesia in the unstable patient

14.1 DEMAND MODE (DEFAULT) PHILIPS MRX

PROCEDURE

1. Apply ECG monitoring electrodes
2. Press the ***LEAD SELECT*** button to select the best lead with an easily detectable R-wave
3. Apply hands free multi-function pads
4. Connect hands free multi-function pad connector to therapy cable
5. Turn the therapy knob to the ***PACER*** position
6. Verify that the white R-wave markers appear above or on the electrocardiogram (ECG) waveform
7. Press ***PACER RATE*** and increase the rate to 60 bpm initially
8. Press ***PACER OUTPUT*** and increase the output to 60 milliamps initially
9. Press ***START PACING***. The message ***PACING*** appears
10. Rapidly increase energy in increments of 10 milliamps until electrical capture is attained
11. Increase the output until cardiac (mechanical) capture occurs

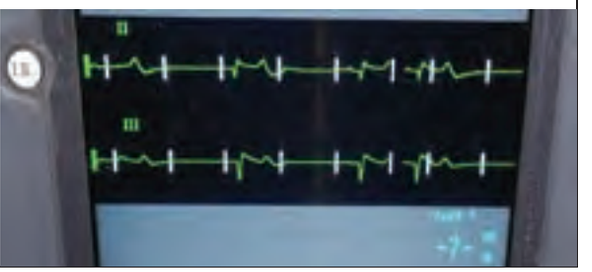


14.2 Fixed Mode – Philips MRx

PROCEDURE

1. Apply hands free multifunction pads
2. Connect hands free multi-function pad connector to therapy cable
3. Change the pacer mode to Fixed Mode
4. Turn the therapy knob to the ***PACER*** position
5. Press ***PACER RATE*** and increase the rate to 60 bpm initially

6. Press ***PACER OUTPUT*** and increase the output to 60 milliamps initially
7. Press ***START PACING***. The message ***PACING*** appears
8. Rapidly increase energy in increments of 10 milliamps until electrical capture is attained
9. Increase the output until cardiac capture occurs



COMPLICATIONS

- Pain
- Burns
- Failure to achieve or maintain electrical and mechanical capture

NOTES

- Spontaneous beats may be present which are not associated with the delivery of paced pulses
- Demand Mode –
  - Pace pulses are delivered when the patient's heart rate is lower that the selected pacing rate.
  - If the patient's heart rate is above the pacer rate, paced pulses are not delivered therefore pacing markers do not appear
  - Requires the use of ECG monitoring cables and hands-free pads
- Fixed Mode –
  - Pace pulses are delivered at the selected rate regardless of the patient's underlying heart rate
- A pulse oximeter can be useful for confirming capture (by comparing the pulse rate measured by the pulse oximeter to set pacing rate) and perfusion

REFERENCES

- http://incenter.medical.philips.com/doclib/enc/fetch/2000/4504/577242/577243/577245/577817/577891/HeartStart_MRx.pdf%3fnodeid%3d8602907%26vernum%3d-2

CP15 SPINAL PRECAUTIONS

INDICATIONS
• Any sign of blunt trauma or mechanism • Spine pain or tenderness or anatomical deformity of the neck or back • Altered mental status less than GCS 15 • Signs of intoxication with alcohol or drugs • Patient distracted by painful injury • Neuro deficit after trauma (signs and symptoms of extremity weakness or numbness)

CONTRAINDICATIONS
• Inability to perform without causing further injury to patient (e.g. unsafe environment requiring rapid extrication)

CAUTIONS
• Spinal precautions are not a benign procedure and may cause significant discomfort and potentially physiologic compromise. ***It should be applied only when necessary*** • Airway assessment and management takes priority over spinal precautions in patients with isolated penetrating trauma to the neck

PROCEDURE
• Maintain manual stabilization while determining if patient meets criteria for spinal precautions (Ref. CT11) • If extrication may be required: o From a vehicle: 1. After placing a cervical collar, if indicated, children in a booster seat and adults should be allowed to self-extricate. 2. For infants and toddlers already strapped in a car seat with a built-in harness, extricate the child while strapped in his/her car seat o Other situations requiring extrication: 1. A padded long board may be used for extrication, using the lift and slide (rather than a logroll) technique o Helmet removal: 1. If a football helmet needs to be removed, it is recommended to remove the facemask followed by manual removal (rather than the use of automated devices) of the helmet while keeping the neck immobilized. 2. Occipital padding should be applied, as needed, with the patient in a supine position, in order to maintain neutral cervical spine positioning (e.g. when wearing shoulder pads) • ***Patients should not routinely be transported on long boards, unless the clinical situation warrants long board use.*** An example of this may be facilitation of immobilization of multiple extremity injuries or an unstable patient where removal of a board will delay transport and/or other treatment priorities. In these rare situations,

long boards should be padded or have a vacuum mattress applied to minimize secondary injury to the patient

COMPLICATIONS

- Increased pain
- Pressure ulcers
- Respiratory compromise

NOTES

- Be aware of potential airway compromise or aspiration in immobilized patient with nausea/vomiting, or with facial/oral bleeding
- Excessively tight immobilization straps can limit chest excursion and cause hypoventilation
- Prolonged immobilization on spine board can lead to ischemic pressure injuries to skin
- Prolonged immobilization on spine board can be very uncomfortable for a patient
- Children are abdominal breathers, so immobilization straps should go across chest and pelvis and not across the abdomen, when possible

REFERENCES

- Hoffman JR, Wolfson AB, Todd K, Mower WR. (1998). "Selective cervical spine radiography in blunt trauma: methodology of the National Emergency X-Radiography Utilization Study (NEXUS)." Ann Emerg Med. 32 (4): 461–9. doi:10.1016/s0196-0644(98)70176-3. PMID 9774931
- "EMS Spinal Precautions and the Use of the Long Backboard" http://www.naemsp.org/pages/position-statements.aspx
- "EMS Spinal Precautions and the Use of the Long Backboard—Resource Document to the Position Statement of the National Association of EMS Physicians and the American College of Surgeons Committee on Trauma. http://www.naemsp.org/pages/position-statements.aspx
- https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/

CP16 COMBAT APPLICATION TOURNIQUET (CAT)

INDICATIONS

- Control of life threatening external hemorrhage when standard methods such as direct pressure are inadequate

CONTRAINDICATIONS

- Inability to place proximal to wound

CAUTIONS

- Incorrectly placed tourniquets may increase venous bleeding
- Do not place over a joint

PROCEDURE

1. Apply tourniquet proximal to wound according to manufacturer's instructions. Avoid placing over joints.
2. Tighten tourniquet until bleeding stops.
3. Apply second tourniquet proximal to first (directly adjacent) if needed.
4. Note the time and date of application on the tourniquet or patient's skin near the tourniquet.
5. Monitor for recurrent hemorrhage.
6. Provide analgesia after application when possible (Ref. M13)
7. Tourniquets should only be removed by the receiving facility, once properly placed.

COMPLICATIONS

- Pain
- Even when properly applied may cause nerve and vascular damage as well as tissue loss

NOTES

- Tourniquets may be used as first line treatment in:
  - Traumatic Cardiac Arrest
  - During incidents with ongoing threats – Ref. CS21
  - When other standard methods of hemorrhage control are not feasible

REFERENCES

- https://www.narescue.com/combat-application-tourniquet-c-a-t

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CP17 HYFIN VENT COMPACT CHEST SEAL

INDICATIONS
• Penetrating wounds to the chest

CONTRAINDICATIONS
• None

CAUTIONS
• Anticipate difficulty with excess blood, skin moisture, or debris

PROCEDURE

1. Clean and dry the wound as practical
2. Remove one vented chest seal from release liner
3. Place firmly over wound, centered, with adhesive side down
4. Apply light direct pressure to assure occlusive seal
5. Repeat with second dressing if a second wound (e.g. exit wound) is present

COMPLICATIONS
• Improper placement may contribute to the development of tension pneumothorax

REFERENCES
• https://www.narescue.com/hyfin-vent-compact-chest-seal-twin-pack

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CP18 WOUND PACKING - QUIKCLOT® COMBAT GAUZE & EMERGENCY TRAUMA DRESSING (ETD)

INDICATIONS
• Control of life-threatening external hemorrhage in areas where proximal tourniquet application is not possible (e.g. junctional wounds) and standard methods such as direct pressure are inadequate.

CONTRAINDICATIONS
• None

CAUTIONS
• Hemorrhage control using external hemostatic dressings may be difficult at non-compressible sites • Avoid hemostatic dressing contact with eyes

PROCEDURE

1. Expose wound, remove excess-pooled blood from around wound while preserving any clots already in the wound if possible.
2. Locate source of bleeding and pack hemostatic gauze into wound tightly and directly onto bleeding source. Use as much gauze as needed to stem blood flow. Remainder of roll can be used on top of wound or to fill wound cavity.
3. Apply manual direct pressure for 3 – 5 minutes or until bleeding stops.
4. Leave gauze in place. Place the pad of the ETD dressing over wound and wrap tightly to create a pressure dressing. Secure as directed.
5. Consider pain management.

COMPLICATIONS
• Failure to adequately control hemorrhage • Pain

NOTES

- Wound packing may be used as first line treatment in:
  - Traumatic Cardiac Arrest
  - During incidents with ongoing threats – Ref. CS21
  - When other standard methods of hemorrhage control are not feasible
- QuikClot® Combat Gauze causes rapid, localized coagulation and the formation of a stable blood clot in a variety of wounds. It does not absorb into the body and is safe to leave in the wound until further medical care is available. QuikClot® Combat Gauze does not produce any heat and controls bleeding faster than conventional methods.

REFERENCES
• https://www.narescue.com/combat-gauze-z-fold-hemostatic • https://www.narescue.com/responder-emergency-trauma-dressings

CP19 TRACTION SPLINT

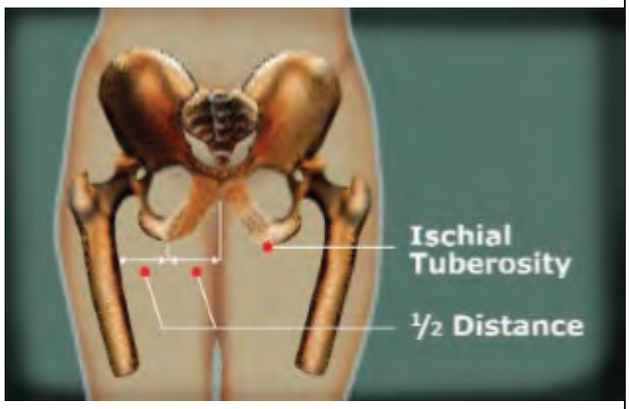
INDICATIONS
• Treatment of unilateral proximal third and mid-shaft femoral fractures • Pain relief

CONTRAINDICATIONS
• Pelvic fracture • Distal femur or supracondylar fractures • Compound or open fractures of the femur • Fractures of the ankle and foot

CAUTIONS
• None

PROCEDURE

- Position the Sager S301 between the patient's legs resting the ischial perineal cushion (the saddle) against the ischial tuberosity, with the shortest end of the articulating base towards the ground
- The pulley wheel should be on the same side and towards the injured limb
- Apply the abductor bridle (thigh strap) around the upper thigh on the injured limb
- Push the ischial perineal cushion gently down at the same time pulling the thigh strap laterally under the patient's thigh
- Tighten the thigh strap lightly
- Lift the spring coil to extend the inner shaft until the pulley (traction) wheel is adjacent to the patient's heels.
- Note the absence or presence of distal pulses. Check for sensation
- Position the malleolar harness (ankle harness) beneath the heel(s) and just above the ankle
- Fold down the number of comfort cushions needed to engage all of the ankle above the medial and lateral malleoli
- Using the attached hook and loop straps, wrap the ankle harness around the ankle too secure snugly
- Pull control tabs on the ankle harness to shorten the ankle sling, pulling it up against the sole of the foot
- Extend the splint shaft to achieve the amount of traction desired while observing the amount registered on the traction scale (use 10% of the patient's weight per fractured femur up to 7 kg (15 pounds))



- At the hollow of the knees, gently slide the large elastic leg cravat through and upwards to the thigh repeating with the smaller cravats to minimize lower and mid-limb movement
- Adjust the thigh strap at the upper thigh making sure it is not too tight but snug and secure, then firmly secure the elastic leg cravats
- Apply the pedal pinion around the feet to prevent rotation
- Note the presence or absence of distal pulses. Check for sensation.

COMPLICATIONS

- Inadequate or excessive traction
- Improper positioning
- Increased pain (rare)
- Neurovascular compromise

NOTES

- None

REFERENCES

- http://www.sagersplints.com/pdf/SEFRS-InstructorsManual.pdf

CP20 OROGASTRIC TUBE INSERTION

ADULT and PEDIATRIC	INDICATIONS
	• Gastric decompression and emptying in pediatric and adult patients receiving assisted ventilation • Remove gastric distention of air and to minimize change of aspiration

CONTRAINDICATIONS
• Awake patient • Patient with intact gag reflex • Caustic ingestions • History of esophageal structures, varices and/or other esophageal disease • Adult patient without an advanced airway in place

CAUTIONS
• Excessive force should not be necessary to pass tube

PROCEDURE

- ***NASAL GASTRIC TUBE INSERTION IS NOT PERMITTED***
- Choose the appropriately sized gastric tube:
  - 6 Fr – Infant/Pediatric 3 kg – 15 kg
  - 12 Fr – Pediatric 16 kg – 25 kg
  - 18 Fr greater than 25 kg

- Measure the tube from the corner of the mouth to the earlobe and then to the point midway between the patient's navel and tip of the sternum
  - King LTS-D gastric lumen access
    - Lubricate the gastric tube with water soluble jelly prior to insertion into the gastric access lumen

  - Endotracheal tube
    - Lubricate the gastric tube with water soluble jelly prior to insertion and slowly advance the tube into the oropharynx ***NEXT TO*** the endotracheal tube to the appropriate depth
  - Non-intubated pediatric patient
    - An OPA should be in place. Measure and insert the gastric tube as previously described.
- If there is resistance, rotate and retract the tube slightly and try again. Keep insertion attempt to 10 seconds or less
- Keeping the patient's head and neck in a neutral position will facilitate passage of the gastric tube
- Once inserted, draw 5 – 20 mL of air (dependent on patient size) into a 60 mL catheter tip syringe and quickly inject the bolus of air into the stomach while auscultating with a stethoscope. If the tube is in the stomach, a gurgling should be audible. If the tube is in the esophagus or trachea, the air sounds will be absent or muffled

- Once placement is confirmed, attach orogastric tube to suction tubing. Place to low, non-continuous suction to facilitate evacuation of stomach contents. Discontinue suction when there is no further return of stomach contents
- Secure the gastric tube to the exterior cheek lightly with tape

COMPLICATIONS
• Bleeding • Inadvertent tracheal placement

NOTES
• None

REFERENCES
• https://www.nasemso.org/Projects/ModelEMSClinicalGuidelines/

CP21 INTRAOSSEOUS ACCESS

INDICATIONS
• Primary vascular access for a patient in cardiac arrest • Inability to obtain peripheral vascular access in other category **RED** patients (adult and pediatric) requiring urgent vascular access.

CONTRAINDICATIONS
• Fracture in targeted bone • Excessive tissue or absence of adequate anatomical landmarks • Infection at area of insertion site • Previous significant orthopedic procedure at site (e.g. prosthetic limb/joint) • Intraosseous access in targeted bone within past 48 hours

CAUTIONS
• None

PROCEDURE
• Determine landmarks for approved sites (proximal tibial plateau, proximal humeral head and distal tibia just proximal to medial malleolus) per manufacturer provided diagrams and choose appropriate needle size • Prep area well with alcohol preps and Chlorprep or betadine (if available) • Insert needle using EZ-IO (device per manufacturer's instructions) • Confirm placement with aspiration of bone marrow, flush and then secure with the EZ-IO Stabilizer device • Infuse fluids and medications as needed • In conscious patients, may administer 2% lidocaine (adults 30 mg & pediatrics 0.5 mg/kg to a max dose of 30 mg) via slow intraosseous push to control infusion related pain • Write time of placement and operator name on provided band and affix to limb where intraosseous placed

COMPLICATIONS
• Improper placement may cause injury to the bone • Bleeding • Extravasation of fluids and medications • Necrosis • Loss of limb

NOTES
• None

REFERENCES
• http://www.arrowezio.com/

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CP22 AUTO-INJECTOR USE

CP22.1 EPINEPHRINE AUTO-INJECTOR (e.g. Epi-pen, Epi-pen Jr.)

INDICATIONS
• Anaphylaxis • Anaphylactic Shock • Life threatening bronchospasm/obstructive respiratory disease

CONTRAINDICATIONS
• None

CAUTIONS
• Caution in patients suspected of coronary disease as may precipitate ACS. • Avoid accidental self-administration

PROCEDURE
1. Expose skin and cleanse if possible 2. Grasp age appropriate auto injector without covering end with fingers and remove safety cap 3. Press tip firmly against patient's outer thigh until device fires holding on skin 10 seconds after firing to ensure full delivery of medication

COMPLICATIONS
• Bleeding • Infection • Adverse medication reaction

CP22.2 NERVE AGENT ANTIDOTE (Duodote Auto-injector)

INDICATIONS

- Treatment of life-threatening symptoms of poisoning by organophosphorus nerve agents, as well as organophosphorus insecticides

CONTRAINDICATIONS

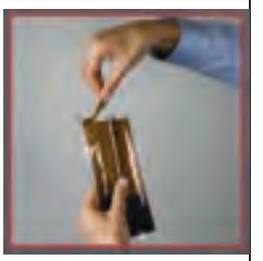
- None

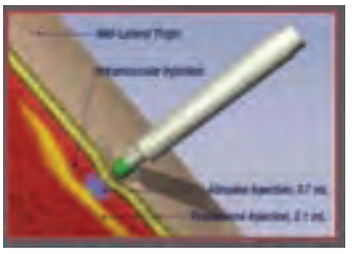
CAUTIONS

- Individuals should not rely solely upon Atropine and Pralidoxime to provide complete protection from chemical nerve agents and insecticide poisoning

PROCEDURE

1. The injection site is the mid-outer thigh area
2. Swing and firmly push GREEN TIP straight down (at a 90-degree angle) against mid-outer thigh. Continue to push firmly until you feel the auto-injector trigger
3. Hold in place firmly against the injection site for 10 seconds
4. Remove the Duodote from the thigh. Inspect the GREEN TIP; if the needle is visible, then the injection was successful
5. If the needle is not visible, make sure the Gray Safety Release is removed and repeat the preceding steps
6. Keep used auto-injectors with the patient so others will be aware of how many injections were administered





COMPLICATIONS

- Bleeding
- Infection
- Adverse medication reaction

NOTES

- Children less than 9 years old – Consult OLMC for administration/dosing determination
- You can inject through clothing, but make sure that pockets are empty
- Injector needle may not penetrate bunker gear
- Give injections into a large muscle mass area such as the outer thigh or buttocks

REFERENCES

- http://www.meridianmeds.com/products/duodote

CP23 PHYSICAL RESTRAINT

INDICATIONS
• **Soft restraints** are appropriate for non-violent patients who require restraint from interfering with therapy (e.g. pulling lines, tubes, etc.) • **Hard restraints** are appropriate for patients that are violent and pose a threat to responders or themselves when verbal de-escalation is ineffective and chemical sedation is not feasible

CONTRAINDICATIONS
• None

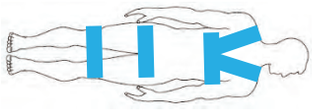
CAUTIONS
• Physical restraints are potentially dangerous and should be used only when other methods (verbal de-escalation, chemical sedation) are not effective or feasible

PROCEDURE

- Verbal de-escalation should be attempted prior to moving to chemical/physical restraints
- Choose the appropriate level of physical restraint:
  - Soft restraints – appropriate for non-violent patients who require restraint from interfering with therapy (e.g. pulling lines, tubes, etc.)
  - Hard restraints (with appropriately sized liner) – appropriate for patients who pose a danger to themselves or responders
- Obtain law enforcement assistance for physical restraint, whenever possible
- Apply restraints following the manufacturer's instructions
- Position a patient in the supine position.

NEVER RESTRAIN A PATIENT IN THE PRONE POSITION

- A patient may be placed on backboard or stretcher to facilitate transfer
  - Strap Placement:
    - Ambulance Stretcher
      - Shoulder/Chest straps
      - Hip strap across hips/pelvis
      - Leg strap immediately above the knees



    - Backboard (when utilized) straps
      - Chest straps across the chest (in the form of an "X")
      - Abdominal strap on the hips (not abdomen – in the form of an "X")
      - Leg strap immediately above the knees

- Secure hands/feet - Stretcher
  - Dominate hand (if known) tied to stretcher above head (same side)
  - Non-dominant hand tied down to their side to the stretcher (same side)
  - Secure ankles individually to each side of the stretcher (right ankle to the right side of the stretcher and left ankle to the left side of the stretcher

- If the patient is spitting, a surgical mask/N95 mask may be used to block secretions. If the patient receives any chemical sedation, a non-rebreather mask at 10 – 15 Lpm should be utilized
- Monitor the airway to prevent aspiration. Have suction readily available and be prepared to roll the patient!!
- Assess distal neurovascular function and document a minimum of every 10 minutes

COMPLICATIONS

- Physical injury to patient or responders
- Failure to recognize deteriorating respiratory, neurologic and cardiovascular status
- Extremity injury

NOTES

- Keep the exit between yourself and the patient so that you may safely and quickly exit, if needed. ***Retreating from a violent patient to prevent injury is not abandonment.***
- Never attempt to subdue a violent or combative patient by yourself
- Request law enforcement for a violent and severely combative patient
- Any patient restrained by law enforcement in a prone position ***SHALL IMMEDIATELY BE PLACED IN A SUPINE POSITION*** upon EMS access to the patient. Provide an initial and ongoing assessment for signs and symptoms of positional asphyxia
- Law Enforcement restraints

If the officer does not want to ride in, an OLMC contact shall be made

REFERENCES

- http://i2.wp.com/emcrit.org/wp-content/uploads/2011/11/how-to-restrain.jpg

CP24 PATIENT RESTRAINT FOR TRANSPORT

INDICATIONS

- All patients being transported shall be secured utilizing an appropriate restraint device

CONTRAINDICATIONS

- None

CAUTIONS

- It is imperative that patients are restrained with approved devices applied per the manufacturer's recommendations. Be mindful that access to a patient's airway should never be compromised by the restraint.
- ***At no time should an infant or child be transported in the lap of a parent or guardian***

PROCEDURE

- For children weighing less than 10 pounds, the "Infant/Child Safety Seat" should be utilized, secured to the stretcher
- For children weighing 10 to 40 pounds, the Pedi-Mate should be utilized secured to the stretcher

- A pediatric immobilization device should be used for all pediatric trauma patients
- A patient weighing greater than 40 pounds should be secured to the main stretcher utilizing provided stretcher straps
- Adult trauma patients will be placed in an Immobilization Device as per CP8 and secured to the stretcher or bench seat

COMPLICATIONS

- Caution when securing patients that proper positioning and alignment is maintained to promote good circulation and decrease injury

NOTES

- For the interfacility transport of infants less than 28 days of age and/or weighing 5 kg or less, CCT should be utilized for neonatal care and transport with an isolette or another specialized device

REFERENCES

- http://www.fernoems.com/en/search-results/pedi-mate.aspx

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CP25 TROUBLESHOOTING & EMERGENCY ACCESS OF INDWELLING CATHETERS

INDICATIONS

- Displacement, fracture, or bleeding from catheter

CONTRAINDICATIONS

- Medication ports ***MAY NOT*** be accessed

CAUTIONS

- There are several types of indwelling catheters that may be encountered. Clinicians may not access a particular catheter unless they are confident on the type and function of each of the ports.

PROCEDURE

- Troubleshooting
  - If catheter is completely out or there is bleeding from the site, apply direct pressure to the site
  - If catheter is partially out, secure in place and cover with sterile dressing
  - Assess for signs and symptoms of embolus, thrombus, or internal bleeding (chest pain, cyanosis, dyspnea, shock)
  - If the catheter is broken in half, with or without bleeding, clamp end of remaining tube with curved Kelly forceps
  - If suspected embolus, thrombus, internal bleeding or air embolus
    - Clamp the line and position patient on left side

- Emergency Access (Paramedic and RN ONLY – Ref. CT24)
  - Make sure clamp is closed, remove end cap, and replace with the extension and cap from the IV Start Kit
  - Identify hub to accessed
  - Cleanse the hub well with alcohol preps x 2 and chlorprep or betadine (if available)
  - Connect syringe and draw back blood waste (Adult - 10 mL/Pediatric - 3 mL)
  - Flush with 0.9% Sodium Chloride to ensure patent line
    - If unable to draw back and flush, DO NOT USE the line
  - Attach 0.9% Sodium Chloride IV fluid ensuring the IV tubing set is primed well
  - Administer medications and fluids as needed

COMPLICATIONS

- Infection
- Bleeding
- Embolization of catheter fragments
- Blood clots
- Air embolism

NOTES

- None

REFERENCES
• Pending

CP26 TROUBLESHOOTING IMPLANTED MEDICAL DEVICES

INDICATIONS
• Acute harm being caused by an implanted medical device due to malfunction or change in patient's condition

CONTRAINDICATIONS
• Unknown type of device

CAUTIONS
• Clinicians should not attempt any manipulation or intervention to any device that they have not positively identified and determined to be causing acute harm to the patient

PROCEDURE

- Identify type of device
  - AICD (automatic implanted cardiac defibrillator)
    - If in consultation with OLMC, you have identified that the patient's AICD is misfiring or causing a dysrhythmia and you have access to the patient's magnet, deactivate the ICD by locating the pulse generator (the large box like structure of the ICD) and place the donut magnet over the generator
    - You may or may not hear a high-pitched tone from the generator, depending on the brand of the ICD
    - Secure the magnet in place with adhesive tape
    - The magnet will inhibit further arrhythmia detection and treatment by the ICD
  - LVAD (left ventricular assist device)
    - Gather information
      - Is patient's complaint related to the device?
      - What type of device is it (color-coded tag on control unit on belt)?
      - Are there any experts on scene?
      - What is the battery status?
      - Is there a hand pump?
      - What hospital do they go to?
    - Contact OLMC – they have a comprehensive, brand specific troubleshooting guide that will assist you in your care
    - Bring all the patient's equipment to the hospital
    - Remember you may not have a palpable pulse but should hear a whirring sound
      - Standard diagnostic measurements will be unreliable (blood pressure, SpO2, heart rate, etc.)
    - NEVER remove both batteries at the same time!!

- ***DO NOT PERFORM CARDIOPULMONARY RESUSCITATION (CPR)*** *on unresponsive and pulseless LVAD patients unless you "cannot" hear the whirring sound on auscultation of the chest as CPR may cause dislodgement of the device and immediate death*

EMERGENCY VAD COORDINATOR CONTACT INFORMATION		
Hospital	**VAD Coordinator 24 hr Phone/Pager**	**Notes**
Tampa General	866-844-8237	If you do not hear back from after paging twice, call the hospital operator 813-844-7000 and ask for the VAD Coordinator
Largo Medical Center	727-588-5823	
St. Joseph's Hospital	813-442-6823	If you receive the answering service, ***STATE YOU HAVE A LVAD PATIENT***

- VNS (Vagus Nerve Stimulator)
  - Clinicians caring for patients in status epilepticus who have a VNS and are not responding to standard medications may assist the family or caretaker to activate/increase the settings of the VNS by passing the patient's control magnet closely over the chest area where the VNS device is implanted every 3 minutes to a maximum of 3 times
  - Remember that VNS stimulators may cause abnormalities on ECG monitoring and 12 leads
- Insulin Pump
  - Clinicians caring for patients who are profoundly hypoglycemic may temporarily pause or disable the pump until the patient has been treated as per protocol
- Patient Controlled Analgesia Pump (PCA)

- PCA pumps encountered in the outpatient setting are most often locked. Troubleshooting will likely be limited to the IV access site

COMPLICATIONS

- Interfering with implanted medical devices is inherently dangerous and should only be attempted if the device is clearly causing acute harm. OLMC consultation should be sought in nearly all cases.

NOTES

- None

REFERENCES

- http://www.mylvad.com/content/ems

CP27 NORMAL CHILDBIRTH PROCEDURE

INDICATIONS
• Imminent or in progress out of hospital delivery

CONTRAINDICATIONS
• None

CAUTIONS
• Ensure appropriate PPE

EQUIPMENT
• 2 - OB Kits • Handtevy Bag • Airway Bag

PROCEDURE

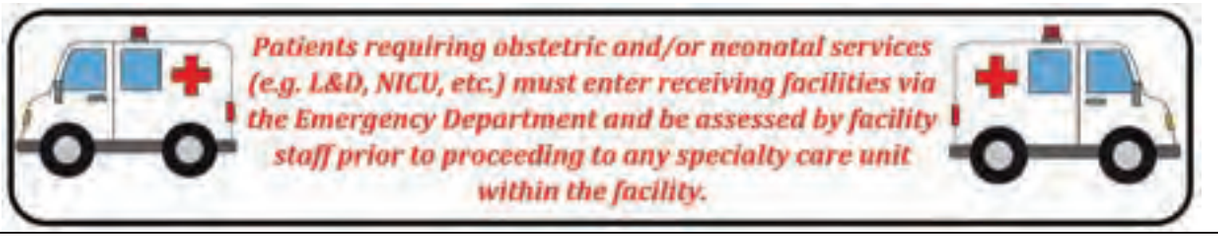
- Normal Childbirth Procedure:
  - Position patient supine, knees drawn up and buttocks elevated
  - Use sterile or aseptic technique
  - Coach patient to breathe deeply between contractions and to PUSH with contractions
    - Upon crowning, control the head with gentle pressure and support during delivery. If the cord is looped (nuchal) around the neck, gently slip it over the newborns head. If unable to do so, clamp and cut the cord

"Nuchal Cord"

  - Suction mouth then the nose ("M" before "N") of the newborn as soon as possible using bulb syringe
  - With gentle pressure, guide the infant's head downward to deliver the anterior shoulder and then upward to release the posterior shoulder
  - Upon delivery, hold the newborn firmly in head dependent position to facilitate drainage of secretions.
  - Clear the airway of any secretions with sterile gauze and repeat suction of the mouth and then the nose ("M" before "N") , if needed
  - Apply two clamps to umbilical cord after it stops pulsating.
    - Place the first one approximately 10 inches from the infant and the second one 2 – 3 inches proximal to the first clamp (7 – 8 inches from the newborns abdomen).
  - Cut the cord between the clamps and check for umbilical cord bleeding. If there is evidence of bleeding, apply additional clamps as needed
  - Dry infant and wrap in warm, dry blankets. Place cap to cover the newborns head
  - Allow the mother to hold the newborn if no signs and symptoms of distress prior to transport

- Document the newborns gender, time of birth and geographical location
- If resuscitation is required, Ref. P5

- Delivery of the Placenta (*Do Not Delay Transport*)
  - As the placenta delivers, encourage the mother to push with contractions
  - Never "pull on" the umbilical cord to assist with placenta delivery
  - Place the placenta in a plastic bag or container and transport with the motheR



COMPLICATIONS
• Prolapsed Cord – Ref. M11 • Breech, failure to progress, shoulder dystocia • Hemorrhage • Perineal injury

NOTES
• Ensure use of appropriate PPE

REFERENCES
•

CP28 RESPONDER MEDICAL SCREENING

Objective
• To ensure members' health and safety through appropriate medical screening before and after strenuous activities.

Procedure

- **Member Pre-Screening – Recommended prior to emergency operations or training exercises that pose a potential safety or health risk to members as determined by agency Incident Commander/Lead Instructor:**
  - Assess for any potential contraindications to participation including:
    - Current or recent illness (less than 72 hrs.) such as GI or Respiratory that predisposes to dehydration.
    - Any recent (less than 48 hrs.) change in prescription medication or OTC use.
    - Any unusual skin color and temperature or open sores/rashes
  - Obtain and document baseline vital signs:
    - Normal Mental Status
    - Blood Pressure Max: SBP less than 160 AND DBP less than 100
    - HR max: 100 bpm
    - Resp Max: 20
    - sPO2 min (if available): greater than 94%
    - Temp max (if available): 100.6 F
  - Concerns related to participation shall be relayed through chain of command for disposition

- **Member Post-Screening – Recommended after emergency operations or training exercises that pose a potential safety or health risk to members as determined by agency Incident Commander/Lead Instructor:**
  - Assess general appearance of member including:
    - Mental status
    - Skin for color, temperature and condition
  - Initiate rest, cooling, oral hydration, and nutrition as needed.
  - Obtain initial and 20 minute vital signs including at a minimum: BP, HR, and RR.
  - Document responder medical screening participation and disposition (Ref. CT26)
  - Acceptable post-screening parameters to complete medical screening are:
    - Asymptomatic
    - Normal Mental Status
    - Blood Pressure: SBP less than 160 AND DBP less than 100
    - HR: less than 100 bpm
    - RR: less than 20
    - sPO2 (if available): greater than 94%
    - Temp (if available): less than 100.6 F

- **Additional Member Rehabilitation/Medical Treatment:**
  - If any significant concerns on initial Post-Screening or any symptoms/complaints member shall be considered a patient and treatment initiated per PCEMS MOM.

- If acceptable parameters are not met by 20 minutes in post-screening and member remains asymptomatic, up to an additional 10-minute period of rest/rehab may be undertaken. If acceptable parameters are not met by the end of the second rest period proceed as follows:
  - If significant VS abnormalities or ANY complaints, member shall be considered a patient and treated per PCEMS MOM.
  - If only minor VS abnormality (no more than one VS mildly outside parameter and ASYMPTOMATIC member may be referred to agency command staff for disposition.
  - At all times, the Pinellas County Certified EMT or Paramedic conducting the medical screening shall have final determination as to when a member shall become a patient.

Complications

- Failure to recognize a potentially unfit team member during pre-screening
- Unrecognized team member injury or illness (toxic exposure, heat exhaustion/stroke, electrolyte abnormality/rhabdomyolysis/dehydration, cardiovascular injury/instability)

References

- Pinellas County 600 Series 600-12
- https://sphhp.buffalo.edu/rehabilitation-science.html
- NFPA 1584
- OSHA Chemical Protective Clothing Technical Manual Section 8, Chapter 1

FORMULARY

FORMULARY

F1 ADENOSINE

Trade Name	Adenocard, Adenoscan	
Class(es)	Antiarrhythmic	
Action(s)	Slows conduction through AV & SA nodes. Can interrupt the reentry pathways through AV node	
Indication(s)	Convert PSVT and PSVT with accessory bypass tracts (Wolff-Parkinson-White Syndrome) to sinus rhythm	
Contraindication(s)	Hypersensitivity to the drug, AV block, preexisting 2nf/3rd degree heart block or sick sinus rhythm without pacemaker	
Precaution(s)	Asthmatics, unstable angina, stenotic valve disease, hypovolemia, hepatic, and renal failure	
Pharmacokinetics	**Onset:** 20 – 30 seconds	**Duration:** N/A
Routes of Administration	IV	
Technique for Administration	Rapid bolus over 1 – 2 seconds. Administer as proximally as possible & follow with rapid 0.9% Sodium Chloride flush	
PEARLS	• Prior to administration – advise patient this will make you feel strange • Start ECG printer just prior to IV administration • Continue printing during IV administration through post administration (10 secs.) • Adverse effects are generally self-limiting • At time of conversion to normal sinus rhythm, PVCs, PACs, sinus bradycardia and sinus tachycardia in addition to various degrees of AV block could be seen on the ECG. Usually only last a few seconds and resolve without intervention	
Y-Site Compatibility	N/A	
Interactions	N/A	
Reference	Pending	

F2 ALBUTEROL SULFATE

Trade Name	Accuneb, Novosalmol, ProAir HFA, Proventil, Proventil HFA, ReliOn Ventolin HFA, Ventolin, Ventolin HFA, VoSpire ER	
Class(es)	Bronchodilator (respiratory smooth muscle relaxant); Beta-adrenergic agonist	
Action(s)	Selective beta2-adrenergic agonist that acts prominently on smooth muscles of the trachea, bronchi, uterus, and vascular supply to skeletal muscles. Inhibits histamine release. Produces bronchodilation by relaxing smooth muscles of the bronchial tree	
Indication(s)	Relieve bronchospasm associated with acute/chronic asthma, bronchitis, or another reversible obstructive airway disease	
Contraindication(s)	Albuterol or Levalbuterol hypersensitivity; congenital long QT syndrome	
Precaution(s)	Cardiovascular disease, hypertension, older adults, history of seizures	
Pharmacokinetics	**Onset:** 5 – 15 minutes	**Duration:** 3 – 6 hours
Routes of Administration	Inhalation	
Technique for Administration	N/A	
PEARLS	• Continuous one on one coaching with the patient will improve effectiveness of the medication	
Y-Site Compatibility	N/A	
Interactions	N/A	
Reference	Pending	

F3 AMIODARONE HYDROCHLORIDE

Trade Name	Cordarone, Nexterone, Pacerone	
Class(es)	Class III anti-arrhythmic	
Action(s)	Acts directly on all cardiac tissues by prolonging duration of action potential and refractory period. Slows conduction time through the AV node and can interrupt the re-entry pathways through the AV node. Has anti-anginal and anti-adrenergic properties	
Indication(s)	Amiodarone injection is an antiarrhythmic agent indicated for initiation of treatment of frequently recurring ventricular fibrillation (VF) and hemodynamically unstable ventricular tachycardia (VT) in patient's refractory to other therapy	
Contraindication(s)	Known hypersensitivity to any of the components of amiodarone, including iodine, cardiogenic shock, marked sinus bradycardia, second- or third-degree atrio-ventricular (AV) block unless a functioning pacemaker is available.	
Precaution(s)	Hypotension, bradycardia and AV block, proarrhythmia	
Pharmacokinetics	**Onset:** Unavailable	**Duration:** Unavailable
Routes of Administration	IV	
Technique for Administration	N/A	
PEARLS	• Monitor BP carefully during infusion and slow the infusion if significant hypotension occurs • Bradycardia should be treated by slowing the infusion or discontinuing it if necessary • Monitor heart rate, rhythm and BP until drug response has stabilized	
Y-Site Compatibility	Aminophylline, amoxicillin, atenolol, digoxin, heparin, levofloxacin, magnesium sulfate, sodium bicarbonate	
Interactions	• Significantly decreases digoxin levels, enhances pharmacological effects and toxicities of disopyramide, procainamide, quinidine, flecanide, lidocaine, verapamil, diltiazem • Fentanyl may cause bradycardia or hypotension	
Reference	Pending	

F4 ASPIRIN

Trade Name	Alka-Seltzer, A.S.A., Bayer, Bayer Children's, Ecotrin, St. Joseph's	
Class(es)	Salicylate, antipyretic, antiplatelet	
Action(s)	Produces analgesia, anti-inflammatory and anti-pyretic effects and reduces platelet aggregation	
Indication(s)	Acute coronary syndrome	
Contraindication(s)	Hypersensitivity to salicylates; sensitivity to other NSAIDs; acute bronchospasm; head trauma, increased intracranial pressure; intracranial bleeding; chronic urticaria; acute GI ulceration, bleeding or other problems; pregnancy; lactation	
Precaution(s)	Immunosuppressed individuals; asthma; GI disease; anemia	
Pharmacokinetics	**Onset:** Unavailable	**Duration:** Unavailable
Routes of Administration	Oral	
Technique for Administration	N/A	
PEARLS	Bleeding time is prolonged 3 – 8 days (life of exposed platelets) following a single 325 mg dose of aspirin	
Y-Site Compatibility	N/A	
Interactions	Anticoagulants increase the risk of bleeding	
Reference	Pending	

F5 ATROPINE

Trade Name	N/A	
Class(es)	Anticholinergic; muscarinic; antiarrhythmic	
Action(s)	Selectively blocks all muscarinic responses to acetylcholine (ach), whether excitatory or inhibitory. Antisecretory action (vagolytic effect) suppresses sweating, lacrimation, salivation & secretions from the nose, mouth, pharynx and bronchi. Block vagal impulse to heart with resulting decrease in AV conduction time, increase in heart rate and cardiac output & shortened PR interval. Produces mydriasis.	
Indication(s)	Symptomatic bradycardia, organophosphate poisoning	
Contraindication(s)	Tachycardia secondary to cardiac insufficiency; acute hemorrhage; acute MI	
Precaution(s)	Myocardial infarction, hypertension, hypotension, coronary artery disease, CHF, tachyarrhythmia, older adults	
Pharmacokinetics	**Onset:** Unavailable	**Duration:** Unavailable
Routes of Administration	IV, IM	
Technique for Administration	N/A	
PEARLS	• Heart rate is a sensitive indicator of the patient's response to Atropine • Be alert to changes in quality, rate and rhythm of the heart rate, respirations, changes in blood pressure and temperature • Initial paradoxical bradycardia following IV Atropine usually lasts only 1 – 2 minutes. It most likely occurs when administered slow via the IV route (over more than a minute) or when small doses (less than 0.5 mg are used	
Y-Site Compatibility	N/A	
Interactions	Procainamide, antihistamines	
Reference	Pending	

F6 CALCIUM CHLORIDE

Trade Name	N/A	
Class(es)	Electrolyte	
Action(s)	Effective cardiac stabilizer under conditions of hyperkalemia or resuscitation. Rapidly and effectively restores serum calcium levels in acute hypocalcemia. Ionizes readily & provides excess chloride ions that promote acidosis and temporary (1-2 days) diuresis secondary to excretion of sodium.	
Indication(s)	Hyperkalemia, hypocalcemia	
Contraindication(s)	Ventricular fibrillation, hypercalcemia, digitalis toxicity	
Precaution(s)	Digitalized patients; cardiac arrhythmias, dehydration, diarrhea, respiratory acidosis, myocardial infarction, hypertension, hypotension, coronary artery disease, CHF, tachyarrhythmias, older adults	
Pharmacokinetics	**Onset:** Unavailable	**Duration:** Unavailable
Routes of Administration	IV	
Technique for Administration	N/A	
PEARLS	• Monitor ECG and vital signs • Intravenous administration may be accompanied by cutaneous burning sensation and peripheral vasodilation, with moderate fall in blood pressure	
Y-Site Compatibility	Propofol, sodium bicarbonate	
Interactions	Other electrolytes	
Reference	Pending	

F7 DEXTROSE

Trade Name	Dextrose 5%, Dextrose 10%	
Class(es)	N/A	
Action(s)	N/A	
Indication(s)	Hypoglycemia, solution for IV medication drip	
Contraindication(s)	May be contraindicated in patients with known allergy to corn or corn products.	
Precaution(s)	Multiple doses of Dextrose injections may result in significant hypokalemia	
Pharmacokinetics	**Onset:** Unavailable	**Duration:** Unavailable
Routes of Administration	IV	
Technique for Administration	• DO NOT use plastic containers in series connections • Pressurizing intravenous solutions contained in flexible plastic containers to increase flow rates can result in air embolism if the residual air in the container is not fully evacuated prior to administration • Use of a vented intravenous administration set with the vent open could result in air embolism	
PEARLS	N/A	
Y-Site Compatibility	Dextrose should not be administered simultaneously with blood through the same administration set because of the possibility of pseudo agglutination or hemolysis	
Interactions	N/A	
Reference	Pending	

F8 DILTIAZEM

Trade Name	Cardizem	
Class(es)	Calcium channel blocking agent, antiarrhythmic, antihypertensive	
Action(s)	Inhibits calcium ion influx into vascular smooth muscle and myocardium, relaxing smooth muscle, decreasing peripheral vascular resistance, dilating coronary arteries and prolonging AV node refractory period	
Indication(s)	Atrial fibrillation, atrial flutter, supraventricular tachycardia	
Contraindication(s)	Known hypersensitivity to the drug; sick sinus syndrome (unless pacemaker is in place and firing); acute MI; severe hypotension (systolic BP < 90 or diastolic < 60); bleeding aneurysm	
Precaution(s)	SA node dysfunction, sick sinus syndrome with functioning pacemaker, right ventricular dysfunction, CHF, severe bradycardia, conduction abnormalities, older adults, pregnancy	
Pharmacokinetics	**Onset:** N/A	**Duration:** 2 – 3 hours
Routes of Administration	IV	
Technique for Administration	Give undiluted	
PEARLS	• Give as a bolus dose over 2 minutes • Pinellas County EMS utilizes a lower max dose than may be referenced	
Y-Site Compatibility	Aminophylline, diazepam, Methylprednisolone, sodium bicarbonate	
Interactions	Furosemide	
Reference	Pending	

F9 Diphenhydramine Hydrochloride

Trade Name	Allerdryl, Benadryl, Benadryl Dye-Free, Sleep Eze 3	
Class(es)	Antihistamine	
Action(s)	Non-selectively antagonizes central and peripheral histamine H1 receptors; suppresses the medullary cough center (antitussive); possesses anticholinergic properties, resulting in antidyskinetic, antiemetic and sedative effects	
Indication(s)	Hives, rashes and itching related to allergic conditions	
Contraindication(s)	Hypersensitivity to antihistamines of similar structure; lower respiratory tract symptoms	
Precaution(s)	Asthma; COPD; convulsive disorders; hypertension; cardiovascular disease; older adults; infants and young children	
Pharmacokinetics	**Onset:** 15 – 30 minutes	**Duration:** 4 – 7 hours
Routes of Administration	Intravenous, intramuscular, oral	
Technique for Administration	• Intravenous administration – give at a rate of 25 mg or fraction there of over one minute • Intramuscular administration – give deep into large muscle mass • Avoid perivascular or subcutaneous injections because of irritating effects	
PEARLS	Monitor for adverse reactions	
Y-Site Compatibility	Aminophylline, ampicillin	
Interactions	Alcohol, CNS depressants	
Reference	Pending	

F11 EPINEPHRINE

Trade Name	Adrenaline, EpiPen, Adrenaclick, Twinject	
Class(es)	Alpha and beta adrenergic agonist; cardiac stimulant; vasopressor	
Action(s)	Stimulates alpha and beta adrenergic receptors (sympathomimetic)	
Indication(s)	Restore cardiac rhythm in cardiac arrest; anaphylactic reactions; acute asthma attack; temporary relief of bronchospasm, mucosal congestion	
Contraindication(s)	Hypersensitivity to drug; hemorrhagic, traumatic or cardiogenic shock; arrhythmias	
Precaution(s)	Older adults; hypertension; diabetes mellitus	
Pharmacokinetics	**Onset:** 3 - 5 minutes	**Duration:** N\A
Routes of Administration	Intravenous, subcutaneous, intramuscular	
Technique for Administration	• Protect from exposure to light at all times • DO NOT remove ampule or vial from carton until ready to use	
PEARLS	N/A	
Y-Site Compatibility	N/A	
Interactions	May increase hypotension in circulatory collapse or hypotension caused by phenothiazines. Additive toxicities with other sympathomimetics	
Reference	Pending	

F12 ETOMIDATE

Trade Name	Amidate	
Class(es)	Ultrashort-acting non-barbiturate hypnotic	
Action(s)	Induces sedation and amnesia	
Indication(s)	Induction of general anesthesia for facilitation of airway management	
Contraindication(s)	Hypersensitivity to drug	
Precaution(s)	Older adults; hypertension; diabetes mellitus	
Pharmacokinetics	**Onset:** within 60 seconds	**Duration:** N\A
Routes of Administration	Intravenous	
Technique for Administration	• Intravenous administration – inject over a period of 30 – 60 seconds • Inject into large forearm vein	
PEARLS	Handled in the same manner as all controlled substances	
Y-Site Compatibility	Vecuronium	
Interactions	N/A	
Reference	Pending	

F13 FENTANYL CITRATE

Trade Name	Sublimaze	
Class(es)	Analgesic; opiate agonist	
Action(s)	Synthetic, potent agonist analgesic that causes analgesia and sedation.	
Indication(s)	Short acting analgesia for pain and sedation	
Contraindication(s)	N/A	
Precaution(s)	Head injuries, older adults, angina, hypotension, bradyarrhythmias	
Pharmacokinetics	**Onset:** Immediate intravenous, 7 – 15 minutes intramuscular	**Duration:** 30 – 60 minutes intravenous, 1 – 2 hours intramuscular
Routes of Administration	Intravenous, intranasal, intramuscular	
Technique for Administration	• l Monitor vital signs and observe patient for signs of skeletal and thoracic muscle (depressed respirations) rigidity and weakness	
PEARLS	DEA Class II Controlled Substance	
Y-Site Compatibility	N/A	
Interactions	Alcohol and other CNS depressants potentiate effects	
Reference	Pending	

F14 GLUCAGON HYDROCHLORIDE

Trade Name	Glucagen	
Class(es)	Antihypoglycemic	
Action(s)	Increases blood glucose secondary to gluconeogenesis, which is the breakdown of glycogen to glucose in the liver. Action in hypoglycemia relies on presence of adequate liver glycogen stores.	
Indication(s)	Hypoglycemia with the inability to obtain vascular access	
Contraindication(s)	Hypersensitivity to glucagon or protein compounds; depleted glycogen stores in liver	
Precaution(s)	Cardiac disease; malnutrition; children	
Pharmacokinetics	**Onset:** 5 – 20 minutes	**Duration:** 1 – 1.5 hours
Routes of Administration	Intravenous, intranasal, intramuscular	
Technique for Administration	Intravenous administration – give over 1 minute	
PEARLS	• Patient usually awakens from (diabetic) hypoglycemic coma 5 – 20 minutes after glucagon injection. • Give PO carbohydrate as soon as possible after patient regains consciousness	
Y-Site Compatibility	N/A	
Interactions	N/A	
Reference	Pending	

F15 HYDROXOCOBALAMIN

Trade Name	Cyanokit	
Class(es)	Antidote	
Action(s)	Binds cyanide to form nontoxic cyanocobalamin that is then excreted in urine	
Indication(s)	Treatment of known or suspected cyanide poisoning	
Contraindication(s)	None	
Precaution(s)	Known anaphylactic reactions to Hydroxocobalamin or cyanocobalamin	
Pharmacokinetics	**Onset:** 5 – 20 minutes	**Duration:** 1 – 1.5 hours
Routes of Administration	Intravenous	
Technique for Administration	• Draw one complete PEP kit while setting up to administer Hydroxocobalamin • Following the addition of the diluent to the lyophilized powder, the vial should be repeatedly inverted and rocked, NOT SHAKEN, for at least 60 seconds prior to infusion. • Intravenous administration – give initial dose over 15 minutes • Cyanokit requires a dedicated intravenous line for administration	
PEARLS	• The recommended diluent is 0.9% Sodium Chloride l Lactated Ringers or Dextrose 5% in Water have also been found to be compatible l Give PO carbohydrate as soon as possible after patient regains consciousness	
Y-Site Compatibility	Sodium Nitrite, Sodium Thiosulfate, blood products	
Interactions	N/A	
Reference	Pending	

F16 IPRATROPIUM BROMIDE

Trade Name	Atrovent	
Class(es)	Anticholinergic; antimuscarinic; bronchodilator	
Action(s)	Bronchodilation by inhibiting acetylcholine at its receptor sites, thereby blocking bronchoconstriction. Also abolishes vagally mediated reflex bronchospasm triggered by such non-specific agents as cigarette smoke, inert dusts, cold air, and a range of inflammatory mediators.	
Indication(s)	Adjunct to Albuterol in asthma/COPD	
Contraindication(s)	Hypersensitivity to Atropine	
Precaution(s)	Pregnancy	
Pharmacokinetics	**Onset:** N/A	**Duration:** 4 – 6 hours
Routes of Administration	Inhalation	
Technique for Administration	N/A	
PEARLS	N/A	
Y-Site Compatibility	N/A	
Interactions	N/A	
Reference	Pending	

F17 LIDOCAINE HYDROCHLORIDE

Trade Name	N/A	
Class(es)	Class IB antiarrhythmic; local anesthetic	
Action(s)	Exerts antiarrhythmic action by suppressing automaticity in His-Purkinje system. It decreases pain through a reversible nerve conduction blockade.	
Indication(s)	Ventricular dysrhythmias; analgesia prior to infusion of fluids via intraosseous needle in conscious patient	
Contraindication(s)	History of hypersensitivity to amide-type local anesthetics, supraventricular arrhythmias; severe degrees of sinoatrial, atrio-ventricular and intraventricular heart block.	
Precaution(s)	CHF, marked hypoxia, respiratory depression, hypovolemia, shock	
Pharmacokinetics	**Onset:** 45 – 90 seconds	**Duration:** 10 – 20 minutes
Routes of Administration	Inhalation, intraosseous	
Technique for Administration	N/A	
PEARLS	Monitor blood pressure and ECG constantly; assess respiratory and neurologic status frequently to avoid potential overdosage and toxicity.	
Y-Site Compatibility	N/A	
Interactions	N/A	
Reference	Pending	

F18 MAGNESIUM SULFATE

Trade Name	N/A	
Class(es)	Electrolyte	
Action(s)	Smooth muscle relaxant and anticonvulsant in labor and delivery and cardiac disorders.	
Indication(s)	Control seizures in toxemia of pregnancy, epilepsy; Prophylaxis and treatment of hypomagnesemia; Severe acute asthma	
Contraindication(s)	Myocardial damage; AV heart block; cardiac arrest except for certain arrhythmias; hypermagnesemia	
Precaution(s)	Acute MI; pregnancy	
Pharmacokinetics	**Onset:** 1 hour intramuscular	**Duration:** 30 minutes intravenous
Routes of Administration	Intravenous, intramuscular	
Technique for Administration	N/A	
PEARLS	• Observe constantly when administered IV • Check blood pressure and pulse every 10-15 minutes or more often if indicated • Monitor respiratory rate close	
Y-Site Compatibility	Amiodarone, ciprofloxacin, haloperidol	
Interactions	Sodium bicarbonate, neuromuscular blocking agents add to respiratory depression and apnea	
Reference	Pending	

F19 METHYLPREDNISOLONE SODIUM SUCCINATE

Trade Name	Solu-Medrol	
Class(es)	Glucocorticoid	
Action(s)	Anti-inflammatory, immune-suppressant	
Indication(s)	Asthma/COPD (chronic inflammatory conditions); Acute allergic/anaphylactic reactions	
Contraindication(s)	Hypersensitivity to corticosteroid drugs	
Precaution(s)	GI ulceration or disease; hypertension; CHF; diabetes	
Pharmacokinetics	**Onset:** N/A	**Duration:** N/A
Routes of Administration	Intravenous, intramuscular	
Technique for Administration	Intramuscular administration - deep into a large muscle mass (not deltoid) l Give each intravenous dose over 2 – 3 minute	
PEARLS	N/A	
Y-Site Compatibility	Amiodarone, ciprofloxacin, haloperidol	
Interactions	Furosemide, Thiazide diuretics increase potassium loss	
Reference	Pending	

F20 MIDAZOLAM HYDROCHLORIDE

Trade Name	Versed	
Class(es)	benzodiazepine; anticonvulsant; anxiolytic	
Action(s)	Produces CNS depression resulting in sedation, hypnosis, skeletal muscle relaxation and anticonvulsant activity dependent on the dosage.	
Indication(s)	Sedative, impair memory, induce hypnosis	
Contraindication(s)	Intolerance to benzodiazepines; shock; coma; acute alcohol intoxication; status asthmaticus; pregnancy	
Precaution(s)	COPD, cardiac disease, dementia, psychosis, CHF, bipolar disorder, older adults	
Pharmacokinetics	**Onset:** 1 – 5 minutes IV, 5 – 15 minutes IM	**Duration:** < 2 hours IV, 1 – 6 hours IM
Routes of Administration	Intravenous, intramuscular, intranasal	
Technique for Administration	• Intramuscular administration - deep into a large muscle mass (not deltoid) • Intranasal administration – 1 mL max volume of drug per nare	
PEARLS	DEA Class IV Controlled Substance	
Y-Site Compatibility	Amoxicillin, bumetanide, furosemide, dexamethasone, sodium bicarbonate, thiopental	
Interactions	Lactated ringers, pentobarbital, prochlorperazine	
Reference	Pending	

F21 NALOXONE HYDROCHLORIDE

Trade Name	Narcan	
Class(es)	Opiate antagonist	
Action(s)	Competitively inhibits opiate receptors	
Indication(s)	Narcotic overdose	
Contraindication(s)	Hypersensitivity to naloxone, naltrexone, nalmefene	
Precaution(s)	Known or suspected narcotic dependence; brain tumor; head trauma; increased ICP; seizure disorders; pregnancy	
Pharmacokinetics	**Onset:** 2 minutes	**Duration:** 45 minutes
Routes of Administration	Intravenous, intramuscular, intranasal	
Technique for Administration	N/A	
PEARLS	• May precipitate opiate withdrawl if administered to a patient who is opiate dependent • Effects of Naloxone usually diminish 20 – 40 minutes after administration	
Y-Site Compatibility	N/A	
Interactions	Reverses analgesic effects of narcotic (opiate) agonists and narcotic (opiate) agonist-antagonist	
Reference	Pending	

F22 NITROGLYCERIN AEROSOL

Trade Name	NitroMist, Nitrostat	
Class(es)	Nitrate vasodilator	
Action(s)	Vasodilator which has effects on both arteries and veins	
Indication(s)	Angina, CHF, acute coronary syndrome	
Contraindication(s)	Hypersensitivity to drug, severe anemia, increased ICP, hypovolemia	
Precaution(s)	Pregnancy	
Pharmacokinetics	**Onset:** 2 minutes	**Duration:** 30 minutes
Routes of Administration	Sublingual	
Technique for Administration	• Bottle requires an initial priming of 10 sprays. The bottle will then stay primed for 6 weeks. If not used in 6 weeks, it can be re-primed with 2 sprays • Do Not shake the bottle • Spray can be released onto or under the tongue • When the liquid reaches the bottom of the hole on the side of the bottle, the remaining doses will have less than the label content	
PEARLS	• Monitor patient closely for change in consciousness and for dysrhythmias • Approximately 50% of all patients experience mild to severe headaches following Nitroglycerin • Supervise ambulation – postural hypotension is possible • Check patient for transdermal patch or ointment in place prior to starting Nitroglycerin	
Y-Site Compatibility	N/A	
Interactions	Antihypertensive agents compound hypotensive effects; vasodilating effects may be enhanced by sildenafil, vardenafil or tadalafil	
Reference	Pending	

F23 NOREPINEPHRINE

Trade Name	Levophed
Class(es)	Sympathomimetic
Action(s)	functions as a peripheral vasoconstrictor (alpha-adrenergic action) and as an inotropic stimulator of the heart and dilator of coronary arteries (beta-adrenergic action).
Indication(s)	For blood pressure control in certain acute hypotensive states (e.g., pheochromocytomectomy, sympathectomy, poliomyelitis, spinal anesthesia, myocardial infarction, septicemia, blood transfusion, and drug reactions). As an adjunct in the treatment of cardiac arrest and profound hypotension.
Contraindication(s)	LEVOPHED should not be given to patients who are hypotensive from blood volume deficits except as an emergency measure to maintain coronary and cerebral artery perfusion until blood volume replacement therapy can be completed. If LEVOPHED is continuously administered to maintain blood pressure in the absence of blood volume replacement, the following may occur: severe peripheral and visceral vasoconstriction, decreased renal perfusion and urine output, poor systemic blood flow despite "normal" blood pressure, tissue hypoxia, and lactate acidosis. LEVOPHED should also not be given to patients with mesenteric or peripheral vascular thrombosis (because of the risk of increasing ischemia and extending the area of infarction) unless, in the opinion of the attending physician, the administration of LEVOPHED is necessary as a life-saving procedure. Cyclopropane and halothane anesthetics increase cardiac autonomic irritability and therefore seem to sensitize the myocardium to the action of intravenously administered epinephrine or norepinephrine. Hence, the use of LEVOPHED during cyclopropane and halothane anesthesia is generally considered contraindicated because of the risk of producing ventricular tachycardia or fibrillation. The same type of cardiac arrhythmias may result from the use of LEVOPHED in patients with profound hypoxia or hypercarbia.

Precaution(s)	**Avoid Hypertension**: Because of the potency of LEVOPHED and because of varying response to pressor substances, the possibility always exists that dangerously high blood pressure may be produced with overdoses of this pressor agent. It is desirable, therefore, to record the blood pressure every two minutes from the time administration is started until the desired blood pressure is obtained, then every five minutes if administration is to be continued. The rate of flow must be watched constantly, and the patient should never be left unattended while receiving LEVOPHED. Headache may be a symptom of hypertension due to overdosage.	
Pharmacokinetics	**Onset:** Rapid	**Duration:** 1-2 minutes
Routes of Administration	IV	
PEARLS	An IV drip chamber or other suitable metering device is essential to permit an accurate estimation of the rate of flow in drops per minute. After observing the response to an initial dose of 2 mL to 3 mL (from 8 mcg to 12 mcg of base) per minute, adjust the rate of flow to establish and maintain a low normal blood pressure (usually 80 mm Hg to 100 mm Hg systolic) sufficient to maintain the circulation to vital organs. In previously hypertensive patients, it is recommended that the blood pressure should be raised no higher than 40 mm Hg below the preexisting systolic pressure. The average maintenance dose ranges from 0.5 mL to 1 mL per minute (from 2 mcg to 4 mcg of base).	
Y-Site Compatibility	N/A	
Interactions	N/A	
Reference	Pending	

F24 ONDANSETRON

Trade Name	Zofran, Zofran ODT, Zuplenz, Ondansetron ODT	
Class(es)	5-HT3 Antagonist, Antiemetic	
Action(s)	Prevents nausea and vomiting	
Indication(s)	Nausea and / or vomiting	
Contraindication(s)	Hypersensitivity to Ondansetron	
Precaution(s)	QT prolongation or pregnancy, concomitant use of apomorphine	
Pharmacokinetics	**Onset:** Unavailable	**Duration:** Unavailable
Routes of Administration	Intravenous, intramuscular, oral	
Technique for Administration	• Do NOT push orally disintegrating tablet through blister foil. Peel foil back and remove tablet. Tablets will disintegrate with/without liquid l Peel open the paper of the outer packaging that displays the product information to access the syringe. Do NOT pop the syringe through l Intravenous administration – give dose over 2 – 5 minutes l Assure that the needleless luer access device is securely attached before beginning the injection	
PEARLS	• Monitor cardiovascular status, especially in patients with a history of coronary artery disease.	
Y-Site Compatibility	Acyclovir, allopurinol, aminophylline, furosemide, lorazepam, methylprednisolone, sodium bicarbonate, TPN.	
Interactions	Rifampin	
Reference	Pending	

F25 ORAL GLUCOSE

Trade Name	Glutose, Insta-Glucose, Level Life Fast Acting Glucose Gel	
Class(es)	Monosaccharide carbohydrate	
Action(s)	Provides an oral source of glucose rapidly utilized for cellular metabolism	
Indication(s)	Conscious patient with signs and/or symptoms of hypoglycemia	
Contraindication(s)	Inability to swallow (aspiration risk), altered level of consciousness	
Precaution(s)	Cannot be absorbed sublingually or buccally	
Pharmacokinetics	**Onset:** within 10 minutes	**Duration:** Unavailable
Routes of Administration	Oral	
Technique for Administration	N/A	
PEARLS	N/A	
Y-Site Compatibility	N/A	
Interactions	N/A	
Reference	Pending	

F26 SODIUM BICARBONATE 8.4%

Trade Name	N/A	
Class(es)	Fluid and electrolyte balance agent	
Action(s)	Short-acting, potent systemic antacid; rapidly neutralizes systemic acidosis	
Indication(s)	Systemic alkalinizer to correct metabolic acidosis	
Contraindication(s)	Hypocalcemia, metabolic alkalosis, respiratory alkalosis, vomiting, diuresis	
Precaution(s)	Pregnancy, hypertension, renal disease, hyperkalemia, older adults	
Pharmacokinetics	**Onset:** 15 minutes	**Duration:** 1 – 2 hours
Routes of Administration	IV	
Technique for Administration	N/A	
PEARLS	Do NOT use Sodium Bicarbonate as an antacid	
Y-Site Compatibility	Allopurinol, Amiodarone, Calcium chloride, Diltiazem, Ciprofloxacin, Lidocaine, Midazolam, Ondansetron, Verapamil	
Interactions	N/A	
Reference	Pending	

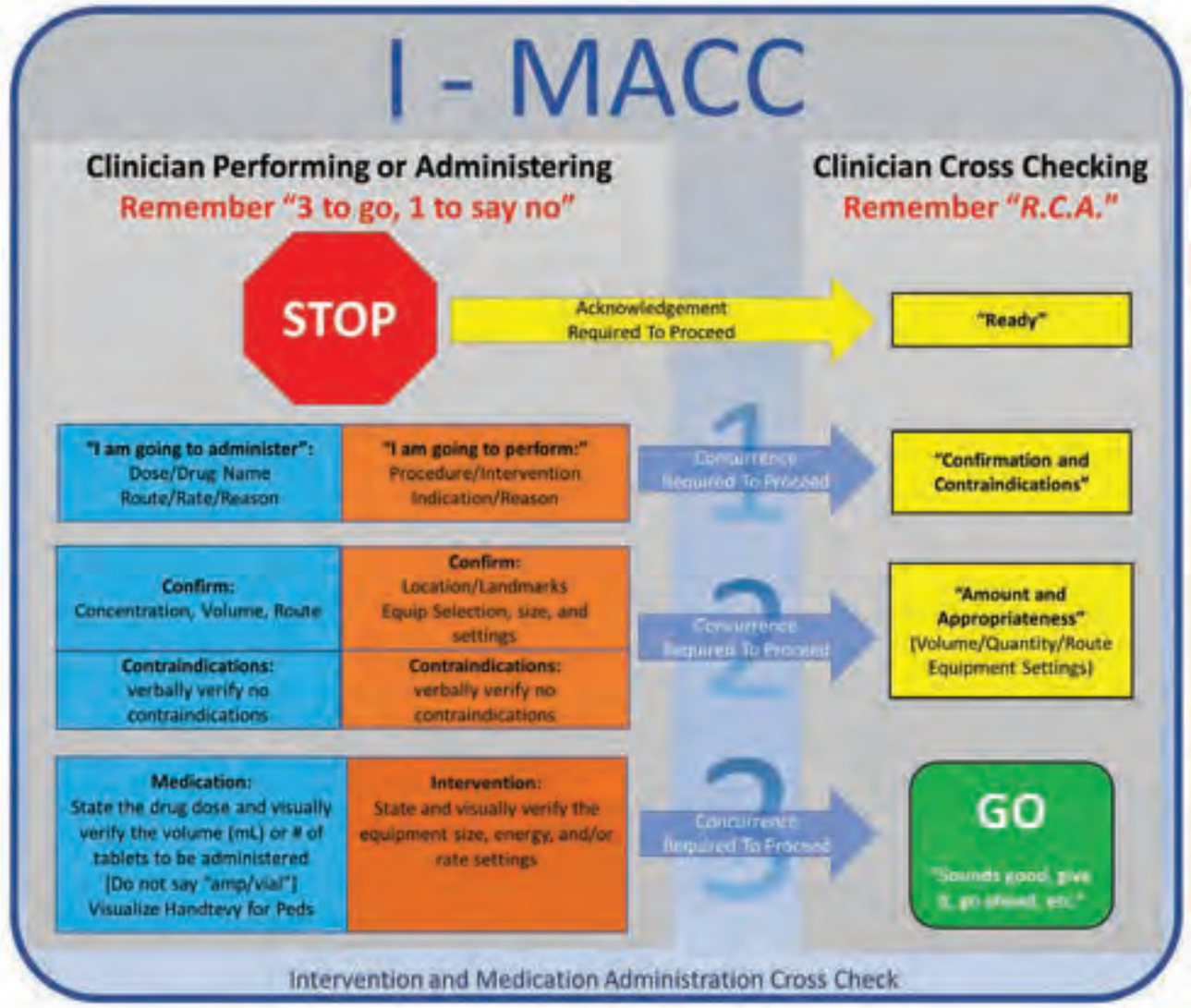
F28 SODIUM CHLORIDE (0.9% IV Fluid) FOR INJECTION

Trade Name	N/A	
Class(es)	Electrolyte	
Action(s)	N/A	
Indication(s)	Source of water and electrolytes	
Contraindication(s)	N/A	
Precaution(s)	CHF	
Pharmacokinetics	**Onset:** Unavailable	**Duration:** Unavailable
Routes of Administration	IV	
Technique for Administration	• Do not use plastic containers in series connections • Do not pressurize intravenous fluids contained in plastic containers	
PEARLS	N/A	
Y-Site Compatibility	Reference compatibility of each specific medication	
Interactions	Reference compatibility of each specific medication	
Reference	Pending	

CLINICAL TOOLS

CLINICAL TOOLS

CT1 INTERVENTION AND MEDICATION ADMINISTRATION CROSS CHECK (I-MACC)



CT2 KING AIRWAY SIZING

King Airway			
Tube Size	Size 3	Size 4	Size 5
Patient	4 – 5 ft.	5 – 6 ft.	6 – 7 ft.
Cuff Volume	40 – 55 mL	50 – 70 mL	60 – 80 mL

CT3 CARDIAC ARREST PIT CREW MODEL - ADULT

Position 2 – Airway/Ventilation
Paramedic (if available)

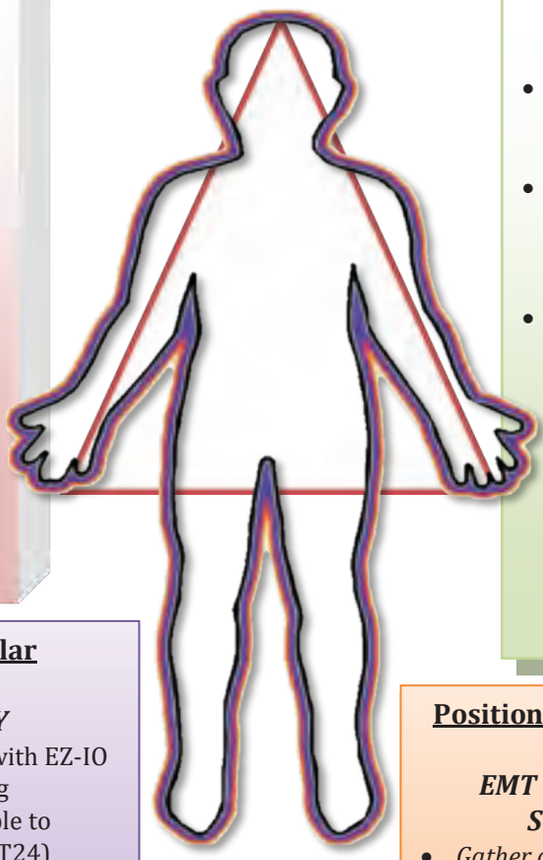
- Open/Clear Airway
- Position/Ready Monitor/AED during initial cycle of compressions
- Attach O2/EtCO2. Provide ventilations with BVM at appropriate ratio for number of rescuers
- Insert King Airway (Paramedic ONLY)/Confirm with EtCO2
- Provide ongoing ventilations 10-12/min.

Philips MRx/AED - Suction/Airway Bag

Philips MRx/AED - Suction/Airway Bag

Position 1 – Compress/Defib
EMT or Paramedic

- **Initiate Uninterrupted Compressions**
- Attached Monitor/AED during pauses for ventilations
- Deliver shock if indicated at conclusion of 1st two (2) min. cycle and on following cycles
- Continue providing uninterrupted high-quality compressions alternating with Position #3, verbally announcing count so all rescuers are prepared for switching compressors



Position 3 – Compress/Defib
EMT or Paramedic

- If present during initial cycle, assist Position #1 by attaching Monitor/AED
- Initiate uninterrupted compressions following initial rhythm/pulse check and shock delivery
- Deliver subsequent shocks as indicated, alternating with Position #1 on following cycles
- Continue providing uninterrupted high-quality compressions alternating with Position #1, verbally announcing count so all rescuers are prepared for switching compressors

Position 4 – Vascular Access/Meds
Paramedic ONLY

- Establish vascular access with EZ-IO (Ref. CP21) or IV/accessing indwelling catheter if unable to obtain IO (Ref. CP25 and CT24)
- Administer medications as indicated
- Assist with other ALS procedures as needed

Position 5 – Documentation/Family Liaison
EMT or Paramedic (Officer or Supervisor Preferred)

- *Gather and document patient information and pre-arrival/Bystander interventions*
- *Document EMS care provided*
- *Provide family updates*
- *Maintain overall situational awareness and prepare for transport logistics*

Medication Response Bag

ePCR

CT3 – CARDIAC ARREST PIT CREW MODEL – ADULT – CT3

CT4 CARDIAC ARREST PIT CREW MODEL – CHILD/INFANT

Philips MRx/AED - Suction/Airway Bag/Handtevy Bag

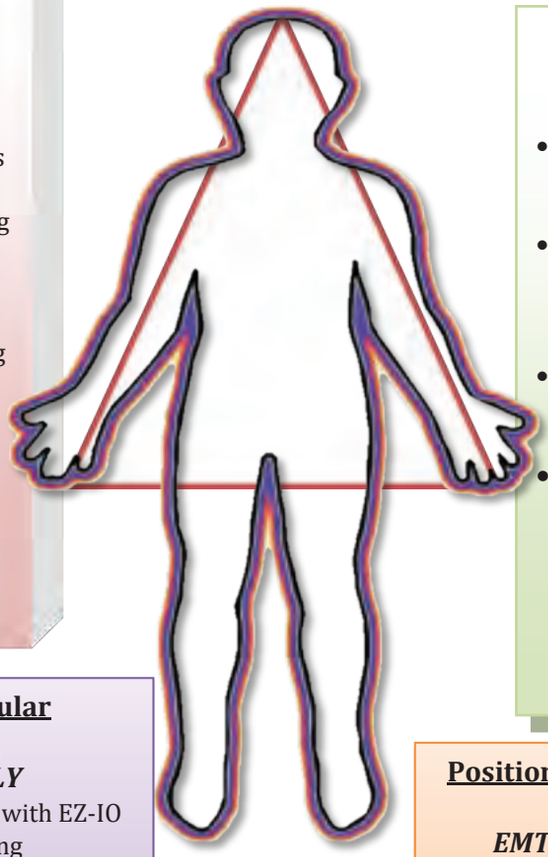
Position 2 – Airway/Ventilation
Paramedic (if available)

- Open/Clear Airway
- Position/Ready Monitor/AED during initial cycle of compressions
- Attach O2/EtCO2. Provide ventilations with BVM and adjunct at appropriate ratio for number of rescuers and age of
- Perform airway management if unable to adequately ventilate with BVM (Ref. CP3)
- Provide ongoing ventilations 12-20/min.

Philips MRx/AED - Suction/Airway Bag/Handtevy Bag

Position 1 – Compress/Defib
EMT or Paramedic

- **Initiate Uninterrupted Compressions**
- Attached Monitor/AED using age appropriate pads (ped key when indicated/available) during pauses for ventilations
- Deliver shock if indicated at conclusion of 1st two (2) min. cycle and on following cycles
- Continue providing uninterrupted high quality compressions alternating with Position #3, verbally announcing count so all rescuers are prepared for switching compressors



Position 3 – Compress/Defib
EMT or Paramedic

- If present during initial cycle, assist Position #1 by attaching Monitor/AED
- Initiate uninterrupted compressions following initial rhythm/pulse check and shock delivery
- Deliver subsequent shocks as indicated, alternating with Position #1 on following cycles
- Continue providing uninterrupted high-quality compressions alternating with Position #1, verbally announcing count so all rescuers are prepared for switching compressors

Position 4 – Vascular Access/Meds
Paramedic ONLY

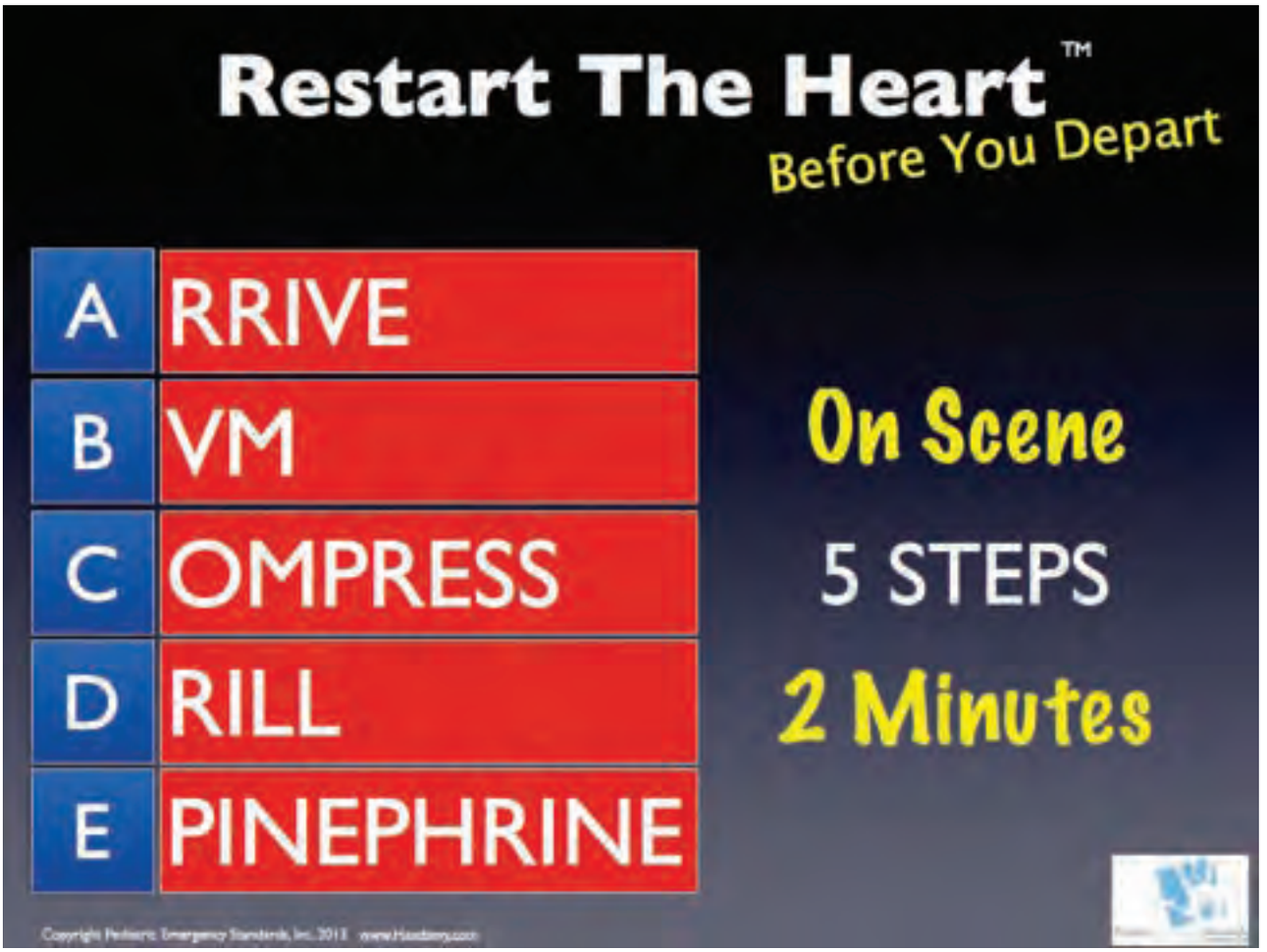
- Establish vascular access with EZ-IO (Ref. CP21) or IV/accessing indwelling catheter if unable to obtain IO (Ref. CP25 and CT24)
- Administer medications as indicated
- Assist with other ALS procedures as needed

Medication Response Bag

Position 5 – Documentation/Family Liaison
EMT or Paramedic (Officer or Supervisor Preferred)

- Provide family updates
- Gather and document patient information and pre-arrival/Bystander interventions
- Document EMS care provided
- Maintain overall situational awareness and prepare for transport logistics

ePCR

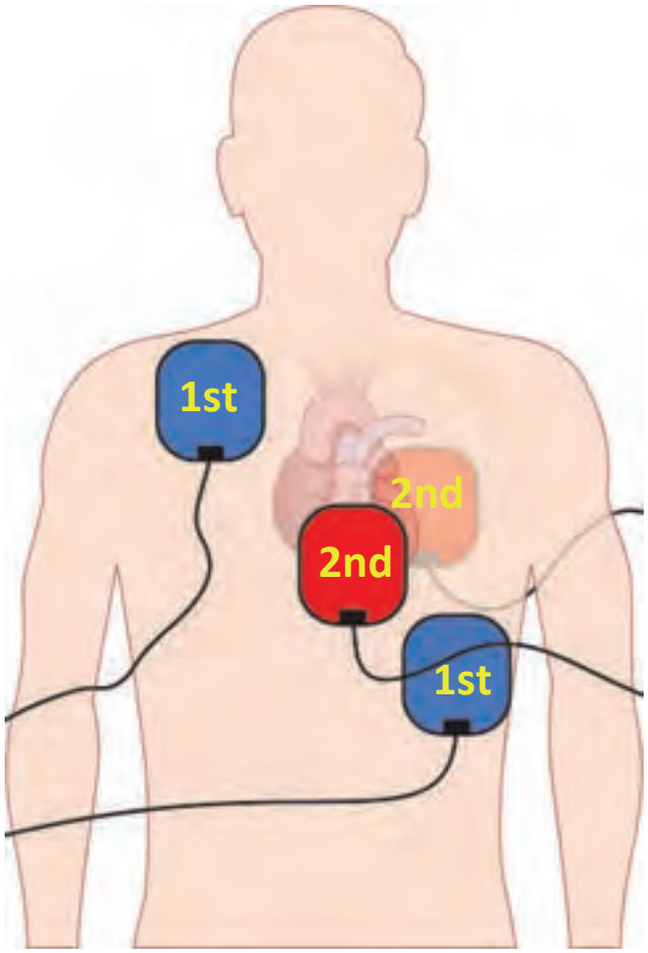

Restart The Heart™
Before You Depart
A RRIVE
B VM
C OMPRESS
D RILL
E PINEPHRINE
On Scene
5 STEPS
2 Minutes

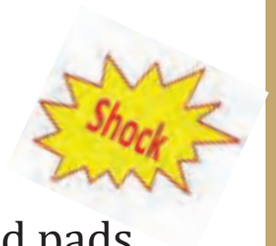
CT5 VECTOR CHANGE DEFIBRILLATION

WARNING

This procedure is performed with two sets of Philips Hands Free Pads and one MRx device

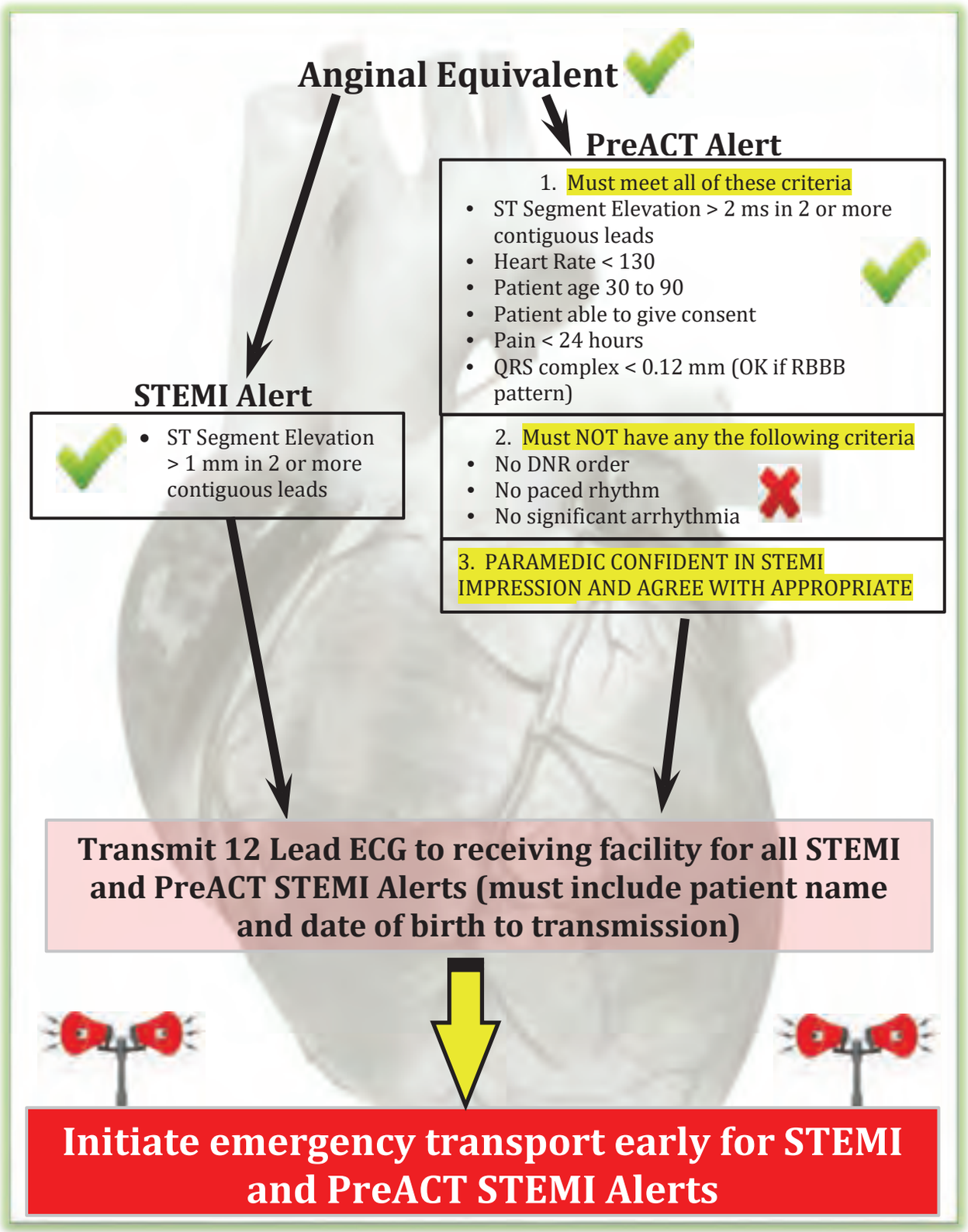
1. First set of pads is placed in standard apex-sternum orientation
2. Second set of pads is placed in an anterior-posterior positioning





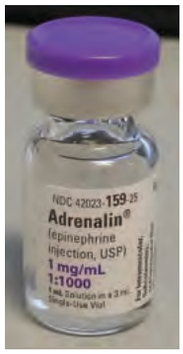
3. First shock is done through apex-sternum placed pads
4. Immediately, switch the MRx Therapy Cable to the anterior-posterior placed pads to provide the next shock

CT6 STEMI ALERT & PREACT STEMI ALERT CRITERIA



CT7 EPINEPHRINE DRIP INFUSION

OR



EPINEPHRINE DRIP INFUSION (1 mcg/mL)		
Mix 1 mg of Epinephrine in a 1000 mL Bag of 0.9% sodium chloride		
mcg/min	**gtt/min**	**Set Dial to (mL/hr)**
1	60	60
2	120	120
3	180	180
4	240	240
5	300	300

MEDICATION ADDED

PATIENT NAME: Susan B. Anthony

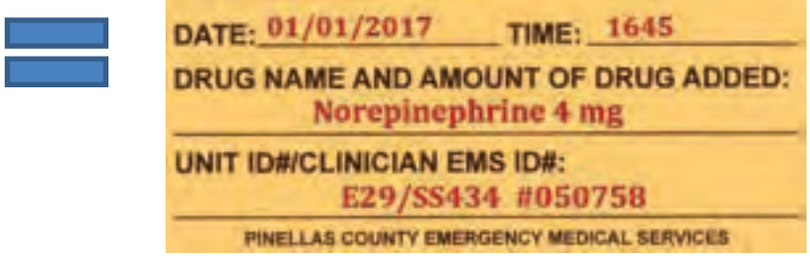
DATE: 01/01/2017 TIME: 1645

DRUG NAME AND AMOUNT OF DRUG ADDED:
Epinephrine 1 mg

UNIT ID#/CLINICIAN EMS ID#:
E29/SS434 #050758

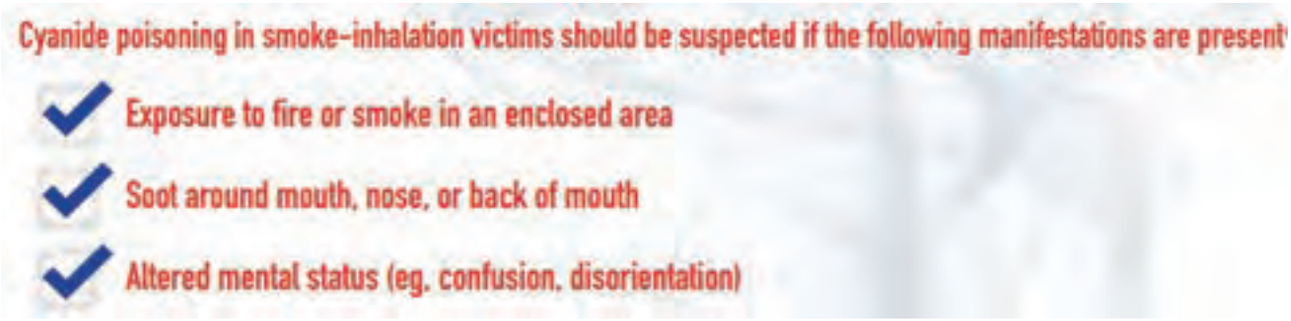
PINELLAS COUNTY EMERGENCY MEDICAL SERVICES

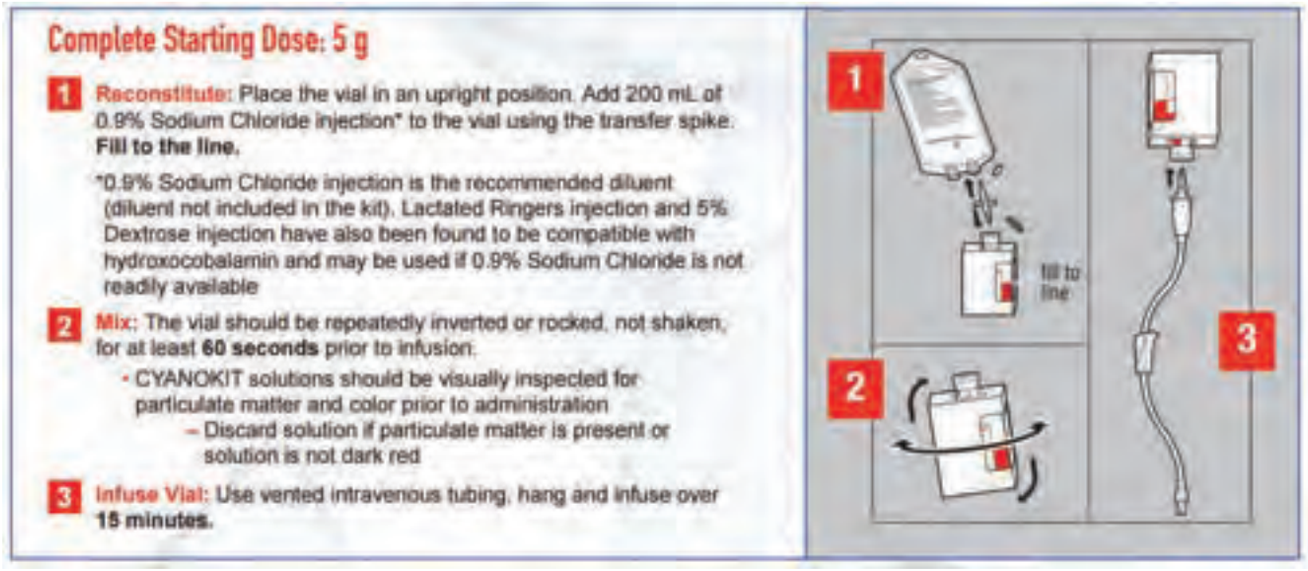
CT8 NOREPINEPHRINE DRIP INFUSION



NOREPINEPHRINE DRIP INFUSION (4 mcg/mL)		
Mix 4 mg of norepinephrine in a 1000 mL bag of 0.9% sodium chloride		
mcg/min	**gtt/min**	**Set Dial to (mL/hr)**
1	15	15
2	30	30
3	45	45
4	60	60
5	75	75
6	90	90
7	105	105
8	120	120
9	135	135
10	150	150

CT9 CYANOKIT

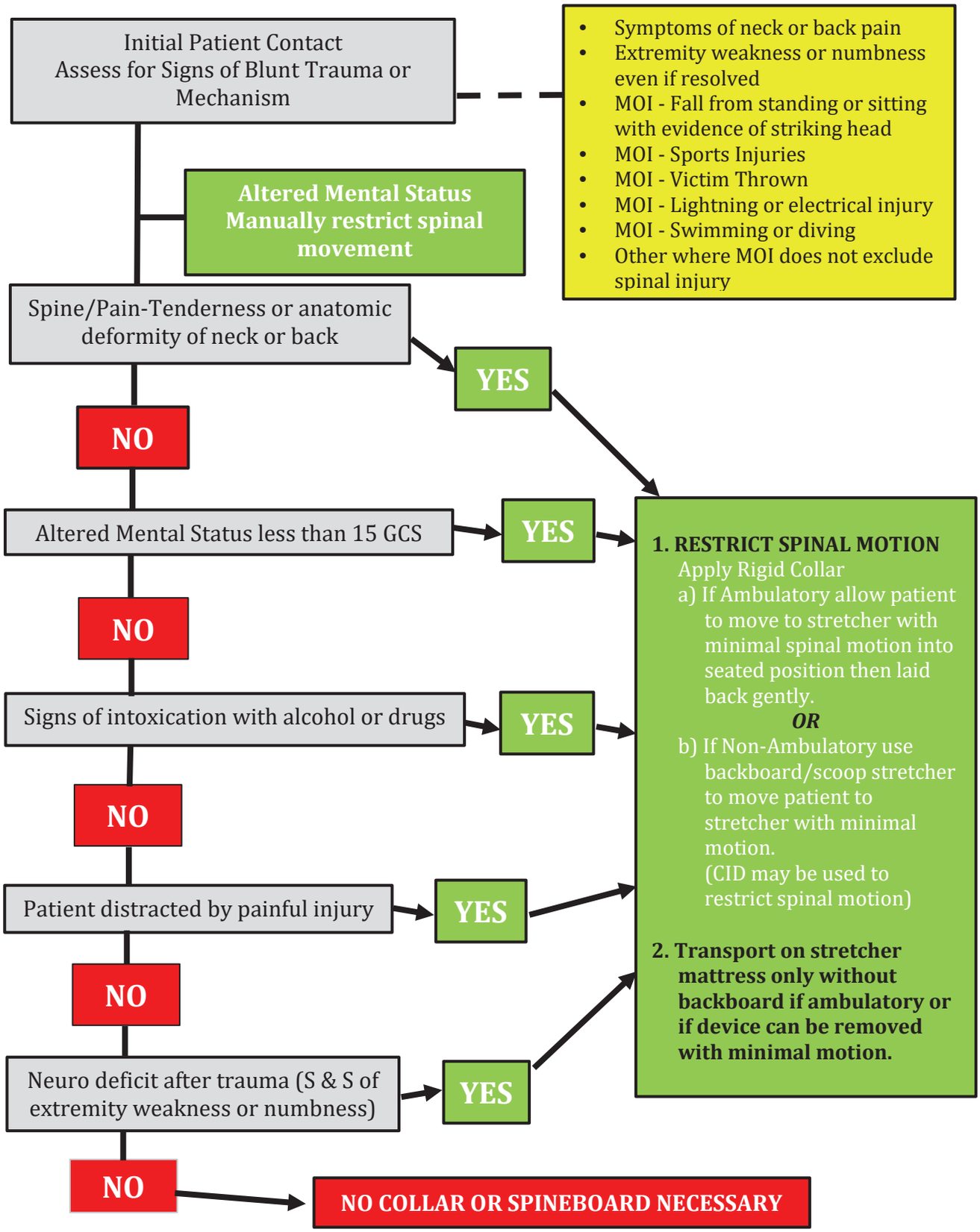




CT10 FIELD ASSESSMENT STROKE TRIAGE FOR EMERGENCY DESTINATION (FAST-ED)

		Test Component	Rapid Screen	Full Scoring
F	**Facial Palsy** Weakness on one side of face with smile	Have the patient look up at you, smile, and show his/her teeth	**Normal:** Symmetry to both sides **Abnormal**: One side of the face droops or does not move symmetrically	Absent or minor paralysis = 0 Partial or complete paralysis = 1
A	**Arm Weak-ness**	Have patient lift arms up and hold them out with eyes closed for 10 seconds	**Normal:** Symmetrical movement in both arms **Abnormal:** One arm drifts down or asymmetrical movement of the arms	No Drift = 0 Drift or some effort against gravity = 1 No effort against gravity or no movement = 2
S	**Speech Changes**	Have the patient say "You can't teach an old dog new tricks"	**Normal:** The correct words are used and no slurring of words is noted **Abnormal:** The words are slurred; the wrong words are used or the patient is aphasic	Absent = 0 Mild to moderate = 1 Severe, global aphasia or mute = 2
T	**Time**	Determine and Document: a. ***EXACT*** time of symptom onset or discovery (hh:mm) b. Last ***KNOWN*** Normal Time (hh:mm) (may or may not be same as onset) c. If symptoms were present upon awakening from sleep d. Name and phone number of person who witnessed event		
E	**Eye Deviation**	Have the patient follow you finger from side to side or have them look at clinicians on opposite sides of body		Absent = 0 Partial = 1 Forced deviation = 2
D	**Denial/ Neglect**	Check for presence of extinction while providing bilateral stimulus Ask the patient “who’s hand is this?”		Absent = 0 Extinction to bilateral simultaneous stimulation in only one sensory modality = 1 Does not recognize own hand or only orients to one side of the body = 2

CT11 SPINAL PRECAUTIONS



CT12 ADULT (AGE ≥ 16) TRAUMA SCORECARD

Any ONE Criteria = Red Trauma Alert	
Active airway assistance beyond the administration of oxygen	Amputation proximal to the wrist or ankle
Lack of radial pulse with sustained heart rate greater than 120	Any penetrating injury to the head, neck or torso (excluding superficial wounds where the depth of the wound can be determined)
Systolic BP less than 90 mmHg	Signs & symptoms two or more long bone fracture sites (humerus, [radius/ulna], femur, [tibia/fibula])
GCS score Best Motor Response equal to or less than 4	GCS score equal to or less than 12 (excluding patients whose normal GCS Score is equal to or less than 12 as established by patient's medical history or preexisting medical condition when known)
Exhibits the presence of paralysis	Signs & symptoms/suspicion of skull fracture, flail chest and/or pelvic fracture**
Suspected spinal cord injury	Major blunt trauma to head, neck, torso or pelvis**
Loss of sensation	Any ejection (complete or partial) from a motor vehicle (***including*** moped, motorcycle, all-terrain vehicle, watercraft)**
2nd or 3rd degree burns equal to or greater than 15% TBSA	Death of another passenger from trauma**

Any TWO Criteria = Blue Trauma Alert	
Respiratory rate equal to or greater than 30	Gunshot wound to an extremity of the body
Sustained heart rate equal to or greater than 120	Signs & symptoms of a single long bone fracture from a MVC
GCS Best Motor Response equals 5	Signs & symptoms of a single long bone fracture from fall equal to or greater than 10 feet
Soft tissue loss from major degloving injury	Age equal to or greater than 55 years old
Major flap avulsion greater than 5 inches	Patient impacted steering wheel causing steering wheel deformity

Paramedic Intuition = "Trauma Alert" (must document basis for declaration on PCR)

Trauma Center Transport Local Criteria = "NON-Trauma Alert"	
Extended extrication time	Moderate – heavy damage without passenger restraints
Rapid deceleration with heavy damage	Falls greater than 15 feet
Passenger space invasion greater than 1 foot	

** = Local Medical Director Trauma Alert Criteria

CT13 PEDIATRIC (≤ 15 y/o) TRAUMA SCORECARD

Any ONE Criteria = Red Trauma Alert	
In order to maintain optimal ventilation, the patient is intubated or breathing is maintained through such measures as manual jaw thrust, continuous suctioning or use of other adjuncts to assist ventilatory efforts	Multiple fracture sites or dislocations (except for isolated wrist or ankle fractures or dislocations)
Exhibits altered mental status including drowsiness, lethargy, inability to follow commands, unresponsiveness to voice, totally unresponsive or coma	Major soft tissue disruption including major degloving injury or major flap avulsions
Presence of paralysis	2nd or 3rd degree burns equal to or greater than 10% TBSA
Loss of sensation	Amputation at or above the Wrist or Ankle
Suspected spinal cord injury	Any penetrating injury to the head, neck or torso (excluding superficial wounds where the depth of the wound can be determined)
Faint or non-palpable carotid or femoral pulse	Major blunt trauma to head, neck, torso or pelvis**
Systolic BP less than 50 mmHg	Signs & symptoms/suspicion of skull fracture, flail chest and/or pelvic fracture**
Evidence of open long bone (humerus, [radius/ulna], femur, [tibia/fibula]) fracture	Any ejection (complete or partial) from a motor vehicle (***including*** moped, motorcycle, all-terrain vehicle, watercraft)**
Death of another passenger from trauma**	

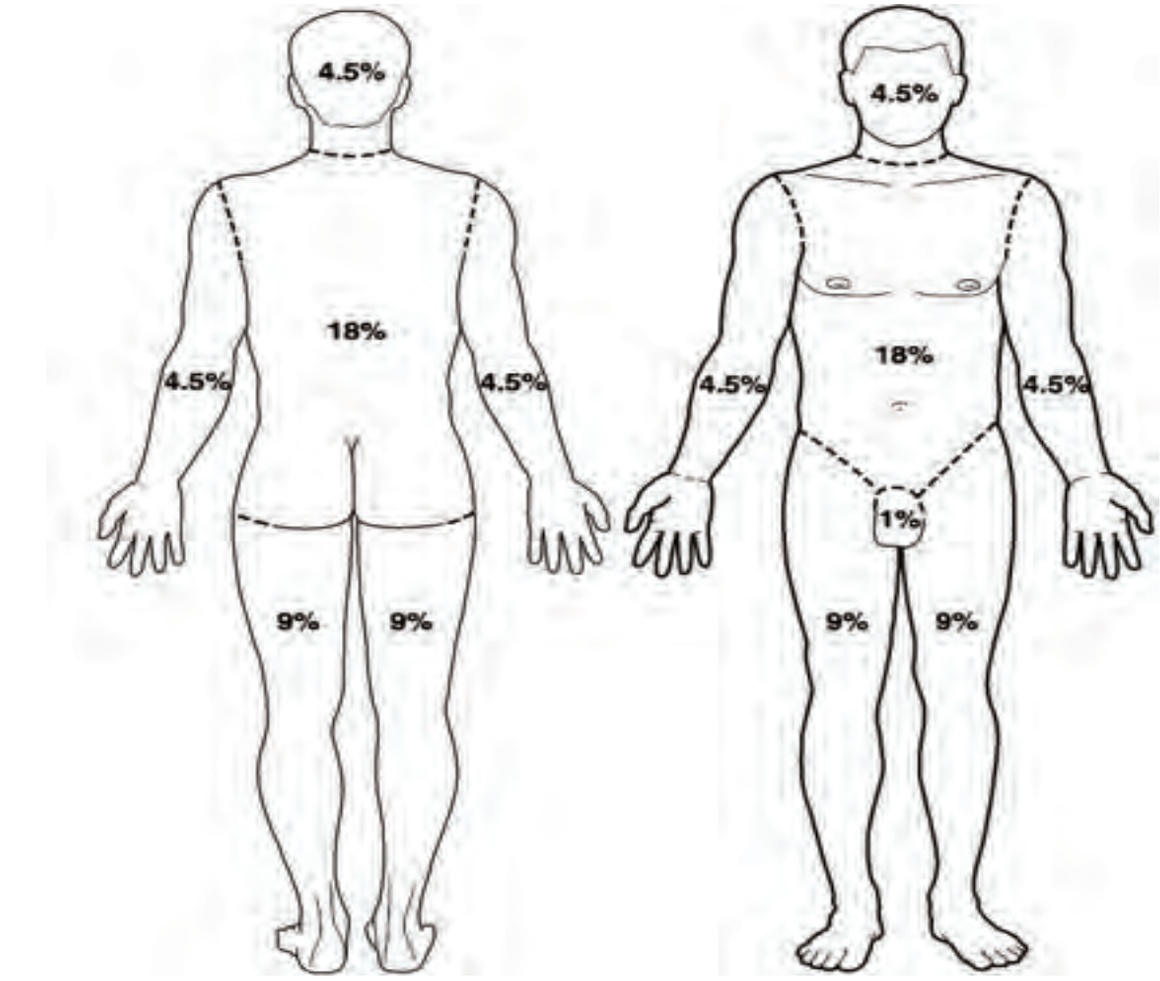
Any TWO Criteria = Blue Trauma Alert	
Symptoms of amnesia exhibited	Weight equal to or less than 11 kilograms or the body length is equivalent to this weight on the Handtevy Tape (the equivalent of 33 inches in measurement or less)
Loss of consciousness	Signs & symptoms of a single closed long bone fracture. Excludes isolated wrist or ankle fractures
Palpable carotid or femoral pulse but the radial or pedal pulses are not palpable	Signs & symptoms single long bone fracture from a fall equal to or greater than 10 feet
Systolic BP less than 90 mmHg	

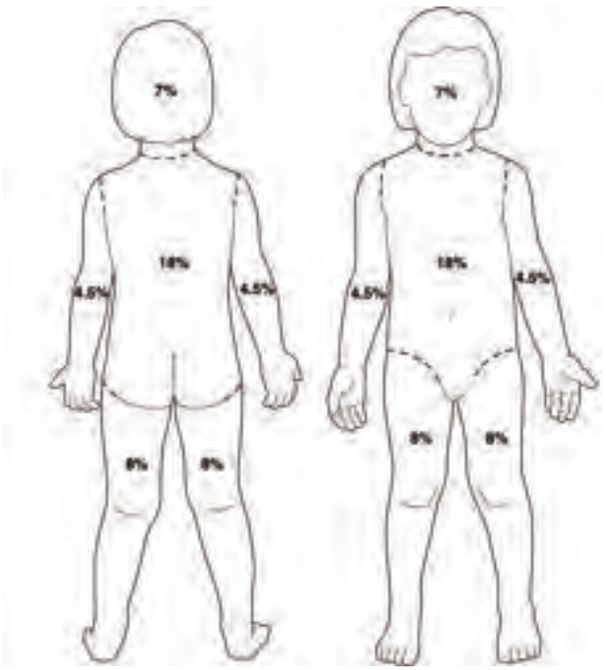
Paramedic Intuition = "Trauma Alert" (must document basis for declaration on PCR)

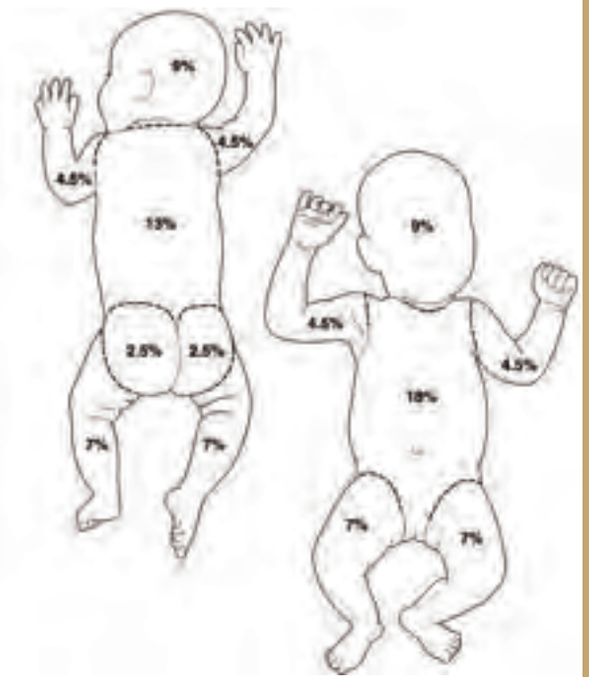
Trauma Center Transport Local Criteria = "NON-Trauma Alert"	
Extended extrication time	Moderate – heavy damage without passenger restraints
Rapid deceleration with heavy damage	Child less than 16 years old struck by a vehicle
Passenger space invasion greater than 1 foot	Falls greater than 15 feet or twice the patient's height

** = Local Medical Director Trauma Alert Criteria

CT14 BURNS – RULES OF 9'S







CT15 TOXIDROMES

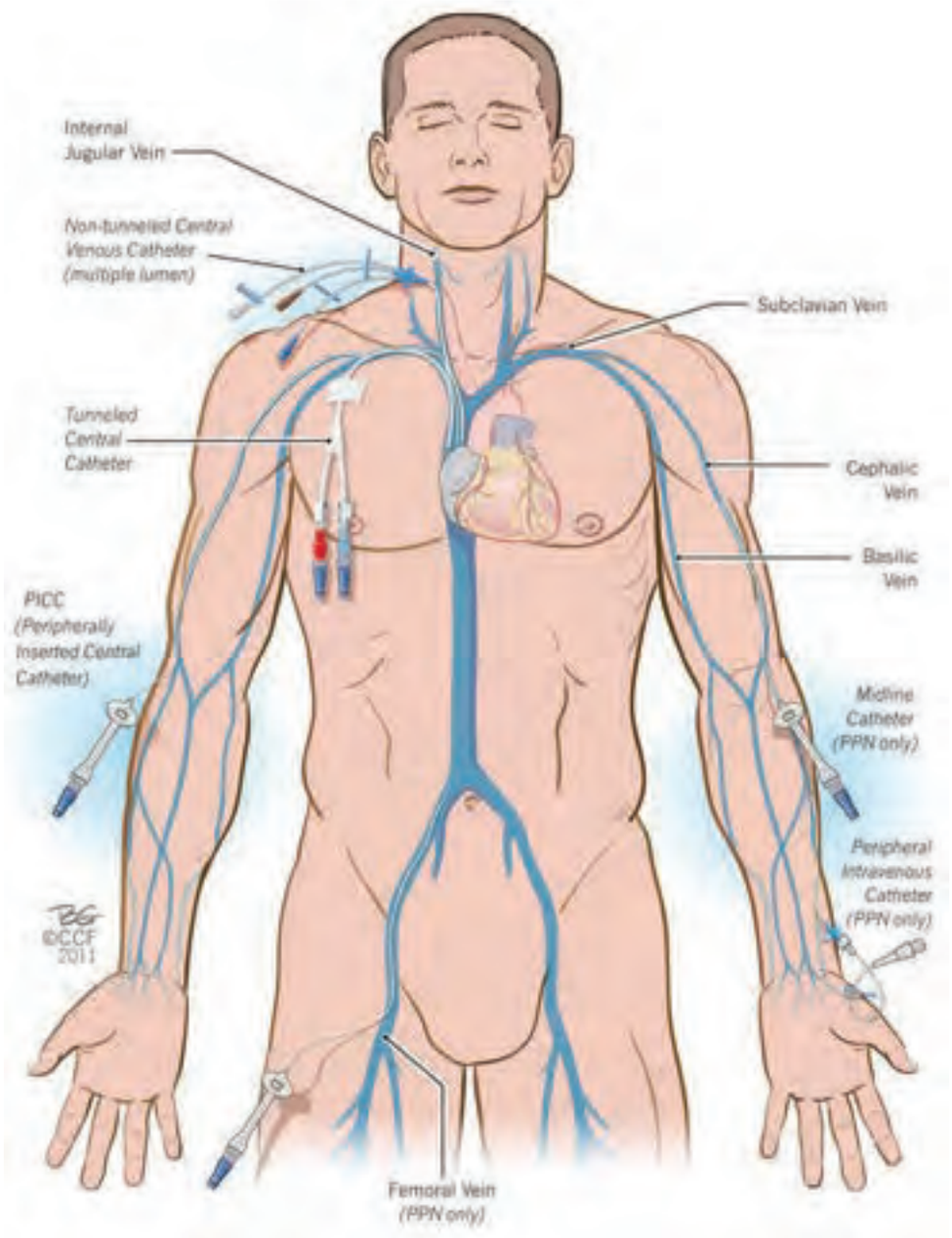
Class	Signs and Symptoms	Agents	Treatment
Sympatho-mimetics	• Agitation • Seizures • Mydriasis • Tachycardia • Hypertension • Diaphoresis • Pallor • Cool Skin • Fever	• Albuterol • Terbutaline • Amphetamines • Cocaine • Methamphetamines • PCP • Theophylline • Caffeine • Catecholamine's • Ketamine	1. Supportive care 2. **Uncooperative/potentially violent:** • Midazolam 2.5 mg IV/IM, may repeat once after 5 minutes if needed 3. **Agitated/Actively violent:** • Midazolam 5 mg IV/IM, may repeat once after 5 minutes, if needed ***OR*** • 10 mg (5 mg per nare) intranasal. May give an additional 5 mg (2.5 mg per nare) after 5 minutes if needed
Cholinergics	(DUMBBELS) - Diarrhea, Urination, Miosis, Bradycardia, Bronchorrhea, Emesis, Lacrimation, Salivation	• Organo-phosphates • Pesticides • Carbamates • Nerve Agents	1. Atropine 2 mg IV every 2 min until secretions dry 2. Contact OLMC for DuoDote utilization 3. If Seizing, Ref. M14
Opioids	• Respiratory Depression • Coma • Miosis • Bradycardia • Hypotension • Constipation	• Morphine • Methadone • Codeine	1. Naloxone 0.4 mg IV, may repeat to maximum 4 mg, as needed ***OR*** 2. Naloxone 2 mg intranasal, may repeat one time in 3 minutes, as needed
Anti-cholinergics	Agitation, Delirium, Coma, Mydriasis, Dry Mouth, Flushed Skin, Tachycardia, Hypertension, Fever, Urinary Retention, "MAD AS A HATTER, BLIND AS A BAT, RED AS A BEET"	• Antihistamines • Atropine • Carbamazepine • Cyclic Antidepressants • Jimson Weed • Oxybutynin • Phenothiazines • Scopolamine	1. Supportive care 2. **Uncooperative/potentially violent:** • Midazolam 2.5 mg IV/IM, may repeat once after 5 minutes if needed 3. **Agitated/violent:** • Midazolam 5 mg IV/IM, may repeat once after 5 minutes, if needed ***OR*** • 10 mg (5 mg per nare) intranasal. May give an additional 5 mg (2.5 mg per nare) after 5 minutes if needed

SPECIFIC WITHDRAWL/MEDICATION REACTIONS			
Acute Withdrawal (opiate, alcohol, Benzodiazepines)	**Sympathetic Storm:** Shakiness, Chills, Tremors, Anxiety, Stress, Depression, Volatile, Mood Swings, Sweating, Pale, Tachycardia, Seizures, Confusion, Psychosis	Withdrawal from: Opiate, Alcohol, Benzodiazepines	1. Supportive care 2. Midazolam 2.5 mg IV/IM, may repeat once after 5 minutes, if needed
Acute Dystonic	Involuntary Muscle Contractions - begin in a single area such as foot, hand or neck. May worsen with stress, fatigue or anxiety	Antipsychotics, antiemetics, and antidepressants most common/ Alcohol and cocaine increase risk.	1. Diphenhydramine 50 mg IV/IM 2. Midazolam 2.5 mg IV/IM, may repeat once after 5 minutes.
Oleoresin Capsicum (OC)/Pepper Spray	Tingling skin, burning skin, skin redness, skin swelling, skin blistering, burning throat, dry cough, wheezing, shortness of breath, gasping, gagging, inability to breath, laryngospasm, laryngeal paralysis, sneezing, nasal irritation, runny nose, eye swelling, eye burning, eye stinging, eye inflammation, tearing, gastrointestinal burning, temporary blindness	Pepper spray	1. Remove contaminated clothing/contact lenses 2. Flush copiously

CT16 INDWELLING CATHETERS

SAFETY ALERT

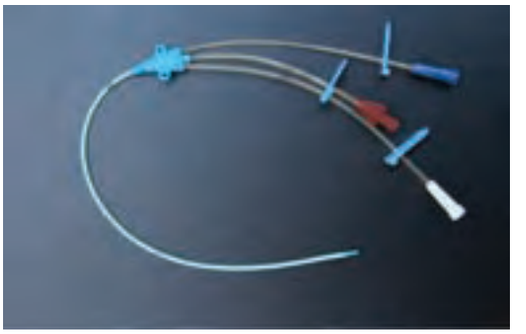
- Misconception: If the catheter end is blue "it's venous" and if the end is red "its arterial" – ***NOT TRUE!***
- The starting point for all central lines may differ, but they end up (for the most part) in the same place (SVC or IVC)
- Some will be heparinized. Withdraw 10 mL (adult) or 3 mL (pediatric) of blood prior to use to avoid inadvertent heparin boluses.



http://www.clevelandclinicmeded.com/medicalpubs/diseasemanagement/gastroenterology/principles-of-nutrition-support/images/figure-2.jpg

Triple lumen central line

- This one is placed in the internal jugular, but longer version may be found in the subclavian vein
- The distal end lives in the SVC (superior vena cava) like all central lines



Dialysis tunnel catheter

- Inserted into the internal jugular and tunneled under the skin (in the chest) for long-term use in dialysis. You may find the same catheter (not tunneled) for temporary use but for us all will be the same
- The distal end lives in the SVC (superior vena cava) like all central lines

PICC line (peripherally inserted central catheter)

- Placed in the upper arm and used for in home antibiotics, etc.
- The distal end lives in the SVC (superior vena cava) like all central lines

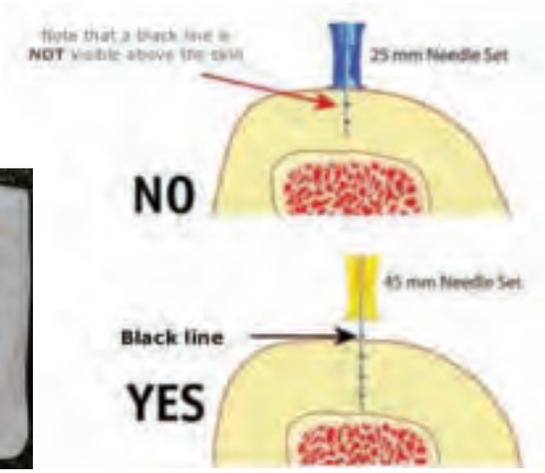
Port

- Port placement is usually in the anterior upper chest but may be in the arm
- The distal end lives in the SVC (superior vena cava) like all central lines
- ***NO EMS USE***

CT17 EZIO NEEDLE SIZE AND INSERTION SITES

1. Needle size selection:

With tip of needle just touching bone, ensure a black line is visible above skin PRIOR to drilling.



2. Insertion Sites:

ADULT

Proximal Tibia

Proximal Humerus

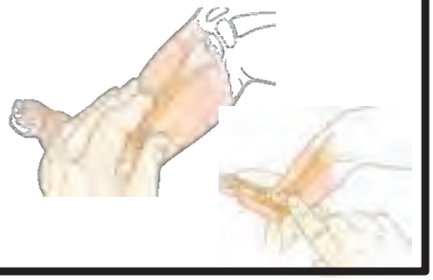
Distal Tibia

PEDIATRIC

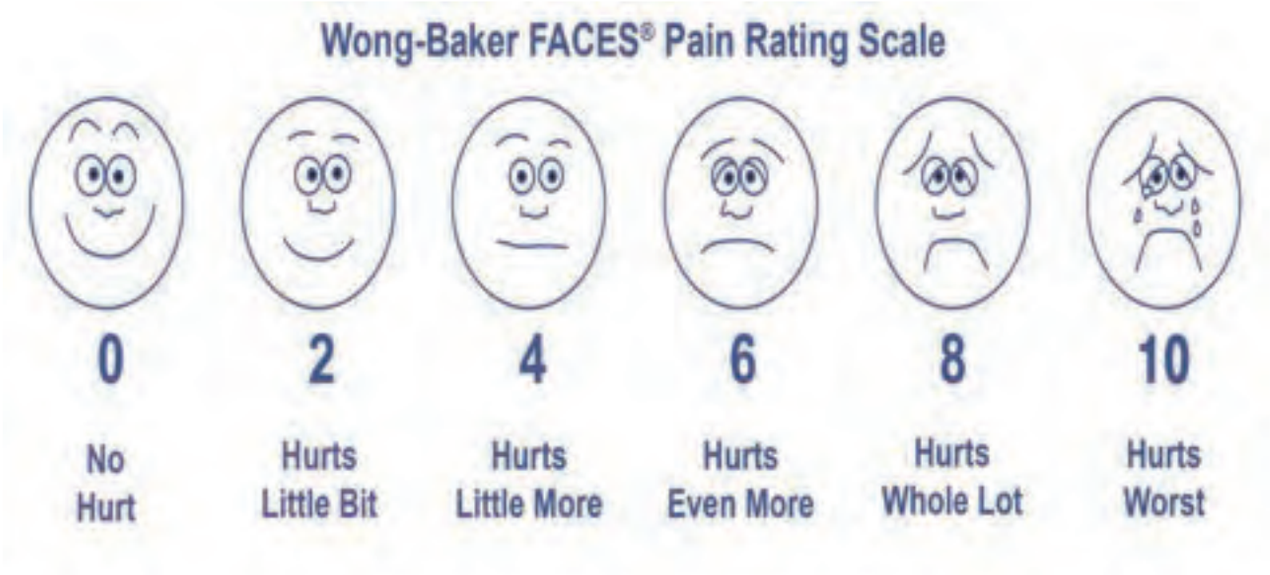
Proximal Tibia

Distal Femur

Distal Tibia



CT18 FACES PAIN SCALE



Instructions for Usage

Explain to the person that each face represents a person who has no pain (hurt), or some, or a lot of pain.

Face 0 doesn't hurt at all. Face 2 hurts just a little bit. Face 4 hurts a little bit more. Face 6 hurts even more. Face 8 hurt a whole lot. Face 10 hurts as much as you can imagine, although you don't have to be crying to have this worst pain.

Ask the person to choose the face that best depicts the pain they are experiencing.

CT19 APGAR SCORE

	0 Points	1 Point	2 Points	Total Points
Activity (muscle tone)	Absent	Arms and Legs Flexed	Active Movement	
Pulse	Absent	Below 100 BPM	Over 100 BPM	
Grimace (reflex irritability)	Flaccid	Some Flexion of Extremities	Active Motion (sneeze, cough, pull away)	
Appearance (skin color)	Blue, Pale	Body Pink, Extremities Blue	Completely Pink	
Respiration	Absent	Slow, Irregular	Vigorous Cry	
		Severely Depressed 0 - 3		
		Moderately Depressed 4 - 6		
		Excellent Condition 7 - 10		

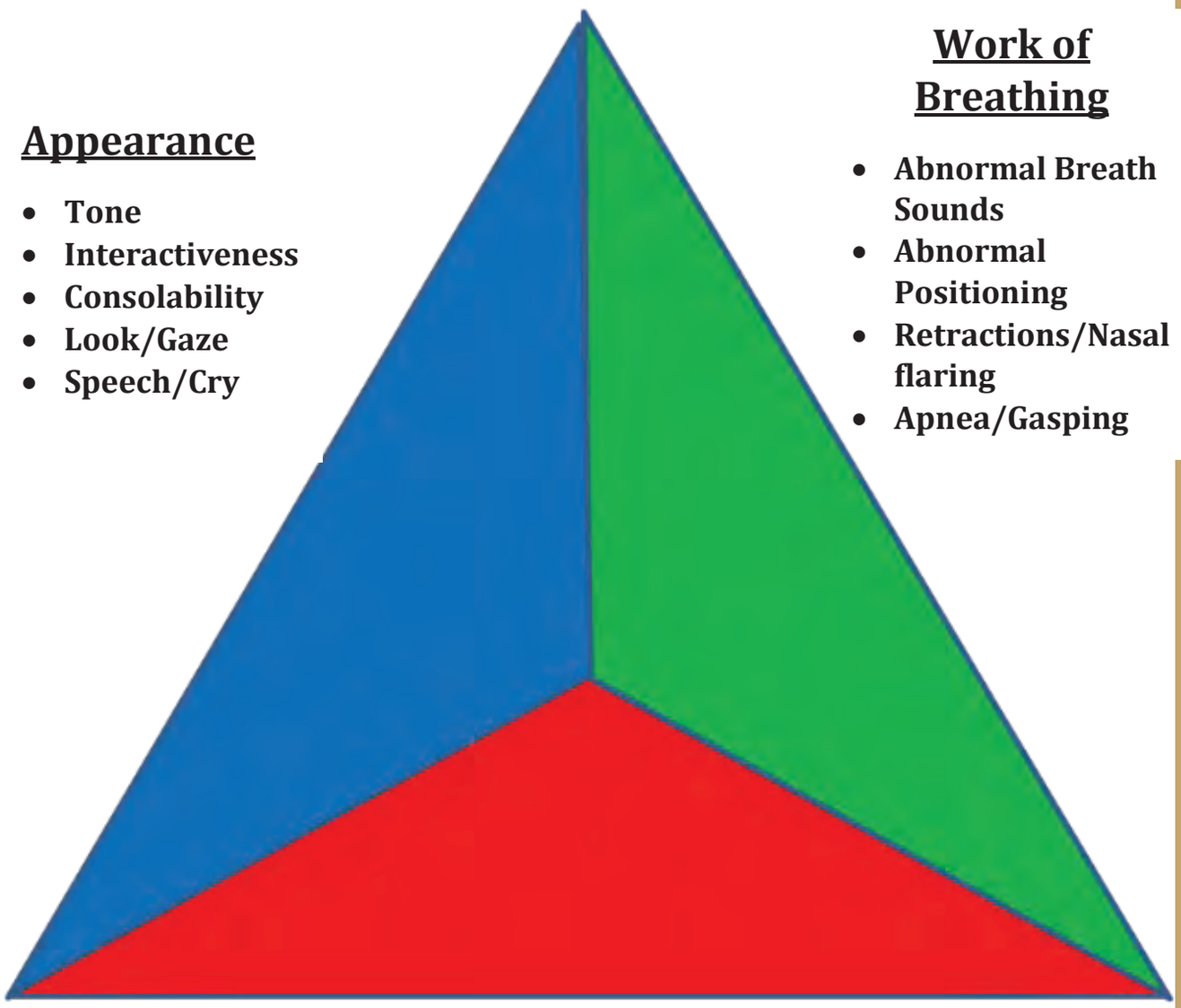
CT20 PEDIATRIC ASSESSMENT TRIANGLE

Appearance

- **Tone**
- **Interactiveness**
- **Consolability**
- **Look/Gaze**
- **Speech/Cry**

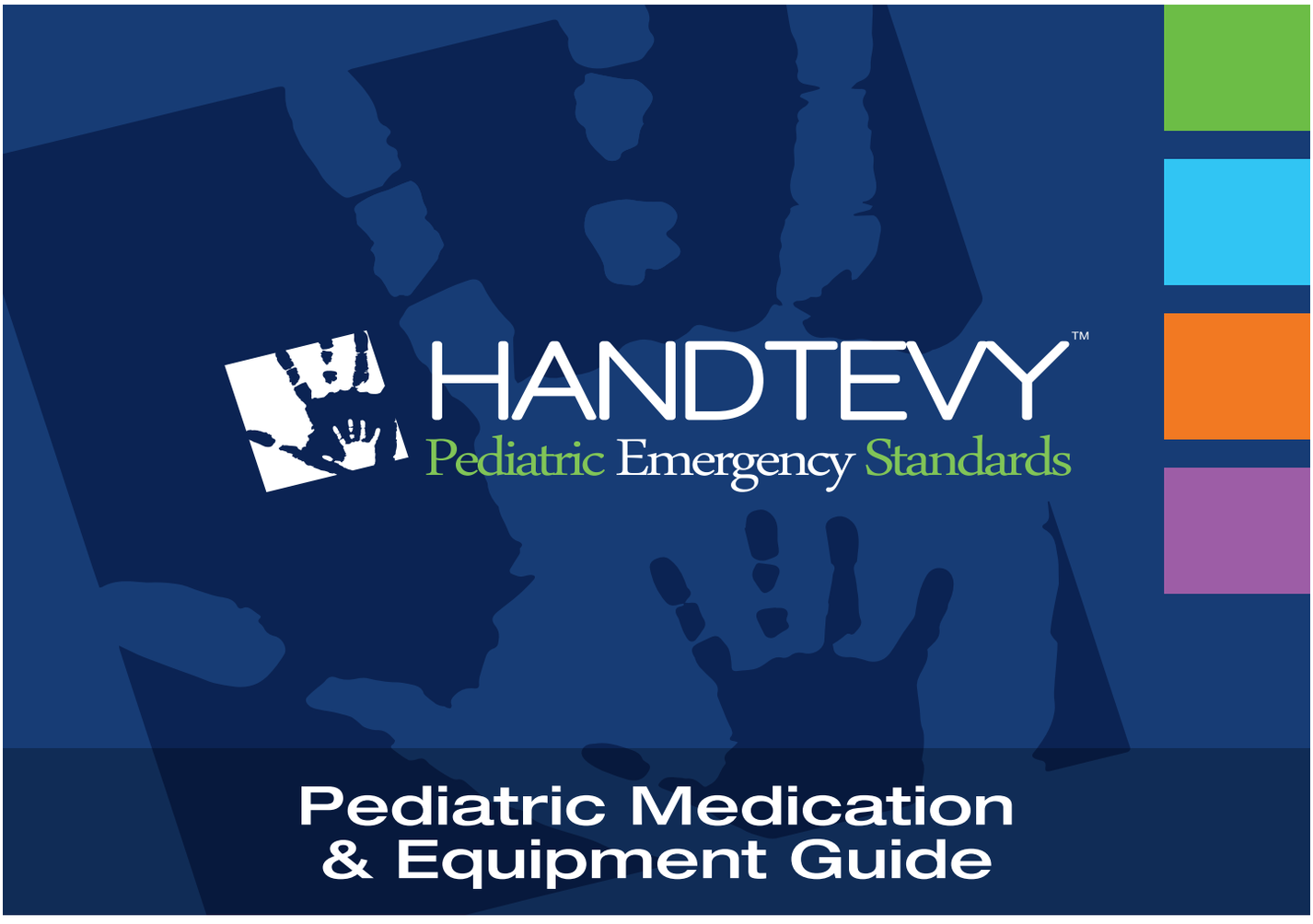
Work of Breathing

- **Abnormal Breath Sounds**
- **Abnormal Positioning**
- **Retractions/Nasal flaring**
- **Apnea/Gasping**



Circulation to the Skin

- **Pallor**
- **Mottling**
- **Cyanosis**



PINELLAS COUNTY EMS

Pinellas County
EMS & FIRE
ADMINISTRATION

GENERAL INFORMATION

From the Office of the Medical Director - Pinellas County EMS

1. All medications and fluids listed in this guidebook that can be administered intravenously (IV), can also be administered via the intraosseous (IO) route.

2. Always confirm the compatibility of medications and fluids prior to infusion together.

3. Always infuse medications and fluids in a manner consistent with standard practice.

4. All intranasal (IN) medication volumes in this book include an additional 0.1 mL of medication to account for the dead space in the atomizer.

From the Manufacturer of the Handtevy Pediatric Bag

The information in this book is customized for Pinellas County EMS. It is the responsibility of Pinellas County EMS to ensure the accuracy of all drug concentrations, drug dosages and equipment sizes on a continual basis. Pediatric Emergency Standards, Inc. recommends prompt revision and replacement of this book if the Department has made any modifications.

For inquires, please contact:
Pediatric Emergency Standards, Inc.
Office: 866.867.3192
Fax: 954.653.3792
Email: info@Handtevy.com

HANDTEVY™
Pediatric Emergency Standards

Option 1 -USE ACTUAL AGE (IF STANDARD SIZED CHILD)
Option 2 -ESTIMATE AGE USING HANDTEVY LENGTH BASED TAPE (HEAD TO HEEL)

PREMIE

PINELLAS COUNTY EMS				2 KG IDEAL WEIGHT	
DRUG	**CONC**	**VOL**	**RT**	**DOSE/KG**	**AMOUNT**
Adenosine [1st Dose]	3 mg/mL	0.07 mL	IV	0.1 mg/kg	0.2 mg
Adenosine [2nd Dose]	3 mg/mL	0.13 mL	IV	0.2 mg/kg	0.4 mg
Albuterol	2.5 mg/3 mL	1.5 mL	NEB	Dose =	1.25 mg
Amiodarone (Arrest Dose)	50 mg/mL	0.2 mL	IV	5 mg/kg	10 mg
Atropine	0.1 mg/mL	1 mL	IV	Dose =	0.1 mg
Calcium Chloride	100 mg/mL	0.4 mL	IV	20 mg/kg	40 mg
Dextrose 10% in Water	10 g/100 mL	10 mL	IV	0.5 g/kg	1 g
Diazepam IV	5 mg/mL	0.04 mL	IV	0.1 mg/kg	0.2 mg
Diazepam PR	5 mg/mL	0.2 mL	PR	0.5 mg/kg	1 mg
Diphenhydramine	50 mg/mL	0.04 mL	IV/IM	1 mg/kg	2 mg
Dopamine	400 mg/250 mL (1600 mcg/mL)	0 gtt/min	IV	Titrate to BP: Max 0 gtt/min	
Epinephrine 1:1,000 IM	1 mg/mL	0.02 mL	IM	0.01 mg/kg	0.02 mg
Epinephrine 1:10,000 IV	0.1 mg/mL	0.2 mL	IV	0.01 mg/kg	0.02 mg
Fentanyl Intranasal	50 mcg/mL	0.16 mL	IN	1.5 mcg/kg	3 mcg
Fentanyl IV	50 mcg/mL	0.04 mL	IV	1 mcg/kg	2 mcg
Glucagon	1 mg/mL	0.5 mL	IV/IM	Dose =	0.5 mg
Glucose (oral)	15 g/pouch	N/A	PO	Not indicated	
Ipratropium Bromide	0.5 mg/2.5 mL	1.25 mL	NEB	Dose =	0.25 mg
Magnesium Sulfate	40 mg/mL	2.5 mL	IV	50 mg/kg	100 mg
Methylprednisolone	125 mg/2 mL	0.06 mL	IV	2 mg/kg	4 mg
Midazolam Intranasal	5 mg/mL	0.18 mL	IN	0.2 mg/kg	0.4 mg
Midazolam IV/IM	5 mg/mL	0.04 mL	IV/IM	0.1 mg/kg	0.2 mg
Morphine	4 mg/mL	0.05 mL	IV	0.1 mg/kg	0.2 mg
Naloxone	1 mg/mL	0.2 mL	IV/IM	0.1 mg/kg	0.2 mg
Naloxone Intranasal	1 mg/mL	1 mL	IN	Dose =	1 mg
Ondansetron IV	2 mg/mL	N/A	IV	Not indicated	
Ondansetron ODT	4 mg/tab	N/A	PO	Not Indicated	
Sodium Bicarb 4.2%	(Dilute 8.4% 1:1 NS)	4 mL	IV	1 mEq/kg	2 mEq
Sodium Chloride Bolus	0.9%	20 mL	IV	10 mL/kg	20 mL

PHILIPS MRx	JOULES/KG	1ST	2ND	3RD	4TH
Defibrillation	2 → 4 → 6 → 10	4	8	10	20
Cardioversion	0.5 → 1 → 2 → 2	1	2	4	4

ET TUBE	DISTANCE AT LIP
2.5 Uncuffed	7 - 9.5 cm

VITALS	SBP	55 - 90	HR	120 - 170	RR	40 - 70

Option 1 -USE ACTUAL AGE (IF STANDARD SIZED CHILD)
Option 2 -ESTIMATE AGE USING HANDTEVY LENGTH BASED TAPE (HEAD TO HEEL)

NB

PINELLAS COUNTY EMS				4 KG IDEAL WEIGHT	
DRUG	**CONC**	**VOL**	**RT**	**DOSE/KG**	**AMOUNT**
Adenosine [1st Dose]	3 mg/mL	0.13 mL	IV	0.1 mg/kg	0.4 mg
Adenosine [2nd Dose]	3 mg/mL	0.27 mL	IV	0.2 mg/kg	0.8 mg
Albuterol	2.5 mg/3 mL	1.5 mL	NEB	Dose =	1.25 mg
Amiodarone (Arrest Dose)	50 mg/mL	0.4 mL	IV	5 mg/kg	20 mg
Atropine	0.1 mg/mL	1 mL	IV	Dose =	0.1 mg
Calcium Chloride	100 mg/mL	0.8 mL	IV	20 mg/kg	80 mg
Dextrose 10% in Water	10 g/100 mL	20 mL	IV	0.5 g/kg	2 g
Diazepam IV	5 mg/mL	0.08 mL	IV	0.1 mg/kg	0.4 mg
Diazepam PR	5 mg/mL	0.4 mL	PR	0.5 mg/kg	2 mg
Diphenhydramine	50 mg/mL	0.08 mL	IV/IM	1 mg/kg	4 mg
Dopamine	400 mg/250 mL (1600 mcg/mL)	1 gtt/min	IV	Titrate to BP: Max 4 gtt/min	
Epinephrine 1:1,000 IM	1 mg/mL	0.04 mL	IM	0.01 mg/kg	0.04 mg
Epinephrine 1:10,000 IV	0.1 mg/mL	0.4 mL	IV	0.01 mg/kg	0.04 mg
Fentanyl Intranasal	50 mcg/mL	0.22 mL	IN	1.5 mcg/kg	6 mcg
Fentanyl IV	50 mcg/mL	0.08 mL	IV	1 mcg/kg	4 mcg
Glucagon	1 mg/mL	0.5 mL	IV/IM	Dose =	0.5 mg
Glucose (oral)	15 g/pouch	N/A	PO	Not indicated	
Ipratropium Bromide	0.5 mg/2.5 mL	1.25 mL	NEB	Dose =	0.25 mg
Magnesium Sulfate	40 mg/mL	5 mL	IV	50 mg/kg	200 mg
Methylprednisolone	125 mg/2 mL	0.13 mL	IV	2 mg/kg	8 mg
Midazolam Intranasal	5 mg/mL	0.26 mL	IN	0.2 mg/kg	0.8 mg
Midazolam IV/IM	5 mg/mL	0.08 mL	IV/IM	0.1 mg/kg	0.4 mg
Morphine	4 mg/mL	0.1 mL	IV	0.1 mg/kg	0.4 mg
Naloxone	1 mg/mL	0.4 mL	IV/IM	0.1 mg/kg	0.4 mg
Naloxone Intranasal	1 mg/mL	1 mL	IN	Dose =	1 mg
Ondansetron IV	2 mg/mL	1 mL	IV	Dose =	2 mg
Ondansetron ODT	4 mg/tab	N/A	PO	Not Indicated	
Sodium Bicarb 4.2%	(Dilute 8.4% 1:1 NS)	8 mL	IV	1 mEq/kg	4 mEq
Sodium Chloride Bolus	0.9%	40 mL	IV	10 mL/kg	40 mL

PHILIPS MRx	JOULES/KG	1ST	2ND	3RD	4TH
Defibrillation	2 → 4 → 6 → 10	8	15	20	50
Cardioversion	0.5 → 1 → 2 → 2	2	4	8	8

ET TUBE	DISTANCE AT LIP
2.5 Uncuffed / 3.0 Cuffed	3 KG: 9-9.5 cm 4 KG: 9.5-10 cm 5 KG: 10-10.5 cm

VITALS	SBP	60 - 100	HR	100 - 160	RR	30 - 60

Option 1 -USE ACTUAL AGE (IF STANDARD SIZED CHILD)
Option 2 -ESTIMATE AGE USING HANDTEVY LENGTH BASED TAPE (HEAD TO HEEL)

4MO

PINELLAS COUNTY EMS				6 KG IDEAL WEIGHT	
DRUG	**CONC**	**VOL**	**RT**	**DOSE/KG**	**AMOUNT**
Adenosine [1st Dose]	3 mg/mL	0.2 mL	IV	0.1 mg/kg	0.6 mg
Adenosine [2nd Dose]	3 mg/mL	0.4 mL	IV	0.2 mg/kg	1.2 mg
Albuterol	2.5 mg/3 mL	1.5 mL	NEB	Dose =	1.25 mg
Amiodarone (Arrest Dose)	50 mg/mL	0.6 mL	IV	5 mg/kg	30 mg
Atropine	0.1 mg/mL	1.2 mL	IV	0.02 mg/kg	0.12 mg
Calcium Chloride	100 mg/mL	1.2 mL	IV	20 mg/kg	120 mg
Dextrose 10% in Water	10 g/100 mL	30 mL	IV	0.5 g/kg	3 g
Diazepam IV	5 mg/mL	0.12 mL	IV	0.1 mg/kg	0.6 mg
Diazepam PR	5 mg/mL	0.6 mL	PR	0.5 mg/kg	3 mg
Diphenhydramine	50 mg/mL	0.12 mL	IV/IM	1 mg/kg	6 mg
Dopamine	400 mg/250 mL (1600 mcg/mL)	1 gtt/min	IV	Titrate to BP: Max 4 gtt/min	
Epinephrine 1:1,000 IM	1 mg/mL	0.06 mL	IM	0.01 mg/kg	0.06 mg
Epinephrine 1:10,000 IV	0.1 mg/mL	0.6 mL	IV	0.01 mg/kg	0.06 mg
Fentanyl Intranasal	50 mcg/mL	0.28 mL	IN	1.5 mcg/kg	9 mcg
Fentanyl IV	50 mcg/mL	0.12 mL	IV	1 mcg/kg	6 mcg
Glucagon	1 mg/mL	0.5 mL	IV/IM	Dose =	0.5 mg
Glucose (oral)	15 g/pouch	N/A	PO	Not indicated	
Ipratropium Bromide	0.5 mg/2.5 mL	1.25 mL	NEB	Dose =	0.25 mg
Magnesium Sulfate	40 mg/mL	7.5 mL	IV	50 mg/kg	300 mg
Methylprednisolone	125 mg/2 mL	0.19 mL	IV	2 mg/kg	12 mg
Midazolam Intranasal	5 mg/mL	0.34 mL	IN	0.2 mg/kg	1.2 mg
Midazolam IV/IM	5 mg/mL	0.12 mL	IV/IM	0.1 mg/kg	0.6 mg
Morphine	4 mg/mL	0.15 mL	IV	0.1 mg/kg	0.6 mg
Naloxone	1 mg/mL	0.4 mL	IV/IM	Dose =	0.4 mg
Naloxone Intranasal	1 mg/mL	1 mL	IN	Dose =	1 mg
Ondansetron IV	2 mg/mL	1 mL	IV	Dose =	2 mg
Ondansetron ODT	4 mg/tab	N/A	PO	Not Indicated	
Sodium Bicarb 4.2%	(Dilute 8.4% 1:1 NS)	12 mL	IV	1 mEq/kg	6 mEq
Sodium Chloride Bolus	0.9%	120 mL	IV	20 mL/kg	120 mL

PHILIPS MRx	JOULES/KG	1ST	2ND	3RD	4TH
Defibrillation	2 → 4 → 6 → 10	10	20	30	70
Cardioversion	0.5 → 1 → 2 → 2	3	6	10	10

ET TUBE	DISTANCE AT LIP
3.0 Cuffed	10.5 - 11 cm

VITALS	SBP	70 - 100	HR	105 - 160	RR	30 - 60

Option 1 -USE ACTUAL AGE (IF STANDARD SIZED CHILD)
Option 2 -ESTIMATE AGE USING HANDTEVY LENGTH BASED TAPE (HEAD TO HEEL)

6MO

PINELLAS COUNTY EMS				8 KG IDEAL WEIGHT	
DRUG	CONC	VOL	RT	DOSE/KG	AMOUNT
Adenosine [1st Dose]	3 mg/mL	0.27 mL	IV	0.1 mg/kg	0.8 mg
Adenosine [2nd Dose]	3 mg/mL	0.53 mL	IV	0.2 mg/kg	1.6 mg
Albuterol	2.5 mg/3 mL	1.5 mL	NEB	Dose =	1.25 mg
Amiodarone (Arrest Dose)	50 mg/mL	0.8 mL	IV	5 mg/kg	40 mg
Atropine	0.1 mg/mL	1.6 mL	IV	0.02 mg/kg	0.16 mg
Calcium Chloride	100 mg/mL	1.6 mL	IV	20 mg/kg	160 mg
Dextrose 10% in Water	10 g/100 mL	40 mL	IV	0.5 g/kg	4 g
Diazepam IV	5 mg/mL	0.16 mL	IV	0.1 mg/kg	0.8 mg
Diazepam PR	5 mg/mL	0.8 mL	PR	0.5 mg/kg	4 mg
Diphenhydramine	50 mg/mL	0.16 mL	IV/IM	1 mg/kg	8 mg
Dopamine	400 mg/250 mL (1600 mcg/mL)	2 gtt/min	IV	Titrate to BP: Max 8 gtt/min	
Epinephrine 1:1,000 IM	1 mg/mL	0.08 mL	IM	0.01 mg/kg	0.08 mg
Epinephrine 1:10,000 IV	0.1 mg/mL	0.8 mL	IV	0.01 mg/kg	0.08 mg
Fentanyl Intranasal	50 mcg/mL	0.34 mL	IN	1.5 mcg/kg	12 mcg
Fentanyl IV	50 mcg/mL	0.16 mL	IV	1 mcg/kg	8 mcg
Glucagon	1 mg/mL	0.5 mL	IV/IM	Dose =	0.5 mg
Glucose (oral)	15 g/pouch	N/A	PO	Not indicated	
Ipratropium Bromide	0.5 mg/2.5 mL	1.25 mL	NEB	Dose =	0.25 mg
Magnesium Sulfate	40 mg/mL	10 mL	IV	50 mg/kg	400 mg
Methylprednisolone	125 mg/2 mL	0.26 mL	IV	2 mg/kg	16 mg
Midazolam Intranasal	5 mg/mL	0.42 mL	IN	0.2 mg/kg	1.6 mg
Midazolam IV/IM	5 mg/mL	0.16 mL	IV/IM	0.1 mg/kg	0.8 mg
Morphine	4 mg/mL	0.2 mL	IV	0.1 mg/kg	0.8 mg
Naloxone	1 mg/mL	0.4 mL	IV/IM	Dose =	0.4 mg
Naloxone Intranasal	1 mg/mL	1 mL	IN	Dose =	1 mg
Ondansetron IV	2 mg/mL	1 mL	IV	Dose =	2 mg
Ondansetron ODT	4 mg/tab	1/2 tab	PO	Dose =	2 mg
Sodium Bicarb 4.2%	(Dilute 8.4% 1:1 NS)	16 mL	IV	1 mEq/kg	8 mEq
Sodium Chloride Bolus	0.9%	160 mL	IV	20 mL/kg	160 mL

PHILIPS MRx	JOULES/KG	1ST	2ND	3RD	4TH
Defibrillation	2 → 4 → 6 → 10	15	30	50	70
Cardioversion	0.5 → 1 → 2 → 2	4	8	15	15

ET TUBE	DISTANCE AT LIP
3.0 Cuffed	10.5 - 11 cm

VITALS	SBP	70 - 100	HR	110 - 160	RR	24 - 38

Option 1 -USE ACTUAL AGE (IF STANDARD SIZED CHILD)
Option 2 -ESTIMATE AGE USING HANDTEVY LENGTH BASED TAPE (HEAD TO HEEL)

1YR

PINELLAS COUNTY EMS				10 KG IDEAL WEIGHT	
DRUG	CONC	VOL	RT	DOSE/KG	AMOUNT
Adenosine [1st Dose]	3 mg/mL	0.33 mL	IV	0.1 mg/kg	1 mg
Adenosine [2nd Dose]	3 mg/mL	0.67 mL	IV	0.2 mg/kg	2 mg
Albuterol	2.5 mg/3 mL	3 mL	NEB	Dose =	2.5 mg
Amiodarone (Arrest Dose)	50 mg/mL	1 mL	IV	5 mg/kg	50 mg
Atropine	0.1 mg/mL	2 mL	IV	0.02 mg/kg	0.2 mg
Calcium Chloride	100 mg/mL	2 mL	IV	20 mg/kg	200 mg
Dextrose 10% in Water	10 g/100 mL	50 mL	IV	0.5 g/kg	5 g
Diazepam IV	5 mg/mL	0.2 mL	IV	0.1 mg/kg	1 mg
Diazepam PR	5 mg/mL	1 mL	PR	0.5 mg/kg	5 mg
Diphenhydramine	50 mg/mL	0.2 mL	IV/IM	1 mg/kg	10 mg
Dopamine	400 mg/250 mL (1600 mcg/mL)	2 gtt/min	IV	Titrate to BP: Max 8 gtt/min	
Epinephrine 1:1,000 IM	1 mg/mL	0.1 mL	IM	0.01 mg/kg	0.1 mg
Epinephrine 1:10,000 IV	0.1 mg/mL	1 mL	IV	0.01 mg/kg	0.1 mg
Fentanyl Intranasal	50 mcg/mL	0.4 mL	IN	1.5 mcg/kg	15 mcg
Fentanyl IV	50 mcg/mL	0.2 mL	IV	1 mcg/kg	10 mcg
Glucagon	1 mg/mL	0.5 mL	IV/IM	Dose =	0.5 mg
Glucose (oral)	15 g/pouch	N/A	PO	Not indicated	
Ipratropium Bromide	0.5 mg/2.5 mL	2.5 mL	NEB	Dose =	0.5 mg
Magnesium Sulfate	40 mg/mL	12.5 mL	IV	50 mg/kg	500 mg
Methylprednisolone	125 mg/2 mL	0.32 mL	IV	2 mg/kg	20 mg
Midazolam Intranasal	5 mg/mL	0.5 mL	IN	0.2 mg/kg	2 mg
Midazolam IV/IM	5 mg/mL	0.2 mL	IV/IM	0.1 mg/kg	1 mg
Morphine	4 mg/mL	0.25 mL	IV	0.1 mg/kg	1 mg
Naloxone	1 mg/mL	0.4 mL	IV/IM	Dose =	0.4 mg
Naloxone Intranasal	1 mg/mL	2 mL	IN	Dose =	2 mg
Ondansetron IV	2 mg/mL	1 mL	IV	Dose =	2 mg
Ondansetron ODT	4 mg/tab	1/2 tab	PO	Dose =	2 mg
Sodium Bicarb 8.4%	50 mEq/50 mL	10 mL	IV	1 mEq/kg	10 mEq
Sodium Chloride Bolus	0.9%	200 mL	IV	20 mL/kg	200 mL

PHILIPS MRx	JOULES/KG	1ST	2ND	3RD	4TH
Defibrillation	2 → 4 → 6 → 10	20	50	70	100
Cardioversion	0.5 → 1 → 2 → 2	5	10	20	20

ET TUBE	DISTANCE AT LIP
3.5 Cuffed	11 - 12 cm

VITALS	SBP	75 - 105	HR	90 - 150	RR	22 - 30

Option 1 -USE ACTUAL AGE (IF STANDARD SIZED CHILD)
Option 2 -ESTIMATE AGE USING HANDTEVY LENGTH BASED TAPE (HEAD TO HEEL)

2YR

PINELLAS COUNTY EMS — 12 KG IDEAL WEIGHT

DRUG	CONC	VOL	RT	DOSE/KG	AMOUNT
Adenosine [1st Dose]	3 mg/mL	0.4 mL	IV	0.1 mg/kg	1.2 mg
Adenosine [2nd Dose]	3 mg/mL	0.8 mL	IV	0.2 mg/kg	2.4 mg
Albuterol	2.5 mg/3 mL	3 mL	NEB	Dose =	2.5 mg
Amiodarone (Arrest Dose)	50 mg/mL	1.2 mL	IV	5 mg/kg	60 mg
Atropine	0.1 mg/mL	2.4 mL	IV	0.02 mg/kg	0.24 mg
Calcium Chloride	100 mg/mL	2.4 mL	IV	20 mg/kg	240 mg
Dextrose 10% in Water	10 g/100 mL	60 mL	IV	0.5 g/kg	6 g
Diazepam IV	5 mg/mL	0.24 mL	IV	0.1 mg/kg	1.2 mg
Diazepam PR	5 mg/mL	1 mL	PR	Dose =	5 mg
Diphenhydramine	50 mg/mL	0.24 mL	IV/IM	1 mg/kg	12 mg
Dopamine	400 mg/250 mL (1600 mcg/mL)	2 gtt/min	IV	Titrate to BP: Max 8 gtt/min	
Epinephrine 1:1,000 IM	1 mg/mL	0.12 mL	IM	0.01 mg/kg	0.12 mg
Epinephrine 1:10,000 IV	0.1 mg/mL	1.2 mL	IV	0.01 mg/kg	0.12 mg
Fentanyl Intranasal	50 mcg/mL	0.46 mL	IN	1.5 mcg/kg	18 mcg
Fentanyl IV	50 mcg/mL	0.24 mL	IV	1 mcg/kg	12 mcg
Glucagon	1 mg/mL	0.5 mL	IV/IM	Dose =	0.5 mg
Glucose (oral)	15 g/pouch	N/A	PO	Not indicated	
Ipratropium Bromide	0.5 mg/2.5 mL	2.5 mL	NEB	Dose =	0.5 mg
Magnesium Sulfate	40 mg/mL	15 mL	IV	50 mg/kg	600 mg
Methylprednisolone	125 mg/2 mL	0.38 mL	IV	2 mg/kg	24 mg
Midazolam Intranasal	5 mg/mL	0.58 mL	IN	0.2 mg/kg	2.4 mg
Midazolam IV/IM	5 mg/mL	0.24 mL	IV/IM	0.1 mg/kg	1.2 mg
Morphine	4 mg/mL	0.3 mL	IV	0.1 mg/kg	1.2 mg
Naloxone	1 mg/mL	0.4 mL	IV/IM	Dose =	0.4 mg
Naloxone Intranasal	1 mg/mL	2 mL	IN	Dose =	2 mg
Ondansetron IV	2 mg/mL	1 mL	IV	Dose =	2 mg
Ondansetron ODT	4 mg/tab	1/2 tab	PO	Dose =	2 mg
Sodium Bicarb 8.4%	50 mEq/50 mL	12 mL	IV	1 mEq/kg	12 mEq
Sodium Chloride Bolus	0.9%	240 mL	IV	20 mL/kg	240 mL

PHILIPS MRx	JOULES/KG	1ST	2ND	3RD	4TH
Defibrillation	2 → 4 → 6 → 10	20	50	70	120
Cardioversion	0.5 → 1 → 2 → 2	6	10	20	20

ET TUBE	DISTANCE AT LIP
4.0 Cuffed	13.5 cm

VITALS	SBP	75 - 110	HR	85 - 140	RR	22 - 30

Option 1 -USE ACTUAL AGE (IF STANDARD SIZED CHILD)
Option 2 -ESTIMATE AGE USING HANDTEVY LENGTH BASED TAPE (HEAD TO HEEL)

3YR

PINELLAS COUNTY EMS — 15 KG IDEAL WEIGHT

DRUG	CONC	VOL	RT	DOSE/KG	AMOUNT
Adenosine [1st Dose]	3 mg/mL	0.5 mL	IV	0.1 mg/kg	1.5 mg
Adenosine [2nd Dose]	3 mg/mL	1 mL	IV	0.2 mg/kg	3 mg
Albuterol	2.5 mg/3 mL	3 mL	NEB	Dose =	2.5 mg
Amiodarone (Arrest Dose)	50 mg/mL	1.5 mL	IV	5 mg/kg	75 mg
Atropine	0.1 mg/mL	3 mL	IV	0.02 mg/kg	0.3 mg
Calcium Chloride	100 mg/mL	3 mL	IV	20 mg/kg	300 mg
Dextrose 10% in Water	10 g/100 mL	75 mL	IV	0.5 g/kg	7.5 g
Diazepam IV	5 mg/mL	0.3 mL	IV	0.1 mg/kg	1.5 mg
Diazepam PR	5 mg/mL	1 mL	PR	Dose =	5 mg
Diphenhydramine	50 mg/mL	0.3 mL	IV/IM	1 mg/kg	15 mg
Dopamine	400 mg/250 mL (1600 mcg/mL)	3 gtt/min	IV	Titrate to BP: Max 12 gtt/min	
Epinephrine 1:1,000 IM	1 mg/mL	0.15 mL	IM	0.01 mg/kg	0.15 mg
Epinephrine 1:10,000 IV	0.1 mg/mL	1.5 mL	IV	0.01 mg/kg	0.15 mg
Fentanyl Intranasal	50 mcg/mL	0.55 mL	IN	1.5 mcg/kg	22.5 mcg
Fentanyl IV	50 mcg/mL	0.3 mL	IV	1 mcg/kg	15 mcg
Glucagon	1 mg/mL	0.5 mL	IV/IM	Dose =	0.5 mg
Glucose (oral)	15 g/pouch	1 pouch	PO	Dose =	15 g
Ipratropium Bromide	0.5 mg/2.5 mL	2.5 mL	NEB	Dose =	0.5 mg
Magnesium Sulfate	40 mg/mL	18.8 mL	IV	50 mg/kg	750 mg
Methylprednisolone	125 mg/2 mL	0.48 mL	IV	2 mg/kg	30 mg
Midazolam Intranasal	5 mg/mL	0.7 mL	IN	0.2 mg/kg	3 mg
Midazolam IV/IM	5 mg/mL	0.3 mL	IV/IM	0.1 mg/kg	1.5 mg
Morphine	4 mg/mL	0.38 mL	IV	0.1 mg/kg	1.5 mg
Naloxone	1 mg/mL	0.4 mL	IV/IM	Dose =	0.4 mg
Naloxone Intranasal	1 mg/mL	2 mL	IN	Dose =	2 mg
Ondansetron IV	2 mg/mL	1 mL	IV	Dose =	2 mg
Ondansetron ODT	4 mg/tab	1/2 tab	PO	Dose =	2 mg
Sodium Bicarb 8.4%	50 mEq/50 mL	15 mL	IV	1 mEq/kg	15 mEq
Sodium Chloride Bolus	0.9%	300 mL	IV	20 mL/kg	300 mL

PHILIPS MRx	JOULES/KG	1ST	2ND	3RD	4TH
Defibrillation	2 → 4 → 6 → 10	30	70	100	150
Cardioversion	0.5 → 1 → 2 → 2	8	15	30	30

ET TUBE	DISTANCE AT LIP
4.5 Cuffed	14 - 15 cm

VITALS	SBP	76 - 115	HR	85 - 140	RR	22 - 30

Option 1 -USE ACTUAL AGE (IF STANDARD SIZED CHILD)
Option 2 -ESTIMATE AGE USING HANDTEVY LENGTH BASED TAPE (HEAD TO HEEL)

4YR

PINELLAS COUNTY EMS — 17 KG IDEAL WEIGHT

DRUG	CONC	VOL	RT	DOSE/KG	AMOUNT
Adenosine [1st Dose]	3 mg/mL	0.57 mL	IV	0.1 mg/kg	1.7 mg
Adenosine [2nd Dose]	3 mg/mL	1.1 mL	IV	0.2 mg/kg	3.4 mg
Albuterol	2.5 mg/3 mL	3 mL	NEB	Dose =	2.5 mg
Amiodarone (Arrest Dose)	50 mg/mL	1.7 mL	IV	5 mg/kg	85 mg
Atropine	0.1 mg/mL	3.4 mL	IV	0.02 mg/kg	0.34 mg
Calcium Chloride	100 mg/mL	3.4 mL	IV	20 mg/kg	340 mg
Dextrose 10% in Water	10 g/100 mL	85 mL	IV	0.5 g/kg	8.5 g
Diazepam IV	5 mg/mL	0.34 mL	IV	0.1 mg/kg	1.7 mg
Diazepam PR	5 mg/mL	1 mL	PR	Dose =	5 mg
Diphenhydramine	50 mg/mL	0.34 mL	IV/IM	1 mg/kg	17 mg
Dopamine	400 mg/250 mL (1600 mcg/mL)	3 gtt/min	IV	Titrate to BP: Max 12 gtt/min	
Epinephrine 1:1,000 IM	1 mg/mL	0.17 mL	IM	0.01 mg/kg	0.17 mg
Epinephrine 1:10,000 IV	0.1 mg/mL	1.7 mL	IV	0.01 mg/kg	0.17 mg
Fentanyl Intranasal	50 mcg/mL	0.61 mL	IN	1.5 mcg/kg	25.5 mcg
Fentanyl IV	50 mcg/mL	0.34 mL	IV	1 mcg/kg	17 mcg
Glucagon	1 mg/mL	0.5 mL	IV/IM	Dose =	0.5 mg
Glucose (oral)	15 g/pouch	1 pouch	PO	Dose =	15 g
Ipratropium Bromide	0.5 mg/2.5 mL	2.5 mL	NEB	Dose =	0.5 mg
Magnesium Sulfate	40 mg/mL	21.3 mL	IV	50 mg/kg	850 mg
Methylprednisolone	125 mg/2 mL	0.54 mL	IV	2 mg/kg	34 mg
Midazolam Intranasal	5 mg/mL	0.78 mL	IN	0.2 mg/kg	3.4 mg
Midazolam IV/IM	5 mg/mL	0.34 mL	IV/IM	0.1 mg/kg	1.7 mg
Morphine	4 mg/mL	0.43 mL	IV	0.1 mg/kg	1.7 mg
Naloxone	1 mg/mL	0.4 mL	IV/IM	Dose =	0.4 mg
Naloxone Intranasal	1 mg/mL	2 mL	IN	Dose =	2 mg
Ondansetron IV	2 mg/mL	2 mL	IV	Dose =	4 mg
Ondansetron ODT	4 mg/tab	1 tab	PO	Dose =	4 mg
Sodium Bicarb 8.4%	50 mEq/50 mL	17 mL	IV	1 mEq/kg	17 mEq
Sodium Chloride Bolus	0.9%	340 mL	IV	20 mL/kg	340 mL

PHILIPS MRx	JOULES/KG	1ST	2ND	3RD	4TH
Defibrillation	2 → 4 → 6 → 10	30	70	100	150
Cardioversion	0.5 → 1 → 2 → 2	9	15	30	30

ET TUBE	DISTANCE AT LIP
4.5 Cuffed	14 - 15 cm

VITALS	SBP	78 - 115	HR	75 - 120	RR	22 - 26

Option 1 -USE ACTUAL AGE (IF STANDARD SIZED CHILD)
Option 2 -ESTIMATE AGE USING HANDTEVY LENGTH BASED TAPE (HEAD TO HEEL)

5YR

PINELLAS COUNTY EMS				20 KG IDEAL WEIGHT	
DRUG	CONC	VOL	RT	DOSE/KG	AMOUNT
Adenosine [1st Dose]	3 mg/mL	0.67 mL	IV	0.1 mg/kg	2 mg
Adenosine [2nd Dose]	3 mg/mL	1.3 mL	IV	0.2 mg/kg	4 mg
Albuterol	2.5 mg/3 mL	3 mL	NEB	Dose =	2.5 mg
Amiodarone (Arrest Dose)	50 mg/mL	2 mL	IV	5 mg/kg	100 mg
Atropine	0.1 mg/mL	4 mL	IV	0.02 mg/kg	0.4 mg
Calcium Chloride	100 mg/mL	4 mL	IV	20 mg/kg	400 mg
Dextrose 10% in Water	10 g/100 mL	100 mL	IV	0.5 g/kg	10 g
Diazepam IV	5 mg/mL	0.4 mL	IV	0.1 mg/kg	2 mg
Diazepam PR	5 mg/mL	1 mL	PR	Dose =	5 mg
Diphenhydramine	50 mg/mL	0.4 mL	IV/IM	1 mg/kg	20 mg
Dopamine	400 mg/250 mL (1600 mcg/mL)	4 gtt/min	IV	Titrate to BP: Max 16 gtt/min	
Epinephrine 1:1,000 IM	1 mg/mL	0.2 mL	IM	0.01 mg/kg	0.2 mg
Epinephrine 1:10,000 IV	0.1 mg/mL	2 mL	IV	0.01 mg/kg	0.2 mg
Fentanyl Intranasal	50 mcg/mL	0.7 mL	IN	1.5 mcg/kg	30 mcg
Fentanyl IV	50 mcg/mL	0.4 mL	IV	1 mcg/kg	20 mcg
Glucagon	1 mg/mL	1 mL	IV/IM	Dose =	1 mg
Glucose (oral)	15 g/pouch	1 pouch	PO	Dose =	15 g
Ipratropium Bromide	0.5 mg/2.5 mL	2.5 mL	NEB	Dose =	0.5 mg
Magnesium Sulfate	40 mg/mL	25 mL	IV	50 mg/kg	1 g
Methylprednisolone	125 mg/2 mL	0.64 mL	IV	2 mg/kg	40 mg
Midazolam Intranasal	5 mg/mL	0.9 mL	IN	0.2 mg/kg	4 mg
Midazolam IV/IM	5 mg/mL	0.4 mL	IV/IM	0.1 mg/kg	2 mg
Morphine	4 mg/mL	0.5 mL	IV	0.1 mg/kg	2 mg
Naloxone	1 mg/mL	0.4 mL	IV/IM	Dose =	0.4 mg
Naloxone Intranasal	1 mg/mL	2 mL	IN	Dose =	2 mg
Ondansetron IV	2 mg/mL	2 mL	IV	Dose =	4 mg
Ondansetron ODT	4 mg/tab	1 tab	PO	Dose =	4 mg
Sodium Bicarb 8.4%	50 mEq/50 mL	20 mL	IV	1 mEq/kg	20 mEq
Sodium Chloride Bolus	0.9%	400 mL	IV	20 mL/kg	400 mL

PHILIPS MRx	JOULES/KG	1ST	2ND	3RD	4TH
Defibrillation	2 → 4 → 6 → 10	50	70	120	150
Cardioversion	0.5 → 1 → 2 → 2	10	20	50	50

ET TUBE	DISTANCE AT LIP
5.0 Cuffed	16.5 cm

VITALS	SBP	80 - 115	HR	70 - 115	RR	20 - 24

Option 1 -USE ACTUAL AGE (IF STANDARD SIZED CHILD)
Option 2 -ESTIMATE AGE USING HANDTEVY LENGTH BASED TAPE (HEAD TO HEEL)

6YR

PINELLAS COUNTY EMS				22 KG IDEAL WEIGHT	
DRUG	CONC	VOL	RT	DOSE/KG	AMOUNT
Adenosine [1st Dose]	3 mg/mL	0.73 mL	IV	0.1 mg/kg	2.2 mg
Adenosine [2nd Dose]	3 mg/mL	1.5 mL	IV	0.2 mg/kg	4.4 mg
Albuterol	2.5 mg/3 mL	3 mL	NEB	Dose =	2.5 mg
Amiodarone (Arrest Dose)	50 mg/mL	2.2 mL	IV	5 mg/kg	110 mg
Atropine	0.1 mg/mL	4.4 mL	IV	0.02 mg/kg	0.44 mg
Calcium Chloride	100 mg/mL	4.4 mL	IV	20 mg/kg	440 mg
Dextrose 10% in Water	10 g/100 mL	110 mL	IV	0.5 g/kg	11 g
Diazepam IV	5 mg/mL	0.44 mL	IV	0.1 mg/kg	2.2 mg
Diazepam PR	5 mg/mL	1 mL	PR	Dose =	5 mg
Diphenhydramine	50 mg/mL	0.44 mL	IV/IM	1 mg/kg	22 mg
Dopamine	400 mg/250 mL (1600 mcg/mL)	4 gtt/min	IV	Titrate to BP: Max 16 gtt/min	
Epinephrine 1:1,000 IM	1 mg/mL	0.22 mL	IM	0.01 mg/kg	0.22 mg
Epinephrine 1:10,000 IV	0.1 mg/mL	2.2 mL	IV	0.01 mg/kg	0.22 mg
Fentanyl Intranasal	50 mcg/mL	0.76 mL	IN	1.5 mcg/kg	33 mcg
Fentanyl IV	50 mcg/mL	0.44 mL	IV	1 mcg/kg	22 mcg
Glucagon	1 mg/mL	1 mL	IV/IM	Dose =	1 mg
Glucose (oral)	15 g/pouch	1 pouch	PO	Dose =	15 g
Ipratropium Bromide	0.5 mg/2.5 mL	2.5 mL	NEB	Dose =	0.5 mg
Magnesium Sulfate	40 mg/mL	27.5 mL	IV	50 mg/kg	1.1 g
Methylprednisolone	125 mg/2 mL	0.7 mL	IV	2 mg/kg	44 mg
Midazolam Intranasal	5 mg/mL	0.98 mL	IN	0.2 mg/kg	4.4 mg
Midazolam IV/IM	5 mg/mL	0.44 mL	IV/IM	0.1 mg/kg	2.2 mg
Morphine	4 mg/mL	0.55 mL	IV	0.1 mg/kg	2.2 mg
Naloxone	1 mg/mL	0.4 mL	IV/IM	Dose =	0.4 mg
Naloxone Intranasal	1 mg/mL	2 mL	IN	Dose =	2 mg
Ondansetron IV	2 mg/mL	2 mL	IV	Dose =	4 mg
Ondansetron ODT	4 mg/tab	1 tab	PO	Dose =	4 mg
Sodium Bicarb 8.4%	50 mEq/50 mL	22 mL	IV	1 mEq/kg	22 mEq
Sodium Chloride Bolus	0.9%	440 mL	IV	20 mL/kg	440 mL

PHILIPS MRx	JOULES/KG	1ST	2ND	3RD	4TH
Defibrillation	2 → 4 → 6 → 10	50	100	120	150
Cardioversion	0.5 → 1 → 2 → 2	10	20	50	50

ET TUBE	DISTANCE AT LIP
5.0 Cuffed	16.5 cm

VITALS	SBP	82 - 120	HR	70 - 115	RR	20 - 24

Option 1 -USE ACTUAL AGE (IF STANDARD SIZED CHILD)
Option 2 -ESTIMATE AGE USING HANDTEVY LENGTH BASED TAPE (HEAD TO HEEL)

7YR

PINELLAS COUNTY EMS				25 KG IDEAL WEIGHT	
DRUG	**CONC**	**VOL**	**RT**	**DOSE/KG**	**AMOUNT**
Adenosine [1st Dose]	3 mg/mL	0.83 mL	IV	0.1 mg/kg	2.5 mg
Adenosine [2nd Dose]	3 mg/mL	1.7 mL	IV	0.2 mg/kg	5 mg
Albuterol	2.5 mg/3 mL	3 mL	NEB	Dose =	2.5 mg
Amiodarone (Arrest Dose)	50 mg/mL	2.5 mL	IV	5 mg/kg	125 mg
Atropine	0.1 mg/mL	5 mL	IV	0.02 mg/kg	0.5 mg
Calcium Chloride	100 mg/mL	5 mL	IV	20 mg/kg	500 mg
Dextrose 10% in Water	10 g/100 mL	125 mL	IV	0.5 g/kg	12.5 g
Diazepam IV	5 mg/mL	0.5 mL	IV	0.1 mg/kg	2.5 mg
Diazepam PR	5 mg/mL	1 mL	PR	Dose =	5 mg
Diphenhydramine	50 mg/mL	0.5 mL	IV/IM	1 mg/kg	25 mg
Dopamine	400 mg/250 mL (1600 mcg/mL)	5 gtt/min	IV	Titrate to BP: Max 20 gtt/min	
Epinephrine 1:1,000 IM	1 mg/mL	0.25 mL	IM	0.01 mg/kg	0.25 mg
Epinephrine 1:10,000 IV	0.1 mg/mL	2.5 mL	IV	0.01 mg/kg	0.25 mg
Fentanyl Intranasal	50 mcg/mL	0.85 mL	IN	1.5 mcg/kg	37.5 mcg
Fentanyl IV	50 mcg/mL	0.5 mL	IV	1 mcg/kg	25 mcg
Glucagon	1 mg/mL	1 mL	IV/IM	Dose =	1 mg
Glucose (oral)	15 g/pouch	1 pouch	PO	Dose =	15 g
Ipratropium Bromide	0.5 mg/2.5 mL	2.5 mL	NEB	Dose =	0.5 mg
Magnesium Sulfate	40 mg/mL	31.3 mL	IV	50 mg/kg	1.25 g
Methylprednisolone	125 mg/2 mL	0.8 mL	IV	2 mg/kg	50 mg
Midazolam Intranasal	5 mg/mL	1.1 mL	IN	0.2 mg/kg	5 mg
Midazolam IV/IM	5 mg/mL	0.5 mL	IV/IM	0.1 mg/kg	2.5 mg
Morphine	4 mg/mL	0.63 mL	IV	0.1 mg/kg	2.5 mg
Naloxone	1 mg/mL	0.4 mL	IV/IM	Dose =	0.4 mg
Naloxone Intranasal	1 mg/mL	2 mL	IN	Dose =	2 mg
Ondansetron IV	2 mg/mL	2 mL	IV	Dose =	4 mg
Ondansetron ODT	4 mg/tab	1 tab	PO	Dose =	4 mg
Sodium Bicarb 8.4%	50 mEq/50 mL	25 mL	IV	1 mEq/kg	25 mEq
Sodium Chloride Bolus	0.9%	500 mL	IV	20 mL/kg	500 mL

PHILIPS MRx	JOULES/KG	1ST	2ND	3RD	4TH
Defibrillation	2 → 4 → 6 → 10	50	100	150	150
Cardioversion	0.5 → 1 → 2 → 2	15	20	50	50

ET TUBE	DISTANCE AT LIP
6.0 Cuffed	17 - 18 cm

VITALS	SBP	84 - 120	HR	70 - 110	RR	16 - 22

Option 1 -USE ACTUAL AGE (IF STANDARD SIZED CHILD)
Option 2 -ESTIMATE AGE USING HANDTEVY LENGTH BASED TAPE (HEAD TO HEEL)

8YR

PINELLAS COUNTY EMS				27 KG IDEAL WEIGHT	
DRUG	**CONC**	**VOL**	**RT**	**DOSE/KG**	**AMOUNT**
Adenosine [1st Dose]	3 mg/mL	0.9 mL	IV	0.1 mg/kg	2.7 mg
Adenosine [2nd Dose]	3 mg/mL	1.8 mL	IV	0.2 mg/kg	5.4 mg
Albuterol	2.5 mg/3 mL	3 mL	NEB	Dose =	2.5 mg
Amiodarone (Arrest Dose)	50 mg/mL	2.7 mL	IV	5 mg/kg	135 mg
Atropine	0.1 mg/mL	5 mL	IV	Dose =	0.5 mg
Calcium Chloride	100 mg/mL	5.4 mL	IV	20 mg/kg	540 mg
Dextrose 10% in Water	10 g/100 mL	135 mL	IV	0.5 g/kg	13.5 g
Diazepam IV	5 mg/mL	0.54 mL	IV	0.1 mg/kg	2.7 mg
Diazepam PR	5 mg/mL	1 mL	PR	Dose =	5 mg
Diphenhydramine	50 mg/mL	0.54 mL	IV/IM	1 mg/kg	27 mg
Dopamine	400 mg/250 mL (1600 mcg/mL)	5 gtt/min	IV	Titrate to BP: Max 20 gtt/min	
Epinephrine 1:1,000 IM	1 mg/mL	0.27 mL	IM	0.01 mg/kg	0.27 mg
Epinephrine 1:10,000 IV	0.1 mg/mL	2.7 mL	IV	0.01 mg/kg	0.27 mg
Fentanyl Intranasal	50 mcg/mL	0.91 mL	IN	1.5 mcg/kg	40.5 mcg
Fentanyl IV	50 mcg/mL	0.54 mL	IV	1 mcg/kg	27 mcg
Glucagon	1 mg/mL	1 mL	IV/IM	Dose =	1 mg
Glucose (oral)	15 g/pouch	1 pouch	PO	Dose =	15 g
Ipratropium Bromide	0.5 mg/2.5 mL	2.5 mL	NEB	Dose =	0.5 mg
Magnesium Sulfate	40 mg/mL	33.8 mL	IV	50 mg/kg	1.35 g
Methylprednisolone	125 mg/2 mL	0.86 mL	IV	2 mg/kg	54 mg
Midazolam Intranasal	5 mg/mL	1.2 mL	IN	0.2 mg/kg	5.4 mg
Midazolam IV/IM	5 mg/mL	0.54 mL	IV/IM	0.1 mg/kg	2.7 mg
Morphine	4 mg/mL	0.68 mL	IV	0.1 mg/kg	2.7 mg
Naloxone	1 mg/mL	0.4 mL	IV/IM	Dose =	0.4 mg
Naloxone Intranasal	1 mg/mL	2 mL	IN	Dose =	2 mg
Ondansetron IV	2 mg/mL	2 mL	IV	Dose =	4 mg
Ondansetron ODT	4 mg/tab	1 tab	PO	Dose =	4 mg
Sodium Bicarb 8.4%	50 mEq/50 mL	27 mL	IV	1 mEq/kg	27 mEq
Sodium Chloride Bolus	0.9%	540 mL	IV	20 mL/kg	540 mL

PHILIPS MRx	JOULES/KG	1ST	2ND	3RD	4TH
Defibrillation	2 → 4 → 6 → 10	50	100	150	150
Cardioversion	0.5 → 1 → 2 → 2	15	30	50	50

ET TUBE	DISTANCE AT LIP
6.0 Cuffed	17 - 18 cm

VITALS	SBP	86 - 120	HR	70 - 110	RR	16 - 22

Option 1 -USE ACTUAL AGE (IF STANDARD SIZED CHILD)
Option 2 -ESTIMATE AGE USING HANDTEVY LENGTH BASED TAPE (HEAD TO HEEL)

9YR

PINELLAS COUNTY EMS				30 KG IDEAL WEIGHT	
DRUG	CONC	VOL	RT	DOSE/KG	AMOUNT
Adenosine [1st Dose]	3 mg/mL	1 mL	IV	0.1 mg/kg	3 mg
Adenosine [2nd Dose]	3 mg/mL	2 mL	IV	0.2 mg/kg	6 mg
Albuterol	2.5 mg/3 mL	3 mL	NEB	Dose =	2.5 mg
Amiodarone (Arrest Dose)	50 mg/mL	3 mL	IV	5 mg/kg	150 mg
Atropine	0.1 mg/mL	5 mL	IV	Dose =	0.5 mg
Calcium Chloride	100 mg/mL	6 mL	IV	20 mg/kg	600 mg
Dextrose 10% in Water	10 g/100 mL	150 mL	IV	0.5 g/kg	15 g
Diazepam IV	5 mg/mL	0.6 mL	IV	0.1 mg/kg	3 mg
Diazepam PR	5 mg/mL	1 mL	PR	Dose =	5 mg
Diphenhydramine	50 mg/mL	0.6 mL	IV/IM	1 mg/kg	30 mg
Dopamine	400 mg/250 mL (1600 mcg/mL)	6 gtt/min	IV	Titrate to BP: Max 24 gtt/min	
Epinephrine 1:1,000 IM	1 mg/mL	0.3 mL	IM	0.01 mg/kg	0.3 mg
Epinephrine 1:10,000 IV	0.1 mg/mL	3 mL	IV	0.01 mg/kg	0.3 mg
Fentanyl Intranasal	50 mcg/mL	1 mL	IN	1.5 mcg/kg	45 mcg
Fentanyl IV	50 mcg/mL	0.6 mL	IV	1 mcg/kg	30 mcg
Glucagon	1 mg/mL	1 mL	IV/IM	Dose =	1 mg
Glucose (oral)	15 g/pouch	1 pouch	PO	Dose =	15 g
Ipratropium Bromide	0.5 mg/2.5 mL	2.5 mL	NEB	Dose =	0.5 mg
Magnesium Sulfate	40 mg/mL	37.5 mL	IV	50 mg/kg	1.5 g
Methylprednisolone	125 mg/2 mL	0.96 mL	IV	2 mg/kg	60 mg
Midazolam Intranasal	5 mg/mL	1.3 mL	IN	0.2 mg/kg	6 mg
Midazolam IV/IM	5 mg/mL	0.6 mL	IV/IM	0.1 mg/kg	3 mg
Morphine	4 mg/mL	0.75 mL	IV	0.1 mg/kg	3 mg
Naloxone	1 mg/mL	0.4 mL	IV/IM	Dose =	0.4 mg
Naloxone Intranasal	1 mg/mL	2 mL	IN	Dose =	2 mg
Ondansetron IV	2 mg/mL	2 mL	IV	Dose =	4 mg
Ondansetron ODT	4 mg/tab	1 tab	PO	Dose =	4 mg
Sodium Bicarb 8.4%	50 mEq/50 mL	30 mL	IV	1 mEq/kg	30 mEq
Sodium Chloride Bolus	0.9%	600 mL	IV	20 mL/kg	600 mL

PHILIPS MRx	JOULES/KG	1ST	2ND	3RD	4TH
Defibrillation	2 → 4 → 6 → 10	70	120	150	150
Cardioversion	0.5 → 1 → 2 → 2	15	30	70	70

ET TUBE	DISTANCE AT LIP
6.5 Cuffed	18.5 - 19.5 cm

VITALS	SBP	88 - 120	HR	65 - 105	RR	16 - 22

Option 1 -USE ACTUAL AGE (IF STANDARD SIZED CHILD)
Option 2 -ESTIMATE AGE USING HANDTEVY LENGTH BASED TAPE (HEAD TO HEEL)

10YR

PINELLAS COUNTY EMS				35 KG IDEAL WEIGHT	
DRUG	**CONC**	**VOL**	**RT**	**DOSE/KG**	**AMOUNT**
Adenosine [1st Dose]	3 mg/mL	1.2 mL	IV	0.1 mg/kg	3.5 mg
Adenosine [2nd Dose]	3 mg/mL	2.3 mL	IV	0.2 mg/kg	7 mg
Albuterol	2.5 mg/3 mL	3 mL	NEB	Dose =	2.5 mg
Amiodarone (Arrest Dose)	50 mg/mL	3.5 mL	IV	5 mg/kg	175 mg
Atropine	0.1 mg/mL	5 mL	IV	Dose =	0.5 mg
Calcium Chloride	100 mg/mL	7 mL	IV	20 mg/kg	700 mg
Dextrose 10% in Water	10 g/100 mL	175 mL	IV	0.5 g/kg	17.5 g
Diazepam IV	5 mg/mL	0.7 mL	IV	0.1 mg/kg	3.5 mg
Diazepam PR	5 mg/mL	1 mL	PR	Dose =	5 mg
Diphenhydramine	50 mg/mL	0.7 mL	IV/IM	1 mg/kg	35 mg
Dopamine	400 mg/250 mL (1600 mcg/mL)	7 gtt/min	IV	Titrate to BP: Max 28 gtt/min	
Epinephrine 1:1,000 IM	1 mg/mL	0.3 mL	IM	Dose =	0.3 mg
Epinephrine 1:10,000 IV	0.1 mg/mL	3.5 mL	IV	0.01 mg/kg	0.35 mg
Fentanyl Intranasal	50 mcg/mL	1.2 mL	IN	1.5 mcg/kg	52.5 mcg
Fentanyl IV	50 mcg/mL	0.7 mL	IV	1 mcg/kg	35 mcg
Glucagon	1 mg/mL	1 mL	IV/IM	Dose =	1 mg
Glucose (oral)	15 g/pouch	1 pouch	PO	Dose =	15 g
Ipratropium Bromide	0.5 mg/2.5 mL	2.5 mL	NEB	Dose =	0.5 mg
Magnesium Sulfate	40 mg/mL	43.8 mL	IV	50 mg/kg	1.75 g
Methylprednisolone	125 mg/2 mL	1.1 mL	IV	2 mg/kg	70 mg
Midazolam Intranasal	5 mg/mL	1.5 mL	IN	0.2 mg/kg	7 mg
Midazolam IV/IM	5 mg/mL	0.7 mL	IV/IM	0.1 mg/kg	3.5 mg
Morphine	4 mg/mL	0.88 mL	IV	0.1 mg/kg	3.5 mg
Naloxone	1 mg/mL	0.4 mL	IV/IM	Dose =	0.4 mg
Naloxone Intranasal	1 mg/mL	2 mL	IN	Dose =	2 mg
Ondansetron IV	2 mg/mL	2 mL	IV	Dose =	4 mg
Ondansetron ODT	4 mg/tab	1 tab	PO	Dose =	4 mg
Sodium Bicarb 8.4%	50 mEq/50 mL	35 mL	IV	1 mEq/kg	35 mEq
Sodium Chloride Bolus	0.9%	700 mL	IV	20 mL/kg	700 mL

PHILIPS MRx	JOULES/KG	1ST	2ND	3RD	4TH
Defibrillation	2 → 4 → 6 → 10	70	150	150	150
Cardioversion	0.5 → 1 → 2 → 2	20	30	70	70

ET TUBE	DISTANCE AT LIP
6.5 Cuffed	18.5 - 19.5 cm

VITALS	SBP	90 - 120	HR	60 - 100	RR	16 - 22

Option 1 -USE ACTUAL AGE (IF STANDARD SIZED CHILD)
Option 2 -ESTIMATE AGE USING HANDTEVY LENGTH BASED TAPE (HEAD TO HEEL)

11YR

PINELLAS COUNTY EMS				40 KG IDEAL WEIGHT	
DRUG	CONC	VOL	RT	DOSE/KG	AMOUNT
Adenosine [1st Dose]	3 mg/mL	1.3 mL	IV	0.1 mg/kg	4 mg
Adenosine [2nd Dose]	3 mg/mL	2.7 mL	IV	0.2 mg/kg	8 mg
Albuterol	2.5 mg/3 mL	3 mL	NEB	Dose =	2.5 mg
Amiodarone (Arrest Dose)	50 mg/mL	4 mL	IV	5 mg/kg	200 mg
Atropine	0.1 mg/mL	5 mL	IV	Dose =	0.5 mg
Calcium Chloride	100 mg/mL	8 mL	IV	20 mg/kg	800 mg
Dextrose 10% in Water	10 g/100 mL	200 mL	IV	0.5 g/kg	20 g
Diazepam IV	5 mg/mL	0.8 mL	IV	0.1 mg/kg	4 mg
Diazepam PR	5 mg/mL	1 mL	PR	Dose =	5 mg
Diphenhydramine	50 mg/mL	0.8 mL	IV/IM	1 mg/kg	40 mg
Dopamine	400 mg/250 mL (1600 mcg/mL)	8 gtt/min	IV	Titrate to BP: Max 32 gtt/min	
Epinephrine 1:1,000 IM	1 mg/mL	0.3 mL	IM	Dose =	0.3 mg
Epinephrine 1:10,000 IV	0.1 mg/mL	4 mL	IV	0.01 mg/kg	0.4 mg
Fentanyl Intranasal	50 mcg/mL	1.3 mL	IN	1.5 mcg/kg	60 mcg
Fentanyl IV	50 mcg/mL	0.8 mL	IV	1 mcg/kg	40 mcg
Glucagon	1 mg/mL	1 mL	IV/IM	Dose =	1 mg
Glucose (oral)	15 g/pouch	1 pouch	PO	Dose =	15 g
Ipratropium Bromide	0.5 mg/2.5 mL	2.5 mL	NEB	Dose =	0.5 mg
Magnesium Sulfate	40 mg/mL	50 mL	IV	50 mg/kg	2 g
Methylprednisolone	125 mg/2 mL	1.3 mL	IV	2 mg/kg	80 mg
Midazolam Intranasal	5 mg/mL	1.7 mL	IN	0.2 mg/kg	8 mg
Midazolam IV/IM	5 mg/mL	0.8 mL	IV/IM	0.1 mg/kg	4 mg
Morphine	4 mg/mL	1 mL	IV	0.1 mg/kg	4 mg
Naloxone	1 mg/mL	0.4 mL	IV/IM	Dose =	0.4 mg
Naloxone Intranasal	1 mg/mL	2 mL	IN	Dose =	2 mg
Ondansetron IV	2 mg/mL	2 mL	IV	Dose =	4 mg
Ondansetron ODT	4 mg/tab	1 tab	PO	Dose =	4 mg
Sodium Bicarb 8.4%	50 mEq/50 mL	40 mL	IV	1 mEq/kg	40 mEq
Sodium Chloride Bolus	0.9%	800 mL	IV	20 mL/kg	800 mL

PHILIPS MRx	JOULES/KG	1ST	2ND	3RD	4TH
Defibrillation	2 → 4 → 6 → 10	70	150	150	150
Cardioversion	0.5 → 1 → 2 → 2	20	50	70	70

ET TUBE	DISTANCE AT LIP
7.0 Cuffed	20 - 21 cm

VITALS	SBP	90 - 120	HR	60 - 100	RR	16 - 22

Option 1 -USE ACTUAL AGE (IF STANDARD SIZED CHILD)
Option 2 -ESTIMATE AGE USING HANDTEVY LENGTH BASED TAPE (HEAD TO HEEL)

12YR

PINELLAS COUNTY EMS				50 KG IDEAL WEIGHT	
DRUG	CONC	VOL	RT	DOSE/KG	AMOUNT
Adenosine [1st Dose]	3 mg/mL	1.7 mL	IV	0.1 mg/kg	5 mg
Adenosine [2nd Dose]	3 mg/mL	3.3 mL	IV	0.2 mg/kg	10 mg
Albuterol	2.5 mg/3 mL	3 mL	NEB	Dose =	2.5 mg
Amiodarone (Arrest Dose)	50 mg/mL	5 mL	IV	5 mg/kg	250 mg
Atropine	0.1 mg/mL	5 mL	IV	Dose =	0.5 mg
Calcium Chloride	100 mg/mL	10 mL	IV	20 mg/kg	1 g
Dextrose 10% in Water	10 g/100 mL	250 mL	IV	0.5 g/kg	25 g
Diazepam IV	5 mg/mL	1 mL	IV	0.1 mg/kg	5 mg
Diazepam PR	5 mg/mL	1 mL	PR	Dose =	5 mg
Diphenhydramine	50 mg/mL	1 mL	IV/IM	1 mg/kg	50 mg
Dopamine	400 mg/250 mL (1600 mcg/mL)	9 gtt/min	IV	Titrate to BP: Max 36 gtt/min	
Epinephrine 1:1,000 IM	1 mg/mL	0.3 mL	IM	Dose =	0.3 mg
Epinephrine 1:10,000 IV	0.1 mg/mL	5 mL	IV	0.01 mg/kg	0.5 mg
Fentanyl Intranasal	50 mcg/mL	1.6 mL	IN	1.5 mcg/kg	75 mcg
Fentanyl IV	50 mcg/mL	1 mL	IV	1 mcg/kg	50 mcg
Glucagon	1 mg/mL	1 mL	IV/IM	Dose =	1 mg
Glucose (oral)	15 g/pouch	1 pouch	PO	Dose =	15 g
Ipratropium Bromide	0.5 mg/2.5 mL	2.5 mL	NEB	Dose =	0.5 mg
Magnesium Sulfate	40 mg/mL	50 mL	IV	Dose =	2 g
Methylprednisolone	125 mg/2 mL	1.6 mL	IV	2 mg/kg	100 mg
Midazolam Intranasal	5 mg/mL	2 mL	IN	0.2 mg/kg	10 mg
Midazolam IV/IM	5 mg/mL	1 mL	IV/IM	0.1 mg/kg	5 mg
Morphine	4 mg/mL	1 mL	IV	Dose =	4 mg
Naloxone	1 mg/mL	0.4 mL	IV/IM	Dose =	0.4 mg
Naloxone Intranasal	1 mg/mL	2 mL	IN	Dose =	2 mg
Ondansetron IV	2 mg/mL	2 mL	IV	Dose =	4 mg
Ondansetron ODT	4 mg/tab	1 tab	PO	Dose =	4 mg
Sodium Bicarb 8.4%	50 mEq/50 mL	50 mL	IV	1 mEq/kg	50 mEq
Sodium Chloride Bolus	0.9%	1000 mL	IV	20 mL/kg	1000 mL

PHILIPS MRx	JOULES/KG	1ST	2ND	3RD	4TH
Defibrillation	2 → 4 → 6 → 10	100	150	150	150
Cardioversion	0.5 → 1 → 2 → 2	20	50	100	100

ET TUBE	DISTANCE AT LIP
7.0 Cuffed	20 - 21 cm

VITALS	SBP	90 - 120	HR	60 - 100	RR	16 - 22

Option 1 -USE ACTUAL AGE (IF STANDARD SIZED CHILD)
Option 2 -ESTIMATE AGE USING HANDTEVY LENGTH BASED TAPE (HEAD TO HEEL)

13YR

PINELLAS COUNTY EMS				60 KG IDEAL WEIGHT	
DRUG	CONC	VOL	RT	DOSE/KG	AMOUNT
Adenosine [1st Dose]	3 mg/mL	2 mL	IV	0.1 mg/kg	6 mg
Adenosine [2nd Dose]	3 mg/mL	4 mL	IV	0.2 mg/kg	12 mg
Albuterol	2.5 mg/3 mL	3 mL	NEB	Dose =	2.5 mg
Amiodarone (Arrest Dose)	50 mg/mL	6 mL	IV	5 mg/kg	300 mg
Atropine	0.1 mg/mL	5 mL	IV	Dose =	0.5 mg
Calcium Chloride	100 mg/mL	10 mL	IV	Dose =	1 g
Dextrose 10% in Water	10 g/100 mL	250 mL	IV	Dose =	25 g
Diazepam IV	5 mg/mL	1 mL	IV	Dose =	5 mg
Diazepam PR	5 mg/mL	1 mL	PR	Dose =	5 mg
Diphenhydramine	50 mg/mL	1 mL	IV/IM	Dose =	50 mg
Dopamine	400 mg/250 mL (1600 mcg/mL)	11 gtt/min	IV	Titrate to BP: Max 44 gtt/min	
Epinephrine 1:1,000 IM	1 mg/mL	0.3 mL	IM	Dose =	0.3 mg
Epinephrine 1:10,000 IV	0.1 mg/mL	6 mL	IV	0.01 mg/kg	0.6 mg
Fentanyl Intranasal	50 mcg/mL	1.9 mL	IN	1.5 mcg/kg	90 mcg
Fentanyl IV	50 mcg/mL	1 mL	IV	Dose =	50 mcg
Glucagon	1 mg/mL	1 mL	IV/IM	Dose =	1 mg
Glucose (oral)	15 g/pouch	1 pouch	PO	Dose =	15 g
Ipratropium Bromide	0.5 mg/2.5 mL	2.5 mL	NEB	Dose =	0.5 mg
Magnesium Sulfate	40 mg/mL	50 mL	IV	Dose =	2 g
Methylprednisolone	125 mg/2 mL	1.9 mL	IV	2 mg/kg	120 mg
Midazolam Intranasal	5 mg/mL	2 mL	IN	Dose =	10 mg
Midazolam IV/IM	5 mg/mL	1 mL	IV/IM	Dose =	5 mg
Morphine	4 mg/mL	1 mL	IV	Dose =	4 mg
Naloxone	1 mg/mL	0.4 mL	IV/IM	Dose =	0.4 mg
Naloxone Intranasal	1 mg/mL	2 mL	IN	Dose =	2 mg
Ondansetron IV	2 mg/mL	2 mL	IV	Dose =	4 mg
Ondansetron ODT	4 mg/tab	1 tab	PO	Dose =	4 mg
Sodium Bicarb 8.4%	50 mEq/50 mL	50 mL	IV	Dose =	50 mEq
Sodium Chloride Bolus	0.9%	1000 mL	IV	Dose =	1000 mL

PHILIPS MRx	JOULES/KG	1ST	2ND	3RD	4TH
Defibrillation	2 → 4 → 6 → 10	120	150	150	150
Cardioversion	0.5 → 1 → 2 → 2	30	70	120	120

ET TUBE	DISTANCE AT LIP
7.0 Cuffed	20 - 21 cm

VITALS	SBP	90 - 120	HR	60 - 100	RR	16 - 22

WEAPONS OF MASS DESTRUCTION (WMD) TREATMENT GUIDE

Call Poison Control 800-222-1222		NB	4MO	6 MO	1 YR	3 YR	5 YR	7 YR	9 YR	10 YR	≥11 YR	
ANTIDOTE	**POISONING**	4 KG	6 KG	8 KG	10 KG	15 KG	20 KG	25 KG	30 KG	35 KG	≥40 KG	**NOTES**
Atropine *0.4 mg/mL*	Organophosphates Carbamates Nerve Agents	0.5 mL	0.75 mL	1 mL	1.3 mL	1.9 mL	2.5 mL	3.1 mL	3.8 mL	4.4 mL	5 mL	*Verify conc.* IV/IO bolus May repeat prn
AtroPen® Auto-injector	Same as Atropine Indication	N/A	0.25 mg	0.5 mg	0.5 mg	0.5 mg	1 mg	1 mg	1 mg	1 mg	2 mg	IM only
Calcium Chloride 10% slow IV bolus	Systemic Hydrofluoric Acid Systemic Fluoride Poison	0.8 mL	1.2 mL	1.6 mL	2 mL	3 mL	4mL	5 mL	6 mL	7 mL	10 mL	Repeat doses may be required
Calcium Gluconate 10% slow IV bolus	Systemic Hydrofluoric Acid Systemic Fluoride Poison	0.8 mL	1.2 mL	1.6 mL	2 mL	3 mL	4mL	5 mL	6 mL	7 mL	10 mL	Repeat doses may be required
Calcium Gluconate Gel	Hydrofluoric Acid Skin Burn	Apply topically using gel or solution										Apply topically 2.5%-10%
DuoDote™ Auto-injector (Atropine + 2-PAM)	Organophosphates Nerve Agents	N/A	N/A	N/A	N/A	N/A	N/A	N/A	YES	YES	YES	9 years and over
Methylene Blue	Methemoglobin Forming Compounds	0.4 mL	0.6 mL	0.8 mL	1 mL	1.5 mL	2 mL	2.5 mL	3 mL	3.5 mL	5 mL	IV/IO slow (5 min)
Pralidoxime (2-PAM)	Organophosphates Nerve Agents	2 mL	3 mL	4 mL	5 mL	7.5 mL	10 mL	12.5 mL	15 mL	17.5 mL	20 mL	IV/IO over 10 min then continuous @5-10 mg/kg/hr
Sodium Nitrite	Cyanide / Nitriles Hydrogen Sulfide	0.8 mL	1.2 mL	1.6 mL	2 mL	3 mL	4 mL	5 mL	6 mL	7 mL	8 mL *(max 10 mL)*	IV/IO over 5 min 3% solution
Sodium Thiosulfate	Cyanide Nitriles	5 mL	8 mL	10 mL	12 mL	18 mL	24 mL	30 mL	36mL	42 mL	50 mL *(max)*	Infuse IV/IO over 10-20 min 25% solution

The WMD Treatment Guide above is NOT Department specific. Dosing is based on standard national protocols. Follow local protocols in all situations and consider calling Poison Control for further information. Call Medical Control when applicable. Cyanokit dosing information is displayed on the next page of this book.

GLASGOW COMA SCALE

Clinical Parameter	Pediatric GCS (Age 2 and Under)	GCS (Age 3 and Over)	Score
Eye Opening	Spontaneous	Spontaneous	4
	To sound	To command	3
	To pain	To pain	2
	None	None	1
Verbal	Age appropriate	Oriented	5
	Cries, irritable	Confused, disoriented	4
	Cries to pain	Inappropriate words	3
	Moans to pain	Incomprehensible sounds	2
	None	None	1
Motor	Spontaneous movement (obeys verbal)	Obeys commands	6
	Withdraws to touch (localizes pain)	Localizes pain	5
	Withdraws to pain	Withdraws	4
	Abnormal flexion to pain (decorticate)	Abnormal flexion to pain	3
	Abnormal extension to pain	Abnormal extension to	2
	None	None	1

A score of 13 or higher correlates with mild brain injury; a score of 9 to 12 correlates with moderate injury; a score of 8 or less represents severe brain injury. Pediatric GCS was validated in 2 years of age or younger.

CYANOKIT ADMINISTRATION

PREPARATION INSTRUCTIONS

1. Add 200 ml NS or D5W to 5 g vial
2. Rock/Rotate (60 seconds)
3. Remove desired vol. w/ syringe
4. Reinsert into an empty NS or D5W bag
5. Attach supplied tubing (20 drops/mL)

NB	4MO	6 MO	1 YR	3 YR	5 YR	7 YR	9 YR	10 YR	11 YR - ADULT
4 KG	6 KG	8 KG	10 KG	15 KG	20 KG	25 KG	30 KG	35 KG	≥ 40 KG
AMOUNT TO REMOVE FROM VIAL (USE 50 ml SYRINGE)									Use vented tubing in Cyanokit for ≥ 11 YR
11 ml	17 ml	22 ml	28 ml	42 ml	56 ml	70 ml	84 ml	98 ml	Administer directly from vial over 15 minutes
AMOUNT TO GIVE THE PATIENT (DROPS/MINUTE)									
15 drops /min	23 drops /min	30 drops /min	37 drops /min	56 drops /min	75 drops /min	93 drops /min	112 drops /min	130 drops /min	260 drops/min

Hydroxycobalamin (Cyanokit) is an antidote indicated for suspected cyanide and for smoke inhalation with severe respiratory distress or arrest. Follow your protocol's specific administration instructions.

GENERAL INFORMATION

Age can be used to determine a child's weight accurately only in children of average size. The Handtevy Length Based Tape should be used in children of short or tall stature or with chronic illness.

The information in this book is customized for PINELLAS COUNTY EMS. It is the responsibility of PINELLAS COUNTY EMS to ensure the accuracy of all drug concentrations, drug dosages and equipment sizes on a continual basis. Pediatric Emergency Standards, Inc. recommends prompt revision and replacement of this book if the Department has made any modifications.

Provider's experience and training should be the final determinant of all clinical treatment decisions.

HANDTEVY™
Pediatric Emergency Standards

For inquires, please contact:
Pediatric Emergency Standards, Inc.
Office: 866.867.3192
Fax: 954.653.3792
Email: Info@Handtevy.com

Visit us at www.Handtevy.com for more information

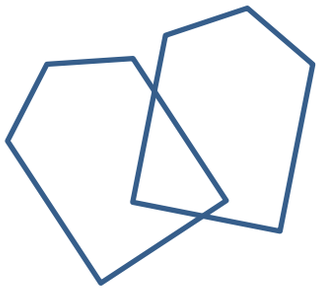
CT22 EMS COGNITIVE EVALUATION

Administer and document the EMS Cognitive Evaluation as indicated

Minimum Passing Score = 23

Maximum Score = 29

Question or Task	Points
1. What is the Year? Season? Month? Day of Week? Patient's Birthday?	5
2. Where are we? Street? City? State? Country?	5
3. The evaluator will name three objects. Repeat the name of the three objects three times. Ask the patient to repeat the name of the three objects after 3 seconds	3
4. Begin with the number 100 and ask the patient to count backwards by five for at least five numbers (e.g. 100, 95, 90, 85, 80)	5
5. Ask the patient to repeat the names of the three objects from Question #3	3
6. Show the patient a pen and a watch. Ask the patient to name them.	2
7. Ask the patient to repeat "no ifs ands or buts"	1
8. Ask the patient to follow a three stage command (e.g. "take this paper in your right hand, hold it and then place it on the floor/ground")	2
9. Ask the patient to read and do the following: "RAISE YOUR RIGHT HAND"	1
10. Ask the patient to write any complete sentence	1
11. Ask the patient to copy the design below:	1



Total Score _____

CT23 REHAB TRACKING TOOL

REHAB GROUP – CHECK IN/OUT SHEET

Department/Agency Name:

Incident Number:

Date:

Name/Assignment	Times	Disposition
First: ____________ Last: ____________ Unit Assignment: ____________	Time In: ____________ Time Out: ____________	☐ Released From Rehab ☐ Referred To Medical Medical Evaluation Completed on Entry ☐ Yes ☐ No Medical Evaluation Completed on Exit ☐ Yes ☐ No
First: ____________ Last: ____________ Unit Assignment: ____________	Time In: ____________ Time Out: ____________	☐ Released From Rehab ☐ Referred To Medical Medical Evaluation Completed on Entry ☐ Yes ☐ No Medical Evaluation Completed on Exit ☐ Yes ☐ No
First: ____________ Last: ____________ Unit Assignment: ____________	Time In: ____________ Time Out: ____________	☐ Released From Rehab ☐ Referred To Medical Medical Evaluation Completed on Entry ☐ Yes ☐ No Medical Evaluation Completed on Exit ☐ Yes ☐ No
First: ____________ Last: ____________ Unit Assignment: ____________	Time In: ____________ Time Out: ____________	☐ Released From Rehab ☐ Referred To Medical Medical Evaluation Completed on Entry ☐ Yes ☐ No Medical Evaluation Completed on Exit ☐ Yes ☐ No

Return form to Agency Representative or Incident Command

One Agency per form

Fire Department 600 Series SOP 600-12-A
Rehab Group - Check In/Out Sheet

Page 1 of 1
Sept 2018

Sunstar PARAMEDICS

INTERFACILITY TRANSPORT REQUEST PROCEDURE

CALL: 727-582-2001

Sending Facility – Be prepared to provide the following information	
Facility Name	Patient location – Unit name, Room and Bed

State Level of Urgency		
 **EMERENCY** Lights and Sirens	**AS SOON AS POSSIBLE** Non-critical: Pt. can wait for next available ambulance	**SCHEDULED/ROUTINE** Non-critical: Specific pick-up time requested

Additional Information Necessary					
1.	Patient's name, age and social security number	**2.**	Diagnosis & reason for transport	**3.**	Adjuncts necessary for transport
4.	Isolation or Safety Precautions	**5.**	Sending Physician Name	**6.**	Destination facility name, unit, room/bed
7.	Receiving Physician Name	**8.**	Transport Coordinator/Primary RN name and direct telephone number		

TRANSPORT OPTIONS*		
EMS System Transport Options	Critical Care Transport Team (Critical Care RN, Paramedic and EMT)	
	Critical Care Paramedic Ambulance (Critical Care Paramedic and EMT)	
	ALS Ambulance (Paramedic and EMT)	
	BLS Ambulance (2 – EMT's)	
Air Medical Transport	Bayflite: 800-223-4494	AeroMed: 800-247-4472
Specialized (Pediatric and NICU transfers)	Johns Hopkins All Childrens Hospital Lifeline Team: 855-261-0220 or 727-767-7337	
Wheelchair/Stretcher Van		

* If patient care exceeds scope of an ALS Ambulance, Critical Care Transport will be dispatched. The Critical Care RN will call for pt. report to then determine the most appropriate EMS System Transport option

PATIENT MONITORING AND MANAGEMENT CAPABILITIES						
	Airway	**Breathing**	**Circulation (Cardiac)**	**Disability & Drugs**	**Exam**	**Notes**
Mental Health Transport (MHT)	NONE	NONE	NONE	No risk of violence or need for restraints (must be able to ambulate without assistance)	Must be medically cleared by MD/DO, ARNP or PA-C	Staffed with non-medical personnel
Basic Life Support (BLS)	Basic Monitoring & Simple Suctioning Uncomplicated trach monitoring	Basic Monitoring & O2 (stable flow)	Basic AED	NONE (Peripheral or Central IVs must be capped/not in use)	Triage by Call Taker EMT verifies on arrival	NONE
Advanced Life Support (ALS)	Endotracheal Intubation Complex or continuous suctioning	Advanced monitoring (SpO_2 /$EtCO_2$) and Oxygen (titration) and Ventilatory assistance	Continuous cardiac monitoring (transfers to monitored beds, recent ACS, arrhythmia, or another cardiac event)	Standard EMS Medications IV Fluids (NS, LR, D10W only) without pump Seizure Precautions (< 24 hrs or high risk) Pain Management Restraints (Physical and/or Chemical)	Triage by Call Taker Paramedic verifies on arrival	Hospital RN may accompany if no CCP/CCT available
Critical Care Paramedic (CCP)	Same capabilities as ALS Ambulance	Stable Vent (no settings changes ≥ 24 hrs) Stable Chest Tube (> 48 hrs old)	Non-monitored arterial sheaths	Advanced/Pump Requiring Medications and Infusions (1 channel max) [e.g. Peds IVF, IVF with K+, antibiotics, TPN, PPI's, H2 blockers, anticoagulants, vasopressors]	Triage by CCT RN to meet CCP Criteria	Emergency STEMI/STROKE Transfers with: • Stable Airway • Stable BP (>90/<180) • No arrhythmia • 1 infusion max
Critical Care (CCT)	RSI with Video Laryngoscopy Recent/Complicated Trach	Vent Management Chest Tube Management	Invasive Monitoring (Art Line, Swan-Ganz, CVP, ICP etc.) Cardiac Adjuncts (Transvenous Pacer, Balloon Pump, LVAD, BIVAD) Fetal Monitoring/tocolysis	Advanced Medications (6 channels max) Blood Products	Triage by CCT RN to meet CCT Criteria	Any patient with high risk of acute deterioration during transport High Risk OB Infants < 28 days or 5 Kgs

CT25 PATIENT/HOSPITAL STATUS DEFINITIONS

PATIENT STATUS	
RED **"Critical/Unstable"**	requiring immediate intervention to preserve life and/or limb or prevent serious disability, including but not limited to the following patients: • *"STEMI ALERT"* • *"STROKE ALERT"* • *"SEPSIS ALERT"* • *"TRAUMA ALERT"*
YELLOW **"Serious"**	potential for loss of life and/or limb or risk of serious disability if care is not received in a timely manner
GREEN **"Non-urgent"**	requiring care in a reasonable amount of time, but will likely not suffer adverse effects from a limited delay in definitive care
BLACK **"Obviously Dead"**	triaged as an unsalvageable/expectant patient, or having traumatic injuries incompatible with life

HOSPITAL STATUS			
Go to http://hs.sunstarems.com for real time hospital status and specialty capabilities			
OPEN	Normal operating condition with the availability of all usual specialty referral service		
CLOSED	An internal disaster has occurred or inability to provide care for any incoming 9-1-1 ambulance transports		
EMS BYPASS	The EMS System, with the approval of the OLMC Physician, has initiated temporary closure of a hospital to all 911/EMS ambulance transports in accordance with the Patient Wait Time/Hospital Bed Delay Protocol		
HOSPITAL DIVERT	Hospital has requested the diversion of all incoming 911/EMS ambulance transports. Status shall be for a minimum of one (1) hour		
SPECIALTY DIVERT	Hospital is OPEN except for the inability to provide one or more usual specialty referral service capabilities as follows:		
	• Percutaneous Coronary Intervention (PCI) • Primary or Comprehensive Stroke Center	• Pediatric (less than 15 years old) Psychiatric / Baker Act • Adult Psychiatric / Baker Act	• Adult Trauma Center • Pediatric Trauma Center • Burn Center • Pediatric/Neonatal • Obstetrics