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CLINICAL GUIDELINES
FOR PRE-HOSPITAL CARE

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TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

PHARMACOPEIA

LOUISVILLE METRO EMS

GENERAL GUIDELINES

DEFINITION OF A PATIENT

GENERAL

- A patient is any human being that:
  - Has a complaint suggestive of potential illness or injury that has resulted in a call for service
  - Requests an evaluation for potential illness or injury
  - Has obvious evidence of illness, injury, cognitive impairment, or lack of decisional capacity
  - Has experienced an acute event or is in a circumstance or situation that could reasonably lead to illness or injury
- Anyone that fits this definition must be properly evaluated and appropriate treatment options must be taken, including obtaining an informed refusal that the competent patient does not wish for medical care and/or transport

DEATH ON SCENE/ WITHHOLDING RESUSCITATIVE EFFORTS

GENERAL

- The following criteria must be present to withhold resuscitative efforts:
  - Unresponsive
  - No carotid pulse
  - No respirations
  - No detectable blood pressure
  - No pupillary reflex
  - Associated with:
    - Obvious mortal wounds (these include decapitation, incineration, hemicorporectomy, or injuries that are so extensive CPR cannot be effectively performed (e.g., severe crush injuries to the head, neck, or chest)
      - Exposed brain matter is **NOT** an injury incompatible with life
    - **OR** Rigor Mortis (this is the stiffening of the body, usually within 4-10 hours after death. The exception to this is a patient that has been exposed to cold temperatures)
    - **OR** Lividity/Venous Pooling (a red/purple skin discoloration that occurs when gravity causes the blood to sink to the lowest part of the body. Lividity usually indicates the patient has been dead for more than 15 minutes unless the patient has been exposed to cold temperatures)
  - **OR** The presence of a properly completed Kentucky EMS DO NOT RESUSCITATE (DNR) form or Kentucky MEDICAL ORDERS FOR SCOPE OF TREATMENT (MOST) form

IF THERE IS ANY DOUBT OR UNCERTAINTY AS TO THE PATIENT'S STATUS,
THE EMS CREW SHALL INITIATE RESUSCIATIVE EFFORTS

- If a person is dead at the scene, the responding unit shall convey this information to the COMMUNICATIONS CENTER and request that law enforcement and the CORONER'S OFFICE respond. The area surrounding the corpse shall not be disturbed in any manner, unless it is necessary to do so in order to treat another sick or injured person. When this is the case, the scene will be disturbed as little as possible. Any movement of the patient or items around the patient shall be documented thoroughly.
- The body will not be searched for identification.
- Personal effects of the corpse will not be searched or handled in any manner.
- The EMS unit will remain on scene until law enforcement or a representative of the CORONER'S OFFICE arrives.

REFUSAL OF CARE

GENERAL

- For all patients who refuse emergency medical care/transport:
  - The patient, the patient's guardian, or the patient's healthcare surrogate must have decisional capacity that is not compromised by impairments
    - Decisional Capacity- an individual's ability to make an informed decision concerning the patient's medical condition/treatment
    - In order to demonstrate decisional capacity, the patient, the patient's guardian, or the patient's healthcare surrogate must be alert and capable of understanding the following:
      - The nature of the medical problem/complaint
      - The possible risks, complications, and implications of refusing emergency medical care/transport
      - All treatment and transportation alternatives
    - A patient's decisional capacity may be compromised by certain impairments; including but not limited to the following:
      - Use and/or abuse of alcohol, illegal or prescription drugs, or toxic substances
      - Head trauma, dementia, encephalopathy, and/or intellectual disabilities
      - Acute or chronic psychiatric illness
      - Medical illnesses including but not limited to hypoxia, hypotension, hyperglycemia, hypoglycemia, dehydration, or sepsis
- A patient, the patient's guardian, or the patient's healthcare surrogate who demonstrates decisional capacity has the right to refuse emergency medical care/transport
  - Prior to accepting a refusal of medical care/transport, the EMS crew shall attempt to:
    - Perform a complete assessment of the patient
    - Offer appropriate treatment and transport to the patient
    - Attempt to speak with whomever called 911, as well as any family, friends, bystanders, patient surrogates or guardians, and/or medical personal on scene
    - Determine the patient's, the patient's guardian's, or the patient's surrogate's decisional capacity (defined above) to refuse emergency medical care/transport
- For any patient who is refusing emergency medical care/transport, the following shall be completed in the Electronic Patient Care Report (ePCR):
  - A signed refusal of emergency medical care/transport
  - Any discharge instructions provided to the patient
  - The risks and consequences which were explained to the patient
  - Documentation of the patient's decisional capacity and understanding of all the above requirements
- LMEMS OPERATIONS OFFICER and/or MEDICAL CONTROL must be contacted, if appropriate, for any refusal of emergency medical care/transport if the provider's judgement indicates a high index of suspicion for the appropriateness of obtaining a refusal
  - High index of suspicion may be defined as, but is not limited to:
    - A provider's concern that an individual may have an acute medical, traumatic, psychiatric, or social condition that might result in an untoward patient outcome.
  - Indications for a high index of suspicion may include, but are not limited to:
    - The mechanism of injury to the patient
    - A 911 caller, friend, neighbor, co-worker, family member, or home-health aide expressing concern for the patient's health, with good cause
    - A 911 caller is reporting expressed or actual suicidal or homicidal behavior by the patient, regardless of whether the caller is on scene or not
    - The request for assistance originated with a physician or a healthcare provider

TERMINATION OF RESUSCITATIVE EFFORTS

GENERAL

- The termination of resuscitative efforts is intended to be an event in which the EMS crew has undertaken resuscitative efforts and those efforts have been unsuccessful (except in cases where a person suffers from hypothermia, cold water drowning, lightning injury, or electrical injury) Such events are usually based upon one or more of the following situation:
  - Upon arrival to the scene, you find CPR is being performed on a patient meeting criteria of "Withholding Resuscitative Efforts"
  - The patient is part of a mass casualty scene
  - The incident scene is unsafe and the continuation of efforts will imperil responders' safety
  - A condition exists that will impair your ability to transport the patient to a hospital in a safe and timely manner
  - You are presented with a standard form or identification of a patient's desire not to be resuscitated in accordance with KRS 331.623 (DNR) or 201 KAR 9:470 (MOST)

PARAMEDIC

- If resuscitative efforts have been initiated, the paramedic should consider the termination of efforts prior to transport if the following are present:
  - Unknown or prolonged time of arrest to CPR initiation
  - Inadequate CPR prior to responders' arrival
  - Arrest not witness by EMS
  - High-performance CPR without clinical improvement >10 minutes
  - Airway managed with or without the use of advanced airways
  - >3 analyzation periods with no "shock advised" or defibrillation indicated by EMS
  - >2 doses of epinephrine
  - Asystole in 2 separate EKG leads
    - Except in cases of of trauma
    - After having considered reversible causes, slow wide-complex agonal complexes are considered a variant of asystole
  - No ROSC at any point (even if brief and unsustained)
- **THE PARAMEDIC SHALL CONTACT MEDICAL CONTROL FOR CONSULTATION PRIOR TO THE TERMINATION OF RESUSCITATIVE EFFORTS**
- The paramedic shall notify the COMMUNICATIONS CENTER and request law enforcement and the CORONER'S OFFICE to respond
- The paramedic shall take reasonable actions to protect the body and the scene. IV lines, endotracheal tubes, and other medical supplies shall not be removed from the patient
- The paramedic shall document their findings in the patient care report

EtCO2 CONSIDERATIONS

- AHA suggests ROSC is unlikely if:
  - EtCO2<10mmHg with:
    - Adequate CPR
    - Properly managed airway

TRAUMA CENTER INDICATIONS

GENERAL

- Major trauma patients may need to be transported to a designated trauma center in a timely manner. It is in the best interest of the patient to be transported to a designated trauma center if the patient meets certain criteria. In general, in the presence of significant trauma, consider the following:
- Vital signs and consciousness
  - Glasgow Coma Scale<6
  - SBP<90mmHg (adult), <70mmHg (pediatric <9 years of age)
  - Respiratory rate <10 or >29
  - Respiratory distress or need for respiratory support

TRANSPORT AND NOTIFY LEVEL 1 TRAUMA CENTER OF IMPENDING ARRIVAL

- Assessment of anatomy and extent of injuries
  - All gunshot wounds
  - All penetrating injuries to head, neck, torso, and proximal extremities
  - Skull deformity or suspected skull fracture
  - Flail chest
  - Two or more proximal long bone fractures
  - Burns in conjunction with trauma
  - Combination of 2nd and 3rd degree burns covering more than 10% BSA, burns of the face or burns of the face and/or airway
  - Open fracture of a long bone
  - Crushed, mangled, degloved, or pulseless extremity
  - Amputation proximal to wrist or ankle
  - Unstable pelvis
  - Active bleeding requiring a tourniquet or wound packing with continuous pressure

TRANSPORT TO LEVEL 1 CENTER AND NOTIFY OF IMPENDING ARRIVAL

- Mechanism of injury
  - Falls >10 feet
  - Ejection from a vehicle
  - Death of an occupant in the same vehicle
  - Extrication time >20 minutes with associated signs/symptoms for significant trauma
  - High-speed auto crash indicators
    - Initial speed >40MPH
    - Major auto deformity
    - Intrusion into passenger compartment >12 inches
  - Auto vs. Pedestrian or Auto vs. Bicycle with significant (>5MPH) impact
    - Victim thrown or run over
  - Rider separated from transport vehicle with significant impact (motorcycle, ATV, horse, etc.)

TRANSPORT TO LEVEL 1 CENTER AND NOTIFY IF APPROPRIATE

- Pertinent history
  - Low level falls <5 years of age or >65 years of age with significant impact
  - Suspicion of child abuse
  - Cardiac or respiratory disease
  - Special, high-resource healthcare needs
  - Pregnancy
  - Immunosuppressed patients
  - Patients with bleeding disorders or patients on anti-coagulants

CONSIDER TRANSPORT TO LEVEL 1 CENTER IF APPROPRIATE

PEDIATRIC CONSIDERATIONS

- Patients >13 years of age with penetrating trauma
  - Transport to adult Level 1 Trauma Center
- Patients >15 years of age with blunt trauma
  - Transport to adult Level 1 Trauma Center
- All other pediatric patients not meeting age considerations above should be transported to the most appropriate facility per the Destination Guidelines

LOUISVILLE METRO EMS

MEDICAL GUIDELINES

ABDOMINAL PAIN

INDICATIONS

- Non-traumatic abdominal pain including:
  - Appendicitis
  - Diverticulitis
  - Abdominal aortic aneurysm
  - Gallbladder disease
  - Ectopic pregnancy
  - Bowel obstruction
  - Pancreatitis
- Abdominal pain may be the first warning of catastrophic internal bleeding (ruptured aneurysm, liver, spleen, ectopic pregnancy, perforated abdominal viscus, etc.). Since the bleeding is not apparent, you must think of volume depletion and monitor patient closely to recognize shock. If catastrophic bleeding is suspected, consider whole blood administration (if available).

GENERAL

- Administer oxygen if indicated
  - Titrate to ≥92% and work of breathing
- Consider possible causes and follow other protocols as appropriate
  - Ischemic Chest Pain/ACS/STEMI
  - Altered Mental Status/Overdose/Toxidrome
  - Diabetic Emergencies
  - Obstetric Emergencies
- Assess for hemodynamic instability, follow Shock protocols if appropriate
- If appropriate, call for ALS, but **DO NOT DELAY TRANSPORT**

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Severe nausea/vomiting
  - Administer ondansetron 4mg IV/IO/SL
    - May repeat x1 after 10 minutes
- Moderate to severe acute pain (>6-10 on the pain scale)
  - Consider Pain Management protocol
    - Administer fentanyl 50mcg IV/IO/IN
      - May repeat x1 to max total 100mcg

PARAMEDIC

- Severe nausea/vomiting
  - Administer droperidol 2.5mg IV/IO/IM
    - May repeat x1
- Moderate to severe acute pain (>6-10 on the pain scale)
  - Administer ketamine 0.3mg/kg IV/IO
    - May repeat x1

AGITATED/AGGRESSIVE PATIENT

INDICATIONS

- Moderate aggression
  - Unable to comply with requests **AND**
  - Lacks decisional capacity **AND**
  - There is concern for dangerous medical conditions
- Severe and dangerous aggression
  - Unable to comply with requests **AND**
  - Lacks decisional capacity **AND**
  - Poses imminent risk to self/others
  - Attempts at de-escalation have failed **OR** patient is unable to comprehend verbal communication
  - High index of suspicion for a hypermetabolic state exists

GENERAL

- Protect yourself and other crew members
- Call for FD/PD assistance as indicated by the situation
- Approach the patient in a calm, cautious manner
- Attempt verbal de-escalation first
- Follow other protocols as appropriate
  - Altered Mental Status/Overdose/Toxidromes
  - Trauma
  - Hyperthermia
  - Seizure
  - Cardiac Arrest
- Administer oxygen if possible
  - Titrate to ≥92% and work of breathing
- Initiate continuous EtCO2 monitoring if possible
- Use Physical Restraint procedure if necessary
  - Supine or lateral recumbent positions only
- Begin passive cooling as appropriate
- Check blood glucose concentration and follow Diabetic Emergencies protocol if indicated
- Acquire 12-lead EKG if possible
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**
- **USE INVOLUNTARY PHYSICAL AND CHEMICAL RESTRAINT AS A LAST RESORT**

PARAMEDIC

- Initiate cardiac monitoring if safe and appropriate
- Moderate agitation/aggression
  - Administer droperidol 5mg IM
    - If agitation/aggression persists after 5 minutes
      - Administer midazolam 5mg IM
  - Establish IV/IO access with isotonic crystalloid solution to keep vein open (when it is safe and appropriate)
    - Consider fluid bolus of 500mL
      - May repeat to max 2L
- Severe agitation/aggression
  - Administer simultaneously:
    - Droperidol 5mg IM
    - Midazolam 5mg IM
- Closely monitor patient's airway and breathing after medication administration

AGITATED/AGGRESSIVE PATIENT CONT.

PARAMEDIC

- Manage ventilations and airway as necessary
- For sudden, witnessed cardiac arrest consider
  - Early administration of sodium bicarbonate 100mEq IV/IO
    - May repeat 50mEq every 10 minutes as needed

ALLERGIC REACTION/ANAPHYLAXIS

GENERAL

- Severe signs and symptoms:
  - Urticaria/rash and/or exposure to known allergen
  - Stridor
  - Oropharyngeal swelling/difficulty swallowing/throat tightening
  - Severe dyspnea
  - Wheezing with accessory muscle use
  - Poor air movement
  - Difficulty speaking in full sentences
  - Hypotension (with or without signs of shock)
- Administer oxygen
  - Titrate to ≥92% and work or breathing
- Initiate continuous EtCO2 monitoring if respiratory distress is present
- Assist ventilations as appropriate
- Remove inciting agent if possible (stinger, food, etc.)

EMT

- Wheezing/bronchospasm
  - Administer 0.5% albuterol 2.5mg, nebulized
    - May repeat x1 after 5 minutes
- Severe symptoms/signs present for patient weighing >30kg
  - Administer epinephrine (1:1,000) 0.3mg IM
    - May repeat every 5 minutes to max total 3 doses
- Call for ALS assistance but **DO NOT DELAY TRANSPORT**

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
  - Initiate 250-500mL fluid bolus for hypotension
    - May repeat to max 2L
- Administer diphenhydramine 50mg IV/IO/IM

PARAMEDIC

- Initiate advanced airway management as appropriate
- Administer epinephrine drip
  - 1mg (1:10,000) epinephrine in 1L isotonic crystalloid solution and infuse at 1mL/minute (1mcg/minute)
  - **OR** 1mg (1:1,000) epinephrine in 1L isotonic crystalloid solution infused at 1mL/minute
  - Titrate to effect
- Consider methylprednisolone 125mg IV/IO

ALTERED MENTAL STATUS/ OVERDOSE/TOXIDROME

INDICATIONS

- Exposure to toxic substances from:
  - Ingestion
  - Inhalation
  - Injection
  - Skin absorption
- Intentional/accidental exposure to pharmacological substances
- Other medical conditions (see below) causing altered mental status

GENERAL

- Remove patient from toxic environment as quickly as possible, remove clothing, and decontaminate if applicable
  - This should be performed by trained personal with appropriate PPE
- Administer oxygen
  - Titrate to ≥92% and work of breathing
  - Assist ventilations as appropriate
- Initiate continuous EtCO2 monitoring
- Follow other protocols as appropriate
  - Diabetic Emergencies
  - Hypothermia/Hyperthermia
  - Seizures/Status Epilepticus
  - Stroke/CVA/TIA
  - Trauma
  - Agitated/Aggressive Patient
- Use patient and/or bystander statements and answers to determine if/what substances are involved

EMT

- Determine blood glucose concentration and if <60mg/dL
  - Administer oral glucose 15g buccal, if conscious and able to tolerate
    - If unable to tolerate oral glucose **AND PATIENT HAS A PRESCRIPTION**
      - Administer glucagon1mg IM
- Suspected opiate/opioid overdose
  - Administer naloxone 2-4mg IN
    - May administer additional 2-4mg IN every 5 minutes to restore respiratory drive to max total 8mg
- Suspected carbon monoxide exposure
  - Monitor CO level if possible
  - Administer high-flow oxygen at 15LPM

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Blood glucose concentration is <60mg/dL
  - Administer dextrose 50% 25g IV/IO
    - May repeat x1 if no response
- IV access cannot be obtained
  - Administer glucagon 1mg IM
- Suspected opiate/opioid overdose
  - Administer naloxone 2mg IV every 5 minutes to restore respiratory drive to max total 8mg

ALTERED MENTAL STATUS/ OVERDOSE/TOXIDROME CONT.

PARAMEDIC

- Begin advanced airway management as appropriate
- Initiate cardiac monitoring
- If signs of shock refer to Shock protocols
- Patient exhibits signs of organophosphate poisoning
  - Administer atropine 2mg IV/IO
    - Repeat at 4mg every 3 minutes fully atropinized (secretions dried)
- Suspected TCA overdose
  - Administer sodium bicarbonate 100mEq IV/IO
- Suspected beta-blocker overdose
  - Administer glucagon 3mg IV/IO
    - May repeat x1 at 2mg
- Suspected calcium channel-blocker overdose
  - Administer calcium chloride 1g IV/IO every 5 minutes to max total 3g
- Suspected dystonic reaction
  - Administer diphenhydramine 50mg IV/IO/IM

ASTHMA/COPD/WHEEZING

INDICATIONS

- Exacerbation of previously diagnosed asthma or COPD
  - Characterized by some combination of:
    - Wheezing
    - Tachypnea
    - Accessory muscle use/retraction
    - Inability to speak in full sentences
- Wheezing due to suspected asthma or suspected COPD

GENERAL

- Administer oxygen
  - Titrate to ≥92% and work of breathing unless COPD history
- Oxygen administration in COPD patients:
  - Patient with history of COPD may have normal lower baseline oxygen saturation; do not automatically place on high-flow oxygen
  - Start 2-3LPM oxygen via nasal cannula
  - Titrate to patient's baseline oxygen saturation or 88-92% and work of breathing
- Initiate continuous EtCO2 monitoring
- Acquire and transmit 12-lead EKG per 12-lead EKG procedure

EMT

- Wheezing /bronchospasm
  - Administer 0.5% albuterol 2.5mg with 0.02% ipratropium bromide 0.5mg nebulized
    - May repeat x1
- Moderate to severe respiratory distress
  - Initiate CPAP, per CPAP procedure
    - Discontinue CPAP if patient becomes hypotensive (SBP <100mmHg)
- Clinical picture worsens or initial presentation of impending respiratory failure
  - Follow protocol for Respiratory Distress or Failure/Drug Assisted Intubation
  - Initiate ventilations via BVM
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- In addition to EMT DuoNeb, the AEMT may administer:
  - Additional DuoNeb treatments every 5 minutes as long as wheezing is present

PARAMEDIC

- Initiate cardiac monitoring
- Subacute presentation
  - Administer methylprednisolone 125mg IV/IO
- Administer magnesium sulfate 2g IV slow push
- Unable to cooperate or otherwise tolerate nebulizer therapy or impending respiratory failure
  - Administer epinephrine (1:1,000) 0.3mg IM
    - May repeat after 5 minutes
- Impending respiratory failure
  - Initiate advanced airway management per Respiratory Distress or Failure/Drug Assisted Intubation protocol

BRADYDYSRHYTHMIAS

INDICATIONS/CONTRAINDICATIONS

- If the heart rate <60bpm with hemodynamic instability, bradycardia should be treated
- If the heart rate <60 but the patient is normotensive or hypertensive, bradycardia should not be treated

GENERAL

- Administer oxygen
  - Titrate to ≥92% and work of breathing
- Initiate continuous EtCO2 monitoring
- Assess for hemodynamic instability (hypotension or relative hypotension with signs of poor perfusion)
- Acquire and transmit 12-lead EKG, per 12-lead EKG procedure
- Follow protocols for associated symptoms/signs as appropriate
  - If chest pain or anginal equivalent symptoms are present, follow protocol for Ischemic Chest Pain/ACS/STEMI
  - If hypotension is present, follow protocol for Non-Traumatic Shock/Hypotension
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
  - Consider 250-500mL fluid bolus for hypotension
    - May continue with additional fluid resuscitation, as needed, if no signs of fluid overload are present

PARAMEDIC

- Initiate cardiac monitoring and evaluate rhythm for width, regularity, and rate
- Do not delay pacing for IV placement or drug administration in the presence of:
  - Severe hemodynamic instability
  - Acute MI
  - High-degree AV-Block (Mobitz type II or 3rd degree AV block)
- Unstable
  - Begin external pacing at 80bpm and increase milliamps until both electrical and mechanical capture have been achieved
  - If time permits and adequate respirations are present, consider sedation prior to or during pacing
    - Administer midazolam 2mg IV/IO **OR** 10 mg IN
      - May repeat 2mg IV/IO x1 if needed
    - Administer ketamine 0.3mg/kg IV/IO slow push
  - If no hemodynamic response to pacing, increase the paced rate to 100bpm using 10bpm increments
  - While preparing for pacing, administer atropine sulfate 1mg IV/IO
    - Repeat every five minutes as needed to max total 3mg
  - No response
    - Continued hypoperfusion
      - Administer push dose epinephrine
        - 20mcg every 3 minutes (2mL) to total 100mcg (10mL)
          - From 10mL syringe of pre-filled epinephrine (1:10,000), waste 9mL and replace with 9mL saline
          - Alternatively, draw out 1mL from pre-filled epinephrine (1:10,000) along with 9mL saline into 10mL syringe
      - **OR** administer epinephrine infusion
        - Mix 1mg in 1L isotonic fluid. Infuse at 2-10mcg/minute and titrate to patient response (see chart)
      - **OR** administer norepinephrine infusion
        - Mix 4mg in 250mL of normal saline and infuse at 8-12mcg/minute and titrate to patient response

BRADYDYSRHYTHMIAS CONT.

PARAMEDIC

- Cardiogenic shock
  - Follow Non-Traumatic Shock/Hypotension protocol
- Suspected hyperkalemia
  - Administer calcium chloride 1gm IV/IO every 5 minutes to max total 3g
  - Administer sodium bicarbonate 100mEq IV/IO
- Suspected acidosis
  - Administer sodium bicarbonate 100mEq IV/IO
- Suspected beta-blocker overdose
  - Administer glucagon 3mg IV/IO
    - May repeat x1 at 2mg IV/IO
- Suspected calcium channel blocker overdose
  - Administer calcium chloride 1g IV/IO every 5 minutes to max total 3g

- Stable
  - Monitor, reassess vital signs every 3-5 minutes, and transport

CONGESTIVE HEART FAILURE/ ACUTE PULMONARY EDEMA

GENERAL

- Maintain in an upright or semi-upright sitting position for SBP>100 and/or signs of adequate perfusion
- Administer oxygen
  - Titrate to ≥92% and work of breathing
  - If signs of impending respiratory failure are present initiate BVM assisted ventilation
- Initiate continuous EtCO2 monitoring
- Acquire and transmit 12-lead EKG, per 12-lead EKG procedure
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**

EMT

- If associated chest pain or history of present illness includes chest pain or anginal equivalent symptoms, follow protocol for Ischemic Chest Pain/ACS/STEMI and administer nitroglycerin as follows:
  - If the patient has previously been prescribed, assist with administration 0.4mg SL every 5 minutes
    - Titrate to SBP>100 and signs and symptoms (recheck BP before each dose)
    - **DO NOT ADMINISTER** if erectile dysfunction medications have recently been used
- Moderate to severe respiratory distress
  - Initiate CPAP, per CPAP procedure
  - If signs of impending respiratory failure prior to or following CPAP initiation, proceed to assisted ventilation with BVM
  - Discontinue CPAP if contraindications are present per CPAP procedure
- Severe wheezing
  - Administer 0.5% albuterol 2.5mg, nebulized

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Administer nitroglycerin 0.4mg SL every 5 minutes
  - Titrate to SBP >90mmHg
  - **DO NOT ADMINISTER** if erectile dysfunction medication have recently been used
- Severe wheezing
  - Administer 0.5% albuterol 2.5mg, nebulized

PARAMEDIC

- Initiate cardiac monitoring
- Signs of impending respiratory failure prior to or following initiation of CPAP
  - Begin BVM ventilation
  - Prepare for intubation and follow Respiratory Distress or Failure/Drug Assisted Intubation protocol

DIABETIC EMERGENCIES

GENERAL

- Administer oxygen
  - Titrate to ≥92% and work of breathing
- Initiate continuous EtCO2 monitoring
- Determine blood glucose concentration
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**

EMT

- Relatively or clinically hypoglycemic, without concern of aspiration
  - Administer oral glucose 15g buccal
    - May repeat every 5 minutes as needed
- Relatively or clinically hypoglycemic, unable to tolerate oral glucose, **AND THE PATIENT HAS A PRESRCIPTION**
  - Administer glucagon 1mg IM

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Hyperglycemia
  - Consider 250-500mL bolus for patients with severe hyperglycemia as appropriate to respiratory status (if no signs/symptoms of pulmonary edema)
- Hypoglycemia
  - Administer dextrose 50% 25g IV/IO
  - Administer 250mL bag of dextrose 10% infused wide open
  - **OR** if IV/IO access cannot be obtained
    - Administer glucagon 1mg IM

HYPERTHERMIA

INDICATIONS

- Elevated body temperature related to heat exposure
- Altered mental status related to heat exposure

GENERAL

- Administer oxygen
  - Titrate to ≥92% and work of breathing
- Initiate continuous EtCO2 monitoring
- Move patient to a cool place away from any external heat source if possible
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**
- Obtain patient temperature (core temperature is preferred if available)

EMT

- Mild symptoms (heat cramps, heat exhaustion, no signs of AMS, body temperature <104° F)
  - Help facilitate passive cooling
    - Loosen clothing, remove excessive clothing
  - Administer PO fluids if available
    - Use caution if patient presents with nausea and vomiting
- Severe symptoms (signs of AMS, body temperature 104-105° F, patient may or may not be sweating)
  - Begin active cooling
    - Delay transport for on-scene cold water immersion if possible
    - Create mobile ice bath if possible (body bag filled with ice)
    - Use sheets or towels dipped in ice water on exposed skin
    - Place ice packs behind the neck, in axillae, and groin
  - If shivering starts, temperature drops <102° F or AMS improves, stop active cooling
- Determine blood glucose concentration

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Initiate IV/IO bolus of 500mL for hypotension
  - May repeat to max 2L

PARAMEDIC

- Uncontrolled shivering during cooling
  - Administer midazolam 2mg IV/IO

HYPOTHERMIA

INDICATIONS/CONTRAINDICATIONS

- Decreased body temperature related to cold exposure
- Altered mental status related to cold exposure
- Repeated ACLS medications and repeated defibrillations are ineffective below 86° F (core temperature)

GENERAL

- Administer oxygen
  - Titrate to ≥92% and work of breathing
- Initiate continuous EtCO2 monitoring
- Acquire 12-lead EKG if indicated
- Decrease ongoing heat loss as soon as possible
  - Move the patient to a warm area
  - Dry and insulate the patient
- Handle the patient gently allowing the patient no exertion
  - Rough handling of a severely hypothermic patient may cause ventricular fibrillation
- Remove all wet clothing (cut off to decrease patient movement)
- Initiate passive external rewarming with blankets in a warm ambulance
- Conscious patients should avoid heated oral fluids
- Suspected severe hypothermia
  - Assess respirations and pulse carefully as both may be very slow but still adequate for the patient's slow metabolism
  - Provide expeditious, non-emergency transport

EMT

- Begin airway management as appropriate
- Follow other protocols as appropriate:
  - Diabetic Emergencies
  - Altered Mental Status/Overdose/Toxidrome
  - Severe hypothermia
    - If a shockable rhythm is present, administer only one defibrillatory shock

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Cardiac arrest
  - Administer epinephrine (1:10,000) 1mg x1
- If restored to a perfusing rhythm, follow the appropriate protocol

ISCHEMIC CHEST PAIN/ACUTE CORONARY SYNDROME/STEMI

INDICATIONS AND CONTRAINDICATIONS

- Non-traumatic chest pain suspicious for Acute Coronary Syndrome
  - Angina/myocardial infarction
- Anginal equivalent symptoms (typically in the presence of risk factors for or prior history of Coronary Artery Disease)
  - Dyspnea (with or without exertion)
  - Light-headedness
  - Generalized weakness
  - Syncope or near syncope
  - Diaphoresis
  - Nausea and/or vomiting
- Maintain a high index of suspicion for atypical presentations, e.g., diabetic patients or females
- For any patient under 18 years of age, or for any patient being transported to a primary pediatric facility, **MEDICAL CONTROL MUST BE CONTACTED PRIOR TO THE ADMINISTRATION OF ASPIRIN OR NITROGLYCERIN**

GENERAL

- Administer oxygen
  - Titrate to ≥92% and work of breathing
  - Initiate continuous EtCO2 monitoring
- Acquire and transmit 12-lead EKG, per 12-lead EKG procedure
- Administer aspirin 324mg PO (to be chewed)
  - Do not withhold unless known allergy or history of anaphylaxis

EMT

- Administer nitroglycerin
  - If the patient has previously been prescribed, assist with administration 0.4mg SL every 5 minutes
    - Titrate to SBP>100 and signs/symptoms (recheck BP before each dose)
    - **DO NOT ADMINISTER** if erectile dysfunction medications have recently been used
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
  - Consider 250-500mL fluid bolus for borderline or relative hypotension
- Administer nitroglycerin 0.4mg SL every 5 minutes
  - Titrate to SBP>90 and signs/symptoms
  - **DO NOT ADMINISTER** if erectile dysfunction medications have recently been used
- Severe nausea/vomiting
  - Administer ondansetron 4mg IV/IO/SL
    - May repeat x1 after 10 minutes

PARAMEDIC

- Initiate cardiac monitoring
- Consider right-sided and/or posterior EKG if necessary
- Severe nausea/vomiting
  - Administer ondansetron 4mg IV/IO/SL
    - May repeat x1 after 10 minutes
- No improvement
  - Administer droperidol 2.5mg IV/IO/IM
    - May repeat x1

NAUSEA/VOMITING

GENERAL

- Gently position the patient to facilitate airway
- Suction as necessary

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
  - Signs/symptoms of volume depletion
    - Consider administration of 250-500mL bolus of isotonic crystalloid solution IV/IO
      - May repeat x1
- Consider possible causes and follow other protocols as appropriate:
  - Ischemic Chest Pain/ACS/STEMI
  - Head Trauma
  - Abdominal Pain
  - Toxidrome/Poisoning/Substance Abuse/Overdose
  - Diabetic Emergencies
  - Hyper/Hypothermia
- Severe nausea/vomiting
  - Administer ondansetron 4mg IV/IO/SL
    - May repeat x1 after 10 minutes
- Severe pain accompanied by severe nausea/vomiting
  - Administer fentanyl 50mcg IV/IO/IN
    - May repeat x1 to max total 100mcg

PARAMEDIC

- Severe nausea/vomiting
  - Administer droperidol 2.5mg IV/IO/IM
    - May repeat x1

NON-TRAUMATIC CARDIAC ARREST

GENERAL

- Begin CPR
  - Maintain continuous, high-quality CPR (100-120/minute) with minimal interruptions throughout duration of cardiac arrest
  - Consider delaying deployment of LUCAS device until the decision is made to initiate transport. LUCAS deployment should not interrupt continuous, high-quality CPR
- Unless extreme conditions are present that do not allow for appropriate resuscitative efforts, do not move patient to ambulance until it is time to initiate transport
- Rapidly apply ITD to BVM if there are a sufficient number of providers to maintain an effective two-handed face mask seal
- Call for ALS and FD assistance (if not already dispatched)
- If 2 providers are on scene, initiate passive ventilation with NRB15LPM with OPA in place
- Initiate continuous EtCO2 monitoring and attempt to improve quality of CPR if EtCO2<10mmHg
  - This can be performed throughout passive ventilation and/or advanced airway attempts with placement of EtCO2 cannula
  - EtCO2 monitoring should be switched to in-line monitoring with the placement of an advanced airway
- If enough personnel are present to provide BVM assistance, do not hyperventilate. Use only enough volume to provide chest rise
- Use asynchronous ventilation every 5-6 seconds. Do not interrupt compressions for ventilations
- If suspected arrest from hypovolemic causes such as GI bleeding or catastrophic vaginal bleeding, consider whole blood administration (if available)

EMT

- Apply AED as soon as possible without interruption of chest compressions
- Following each analysis/2 minutes of CPR cycle:
  - If signs of life are present, continue to ventilate and initiate transport
  - If no signs of life are present, continue high-quality CPR and follow AED prompts as indicated
- After 2 defibrillations, if refractory shockable rhythm is still present, perform vector change defibrillation
  - Place a second set of defibrillation pads in anterior/posterior positions
  - If a second AED/monitor is available, DSED should be in conjunction with vector change
- When appropriate
  - Consider supraglottic rescue airway device with in-line EtCO2 monitoring
  - Initiate transport if ALS is not on scene and maintain continuous, high-quality CPR
  - Apply LUCAS device if indicated

AEMT

- Establish IV/IO access with isotonic crystalloid solution
  - Initiate fluid resuscitation if indicated
- Administer epinephrine (1:10,000) 1mg IV/IO
  - May repeat every 5 minutes to max total 4mg

SPECIAL CONSIDERATIONS

- Suspected opiate overdose
  - Administer naloxone 2mg IV/IO
- Suspected hypoglycemia
  - Administer dextrose 50% 25g IV/IO

NON-TRAUMATIC CARDIAC ARREST CONT.

PARAMEDIC

VENTRICULAR FIBRILLATION OR PULSELESS VENTRICULAR TACHYCARDIA

- Perform continuous, high-quality CPR
- Defibrillate at 360J every 2 minutes, as necessary
- Perform advanced airway management if indicated. Do not interrupt continuous CPR for advanced airway management if BVM ventilations are effective
- Administer epinephrine per AEMT directives
- Administer
  - Amiodarone 300mg IV/IO
    - May repeat x1 at 150mg after 5 minutes
  - **OR** lidocaine 100mg IV/IO
    - May repeat 100mg every 5 minutes to max total 300mg

SPECIAL CONSIDERATIONS

- Suspected hyperkalemia or calcium channel blocker overdose
  - Administer calcium chloride 1g IV/IO every 5 minutes to max total 3g
- Acidosis, hyperkalemia, or tricyclic antidepressant overdose
  - Administer sodium bicarbonate 100mEq IV/IO
- Torsades de pointes
  - Administer magnesium sulfate 2g IV/IO

- If no response to treatment, consider termination of efforts per the Termination of Resuscitative Efforts protocol

ASYSTOLE OR PULSELESS ELECTRICAL ACTIVITY

- Perform continuous, high-quality CPR
- Perform advanced airway management, as indicated
- Administer epinephrine per AEMT directives

SPECIAL CONSIDERATIONS

- Hypovolemia
  - Administer 1L isotonic crystalloid solution
  - If hypovolemia is secondary to blood loss, consider whole blood administration (if available)
- Tension pneumothorax
  - Follow procedure for Needle Thoracostomy
- Cardiac Tamponade
  - Initiate rapid transport
- Hyperkalemia or calcium channel blocker overdose
  - Administer calcium chloride 1g IV/IO every 5 minutes to max total 3g
- Acidosis, hyperkalemia, or tricyclic antidepressant overdose
  - Administer sodium bicarbonate100mEq IV/IO
- Beta Blocker overdose
  - Administer glucagon 3mg IV/IO
    - May repeat x1 at 2mg IV/IO

- If no response to treatment, consider termination of efforts per the Termination of Resuscitative Efforts protocol

NON-TRAUMATIC SHOCK/ HYPOTENSION

INDICATIONS

- SBP<90mmHg
- Relative hypotension with signs/symptoms of shock

GENERAL

- Administer oxygen
  - Titrate to ≥92% and work of breathing
- Initiate continuous EtCO2 monitoring
- Acquire 12-lead EKG if indicated
- If trauma, follow Traumatic Shock protocol and control external hemorrhage as appropriate
- Place patient in supine position as appropriate and tolerated
- Follow other protocols as appropriate
  - Allergic Reaction/Anaphylaxis
  - Diabetic Emergencies
  - Ischemic Chest Pain/ACS/STEMI
  - Trauma
  - Traumatic Shock
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**

EMT

- Consider ventilation via BVM with airway adjunct placed, if appropriate

AEMT

- Establish large bore IV access (consider 2nd IV site in case of whole blood administration) or IO access as indicated
  - Consider fluid administration 500mL bolus
    - 2L max
  - Titrate to SBP>90mmHg
- Initiate airway management as appropriate

PARAMEDIC

- Initiate advanced airway management, as appropriate
- Perform needle thoracostomy if suspected tension pneumothorax
- Initiate cardiac monitoring and treat cardiac dysrhythmias
- If no response to adequate attempts at fluid resuscitation or other protocol interventions and trauma is **NOT** suspected
  - Administer norepinephrine infusion
    - Mix 4mg in 250mL of normal saline
    - Infuse at 8-12mcg/minute
    - Titrate to SBP >90mmHg and/or signs of improvement of initial decompensation
- If catastrophic hemorrhage of medical origin is present, such as active GI or vaginal bleeding
  - Administer TXA 2g IV/IO slow push
    - Postpartum hemorrhage
      - Administer oxytocin 10 units IM
  - Consider whole blood administration (if available)
- Acute adrenal crisis occurs in patients with a history of adrenal insufficiency in times of stress (infections, fevers, trauma, recent surgery) or non-compliance with medications
- Suspected adrenal crisis with associated signs/symptoms with hemodynamic instability
  - Consider solu-cortef administration
    - Use patient's own medication and follow written instructions regarding dose/route by patient's signed physician order
      - If not available, administer methylprednisolone 2mg/kg (max 125mg) IV/IO

OBSTETRIC EMERGENCIES

GENERAL

- Administer high-flow oxygen
- Initiate continuous EtCO2 monitoring
- Check for presentation
- If delivery appears imminent, follow childbirth procedure
- Look for signs/symptoms of obstetrical complications and treat as indicated
  - Conditions that prompt immediate transport despite the threat of delivery include:
    - Prolonged membrane rupture (>24 hours)
    - Breech presentation
    - Cord presentation
    - Extremity presentation
    - Evidence of meconium staining
    - Nuchal cord
- If catastrophic hemorrhage is present, consider whole blood administration (if available)
- Call for ALS or FD assistance if appropriate, but **DO NOT DELAY TRANSPORT**

SPECIAL CONSIDERATIONS

- Breech presentation
  - If head does not deliver immediately, place a gloved hand in the vagina with the palm towards the infant's face
  - With the index and middle fingers, form a "V" on either side of the infant's nose
- Prolapsed umbilical cord
  - Insert two fingers of a gloved hand to raise the presenting part of the fetus off of the cord
  - Positioning the mother in knee-chest position may relieve pressure on the cord
  - Instruct the mother to "pant" with each contraction to prevent her from bearing down
- Nuchal cord
  - Examine the infant's neck for the presence of a looped (nuchal) umbilical cord during delivery
  - If cord is looped around the neck, gently slip over the infant's head
    - If unable to do so, clamp and cut the cord

AEMT

- Provide additional assessment to all patients
  - If newborn presents with signs/symptoms of distress or hypoperfusion, follow Newborn Resuscitation protocol
- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Eclamptic seizures
  - Administer midazolam 2mg IV/IO every 5 minutes until seizure activity stops **OR** 10mg IN

PARAMEDIC

- Hypertension with documented manual BP >160/110mmHg if >20 weeks gestation or ≤6 weeks postpartum
  - Administer labetalol 20mg IV slow push
- Eclamptic seizures
  - Administer magnesium sulfate 4g IV/IO slow push over 3 minutes
- Catastrophic postpartum hemorrhage
  - Administer oxytocin 10 units IM
  - **AND** administer TXA 2g IV/IO slow push
  - Consider whole blood administration (if available)

POST ROSC CARE

INDICATIONS

- Recent cardiac arrest
- Patient has palpable pulse
- Patient's mental status may range from awake/alert to unresponsive

GENERAL

- Continue to follow protocol covering presumptive underlying cause of arrest (non-traumatic vs. traumatic)
- Maintain patent airway as needed and administer oxygen to correct potential hypoxia
  - Titrate to ≥92%
- Initiate or maintain continuous EtCO2 monitoring
- Provide ventilatory support as needed (avoid hyperventilation)
- Keep defibrillator pads in place
- Monitor vitals signs frequently
- Obtain 12-lead EKG and transmit to receiving facility if indicated
- For traumatic arrest, consider whole blood administration (if available)
- If hyperthermic, attempt passive cooling techniques, but do not cool below normal body temperature
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**

AEMT

- Establish IV/IO access if not already complete
- Hypotension
  - Administer 250mL isotonic solution bolus
    - May repeat as necessary to maintain SBP>90mmHg

PARAMEDIC

- Maintain cardiac monitoring and treat dysrhythmias, per appropriate protocol
- Treat any reversible etiologies present
- For continued hypoperfusion
  - Administer push dose epinephrine
    - 20mcg every 3 minutes (2mL) to total of 100mcg (10mL)
    - From 10mL syringe of prefilled epinephrine (1:10,000), waste 9mL and replace with 9mL saline
    - Alternatively, draw 1mL epinephrine (1:10,000) pre-filled with 9mL saline into 10mL syringe
  - **OR** administer epinephrine infusion
    - Mix 1mg in 1L isotonic fluid and infuse at 2-10mcg/minute and titrate to patient response
  - **OR** administer norepinephrine infusion
    - Mix 4mg in 250mL of normal saline and infuse at 8-12mcg/minute and titrate to patient response

RESPIRATORY DISTRESS OR FAILURE/ DRUG ASSISTED INTUBATION

GENERAL

- Administer oxygen
  - Titrate to ≥92% and work of breathing
    - COPD patients may be maintained at oxygen saturations of 88-92%, as tolerated
- Initiate continuous EtCO2 monitoring
  - Maintain EtCO2 35-45mmHg
- Follow other protocols as appropriate:
  - Non-Traumatic Cardiac Arrest
  - Asthma/COPD/Wheezing
  - Congestive Heart Failure/Acute Pulmonary Edema
  - Shock/Hypotension
  - Ischemic Chest Pain/ACS/STEMI
  - Allergic Reaction/Anaphylaxis

EMT

- Signs of upper airway obstruction
  - Attempt to clear airway by:
    - Opening or positioning
    - Foreign body removal, as appropriate
    - Suction
- To maintain airway once clear, insert NPA or OPA
- Moderate to severe respiratory distress
  - Initiate CPAP, per CPAP procedure
- Impending respiratory failure or anticipated loss of airway control
  - Assist ventilations with BVM
  - Consider insertion of supraglottic rescue airway device if no gag reflex is present

PARAMEDIC

- Consider underlying causes and follow other protocols, as appropriate
  - For tension pneumothorax see Needle Thoracostomy procedure
- Impending respiratory failure or anticipated loss of airway control, consider advanced airway management
  - Nasotracheal intubation indicators
    - Patient is spontaneously breathing
    - Unable to achieve sufficient oral relaxation
    - No signs of facial instability or trauma
  - Orotracheal intubation indicators
    - Patient is unconscious (no gag reflex is present)
    - Patient is apneic or has inadequate respirations
    - High risk of aspiration due to vomitus/hemorrhage
- Utilize adjuncts to facilitate orotracheal intubation as follows:
  - Maintain oxygenation via NC 10L/minute throughout procedure
  - Suction as necessary
- Unable to intubate or achieve sufficient patient relaxation prior to intubation
  - Pre-oxygenate with 100% oxygen via appropriate delivery device
  - Consider drug assisted intubation
    - Administer etomidate 0.3mg/kg IV/IO slow push over 30 seconds
    - Administer midazolam 2mg IV/IO

RESPIRATORY DISTRESS OR FAILURE/ DRUG ASSISTED INTUBATION CONT.

PARAMEDIC

        - Insufficient sedation
            - Administer additional dose of etomidate 0.1mg/kg IV/IO
- Consider the use of blind insertion supraglottic rescue airway device if intubation is unsuccessful after 2 attempts
- Further sedation is required once intubated
    - Administer midazolam 2mg IV/IO every 5 minutes as needed for sedation as long as SBP>100
- Unable to maintain airway via BVM, supraglottic rescue airway device, or ET device
    - Consider cricothyrotomy device for airway obstructions

SEIZURE/STATUS EPILEPTICUS

GENERAL

- Administer oxygen
  - Titrate to ≥92% and work of breathing
- Initiate continuous EtCO2 monitoring
- Position patient to avoid injury and/or aspiration
  - Consider placing in lateral recumbent position
- Determine blood glucose concentration and follow Diabetic Emergency protocol if appropriate
- Follow other protocols as appropriate:
  - Trauma
  - Toxidrome/Poisoning/Substance Abuse/Overdose
  - Obstetric Emergencies
- Obtained 12-lead EKG if appropriate
- Ongoing seizure or status epilepticus (>2 seizures without lucid period)
  - Call for ALS assistance, but **DO NOT DELAY TRANSPORT**

AEMT

- Monitor carefully for respiratory depression and need for assisted ventilation as appropriate
  - Consider airway adjuncts, ventilation, rescue airway as appropriate
- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- If patient is postictal and not actively seizing, pharmacologic therapy is **NOT** indicated
- Actively seizing or in status epilepticus
  - Administer midazolam 2mg IV/IO slow push
    - May repeat 2mg every 5 minutes as long as patient is actively seizing
  - **OR** 10mg IN
- If suspected eclampsia, call for ALS assistance immediately

PARAMEDIC

- Initiate cardiac monitoring
- Suspected eclampsia
  - Administer magnesium 4g IV/IO slow push over 3 minutes

STROKE

INDICATIONS

- Any positive finding on the modified Cincinnati Prehospital Stroke Scale
  - Facial droop
    - One side dose not move or moves less than the other
  - Pronator drift
    - With eyes closed, patient is unable to hold both arms up equally for 10 seconds
  - Speech/language deficit
    - Slurred speech, inappropriate words, or mute
- Any score ≥2 on the C-STAT stroke scale is positive for a possible LVO (large vessel occlusion) stroke
  - Conjugate gaze deviation (2 points)
    - Eyes deviated in one direction
  - Level of consciousness (1 point)
    - Knows own age and month
    - Inability to close eyes and close/open hands
  - Arm weakness (1 point)
    - Unable to hold arms up for 10 seconds

GENERAL

- Administer oxygen
  - Titrate to ≥92% and work of breathing
- Initiate continuous EtCO2 monitoring
- Determine blood glucose concentration and follow Diabetic Emergencies protocol as appropriate
- When possible, transport a witness of the onset of symptoms with patient to assist physicians in determining the "last known normal" time
- Attempt to obtain a phone number for witnesses

EMT

- Initiate airway management measures with adjunct and BVM as appropriate
- Initiate Stroke Alert procedure if positive finding(s) from Cincinnati and/or C-STAT scales
- Initiate immediate transport to the appropriate stroke center or LVO center dependent on findings

AEMT

- Initiate airway management as appropriate
- Establish IV/IO access with isotonic crystalloid solution to keep vein open but **DO NOT DELAY TRANSPORT FOR IV ACCESS**
- Follow other protocols as appropriate for seizure and/or altered mental status

PARAMEDIC

- Initiate advanced airway management as appropriate
- Initiate cardiac monitoring

TACHYDYSRHYTHMIAS

INDICATIONS

- Symptoms/signs directly attributable to tachydysrhythmias typically do not occur until >150bpm
  - Approximately 220bpm - patient's age in years

GENERAL

- Administer oxygen
  - Titrate to ≥92% and work of breathing
- Initiate continuous EtCO2 monitoring
- Assess for hemodynamic instability
  - Hypotension or relative hypotension
  - ACS/Acute MI
  - Acute pulmonary edema
- Acquire and transmit 12-lead EKG, per 12-lead EKG procedure
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Administer 250-500mL fluid bolus for hypotension
  - May repeat fluid bolus if no signs of fluid overload are present.

PARAMEDIC

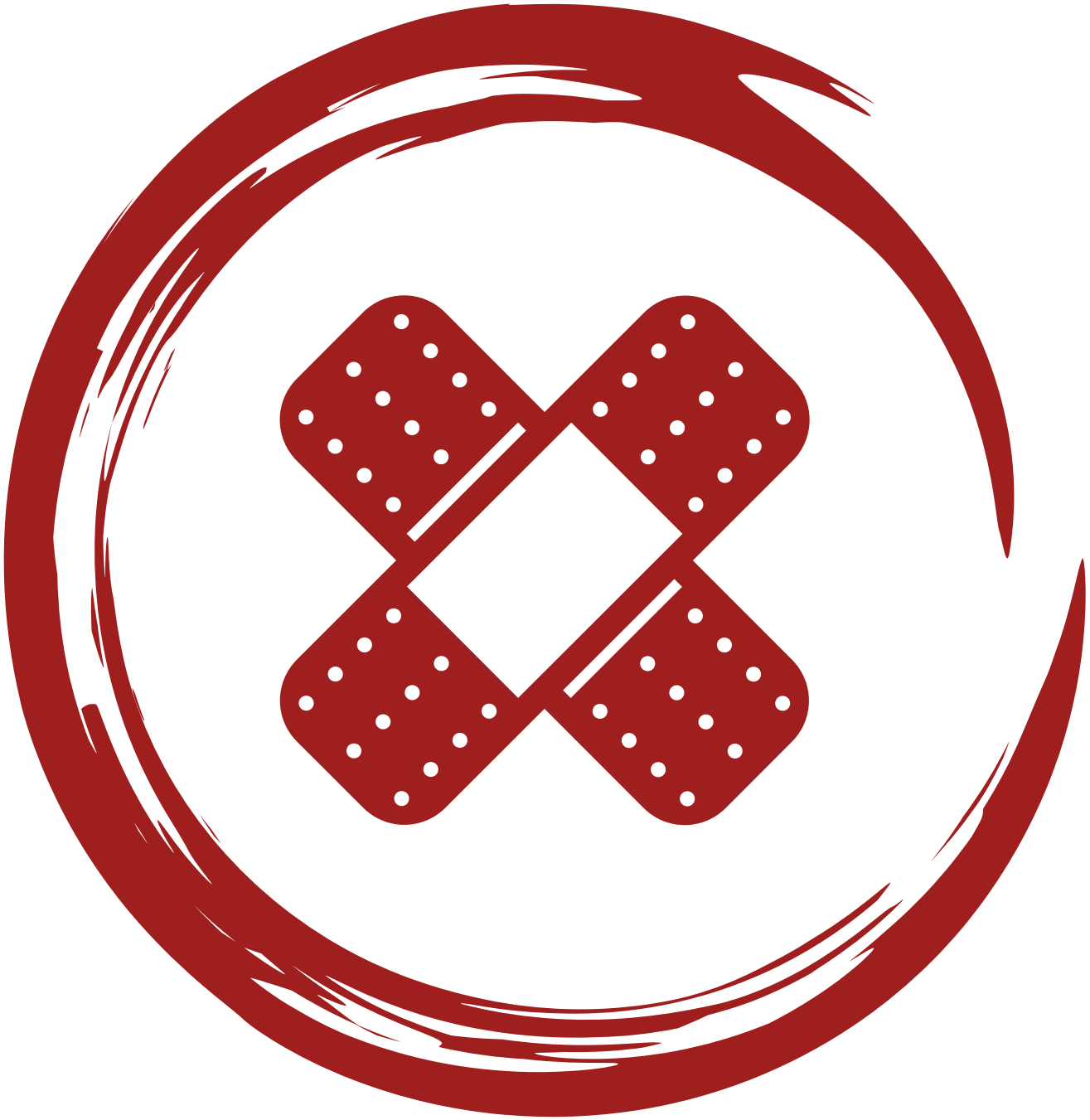
- Initiate cardiac monitoring. Evaluate rhythm for width, regularity, and rate.
  - Do not delay cardioversion in the presence of hemodynamic instability
  - Apply defibrillation pads
  - Consider sedation prior to cardioversion if time and the patient's condition permits
    - Administer midazolam 2mg IV/IO **OR** 10mg IN
    - Consider Ketamine 0.3mg/kg IV/IO
- Unstable
  - Narrow complex (QRS<0.12 seconds)
    - Regular (SVT, PAT, or atrial flutter)
      - Synchronized cardioversion: 100J, then (if no response) 200J, 300J, 360J
      - When preparing for cardioversion, administer adenosine 12mg IV/IO rapid push with isotonic crystalloid flush
        - Repeat adenosine 12mg IV/IO after 2 minutes, if needed
    - Irregular (atrial fibrillation)
      - Synchronized cardioversion: 100J, then (if no response) 200J, 300J, 360J
  - Wide complex (QRS>0.12 seconds)
    - Regular (VT or possible SVT with aberrancy or underlying BBB/IVCD)
      - Synchronized cardioversion: 100J, then (if no response) 200J, 300J, 360J
    - Irregular (atrial fibrillation with aberrancy or BBB/IVCD)
      - Synchronized cardioversion: 100J, then (if no response) 200J, 300J, 360J
- Stable
  - Narrow complex (QRS<0.12 seconds)
    - Regular (SVT/presumed PAT)
      - Perform vagal maneuvers
        - If no response, administer adenosine 12mg IV/IO rapid push with isotonic crystalloid flush
          - Repeat same dose after two minutes if no response
    - Irregular (atrial fibrillation)
      - Administer diltiazem 0.25mg/kg (max 20mg) IV slow push over five minutes
        - If no response administer diltiazem 0.35mg/kg (max 35mg) IV slow push over five minutes
      - If rate control achieved, initiate diltiazem infusion 5mg/hour IV

TACHYDYSRHYTHMIAS CONT.

PARAMEDIC

- Wide complex (QRS>0.12 seconds)
  - Regular (VT, possible SVT with aberrancy of underlying BBB/IVCD)
    - Administer amiodarone 150mg IV/IO over 10 minutes
    - **OR** administer lidocaine 100mg IV/IO
  - Presumed hyperkalemia
    - Administer calcium chloride 1g IV slow push every 5 minutes to max total 3g
    - Administer 8.4% sodium bicarbonate 100mEq
  - Polymorphic VT (torsades de pointes)
    - Administer magnesium sulfate 2mg IV/IO slow push over 2 minutes
- Irregular
  - Monitor and transport

LOUISVILLE METRO EMS



TRAUMA GUIDELINES

AMPUTATED BODY PARTS

GENERAL

- Administer oxygen
  - Titrate to ≥92% and work of breathing
- Initiate continuous EtCO2 monitoring
- Control bleeding with direct pressure and elevation if possible
- Cover the stump with moist, sterile gauze then wrap with dry dressing
- Wrap the severed part in a saline moistened sterile dressing
  - Place in a watertight plastic bag
  - Place the bag in a cooler with ice if possible
  - Do not freeze
  - Do not soak in water
- Follow other protocols as appropriate:
  - Trauma
- Consider whole blood administration (if available) for severe, uncontrolled bleeding
- Call for ALS assistance but **DO NOT DELAY TRANSPORT**

AEMT

- Assess for hemodynamic instability
- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Consider Pain Management protocol in isolated injury
  - Administer fentanyl 50mcg IV/IO/IN
    - May repeat x1 to max total 100mcg

PARAMEDIC

- Consider Pain Management protocol as appropriate
  - Administer ketamine 0.3mg/kg IV/IO
    - May repeat x1

BURNS

GENERAL

- Administer oxygen
  - Titrate to ≥92% and work of breathing
- Initiate continuous EtCO2 monitoring
- Begin airway management as appropriate
- Obtain 12-lead EKG, especially when injury involves an electrical burn
- Monitor CO level if possible
- Stop the burning process
  - Remove dry chemicals and flush affected area with copious amounts of water
  - Remove contaminated clothing
  - Remove clothing and jewelry in the area of the burn and distal to the injured area
  - For chemical burns of the eye, flush the eyes with copious amounts of water or saline
  - Attempt to cool the affected area
- Determine blood glucose concentration
- Estimate TBSA affected and the depth of the burns (TBSA does not include 1st degree burns)
- Apply dry dressing to burns as tolerated
- Call for ALS assistance for serious burns or electrical burns but **DO NOT DELAY TRANSPORT**

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Lactated ringers to be administered according to ABA Pre-Hospital Guidelines
  - 500mL per hour for adult patient initial fluid resuscitation
  - IVs may be inserted through the burns if necessary
- Consider Pain Management protocol
  - Administer fentanyl 50mcg IV/IO/IN
    - May repeat x1 to max total100mcg

PARAMEDIC

- Begin advanced airway management as appropriate
  - Observe for signs of inhalation injury (stridor, muffled voice, carbonaceous sputum)
  - If signs of inhalation injury are present, prepare to secure the airway
- Initiate cardiac monitoring
- Consider Pain Management protocol
  - Administer ketamine 0.3mg/kg IV/IO
    - May repeat x1

DENTAL/ORAL TRAUMA

INDICATIONS

- Known or suspected injury in the mouth

GENERAL

- Transport/assess the patient sitting upright
- Constantly assess for airway patency
- Visually inspect teeth and oral/mucosa/tongue for deformity, bleeding, laceration, fracture, etc.
- Use great caution if you choose to put fingers in the patient's mouth
- Control minor bleeding with a small piece of gauze held by the patient
- Suction as needed to clear the airway
- Bleeding post-tonsillectomy (5-7days after surgery)
  - Bleeding may be severe and **IS A SURGICAL EMERGENCY**
  - Consider whole blood administration (if available)
  - Consider direct pressure with gauze
    - May use gauze wrapped around Magill forceps
- Dental trauma
  - Attempt to locate avulsed teeth or fragments of teeth
  - Rinse with saline
  - Avulsed permanent teeth are considered an emergency and require transport for replacement
  - Place tooth in container of white milk or tooth saver solution
  - Patient saliva or saline may be used if solutions are not available
  - Cover the whole tooth with chosen solution

AEMT

- Severe bleeding (generally from tonsillectomy)
  - Establish IV/IO access with isotonic crystalloid to maintain SBP>90mmHg

PARAMEDIC

- Moderate bleeding
  - Consider soaking gauze in TXA for direct pressure on affected area
- Severe oropharyngeal bleeding
  - Administer TXA
    - 500mg in 5mL saline nebulized (preferred)
    - **OR** 2g IV/IO slow push

EYE TRAUMA

INDICATIONS

- Injury to the eye or periorbital region

GENERAL

- Assess mental status/neurological function
- Assess gross visual acuity in the affected eye every 10 minutes
- Assess extra-ocular movements
- Allow patient to sit upright during transport
- Suspected open globe
  - Do not palpate eye or surrounding region
  - Cover with eye shield resting on orbital ridge
  - Stabilize large penetrating foreign bodies without applying pressure to the globe
  - Transport with head elevated
- Suspected obviously non-penetrating foreign object
  - If visible, gentle irrigation with saline
  - May gently dab a foreign body off the cornea with a moist cotton swab
  - Avoid eye patching
- Suspected chemical exposure
  - Irrigate on scene with water or saline for 20 minutes
- Suspected thermal burn
  - Apply moist gauze to the burned area
- Suspected laceration
  - Apply moist gauze
  - Avoid applying pressure to the eye

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Severe pain
  - Administer fentanyl 50mcg IV/IO/IN
    - May repeat x1 to max total 100mcg
- Severe nausea
  - Administer ondansetron 4mg IV/IO/SL
    - May repeat x1 after 10 minutes for continued symptoms

PARAMEDIC

- Severe pain
  - Administer ketamine 0.3mg/kg IV/IO
    - May repeat x1

PAIN MANAGEMENT

INDICATIONS

- Severe pain (> 6/10 on the pain scale) associated with:
  - Burns
  - Trauma
  - Abdominal pain
  - Sickle Cell crisis

CONTRAINDICATIONS

- SBP<100mmHg or oxygen saturation ≤92%
- Chest pain (this protocol is superseded by Ischemic Chest Pain/Acute Coronary Syndrome/STEMI protocol)
- This protocol dose **NOT** apply to pain associated with:
  - Obstetric Emergencies
  - Altered Mental Status/Overdose/Toxidrome

GENERAL

- Administer oxygen
  - Titrate to ≥92% and work of breathing
- Initiate continuous EtCO2 monitoring
- Place patient in a position of comfort and splint any injured extremities as appropriate
- Follow applicable protocols:
  - Trauma
  - Burns
  - Abdominal pain
- Assess pain using pain scale for arrival of ALS on scene
- Call for ALS assistance but **DO NOT DELAY TRANSPORT**

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Administer fluid bolus 500mL IV/IO as appropriate for:
  - Burns
  - Hypotension if appropriate
  - Sickle Cell crisis
- Administer fentanyl 50mcg IV/IO/IN
  - May repeat x1 to max total 100mcg
  - Respiratory depression following fentanyl administration
    - Assist ventilations and administer naloxone 2mg IV/IO/IN; titrate to respiratory status
- Monitor and document vital signs and assess pain scale following each dose of fentanyl
- Associated nausea/vomiting
  - Administer ondansetron 4mg IV/IO/SL

PARAMEDIC

- Initiate cardiac monitoring
- Administer ketamine 0.3mg/kg IV/IO
  - May repeat x1
- Monitor and document vital signs and assess pain scale following each dose of selected pain medication

TRAUMA

GENERAL

- Ensure airway is patent while protecting the cervical spine
- Administer oxygen
  - Titrate to ≥92% and work of breathing
- Initiate continuous EtCO2 monitoring
- Begin airway management as appropriate
- Treat injuries and control bleeding as needed including wound packing and/or tourniquet application
- Determine the need for C-spine immobilization per Selective Spinal Immobilization procedure
  - C-spine immobilization is not indicated for penetrating trauma unless a neurologic deficit is noted on assessment
- Assess for hemodynamic instability and follow Shock protocol if indicated
- Consider whole blood administration (if available) if severe bleeding is present
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**
- Head/neck injuries
  - Determine the need for C-spine immobilization
- Chest injuries
  - Control bleeding
  - Stabilize impaled objects
  - Cover open chest wounds with occlusive dressing
- Abdominal injuries
  - Control bleeding
  - Stabilize impaled objects
  - Cover eviscerations with moist, sterile gauze
- Extremity injuries
  - Splint according to injury
  - Apply sterile dressings to open fractures. Do not replace exposed bone
  - Control bleeding with direct pressure and/or tourniquet
  - Do not attempt to reduce dislocations in the field
- Pregnant patients
  - If major trauma to the abdomen, suspect life-threatening injuries
  - In general, the fluid filled uterus protects the fetus from blunt trauma
  - Direct trauma may result in premature separation of the placenta from the uterine wall, premature labor, uterine rupture, abortion, or fetal death
  - Consider whole blood administration (if available) for catastrophic vaginal bleeding in pregnant patients
  - Place patient in left lateral recumbent position
  - When determining receiving facility, trauma takes precedent over the patient's OB hospital

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
  - Consider a 2nd IV site in case of blood administration
  - Consider fluid resuscitation only if signs of hemodynamic decompensation and/or unable to palpate radial pulses
  - Consider Pain Management protocol as appropriate
    - Administer fentanyl 50mcg IV/IO/IN
      - May repeat x1 to max total 100mcg

PARAMEDIC

- Begin advanced airway management if indicated
- Initiate cardiac monitoring
- Consider needle thoracostomy for suspected pneumothorax

TRAUMA CONT.

PARAMEDIC

- Significant bleeding
  - Administer TXA 2g IV/IO slow push
- Consider Pain Management as appropriate
  - Administer ketamine 0.3mg/kg IV/IO
    - May repeat x1

TRAUMATIC CARDIAC ARREST

INDICATIONS

- Patient is unresponsive, without normal breathing, and without a palpable pulse
- Reason for cardiac arrest is believed to be traumatic in nature

GENERAL

- If patient presentation meets requirements for Withholding Resuscitative Efforts, do not attempt resuscitation
- Pregnant female at/more than 24 weeks gestation or uterine fundus is palpable at or above the umbilicus
  - Immediate transport to nearest emergency department (preferably Level 1 Trauma Center if other trauma is present)
- Defer spinal immobilization; maintain C-spine in neutral position manually if possible
- Initiate chest compressions (may defer to address shock and/or airway compromise)
- Consider whole blood administration (if available) if severe hemorrhage is present
- Initiate continuous EtCO2 monitoring
- Prevent hypothermia if ROSC is present (consider actively warming the patient)
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**

EMT

- Control external hemorrhage
  - Use tourniquets, direct pressure, and/or hemostatic gauze
- Apply pelvic binder for blunt trauma, if indicated
- Perform airway management
  - BVM with airway adjunct in place
  - Inflate to adequate chest rise and fall
  - Supraglottic rescue airway device may be used if basic maneuvers are insufficient or impractical
- After the above are complete
  - Check carotid pulse
  - Apply AED
  - Continue high-performance CPR

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- For severe hemorrhage consider fluid bolus (500mL only)
- Perform airway management
- After the above are complete
  - Check carotid pulse
  - Apply AED
  - Continue high-performance CPR
- Administer epinephrine (1:10,000) 1mg IV/IO

PARAMEDIC

- Treat severe hemorrhagic shock as indicated above
- Severe bleeding
  - Administer TXA 2g IV/IO slow push
  - Consider whole blood administration (if available)
- Treat obstructive shock
  - Perform needle thoracostomy as indicated for tension pneumothorax
- Perform airway management
- After above are complete
  - Check carotid pulse
  - Apply cardiac monitor
  - Continue high-performance CPR

TRAUMATIC CARDIAC ARREST CONT.

PARAMEDIC

ASYSTOLE OR ORGANIZED RHYTHM WITH RATE <40BPM

- Withhold further resuscitation
- Contact MEDICAL CONTROL
- Contact the CORONER'S OFFICE

ORGANIZED RHYTHM WITH RATE >40BPM

- Consider repeat chest decompression if necessary
- Ensure hemorrhage control
- Ensure bilateral chest rise and fall and EtCO2 waveform
- Immediate transport to Level 1 Trauma Center
- Administer epinephrine (1:10,000) 1mg IV/IO

VENTRICULAR FIBRILLATION OR PULSELESS VENTRICULAR TACHYCARDIA

- Defibrillate at 360J
- Consider repeat chest decompression
- Ensure hemorrhage control
- Consider repeat fluid bolus
- Ensure bilateral chest rise and fall and EtCO2 waveform
- Immediate transport to Level 1 Trauma Center
- Administer epinephrine (1:10,000) 1mg IV/IO

TRAUMATIC SHOCK

INDICATIONS

- Following traumatic injury:
  - Altered mental status
  - Tachycardia
  - Poor skin perfusion
  - Hypotension (SBP<90mmHg)

GENERAL

- Consider other causes of shock and see protocol for Non-Traumatic Shock if applicable
- Administer oxygen
  - Titrate to ≥92% and work of breathing
- Initiate continuous EtCO2 monitoring
- Begin airway management as appropriate
- Treat injuries/control bleeding as needed and place pelvic binder for unstable fracture
- Determine the need for C-spine immobilization per Selective Spinal Immobilization procedure
  - C-Spine immobilization is not indicated for penetrating trauma unless a neurologic deficit is noted on assessment
- Assess for hemodynamic instability
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**
- Consider whole blood administration (if available) if severe bleeding is present

BLOOD INCLUSION CRITERIA

- Adult patient or pediatric patient >6 years of age
  - Consult with medical direction if the patient is in hemorrhagic shock and <6 years of age
- SBP <70mmHg
- **OR** SBP <90mmHg with HR >110bpm
- **OR** EtCO2 <25mmHg
- **OR** Witnessed traumatic arrest <5 minutes of provider arrival with continuous CPR being performed throughout downtime
- **OR** Age >65 years of age with SBP <100mmHg and HR >100bpm
- Patient has no religious objection to receiving blood products

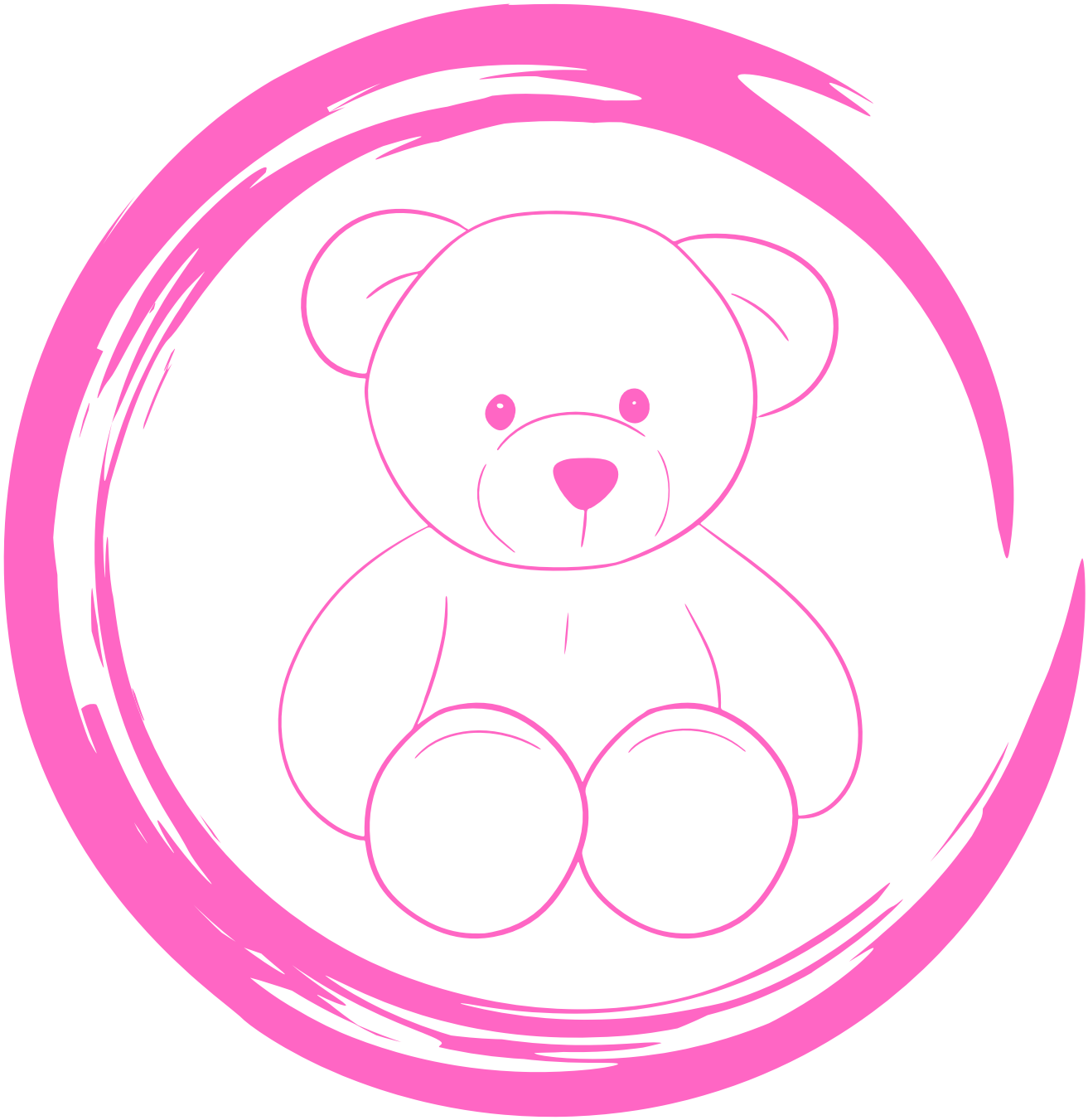
AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open (consider 2 IV sites if blood administration is indicated)
- SBP< 90mmHg
  - Does patient meet inclusion criteria for whole blood administration?
  - If not, administer crystalloid fluid bolus 500mL
    - May repeat in 250mL increments until SBP>90mmHg

PARAMEDIC

- Perform needle thoracotomy for tension pneumothorax if present
- Administer TXA 2g IV/IO slow push
- Does patient meet inclusion criteria for whole blood administration?
  - If so, transfusion to be performed en route to the hospital; **DO NOT PROLONG SCENE TIMES FOR BLOOD TRANSFUSION**
- If whole blood is administered
  - Administer calcium chloride 2g IV/IO

LOUISVILLE METRO EMS



PEDIATRIC MEDICAL GUIDELINES

PEDIATRIC ABDOMINAL PAIN

INDICATIONS

- Non-traumatic abdominal pain including:
  - Appendicitis
  - Constipation
  - Abdominal aortic aneurysm
  - Lactose intolerance
  - Gastroenteritis
  - Bowel obstruction
  - Pancreatitis
- Abdominal pain may be the first warning of catastrophic internal bleeding (ruptured aneurysm, liver, spleen, perforated abdominal viscus, ect.) Since the bleeding is not apparent, you must think of volume depletion and monitor the patient closely to recognize shock.
  - If catastrophic bleeding is suspected, consider whole blood administration (if available)

GENERAL

- Consult age-based guide, such as Handtevy app, for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Administer oxygen
  - Titrate to ≥95% and work of breathing
- Initiate continuous EtCO2 monitoring
- Consider possible causes and follow other protocols as appropriate
- Assess for hemodynamic instability; follow Non-Traumatic or Traumatic Shock protocols as appropriate
- If appropriate, request ALS assistance, but **DO NOT DELAY TRANSPORT**

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
  - Use caution with fluid administration in patients with suspected vascular catastrophe, maintain SBP>90mmHg
- Moderate to severe acute pain (>6/10 on the pain scale)
  - Administer fentanyl 1mcg/kg IV/IO **OR** 1.5mcg/kg IN (max single dose 50mcg)
    - May repeat x1 after 10 minutes
- Severe nausea/vomiting
  - Administer ondansetron 0.1mg/kg **OR** 4mg SL (if ≥4 years of age)
    - May repeat x1 after 10 minutes to max total 4mg

PARAMEDIC

- Severe nausea/vomiting
  - Administer droperidol 0.01mg/kg (max 1.25) IV/IO/IM
- Severe acute pain (>6/10 on the pain scale)
  - Administer ketamine 0.3mg/kg IV/IO
    - May repeat x1

PEDIATRIC ALLERGIC REACTION/ANAPHYLAXIS

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Severe signs/symptoms:
  - Urticaria/rash and/or exposure to known allergen
  - Stridor
  - Oropharyngeal swelling/difficulty swallowing/throat tightening
  - Severe dyspnea
  - Wheezing with accessory muscle use
  - Poor air movement
  - Difficulty speaking in full sentences
  - Hypotension (with or without signs of shock)
- Administer oxygen
  - Titrate to $\geq$95% and work of breathing
- Initiate continuous EtCO2 monitoring if respiratory distress is present
- Assist ventilations as appropriate
- Remove inciting agent if possible (stinger, food, etc.)

EMT

- Wheezing /bronchospasm
  - Administer 0.5% albuterol 2.5mg, nebulized
    - May repeat x1 after five minutes
- Severe signs/symptoms present for patients weighing <30kg
  - Administer epinephrine (1:1,000) 0.15mg IM
    - May repeat every 5 minutes to max 3 total doses, if no response to initial dose
  - Administer Epi Pen Jr. autoinjector IM x1 (if previously prescribed)
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
  - Initiate fluid bolus 20mL/kg for hypotension
    - May repeat to max 2L
- Administer diphenhydramine 1mg/kg (max 50mg) IV/IO/IM

PARAMEDIC

- Initiate advanced airway management as appropriate
- Administer epinephrine drip
  - (1:10,000) 0.5mg in 1,000mL isotonic crystalloid solution
    - Infuse at 1mcg/minute
  - **OR** (1:1,000) 0.5mg in 1,000mL isotonic crystalloid solution
    - Infuse at 1mcg/minute
  - Titrate to effect
- Consider methylprednisolone 2mg/kg (max 60mg) IV/IO

PEDIATRIC ALTERED MENTAL STATUS/ OVERDOSE/TOXIDROME

INDICATIONS

- Exposure to toxic substances from:
  - Ingestion
  - Inhalation
  - Injection
  - Skin absorption
- Intentional/accidental exposure to pharmacological substances
- Other medical conditions (see below) causing altered mental status

GENERAL

- Consult age-based guide, such as Handtevy app, for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Remove patient from toxic environment as quickly as possible, remove clothing, and decontaminate if applicable
  - This should be performed by trained personal with appropriate PPE
- Administer oxygen
  - Titrate to ≥95% and work of breathing
  - Assist ventilations as appropriate
- Initiate continuous EtCO2 monitoring
- Follow other protocols as appropriate
  - Diabetic Emergencies
  - Hypothermia/Hyperthermia
  - Seizures/Status Epilepticus
  - Stroke/CVA/TIA
  - Trauma
  - Agitated/Aggressive Patient
- Obtain a thorough history of events leading up to the altered mental status
- Use patient and/or bystander statements and answers to determine if/what substances are involved

EMT

- Determine blood glucose concentration and if <60mg/dL
  - Administer glucose 15g buccal, if conscious and able to tolerate
    - Unable to tolerate oral glucose **AND THE PATIENT HAS A PRESCRIPTION**
      - Administer glucagon 0.1mg/kg IM (max 1mg)
- Suspected opiate/opioid overdose
  - Administer naloxone 0.1mg/kg IN
    - May administer additional 0.1mg/kg IN every 5 minutes to restore respiratory drive to max total 2mg
- Suspected carbon monoxide exposure
  - Monitor CO level if possible
  - Administer high-flow oxygen at 15LPM

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Blood glucose concentration is <60mg/dL
  - Administer dextrose 10% 4mL/kg IV/IO
    - May repeat x1 if no response
  - IV access cannot be obtained
    - Administer glucagon 0.1mg/kg IM (max 1mg)
- Suspected opiate/opioid overdose
  - Administer naloxone 0.1mg/kg IV every 5 minutes to restore respiratory drive to max total 2mg

PEDIATRIC ALTERED MENTAL STATUS/ OVERDOSE/TOXIDROME CONT.

PARAMEDIC

- Begin advanced airway management as appropriate
- Initiate cardiac monitoring
- If signs of shock refer to shock protocols
- Patient exhibits signs of organophosphate poisoning
  - Administer atropine 0.02mg/kg IV/IO
    - Repeat at 0.02mg/kg every 3 minutes fully atropinized (secretions dried)
- Suspected TCA overdose
  - Administer sodium bicarbonate 8.4% 1mEq/kg IV/IO
    - 4.2% solution recommended for infants younger than 1 month
- Suspected beta-blocker overdose
  - Administer glucagon 0.07mg/kg IV/IO
    - May repeat x1 to max total 5mg
- Suspected calcium channel-blocker overdose
  - Administer calcium chloride 20mg/kg (max 1g) IV/IO
    - May repeat x1 after 10 minutes
- Suspected dystonic reaction
  - Administer diphenhydramine 1mg/kg (max 50mg) IV/IO/IM

PEDIATRIC APPARENT LIFE THREATENING EVENT/ BRIEF RESOLVED UNEXPLAINED EVENT

INDICATIONS

- An apparent life threatening event (ALTE) is defined as an episode that is frightening to the observer and is characterized by some combination of:
  - Apnea
  - Color change
  - Marked change in muscle tone
  - Unexplained choking or gagging
- A brief resolved unexplained event (BRUE) is similar to ALTE but symptoms resolve without intervention

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Provide emotional support to parents
- Document all aspects of scene and environmental conditions
- If SIDS suspected, consult cardiac arrest protocols
- ABCs and assessment using the Pediatric Assessment Triangle
- Measure and record temperature
- Blow-by oxygen as tolerated
- Pulse oximetry for reported apneic events
- Determine blood glucose concentration
- **TRANSPORT ALL INFANTS WITH AN ALTE/BRUE**
- Consider ALS transport if symptoms are still present
- Consult other protocols as necessary for patient condition

PEDIATRIC ASTHMA/WHEEZING

INDICATIONS

- Exacerbation of previously diagnosed asthma or COPD
  - Characterized by some combination of:
    - Wheezing
    - Tachypnea
    - Accessory muscle use/retraction
    - Inability to speak in full sentences
- Wheezing due to suspected asthma (>1 year of age)

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions and references to normal vital sign ranges for pediatric patients
- Administer oxygen
  - Titrate to ≥95% and work of breathing
- Initiate continuous EtCO2 monitoring

EMT

- Wheezing /bronchospasm
  - Administer 0.5% albuterol 2.5mg with 0.02% ipratropium bromide 0.5mg nebulized
    - May repeat x1
- Moderate to severe respiratory distress
  - Initiate CPAP, per CPAP protocol
    - If signs of impending respiratory failure prior to or following initiation of CPAP, proceed to assisted ventilations with BVM
    - Discontinue CPAP if patient becomes hypotensive
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**

AEMT

- Establish IV/IO access with isotonic crystalloid solution
- In addition to EMT DuoNeb, the AEMT may administer:
  - Additional DuoNeb treatments every 5 minutes as long as wheezing is present
    - Max 3 additional doses

PARAMEDIC

- Initiate cardiac monitoring
- Subacute presentation
  - Administer methylprednisolone 2mg/kg IV/IO
- Administer magnesium sulfate 50mg/kg (max 2g) infused over 10 minutes
- Unable to cooperate with or otherwise tolerate nebulizer therapy or impending respiratory failure
  - Administer epinephrine (1:1,000) 0.15mg IM
    - May repeat x1 after five minutes
- Impending respiratory failure
  - Initiate Pediatric Respiratory Distress or Failure protocol

PEDIATRIC BRADYDYSRHYTHMIAS

INDICATIONS

- Heart rate < normal range for patient age or relative bradycardia

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions, equipment sizes, and references to normal vital sign ranges for pediatric patients
- Administer oxygen
  - Titrate to ≥95% and work of breathing
- Initiate continuous EtCO2 monitoring
- Assess for hemodynamic instability (hypotension or relative hypotension with signs of poor perfusion)
- Acquire 12-lead EKG
- Call for ALS and additional assistance as necessary, but **DO NOT DELAY TRANSPORT**

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Hypotension
  - Administer fluid bolus 20mL/kg
    - May repeat x2

PARAMEDIC

- Initiate cardiac monitoring and evaluate rhythm for width, regularity, and rate
- Unstable
  - Administer epinephrine (1:1,000) 0.01mg/kg **OR** (1:10,000) 0.01mg/kg
    - May repeat every 5 minutes to max total 4 doses
  - Consider atropine 0.02mg/kg
    - Minimum dose 0.1mg and max single dose 0.5mg
      - May repeat x1
  - Consider external pacing
    - 0-36 months: 120bpm
    - 36 months-12 years: 100bpm
    - >12 years: 80bpm
  - If time permits and adequate respirations are present, consider sedation prior to pacing
    - Administer midazolam 0.1mg/kg (max 2mg) IV/IO/IN
    - **OR** administer ketamine 0.3mg/kg IV/IO
  - If no response consider
    - Hypotension
      - Administer fluid bolus 20mg/kg
        - May repeat x2
    - Suspected prolonged/severe acidosis
      - Administer sodium bicarbonate 8.4% 1mEq/kg IV/IO
        - 4.2% solution recommended for infants younger than 1 month
    - Suspected beta-blocker overdose
      - Administer glucagon 0.07mg/kg (max 5mg) IV/IO
    - Suspected calcium channel blocker overdose
      - Administer calcium chloride 20/mg/kg IV/IO
- Stable
  - Monitor, reassess vitals signs every 3-5 minutes, and transport

PEDIATRIC CROUP

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions and references to normal vital sign ranges for pediatric patients
- Administer oxygen
  - Titrate to ≥95% and work of breathing
  - Consider humidified oxygen or nebulized saline for mild symptoms
- Initiate continuous EtCO2 monitoring
- Remove any tight clothing
- Allow patient to remain in a position of comfort with someone familiar
  - The condition of an upset patient can deteriorate quicker than that of a calm patient
  - Family should be used to soothe the patient and keep them calm if possible
  - Do not force the patient into a position, they will protect their airway by their position

AEMT

- Severe respiratory distress
  - Administer nebulized epinephrine (1:1,000) 3mg mixed with 3mL isotonic crystalloid solution

PARAMEDIC

- Initiate cardiac monitoring

PEDIATRIC DIABETIC EMERGENCIES

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Administer oxygen
  - Titrate to ≥95% and work of breathing
- Initiate continuous EtCO2 monitoring
- Determine blood glucose concentration
- If appropriate, call for ALS assistance, but **DO NOT DELAY TRANSPORT**

EMT

- Relatively or clinically hypoglycemic without concern for aspiration
  - Administer oral glucose 15g buccal
    - May repeat every 5 minutes as needed
- Relatively or clinically hypoglycemic, unable to tolerate oral glucose, **AND THE PATIENT HAS A PRESRCIPTION**
  - Administer glucagon 0.1mg/kg (max 1mg) IM

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Hyperglycemia
  - Consider 250-500mL bolus with severe hyperglycemia as appropriate to respiratory status (signs/symptoms of pulmonary edema)
- Hypoglycemia
  - Use D5W for IV/IO access
  - Administer dextrose 10% 4mL/kg IV/IO
  - **OR** if IV/IO access cannot be obtained, administer glucagon 0.1mg/kg (max 1mg) IM

PEDIATRIC FEVER

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Any child less than 60 days old with a documented temperature of >100.4° F rectally (99.4° F axillary) must be transported for evaluation. Supervisor should be contacted prior to accepting a refusal
- Rectal temperature is preferred method of obtaining core temperature for children
- Begin passive cooling, remove excessive clothing/blankets
- Do not cool to induce shivering
- Follow Pediatric Seizure protocol of febrile seizure is suspected
- Temperatures >100.5° F
  - If a child has had acetaminophen more than 4 hours prior
    - Administer acetaminophen 15mg/kg PO
  - If the last dose of acetaminophen was less than 4 hours prior and the child has not had ibuprofen in the previous 6 hours
    - Administer ibuprofen 10mg/kg PO
      - Contraindicated in children under 6 months of age

PEDIATRIC HYPERTHERMIA

INDICATIONS

- Elevated body temperature related to heat exposure
- Altered mental status related to heat exposure

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Administer oxygen
  - Titrate to ≥95% and work of breathing
- Initiate continuous EtCO2 monitoring
- Move patient to a cool place away from any external heat sources if possible
- If appropriate, call for ALS assistance, but **DO NOT DELAY TRANSPORT**
- Obtain patient temperature (rectal temperature is preferred if available)

EMT

- Mild symptoms (heat cramps, heat exhaustion, no signs of AMS, body temperature <104° F)
  - Help facilitate passive cooling
    - Loosen clothing, remove excessive clothing
  - Administer PO fluids (if available)
    - Use caution if the patient presents with nausea and vomiting
- Severe symptoms (signs of AMS, body temperature 104-105° F, patient may or may not be sweating)
  - Begin active cooling
    - Delay transport for on-scene cold water immersion if possible
    - Create mobile ice bath if possible (body-bag filled with ice)
    - Use sheets or towels dipped in ice water on exposed skin
    - Place ice packs behind neck, in axillae, and in groin areas
  - If shivering starts, temperature drops <102° F, or AMS improves, stop active cooling
  - Determine blood glucose concentration

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Initiate IV/IO fluid bolus 20mL/kg for hypotension
  - May repeat to max 2L

PARAMEDIC

- Uncontrolled shivering during cooling
  - Administer midazolam 0.1mg/kg (max 1mg) IV/IO/IM/IN

PEDIATRIC HYPOTHERMIA

INDICATIONS/CONTRAINDICATIONS

- Decreased body temperature related to cold exposure
- Altered mental status related to cold exposure
- Repeated ACLS medications and repeated defibrillations are ineffective below 86° F (core temperature)

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Administer oxygen
  - Titrate to ≥95% and work of breathing
- Initiate continuous EtCO2 monitoring
- Decrease on-going heat loss ASAP
  - Move the patient to a warm area
  - Dry and insulate the patient
- Handle the patient gently, allowing the patient no exertion
  - Rough handling of severely hypothermic patients may cause ventricular fibrillation
- Remove all wet clothing (cut off to decrease patient movement)
- Initiate passive external warming with blankets in a warm ambulance
- Conscious patients should avoid heated oral fluids
- Obtain patient temperature (core temperature preferred if obtainable)
- Suspected severe hypothermia
  - Assess respirations and pulse carefully as both may be very slow but still adequate for patient's slowed metabolism
  - Provide expeditious, non-emergency transport
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**

EMT

- Begin airway management as appropriate
- Follow other protocols as appropriate
  - Diabetic Emergencies
  - Altered Mental Status/Overdose/Toxidrome
- Severe hypothermia
  - If a shockable rhythm is present, administer only one defibrillatory shock

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Cardiac arrest
  - Administer epinephrine (1:10,000) 0.01mg/kg (max one dose) IV/IO
- If restored to perfusing rhythm, follow appropriate protocol

PEDIATRIC NAUSEA/VOMITING

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Gently position the patient to facilitate airway
- Suction as necessary

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
  - Signs/symptoms of volume depletion
    - Consider administration isotonic solution fluid bolus 20mL/kg IV/IO
      - May repeat x1
- Consider possible causes and follow other protocols as appropriate:
  - Trauma
  - Abdominal Pain
  - Altered Mental Status/Overdose/Toxidrome
- Severe nausea/vomiting
  - Administer ondansetron 0.1mg/kg IV/IO **OR** 4mg SL (if ≥4 years of age)
    - May repeat x1 after 10 minutes
- Severe pain accompanied by severe nausea/vomiting
  - Administer fentanyl 1mcg/kg IV/IO **OR** 1.5mcg/kg IN (max single dose 50mcg)
    - May repeat x1

PARAMEDIC

- Severe nausea/vomiting
  - Administer droperidol 0.01mg/kg (max 1.25mg) IV/IO/IM

PEDIATRIC NEWBORN RESUSCITATION

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Once the body is fully delivered, dry the infant and wrap in a thermal blanket or dry towel
- Cover the the infant's scalp
- Assess breathing
  - If breathing is inadequate, stimulate the infant by gently rubbing the back and flicking the soles of the feet
  - If breathing is still inadequate, begin assisted ventilation via BVM at a rate of 40-60 breaths per minute
  - If breathing is adequate, but the infant displays central cyanosis, administer high flow oxygen via blow by
- Assess heart rate by auscultation or by palpation of the umbilical cord stump. If less than 60 beats per minute
  - Assist ventilations
  - Begin chest compressions at a rate of 120 per minute (3 compressions to each ventilation)
    - If heart rate is still less than 60bpm after 30 seconds of chest compressions
      - Consider insertion of supraglottic rescue airway device
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**
- Reassess frequently en route to the hospital

AEMT

- If heart rate is still less than 60bpm after 30 seconds of chest compressions
  - Establish IV/IO access with isotonic crystalloid solution to keep vein open
  - Administer epinephrine (1:10,000) 0.01mg/kg IV/IO
    - May repeat every 5 minutes to max total 4 doses

PARAMEDIC

- If meconium is present, initiate endotracheal intubation before the infant takes its first breath
  - Suction the airway using a meconium aspirator while withdrawing the tube
  - Repeat the procedure until the tube is clear of meconium
  - If the infant's heart rate slows, immediately discontinue suctioning and ventilate the infant
  - If the infant is already breathing, intubation and suctioning may be omitted
- If the heart rate is still less than 60bpm after 30 seconds of chest compressions
  - Consider endotracheal intubation
  - Administer epinephrine as indicated above
- Umbilical vascular access is preferred for drug/fluid administration

PEDIATRIC NON-TRAUMATIC CARDIAC ARREST

GENERAL

- Begin continuous, high quality CPR with minimal interruption
- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Call for ALS and/or additional assistance if necessary

EMT

- Apply AED and follow prompts
- Initiate continuous EtCO2 monitoring when appropriate
- Ventilate patient with BVM with airway adjunct in place
- Following each analysis
  - If signs of ROSC: continue to ventilate and initiate transport
  - If no ROSC: continue CPR and follow AED prompts
- After > 6 minutes of CPR have been completed
  - Consider supraglottic rescue airway device
  - Initiate transport if ALS is not on scene and continue CPR without interruption
  - If transport is delayed, continue CPR and follow AED prompts

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Follow AED prompts and continue CPR without interruption
- Administer epinephrine (1:10,000) 0.01mg/kg IV/IO every 5 minutes to max total 4 doses

SPECIAL CONSIDERATIONS

- Suspected opiate overdose
  - Administer naloxone 0.1mg/kg IV/IO
    - May repeat every five minutes to max total 2mg
- Suspected hypoglycemia
  - Administer dextrose 25% 4mL/kg IV/IO

PARAMEDIC

- Initiate cardiac monitoring and rhythm analysis

VENTRICULAR FIBRILLATION OR PULSELESS VENTRICULAR TACHYCARDIA

- Defibrillate at 4J/kg after each CPR 2 minute cycle in which defibrillation is indicated
- Perform advanced airway management with endotracheal tube or supraglottic rescue airway device
  - Intubation should be deferred until > 6 minutes of CPR, with or without 3 defib shocks, have been administered as long as BVM ventilations are adequate
- Administer epinephrine (1:10,000) 0.01mg/kg IV/IO every five minutes to max total 4 doses
- Administer amiodarone 5mg/kg IV/IO (max total 300mg)

SPECIAL CONSIDERATIONS

- Suspected calcium channel blocker overdose
  - Administer calcium chloride 20mg/kg (max 1g) IV/IO with saline flush
- Suspected prolonged acidosis, hyperkalemia, or tricyclic antidepressant overdose
  - Administer 8.4% sodium bicarbonate 1mEq/kg IV/IO every 10 minutes
    - 4.2% concentration recommended for infants younger than 1 month
- Suspected torsades des pointes
  - Administer magnesium sulfate 50mg/kg (max 2g) IV/IO

- Initiate transport when appropriate

PEDIATRIC NON-TRAUMATIC CARDIAC ARREST CONT.

PARAMEDIC

ASYSTOLE OR PULSELESS ELECTRICAL ACTIVITY

- Perform continuous, high-quality CPR
- If no rhythm change after each 2 minute cycle of CPR, treat reversible causes
- Perform advanced airway management with endotracheal tube or supraglottic rescue airway device
  - Intubation should be deferred until > 6 minutes of CPR with or without 3 defib shocks have been administered as long as BVM ventilation are adequate
- Administer epinephrine (1:10,000) 0.01mg/kg IV/IO every 5 minutes to max total 4 doses

SPECIAL CONSIDERATIONS

- Suspected hypovolemia
  - Administer 20mL/kg fluid bolus
    - Max total 3 doses
- Suspected tension pneumothorax
  - Follow Needle Thoracostomy procedure
- Suspected calcium channel blocker overdose
  - Administer calcium chloride 20mg/kg (max 1g) with saline flush
- Suspected prolonged acidosis, hyperkalemia, or tricyclic antidepressant overdose
  - Administer 8.4% sodium bicarbonate 1mEq/kg IV/IO every 10 minutes
    - 4.2% concentration recommended for infants younger than 1 month
- Suspected beta-blocker overdose
  - Administer glucagon 0.07mg/kg (max 5mg)

- Initiate transport as appropriate

PEDIATRIC NON-TRAUMATIC SHOCK/HYPOTENSION

INDICATIONS

- Relative hypotension with signs/symptoms of shock
- Decreased LOC
- Capillary refill >2 seconds

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Administer oxygen
  - Titrate to ≥95% and work of breathing
- Initiate continuous EtCO2 monitoring
- If trauma, follow Pediatric Traumatic Shock protocol and control external hemorrhage as appropriate
- Place patient in a supine position as appropriate and tolerated
- Follow other protocols as appropriate:
  - Pediatric Allergic Reaction/Anaphylaxis
  - Pediatric Diabetic Emergencies
  - Pediatric Trauma
  - Pediatric Traumatic Shock
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**

EMT

- Consider ventilation via BVM with airway adjunct in place if appropriate

AEMT

- Establish large bore IV access (consider 2nd IV site in case of whole blood administration) or IO access as indicated
  - Consider fluid administration 20mL/kg bolus
  - Titrate SBP to perfusion status
- Initiate airway management as appropriate

PARAMEDIC

- Initiate advanced airway management, as appropriate
- Initiate cardiac monitoring and treat cardiac dysrhythmias
- Catastrophic hemorrhage of medical origin, such as active GI bleeding
  - Administer TXA
    - (6-10 years old) 1g IV/IO slow push
    - (>10 years old) 2g IV/IO slow push
  - Consider whole blood administration (if available)
- Acute adrenal crisis occurs in patients with a history of adrenal insufficiency in times of stress (infections, fevers, trauma, recent surgery) or non-compliance with medications
  - Suspected adrenal crisis with associated signs/symptoms with hemodynamic instability
    - Consider solu-cortef administration
      - Use the patient's own medication and follow written instructions regarding dose/route by patient's signed physician order
        - If not available, administer methylprednisolone 2mg/kg (max 60mg) IV/IO

PEDIATRIC POST ROSC CARE

INDICATIONS

- Recent cardiac arrest
- Patient has a palpable
- Patient's mental status may range from awake/alert to unresponsive

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Continue to follow protocols covering the presumptive underlying causes of arrest (non-traumatic vs. traumatic)
- Maintain patent airway as needed and administer oxygen to correct potential hypoxia
  - Titrate to ≥95%
- Maintain continuous EtCO2 monitoring
- Provide ventilatory support as needed (avoid hyperventilation)
- Keep defibrillator pads in place
- Monitor vital signs frequently
- For traumatic arrest, consider whole blood administration (if available)
- If hyperthermic, attempt passive cooling techniques, but do not cool below normal body temperature
- Calls for ALS assistance, but **DO NOT DELAY TRANSPORT** to appropriate facility

AEMT

- Initiate IV/IO access if not already complete
- Hypotension
  - Administer 20mL/kg isotonic crystalloid solution bolus
    - May repeat as necessary to maintain SBP to adequate perfusion status

PARAMEDIC

- Maintain cardiac monitoring and treat dysrhythmias, per appropriate protocols
- Treat any reversible etiologies present

PEDIATRIC RESPIRATORY DISTRESS OR FAILURE

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Administer oxygen
  - Titrate to ≥95% and work of breathing
- Initiate continuous EtCO2 monitoring
  - Maintain EtCO2 35-45mmHg
- Follow other protocols as appropriate:
  - Pediatric Non-Traumatic Cardiac Arrest
  - Pediatric Asthma/Wheezing
  - Pediatric Shock/Hypotension
  - Pediatric Allergic Reaction/Anaphylaxis

EMT

- Signs of upper airway obstruction
  - Attempt to clear airway by
    - Opening or positioning
    - Foreign body removal, as appropriate
    - Suction
- To maintain airway once clear, insert NPA or OPA
- Impending respiratory failure or anticipated loss of airway
  - Assist ventilations with BVM
  - Consider insertion of supraglottic rescue airway device if no gag reflex is present

PARAMEDIC

- Consider underlying causes and follow other protocols as appropriate
  - For tension pneumothorax, see Needle Thoracostomy procedure
- Impending respiratory failure or anticipated loss of airway control
  - Consider advanced airway management
    - Orotracheal intubation indicators
      - Patient is unconscious, no gag reflex is present
      - Patient is apneic or has inadequate respirations
      - High risk of aspiration due to vomitus/hemorrhage
- Utilize adjuncts to facilitate orotracheal intubation as follows:
  - Maintain oxygenation via NC 10L/minute throughout procedure
  - Suction as necessary
- Consider use of supraglottic rescue airway device if intubation is unsuccessful after 2 attempts

PEDIATRIC SEIZURE/STATUS EPILEPTICUS

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Administer oxygen
  - Titrate to ≥95% and work of breathing
- Initiate continuous EtCO2 monitoring
- Position patient to avoid injury and/or aspiration
  - Consider placing in lateral recumbent position
- Determine blood glucose concentration and follow Pediatric Diabetic Emergencies protocol if appropriate
- Follow other protocols as appropriate:
  - Trauma
  - Altered Mental Status/Overdose/Toxidrome
- Ongoing seizure or status epilepticus (>2 seizures without lucid period)
  - Call for ALS assistance, but **DO NOT DELAY TRANSPORT**
- If febrile seizure is suspected, obtain temperature, if possible, and remove excessive clothing/blankets

AEMT

- Monitor carefully for respiratory depression and need for assisted ventilation as appropriate
  - Consider airway adjuncts, ventilation, rescue airway as appropriate
- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Actively seizing
  - Administer midazolam 0.15mg/kg (max 2mg) IV/IO/IM/IN
    - May repeat every five minutes until seizure stops
- If not actively seizing, pharmacologic therapy is not indicated

PEDIATRIC TACHYDYSRHYTHMIAS

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Administer oxygen
  - Titrate to ≥95% and work of breathing
- Initiate continuous EtCO2 monitoring
- Assess for hemodynamic instability
  - Hypotension or relative hypotension with signs of poor perfusion
- Acquire 12-lead EKG
- Call for ALS and additional assistance as necessary, but **DO NOT DELAY TRANSPORT**

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Consider age-appropriate vagal maneuvers

PARAMEDIC

- If time permits and adequate respirations are present, consider sedation prior to cardioversion
  - Administer midazolam 0.1mg/kg (max 2mg) IV/IO
  - **OR** administer ketamine 0.3mg/kg IV/IO
- Unstable narrow complex
  - SVT rate (usually > 220bpm in infants and > 180bpm in children)
    - Perform synchronized cardioversion at 1J/kg
      - If not effective, increase to 2J/kg
- Unstable wide complex
  - Perform synchronized cardioversion at 1J/kg
    - If not effective, increase to 2J/kg
- Stable narrow complex
  - Sinus tachycardia
    - Monitor and transport
  - SVT rate (usually > 200bpm in infants and > 180bpm in children)
    - Administer adenosine 0.1mg/kg (max 6mg) IV/IO rapid push
      - Repeat at 0.2mg/kg (max 12mg) IV/IO rapid push
- Stable narrow complex
  - Administer amiodarone 5mg/kg (max 150mg) IV/IO over ten minutes

LOUISVILLE METRO EMS

PEDIATRIC TRAUMA GUIDELINES

PEDIATRIC AMPUTATED BODY PARTS

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Administer oxygen
  - Titrate to ≥95% and work of breathing
- Initiate continuous EtCO2 monitoring
- Control bleeding with direct pressure and elevation if possible
- Cover the stump with moist, sterile gauze then wrap with a dry dressing
- Wrap the severed part in a saline moistened sterile dressing
  - Place in a water tight plastic bag
  - Place the bag in a cooler with ice if possible
  - Do not freeze
  - Do not soak in water
- Follow other protocols as appropriate
  - Pediatric Trauma
- Consider whole blood administration (if available) for severe, uncontrolled bleeding
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**

AEMT

- Assess for hemodynamic instability
- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Consider Pediatric Pain Management protocol for an isolated injury
  - Administer fentanyl 1mcg/kg IV/IO **OR** 1.5mcg/kg IN (max single dose 50mcg)
    - May repeat x1

PARAMEDIC

- Consider Pediatric Pain Management protocol as appropriate
  - Administer ketamine 0.3mg/kg IV/IO
    - May repeat x1

PEDIATRIC BURNS

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Administer oxygen
  - Titrate to ≥95% and work of breathing
- Initiate continuous EtCO2 monitoring
- Begin airway management as appropriate
- Monitor CO level if possible
- Stop the burning process
  - Remove dry chemicals and flush the affected area with copious amounts of water
  - Remove contaminated clothing
  - Remove clothing and jewelry in the area of the burn and distal to the injured area
  - For chemical burns of the eye, flush eyes with copious amounts of water or saline
  - Attempt to cool the affected area
- Determine blood glucose concentration
- Estimate TBSA affected and the depth of the burns (TBSA does not include 1st degree burns)
- Apply dry dressing to burns as tolerated
- Call for ALS assistance for serious or electrical burns, but **DO NOT DELAY TRANSPORT**

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Initial lactated ringers to be administered according to ABA Pre-Hospital Guidelines
  - 5 years and younger: 125mL/hour
  - 6-13 years: 250mL/hour
  - IVs may be inserted through burns if necessary
- Consider Pediatric Pain Management protocol
  - Administer fentanyl 1mcg/kg IV/IO **OR** 1.5mcg/kg IN (max single dose 50mcg)
    - May repeat x1

PARAMEDIC

- Begin advanced airway management as appropriate
  - Observe for signs of inhalation injury (stridor, muffled voice, carbonaceous sputum)
  - If signs of inhalation injury are present, prepare to secure the airway
- Initiate cardiac monitoring
- Consider Pediatric Pain Management protocol
  - Administer ketamine 0.3mg/kg IV/IO
    - May repeat x1

PEDIATRIC DENTAL/ORAL TRAUMA

INDICATIONS

- Known or suspected injury in the mouth

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Transport/assess the patient sitting upright
- Constantly assess for airway patency
- Visually inspect the teeth and oral/mucosa/tongue for deformity, bleeding, laceration, fracture, etc.
- Use great caution if you choose to put fingers in the patient's mouth
- Control mild bleeding with a small piece of gauze held by the patient
- Suction as needed to clear the airway
- Bleeding post tonsillectomy (*5-7* days after surgery)
  - Bleeding may be severe and **IS A SURGICAL EMERGENCY**
  - Consider whole blood administration (if available)
  - Consider direct pressure with gauze
    - May use gauze wrapped around Magill forceps
- Dental trauma
  - Attempt to locate the avulsed teeth or fragments of teeth
  - Rinse with saline
  - Avulsed permanent teeth are considered an emergency and require transport for replacement
  - Place tooth in container of white milk or tooth saver solution
  - Patient saliva or saline may be used if other solutions are not available
  - Cover the whole tooth with the chosen solution

AEMT

- Severe bleeding (generally from tonsillectomy)
  - Establish IV/IO access with isotonic crystalloid solution to maintain SBP>90mmHg

PARAMEDIC

- Moderate oropharyngeal bleeding
  - Consider soaking gauze in TXA for direct pressure on affected area
- Severe oropharyngeal bleeding
  - Administer TXA
    - (6-10 years old) 500mg in 5mL saline nebulized (preferred) **OR** 1g IV/IO slow push
    - (>10 years old) 500mg in 5mL saline nebulized (preferred) **OR** 2g IV/IO slow push

PEDIATRIC EYE TRAUMA

INDICATIONS

- Injury to the eye or periorbital region

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Assess mental status/neurological function
- Assess gross visual acuity in the affected eye every 10 minutes
- Assess extra-ocular movements
- Allow patient to sit upright during transport
- Suspected open globe
  - Do not palpate eye or surrounding area
  - Cover with eye shield resting in orbital ridge
  - Stabilize large penetrating foreign bodies without applying pressure to the globe
  - Transport with head elevated
- Suspected obviously non-penetrating ocular foreign body
  - If visible, gentle irrigation with saline
  - May gently dab a foreign body off the cornea with a moist cotton swab
  - Avoid eye patching
- Suspected chemical exposure
  - Irrigate on scene with water or saline for 20 minutes
- Suspected thermal burn
  - Apply moist gauze to the burned area
- Suspected laceration
  - Cover with moist gauze
  - Avoid applying pressure on the eye

AEMT

- Establish IV access with isotonic crystalloid solution to keep vein open
- Severe pain
  - Administer fentanyl 1mcg/kg IV/IO **OR** 1.5mcg/kg IN (max single dose 50mcg)
    - May repeat x1
- Severe nausea
  - Administer ondansetron 0.1mg/kg (max 4mg) IV/IO **OR** 4mg SL (if ≥4 years of age)
    - May repeat x1 to max total 4mg after 10 minutes

PARAMEDIC

- Severe pain
  - Administer ketamine 0.3mg/kg IV/IO
    - May repeat x1

PEDIATRIC PAIN MANAGEMENT

INDICATIONS

- Moderate to severe pain (>6/10 on the pain scale) associated with:
  - Burns
  - Trauma
  - Abdominal pain
  - Sickle Cell crisis

CONTRAINDICATIONS

- SBP <100mmHg
- Oxygen saturation ≤95%
- This protocol does not apply to pain associated with Altered Mental Status/Overdose/Toxidromes

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Administer oxygen
  - Titrate to ≥95% and work of breathing
- Initiate continuous EtCO2 monitoring
- Place patient in a position of comfort and splint any injured extremities as appropriate
- Follow applicable protocols:
  - Trauma
  - Burns
  - Abdominal pain
- Assess pain using pain scale for arrival of ALS
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Administer fluid bolus 20mL/kg IV/IO as appropriate for:
  - Burns
  - Hypotension, if appropriate
  - Sickle Cell crisis
- Administer fentanyl 1mcg/kg IV/IO **OR** 1.5mcg/kg IN (max single dose 50mcg)
  - May repeat x1
- Respiratory depression following fentanyl administration
  - Assist ventilations and administer naloxone 0.1mg/kg IV/IO/IN and titrate to respiratory status
- Monitor and document vital signs and assess pain scale following each dose of fentanyl
- Associated nausea/vomiting
  - Administer ondansetron 0.1mg/kg (max 4mg) IV/IO **OR** 4mg SL (if ≥4 years of age)
    - May repeat x1 to max total 4mg after 10 minutes

PARAMEDIC

- Initiate cardiac monitoring
- Administer ketamine 0.3mg/kg IV/IO
  - May repeat x1
- Monitor and document vital signs and assess pain scale following each dose of selected pain medication

PEDIATRIC TRAUMA

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Ensure a patent airway while protecting the cervical spine
- Administer oxygen
  - Titrate to ≥95% and work of breathing
- Initiate continuous EtCO2 monitoring
- Begin airway management as appropriate
- Treat injuries/control bleeding, as needed, including wound packing and/or tourniquet application
- Determine the need for C-spine immobilization per Selective Spinal Immobilization procedure
  - C-Spine immobilization is not indicated for penetrating trauma unless a neurologic deficit is noted on assessment
- Assess for hemodynamic stability and follow Traumatic Shock protocol
- Consider whole blood administration (if available) if severe bleeding is present
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**
- Head/neck injuries
  - Determine the need for C-spine immobilization
- Chest injuries
  - Control bleeding
  - Stabilize impaled objects
  - Cover open chest wounds with occlusive dressings
- Abdominal injuries
  - Control bleeding
  - Stabilize impaled objects
  - Cover eviscerations with moist, sterile gauze
- Extremity injuries
  - Splint according to injury
  - Apply sterile dressing to open fractures. Do not replace exposed bone
  - Control bleeding with direct pressure and/or tourniquet
  - Do not attempt to reduce dislocation in the field

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
  - Consider 2nd IV site in case of whole blood administration
- Consider fluid resuscitation only if signs of hemodynamic decompensation and/or unable to palpate radial pulses
- Consider Pediatric Pain Management protocol as appropriate
  - Administer fentanyl 1mcg/kg IV/IO **OR** 1.5mcg/kg IN (max single dose 50mcg)
    - May repeat x1

PARAMEDIC

- Begin advanced airway management if indicated
- Initiate cardiac monitoring
- Consider needle thoracostomy for suspected tension pneumothorax
- Significant bleeding/hemorrhage
  - Administer TXA
    - (6-10 years old) 1g IV/IO slow push
    - (>10 years old) 2g IV/IO slow push
- Consider Pediatric Pain Management protocol as appropriate
  - Administer 0.3mg/kg IV/IO
    - May repeat x1

PEDIATRIC TRAUMATIC CARDIAC ARREST

INDICATIONS

- Patient is unresponsive, without normal breathing, and without a palpable pulse
- Reason for cardiac arrest is believed to be traumatic in nature

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- If patient presentation meets criteria for withholding resuscitative efforts, do not attempt resuscitation
- Defer spinal immobilization, maintain C-spine in a neutral position manually if possible
- Initiate chest compressions (may defer to address shock and/or airway compromise)
- Consider whole blood administration (if available) if severe hemorrhage is present
- Initiate continuous EtCO2 monitoring
- Prevent hypothermia if ROSC is present; consider actively warming the patient
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**

EMT

- Control external hemorrhage
  - Apply tourniquets, direct pressure, and/or hemostatic gauze
- Apply pelvic binder for blunt trauma
- Perform airway management
  - BVM with airway adjunct
  - Inflate to adequate chest rise and fall
  - Supraglottic rescue airway device may be used if basic maneuvers are insufficient or impractical
- After above are complete
  - Check carotid pulse
  - Apply AED

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
- Severe hemorrhage
  - Consider fluid administration (20mL/kg bolus only)
- Perform airway management
- After above are complete
  - Check carotid pulse
  - Apply AED
  - Continue high-performance CPR
- Administer epinephrine (1:10,000) 0.01mg/kg (max one dose) IV/IO

PARAMEDIC

- Treat severe hemorrhagic shock with volume replacement as indicated above
- Severe bleeding
  - Administer TXA
    - (6-10 years old) 1g IV/IO slow push
    - (>10 years old) 2g IV/IO slow push
  - Consider whole blood administration (if available)
- Perform needle thoracostomy as indicated for tension pneumothorax
- Perform airway management as indicated
- After above are complete
  - Check carotid pulse
  - Apply cardiac monitor
  - Continue high-performance CPR

PEDIATRIC TRAUMATIC CARDIAC ARREST CONT.

PARAMEDIC

ASYSTOLE OR ORGANIZED RHYTHM WITH RATE <40BPM

- Withhold further resuscitation
- Contact MEDICAL CONTROL
- Contact the CORONER'S OFFICE

ORGANIZED RHYTHM WITH RATE >40BPM

- Consider repeat chest decompression if necessary
- Ensure hemorrhage control
- Ensure bilateral chest rise and fall and EtCO2 waveform
- Administer epinephrine (1:10,000) 0.01mg/kg (max 1mg) IV/IO
- Transport to the appropriate Level 1 Trauma Center

VENTRICULAR FIBRILLATION OR PULSELESS VENTRICULAR TACHYCARDIA

- Defibrillate at 4J/kg
- Consider repeat chest decompression
- Ensure hemorrhage control
- Consider repeat fluid bolus
- Ensure bilateral chest rise and fall and EtCO2 waveform
- Immediate transport to Level 1 Trauma Center
- Administer epinephrine (1:10,000) 0.01mg/kg (max 1mg) IV/IO
- Transport to the appropriate Level 1 Trauma Center

PEDIATRIC TRAUMATIC SHOCK

INDICATIONS

- Following a traumatic injury:
  - Altered mental status
  - Tachycardia
  - Poor skin perfusion
  - Hypotension

GENERAL

- Consult age-based guide such as Handtevy app for appropriate medication doses/interventions/equipment sizes and references to normal vital sign ranges for pediatric patients
- Consider other causes of shock and follow Pediatric Non-Traumatic Shock protocol if applicable
- Administer oxygen
  - Titrate to ≥95% and work of breathing
- Initiate continuous EtCO2 monitoring
- Begin airway management as appropriate
- Treat injuries/control bleeding as needed
- Determine the need for C-spine immobilization per the Selective Spinal Immobilization procedure
  - Consider the age of the patient for Selective Spinal Immobilization procedure
  - C-Spine immobilization is not indicated for penetrating trauma unless a neurological deficit is noted on assessment
- Assess for hemodynamic instability
- Call for ALS assistance, but **DO NOT DELAY TRANSPORT**
- Consider blood administration if severe bleeding is present

BLOOD INCLUSION CRITERIA

- Adult patient or pediatric patient >6 years of age
  - Consult with medical direction if the patient is in hemorrhagic shock and <6 years of age
- SBP <70mmHg
- **OR** SBP <90mmHg with HR >110bpm
- **OR** EtCO2 <25mmHg
- **OR** Witnessed traumatic arrest <5 minutes of provider arrival with continuous CPR being performed throughout downtime
- **OR** Age >65 years of age with SBP <100mmHg and HR >100bpm
- Patient has no religious objection to receiving blood products

AEMT

- Establish IV/IO access with isotonic crystalloid solution to keep vein open
  - Consider 2nd IV site in case of whole blood administration
- SBP<90mmHg
  - Does the patient meet inclusion criteria for whole blood administration?
  - If not, administer crystalloid fluid bolus 20mL/kg
    - May repeat in 20mL/kg increments until SBP>90mmHg

PARAMEDIC

- Perform needle thoracostomy for tension pneumothorax if present
- Administer TXA
  - (6-10 years old) 1g IV/IO slow push
  - (>10 years old) 2g IV/IO slow push
- Does the patient meet inclusion criteria for whole blood administration?
  - If so, transfusion to be performed en route to the hospital; **DO NOT PROLONG SCENE TIMES FOR BLOOD TRANSFUSION**
- If whole blood is administered
  - Administer calcium chloride 1g IV/IO

LOUISVILLE METRO EMS

PROCEDURES

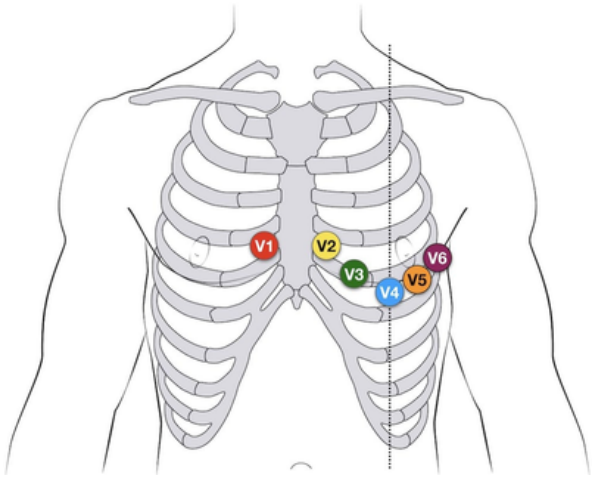
12-LEAD EKG

INDICATIONS

- Patients who are complaining of chest pain and/or anginal equivalents consistent with ACS, palpations, irregular heartbeat, shortness of breath, dizziness, syncope, or weakness with clinical suspicion of cardiac origin
- Electrical injuries
- Suspected cardiotoxic overdose

GENERAL

- Assess patient and monitor cardiac status
- If the patient is unstable, definitive treatment is the priority. Once stable, perform 12-lead EKG
  - Should be obtained within the first 10 minutes of the patient encounter and prior to moving the patient to the ambulance
- Prepare the EKG monitor and connect the patient cable with electrodes
- Enter the patient's demographics on the monitor
- Expose the chest and prepare the area as necessary, being mindful of modesty and patient comfort
- Apply the chest and extremity leads in the following landmarks:
  - RA- Right arm
  - LA- Left arm
  - RL- Right leg
  - LL- Left leg
  - V1- 4th intercostal space at the right sternal border
  - V2- 4th intercostal space at the left sternal border
  - V3- Directly between V2 and V4
  - V4- 5th intercostal space at the midclavicular line
  - V5- Level with V4 at the left anterior axillary line
  - V6- Level with V5 and the left midaxillary line
- Instruct the patient to remain still
- Acquire the 12-lead EKG
  - It is important to enter the patient's age, gender, and race



Chest lead placement

EMT

- Transmit any of the following statements to a STEMI receiving facility:
  - ***ACUTE STEMI***
  - ***POSSIBLE ACUTE STEMI***
  - ***ACUTE MI/ISCHEMIA***
- **DO NOT DELAY TRANSPORT.** 12-lead EKGs with the above statement should be transmitted within five minutes of being obtained
- Contact the receiving facility to notify them of the 12-lead EKG
  - If it is not received, read the descriptive statement and consider a LifeNet Connect Live Stream (if available)
- Keep all leads connected at all times (when practical) to allow for automatic ST-segment monitoring to occur
- Document STEMI Alert as well as the "12-lead" procedure in the ePCR flowchart
- Download monitor data and attach to the ePCR at the conclusion of the case

PARAMEDIC

- After manual interpretation and upon diagnoses of STEMI, follow Field Activation of Cardiac Cath. Lab procedure

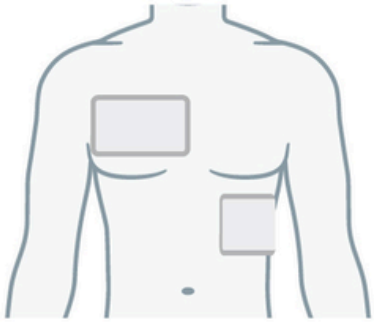
AUTOMATED EXTERNAL DEFIBRILLATION

INDICATIONS

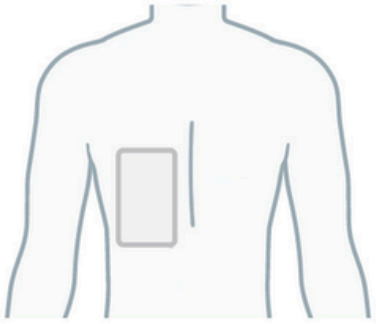
- The patient is in cardiac arrest

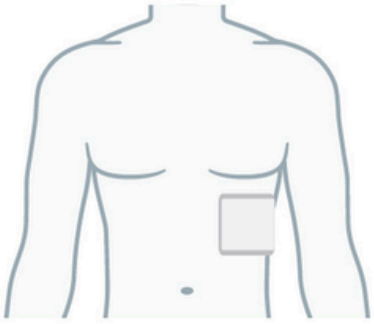
GENERAL

- Early and rapid deployment of the AED is key to successful resuscitation
- Ensure the use of high-quality chest compression and minimize interruptions
- Remove any medication patches and wipe off any residue
- Apply defibrillation pads to a bare chest in the anterior-lateral position or the anterior-posterior position (refer to the appropriate protocol
- Press "Analyze"
- Select the appropriate patient type
- Follow prompts
- Shock advised
  - Clear the patient just prior to delivering the shock by pressing "Shock"
  - Immediately resume chest compressions
- CPR Insight will automatically analyze during CPR cycle and pre-charge if indicated. **DO NOT STOP CPR WHILE THE MONITOR CHARGES**
- Provide shocks as indicated and resume CPR immediately
- If CPR Insight is inconclusive, follow normal analysis prompts
- CPR Insight is not possible for patients who have internal pacemakers



Anterior-lateral position





Anterior-posterior position

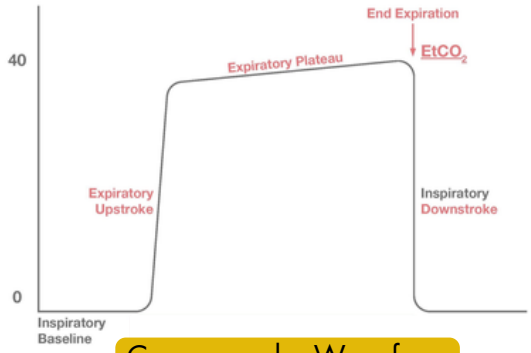
CAPNOGRAPHY

INDICATIONS

- Verification of supraglottic or endotracheal tube placement
- Intubated patients
- All benzodiazepine or narcotic administration
- Respiratory distress

GENERAL

- Allow the monitor to "zero out" (dashed lines)
- Interpretation should be done after 40 seconds of ventilation and full expiration
- Emesis and/or medications can affect the reliability of the detector if particles clog the tube
- This does not replace the need to auscultate breath sounds. EtCO2 monitoring cannot differentiate intubation of the right mainstem bronchus
- Side Stream Monitoring
  - Connect EtCO2 device to the monitor
  - Apply EtCO2 NC
    - Oxygen can be delivered to the patient through the NC or a NRB
- Main Stream Monitoring
  - Connect the EtCO2 device to the monitor
  - Connect the in-line adapter between the airway device and the BVM
  - Ventilate the patient via BVM
    - Expelled EtCO2 will be depicted by a waveform on the screen and numeric value (mmHg)
- Document the procedure and download monitor data into the ePCR
- Capnometer shall remain in place with the airway and be monitored throughout pre-hospital care and transport
- If CO2 is not detected, assess quickly for:
  - Loss of airway
    - Apnea
    - Esophageal endotracheal tube placement/migration
    - Obstruction
  - Circulatory collapse
    - Cardiac arrest
    - Massive pulmonary embolism
    - Exsanguination
  - Equipment failure
    - Disconnected or malfunctioning BVM or ventilator



Capnography Waveform

CONTINUOUS POSITIVE AIRWAY PRESSURE

INDICATIONS

- Severe respiratory distress due to suspected:
  - Pulmonary edema
  - COPD
  - Asthma
  - Pneumonia
  - Near-drowning
- Respiratory rate >24, increased work of breathing, intercostal retractions/accessory muscle usage, SpO2 ≤92%

CONTRAINDICATIONS

- Suspected pneumothorax
- Inability to maintain own airway
  - Vomiting
  - Upper GI hemorrhage
  - Unconscious or uncooperative
- Impending respiratory failure that may require assisted ventilations
- Facial abnormalities that prevent an effective mask seal
  - Burns
  - Trauma
  - Congenital defects
- Hypotension (SBP >90mmHg) or relative hypotension with signs/symptoms of decompensation

GENERAL

- Monitor pulse oximetry and continuous EtCO2 prior to and following the application of CPAP, see Capnography procedure
- Remove the "Christmas tree" adapter from the oxygen regulator or use the DISS port on portable cylinders
- Attach CPAP circuit to oxygen source
- If not using DISS port, set flow rate to the highest setting
  - DISS will automatically flow once connected
- Allow patient to hold the appropriately sized mask to their face
- Adjust the forehead support and straps to achieve optimal seal
- Begin at 5cmH2O and increase up to 10cmH2O until improvement in SpO2 and/or work of breathing
- Continue pharmacological interventions, per appropriate protocol
- Reassess the patient frequently and be prepared to provide ventilatory support

"Christmas tree" adapter

CONTROL-CRIC

INDICATIONS

- Inability to manage airway via other means (BVM, SGA, ET intubation)
- Failed RSI

CONTRAINDICATIONS

- Inability to locate landmarks
- Distorted anatomy

PARAMEDIC

- Position the patient supine and identify the cricothyroid membrane
- Stabilize the larynx with the thumb and middle finger of your non-dominant hand
- Use the Cric-Knife to incise skin
  - A vertical skin incision from mid-thyroid cartilage to the cricoid is recommended (usually about 2 finger breadths)
  - With patients with a thick neck, a longer incision may be needed
  - A horizontal skin incision may be used when landmarks are evident
- After palpating the cricothyroid membrane, turn the Cric-Knife to a horizontal position over the cricothyroid membrane
- Push the blade downward, perpendicular to the trachea, until the blade is fully inserted and the airway is entered
- While maintaining downward force, slide the tracheal hook down the handle with your thumb until the hook is felt to enter the trachea and it disengages from the handle
- Grab the tracheal hook with your non-dominant had, lifting up on the thyroid cartilage
- Insert the Cric-Key tube through the incision
- Confirm placement by moving the device along the anterior wall of the trachea to feel for the tracheal rings
- Indicators of incorrect placement could include:
  - Tenting of the skin
  - Difficulty advancing the Cric-Key tube
  - Lack of tactile feedback from the tracheal rings
- Once placement has been confirmed, advance the Cric-Key tube to the flange
- Stabilize the Cric-Key tube and pivot the tracheal hook towards the patient's shoulder to remove from the airway
- While stabilizing the Cric-Key tube, remove the Cric-Key introducer
- Inflate the cuff until resistance is met
- Confirm placement
- Secure with stabilizing strap
- Attach BVM
  - Ventilate and auscultate lung sounds
- Reassess

FIELD ACTIVATION OF CARDIAC CATH. LAB

GENERAL

- This procedure is to be utilized **ONLY** by paramedics to activate the Cardiac Catheterization Lab at STEMI receiving facilities that have been identified by the Greater Louisville Medical Society's Destination Guidelines
- This should be completed within 5 minutes of a positive EKG finding for STEMI

PARAMEDIC

- Active chest pain or equivalent symptoms (e.g. dyspnea, nausea)
- 12-lead EKG of good quality showing STEMI (must meet all 3 criteria)
  - ST elevation >2mm in at least 2 anatomically contiguous leads
  - QRS duration <0.12 seconds (No LBBB)
  - ***ACUTE STEMI*** or ***POSSIBLE ACUTE STEMI*** or ***ACUTE MI/ISCHEMIA*** via LP35
- Paramedic agrees with the interpretation
- Evaluate eligibility for acute cardiac catheterization
  - Age <85
  - No major active bleeding
  - No major surgery in the previous 6 weeks
  - No significant trauma
  - Patient able to provide informed consent or a legal representative is with the patient to provide consent
- Ask the patient if they have a cardiologist and obtain the name
- Document the STEMI Alert in the ePCR flowchart

FIELD DELIVERY

GENERAL

- Perform a physical assessment to determine the need for imminent delivery or need for immediate transport
  - Conditions that prompt the need for immediate transport despite the need threat of delivery include:
    - Breech presentation
    - Cord prolapse
    - Extremity presentation
    - Evidence of meconium staining
    - Nuchal cord
- Position the mother for delivery
- Coach the mother to breath deeply between contractions and to push with the contractions
- Administer oxygen as needed
- Delivery of infant
  - As the head crowns in the vaginal vault, support the head and perineum with gentle pressure
  - After the head is delivered, assess for a nuchal cord
    - If the cord is looped around the neck, gently slip it over the infants head
    - In unable to remove the nuchal cord, carefully clamp and cut the cord
  - Support the infants head as it rotates for shoulder presentation
  - With gentle pressure, guide the infant's head downward to deliver the anterior shoulder
  - Guide the infant's head upward to deliver the posterior shoulder
  - Complete the delivery of the infant
  - Place the infant on the mother's chest
- Clamping the umbilical cord
  - Apply two clamps to the umbilical cord if not already completed
    - Place the 1st clamp approximately 10 inches from the infant
    - Place the 2nd clamp approximately 2 inches **PROXIMAL** to the 1st clamp
  - Cut the cord between the two clamps
  - If the umbilical cord continues to bleed after being clamped, apply an additional clamp
- Dry the infant and wrap them in warm towels/blankets and cover their head
- Promote "kangaroo care" between the infant and the mother, if both are stable
- Record the time of birth
- If newborn resuscitation is not needed, record the APGAR score at 1 minute and 5 minutes after birth
- If newborn resuscitation is needed, follow the Newborn Resuscitation protocol
- Delivery of placenta
  - Do not delay transport for the delivery of the placenta
  - If the placenta presents, encourage the mother to push with the contractions
  - Place the placenta in a plastic bag and transport it with the mother and give to the receiving facility
  - **NEVER** pull on the umbilical cord to facilitate placental delivery

0-3 Critically low
4-6 Fairly low
7-10 Generally normal

	0	1	2
Appearance	Blue or pale all over	Blue extremities but pink torso	Pink all over
Pulse	None	<100bpm	>100bpm
Grimace	No response	Weak grimace when stimulated	Cries or pulls away when stimulated
Activity	None	Some flexion of arms	Arms flexed and legs resist extension
Respirations	None	Weak, irregular, or gasping	Strong cry

I-GEL/SUPRAGLOTTIC AIRWAY

INDICATIONS

- Cardiac arrest
- Unresponsive without a gag reflex

CONTRAINDICATIONS

- Known esophageal disease
- Airway burns
- Ingestion of caustic substances

GENERAL

- Preoxygenate with appropriate airway adjunct and BVM
- Select appropriate size for the patient's weight
- Lubricate the device
- Grasp the I-Gel firmly along the integral bite block with your dominant hand
- Position the device so that the I-Gel cuff outlet is facing towards the patient's chin
- With your non-dominant hand, place the patient into the "sniffing position" and gently press down on the chin
- Introduce the leading soft tip into the mouth towards the hard palate
- Glide the device downwards and backwards along the hard palate with a continuous but gentle push until definitive resistance is felt
- Confirm placement
  - Auscultate breath sounds
  - Observe chest rise and fall
  - Presence of EtCO2
- Secure with the manufacturer provided device
- Re-check the position of the device after each patient movement and on transfer of care to another provider

I-Gel Size Reference

i-gel size	Patient size	Patient weight guidance (kg)
1	Neonate	2-5
1.5	Infant	5-12
2	Small paediatric	10-25
2.5	Large paediatric	25-35
3	Small adult	30-60
4	Medium adult	50-90
5	Large adult+	90+

INTRAOSSEOUS INFUSION/EZ-IO

INDICATIONS

- Anytime in which vascular access is difficult to obtain in emergent, urgent, or medically necessary cases

CONTRAINDICATIONS

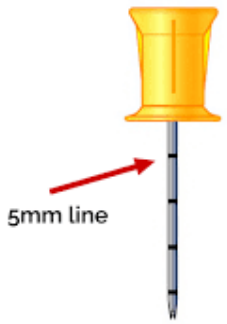
- Fracture of target bone
- Previous orthopedic procedures
- IO access (or attempted IO access) in the target bone with 48 hours
- Infection at insertion site
- Excessive tissue at insertion site and/or absence of adequate anatomical landmarks

GENERAL

- Preferred site
  - Proximal Humerus
- Secondary site
  - Proximal Tibia
- Tertiary site
  - Distal Tibia

6-85lbs | >6lbs | >85lbs

- If the 5mm mark (closest to the hub) is not visible, abandon the procedure, consider an alternate site, or choose a larger needle set as the current needle may not be long enough
- Gravity flow is often slow; consider a pressure cuff if medications and/or bolus are needed
- If there is swelling around the site due to fluids in the soft tissues, consider the following:
  - The fluid may be leaking from a previous puncture site
  - The fluid may be leaking through the hole around the needle which was enlarged by bumping or jiggling the needle
  - The needle may have gone all the way through the bone and the fluid is leaking from the end of the needle on the other side. You must remove the needle and attempt access in another bone
- Locate the insertion site
- Cleanse the insertion site using aseptic technique
- Stabilize the extremity and insert EZ-IO needle set through the skin a 90 degree angle
  - Ensure the 5mm mark is visible
    - If the 5mm mark (closest to the hub) is not visible, abandon the procedure, consider an alternate site, or choose a larger needle set as the current needle may not be long enough
  - Power the driver and place the needle set into the bone
  - Stop when you feel a sudden "give" or loss of resistance
- Remove the EZ-IO driver from the needle set while stabilizing the catheter hub
- Connect a primed EZ-Connect Extension to the hub
- Flush with normal saline
  - Multiple flushes may be required
- Begin infusion and monitor EZ-IO site and patient condition
- Conscious patients who are responsive to pain
  - Carefully attach syringe directly to IO catheter hub (without extension set in place)
  - Slowly infuse initial dose of lidocaine 2% over 120 seconds and allow to dwell for 60 seconds
    - Adults: 40mg
    - Infants/Children: 0.5mg/kg (max 40mg)
  - Flush IO catheter
  - Assess for pain. If needed, slowly infuse lidocaine (half initial dose) over 60 seconds



GEEKY MEDICS

LUCAS DEPLOYMENT

- During the deployment and use of this device, if compressions will be delayed, manual CPR **MUST** be re-initiated immediately. Failing to perform chest compressions for a patient in cardiac arrest is not acceptable at any point.

GENERAL

- Assess the patient and initiate treatment per the appropriate cardiac arrest protocol
- Perform manual, high-quality CPR (Deployment of the LUCAS device should not interrupt continuous manual, high-quality CPR)
- Deployment of the LUCAS device should not be initiated until packaging the patient for transport

NON-COMPRESSING PROVIDERS

- Open the LUCAS carrying case, remove the back plate, and place it on the floor just above the patient's head
- Power on the LUCAS device and open the clip-locks on the arms
- After analysis (and defibrillation if appropriate)
  - Lift the patient by the arms or shoulders
  - Place the posterior pad of a second set of defibrillation pads to the left of the spine and inferior to the scapula
  - Place the patient on the LUCAS back plate
  - Clip the arm of the LUCAS onto the back plate furthest from the the compressor and then through the arms of the compressor
    - Lift up on the device to ensure a proper lock
      - If the device is not properly locked, re-engage the levers and reattempt
  - Once the device is properly locked onto the back plate, lower the suction cup to the patient's chest
  - Press the "Pause" button to lock the device and press the "Play" button to start the device
  - Connect the neck strap
- Once deployed and functioning properly
  - Mark the inferior point of the suction cup on the patient's chest for device positioning checks
  - Secured the patient's arms into the wrist straps of the device
  - Perform rhythm checks/analysis every two minutes per the appropriate cardiac arrest protocols
- There is no need to pause the LUCAS device during shock/defibrillation

NON-INVASIVE PACING

INDICATIONS

- Symptomatic bradycardia
  - Heart rate <60bpm
  - Relative bradycardia
- Signs of inadequate cerebral/cardiac perfusion
  - Hypotension
  - Pulmonary edema

PARAMEDIC

- Attach EKG limb leads
- Apply pacing pads to the chest in the anterior-lateral position
- Push the yellow “therapy” button in the bottom right corner of the monitor screen
- Select “Pacing”
- Note pacer spikes in the EKG
- Slowly increase the mA output until electrical capture is achieved
- Unable to capture at maximum current
  - Stop pacing
- Capture observed on monitor
  - Check for palpable pulses
  - Obtain blood pressure
  - Consider sedation for patient comfort
- If no positive hemodynamic response, increase the pacer rate up to 100bpm using 10bpm increments

Anterior-lateral position

NEEDLE THORACOSTOMY

INDICATIONS

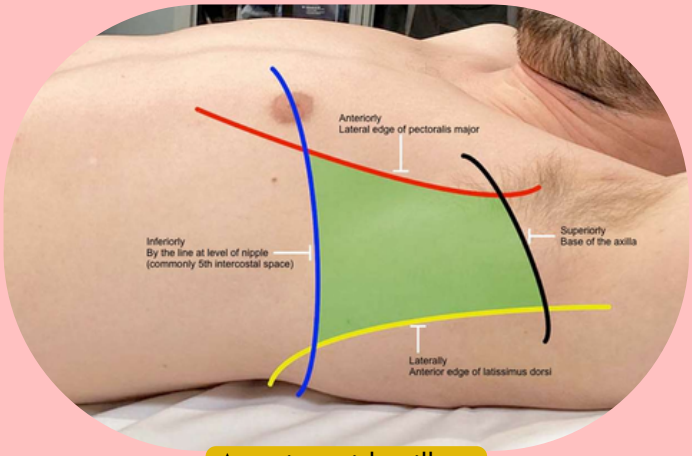
- Tension pneumothorax associated with marked ventilatory distress and hypotension
  - Absence of breath sounds alone may not be sufficient clinical presentation to diagnose tension pneumothorax

CONTRAINDICATIONS

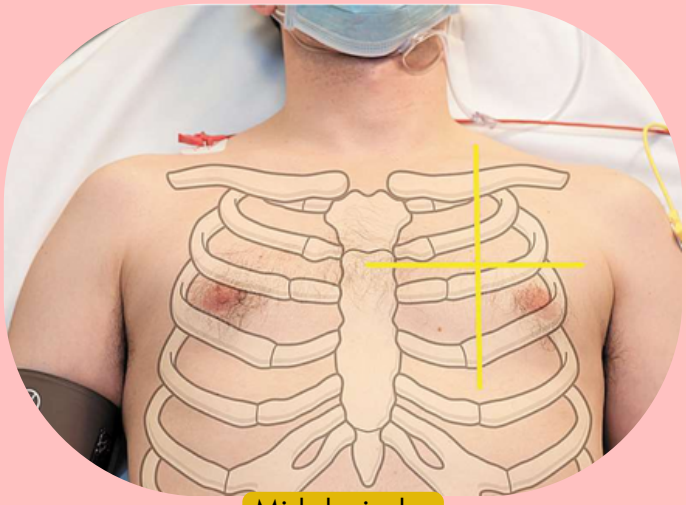
- Simple pneumothorax or hemothorax
- Simple barotrauma

PARAMEDIC

- Select site
- Cleanse the site with antiseptic
- Remove the red cap from the case with a twisting motion
- Remove the Enhanced ARS from the case
- Insert the Enhanced ARS through the skin targeting the selected rib (below the level of intended insertion site)
  - Place the needle tip against the exterior rib and confirm position
  - Direct the Enhanced ARS superiorly over the rib and into the thoracic cavity while ensuring perpendicular positioning in relation to the thoracic cavity
  - Penetrate the thoracic cavity; extending the Enhanced ARS approximately 3cm beyond the exterior of the targeted rib
  - Direct the needle tip toward the middle of the clavicle (tension may release at this point)
  - Stop advancing the needle and advance **ONLY** the catheter portion towards the middle of the clavicle using the needle as a guide but avoiding further penetration with the needle
- Remove the needle only when the catheter has been fully inserted (tension may release at this point)
- Secure the catheter with tape if necessary
- Monitor the patient for recurrence of respiratory distress following the procedure and continually assess the patient for complications
  - Hemodynamic instability
  - Respiratory distress
  - Unilateral chest expansion
  - Decreased SpO2
  - Bleeding
  - Catheter occlusion
  - Hematoma



Anterior mid-axillary
4th or 5th intercostal space



Mid-clavicular
2nd intercostal space

PHYSICAL RESTRAINT

INDICATIONS

- EMS shall restrain combative or disoriented patients who present a physical danger to themselves or others
- Mildly combative or disoriented patients may be restrained if there is reason for concern that a worsening of the patient's condition may present a physical danger to the themselves or others
- Extremely violent patients may require the assistance of law enforcement to facilitate restraint
  - It is acceptable to assist law enforcement at their request
- Restraints are to be used only when necessary in situations where the patient is violent, or potentially violent, and may be a danger to themselves or others
- EMS **MUST** remember that aggressive behavior could be a sign of a medical condition

GENERAL

- Withdraw from the scene to a safe location immediately if the patient has any type of weapon or potential weapon and wait for law enforcement to secure the scene
- Attempt to verbally deescalate the situation
- The patient may be restrained supine in a long spine board with backboard straps and head immobilization
  - The patient shall **NOT** be restrained in a prone position or have a backboard placed on top of them
- Stretcher seatbelts are an appropriate means of securing/restraining a patient to the stretcher
- Commercial soft restraints or cravats may be utilized to secure a patient's arms and legs to the backboard or stretcher
  - Prior to and immediately following the application of physical restraints the crew will complete an assessment of pulse, motor, and sensory of the distal limb that is restrained
- The use of a spit hood is appropriate when needed to protect the crew from infectious diseases and possible blood-borne pathogens
- Any use of any restraint not authorized in this policy is prohibited. Examples include but are not limited to:
  - Tape
  - Rope
  - Other binding materials
  - Choke holds

OVERSTEPPING THE BOUNDRIES OF RESTRAINT MAY BE PERCIEVED AS BATTERY, ASSAULT, A VIOLATION OF CIVIL RIGHTS, OR FALSE IMPRISIONMENT

- **(KRS 503.110 Use of force by person with responsibility for care, discipline, or safety of others)**
  - The use of physical force by a defendant upon another person is justifiable when the defendant is a person responsible for the operation or the maintenance of order in a vehicle or other carrier of passengers and the defendant believes that such force is necessary to prevent interference with its operation or to maintain order in the vehicle or other carrier, except that deadly physical force may be used only when the defendant believes it necessary to prevent death or serious physical injury
  - The use of physical force by a defendant upon another person is justifiable when the defendant is a doctor or other therapist or a person assisting him at his direction, and:
    - The force is used for the purpose of administering a recognized form of treatment which the defendant believes to be adapted to promoting the physical or mental health of the patient; and
    - The treatment is administered with the consent of the patient or, if the patient is a minor or a mentally disabled person, with the consent of the parent, guardian, or other person legally competent to consent in his behalf, or the treatment is administered in an emergency when the defendant believes that no one competent to consent can be consulted and that a reasonable person, wishing to safeguard the welfare of the patient, would consent

PIT CREW CPR

GENERAL

- Compression rate: 100-120/minute
- Compression depth: 2" (adult), 1-1.5" (pediatric)
- Ventilation rate: 1 breath/6 seconds (adult), 1 breath/3 seconds (pediatric)
- Ventilation depth: 1 second breaths allowing for adequate chest rise/fall

POSITION 1 (COMPRESSOR)

- Upon arrival to the patient's side, the responder will immediately assess level of consciousness and presence of a carotid pulse for no more than 3-5 seconds
  - If no pulse is detected, instruct Position 2 to immediately begin chest compressions
- Apply AED
  - Power on monitor
  - Apply defibrillation pads as indicated on packaging
- Initiate passive oxygenation
  - Insert oral airway adjunct
  - Apply NBR 15LPM
- After Position 2 completes 60 second cycle of 100 compressions, Position 1 will immediately "Analyze" cardiac rhythm
- After analyzation, take over the role of primary compressor
- When not acting as the primary compressor
  - Assist Position 3 by providing BVM ventilations
  - Prepare to relieve the primary compressor

POSITION 2 (COMPRESSOR)

- Upon arrival to the patient's side, the responder will "hover hands" near the patient's chest and wait for instructions from Position 1 to start compressions
- When not acting as the primary compressor
  - Complete the application of AED pads and passive oxygenation
  - Assist Position 3 by providing BVM ventilations
  - Prepare to relieve the primary compressor

POSITION 3 (AIRWAY)

- Immediately open the airway using the appropriate technique
- Verify a lack of spontaneous respirations
- Insert oral airway adjunct and attach supplemental oxygen and EtCO2 to BVM
- Maintain airway and mask seal with two hands ("E-C" method)
- Responders in the Compressor positions that are not currently compressing will ventilate with a BVM at a rate of 1 breath every 6 seconds (or 1 breath every 3 seconds for pediatrics) with or without an advanced airway in place

POSITION 4 (CODE COMMANDER)

- All Code Commanders
  - Ensure proper rate, depth, and quality of compressions
  - Time cycles between compressors
  - Ensure the airway technique is adequate and effective
    - Direct advanced airway placement when appropriate
- ALS Code Commanders
  - Instruct and assist the resting compressor with switching the cardiac monitor from AED mode
    - When appropriate, visually analyze cardiac rhythms and follow the appropriate cardiac arrest protocol
  - Coordinate the placement of a second set of defibrillation pads for vector changes/DSED
  - Establish IV/IO access
    - Administer medications per the appropriate cardiac arrest protocol

PIT CREW CPR CONT.

GENERAL

POSITION 5 (LOGISTICS)

(Positioned outside of the circle of care)

- Gather pertinent history and communicate with the family during the transition to cessation or transport
- Assist the resuscitation team with equipment and egress planning
- Assist the Code Commander in timing of procedures and compressor changes

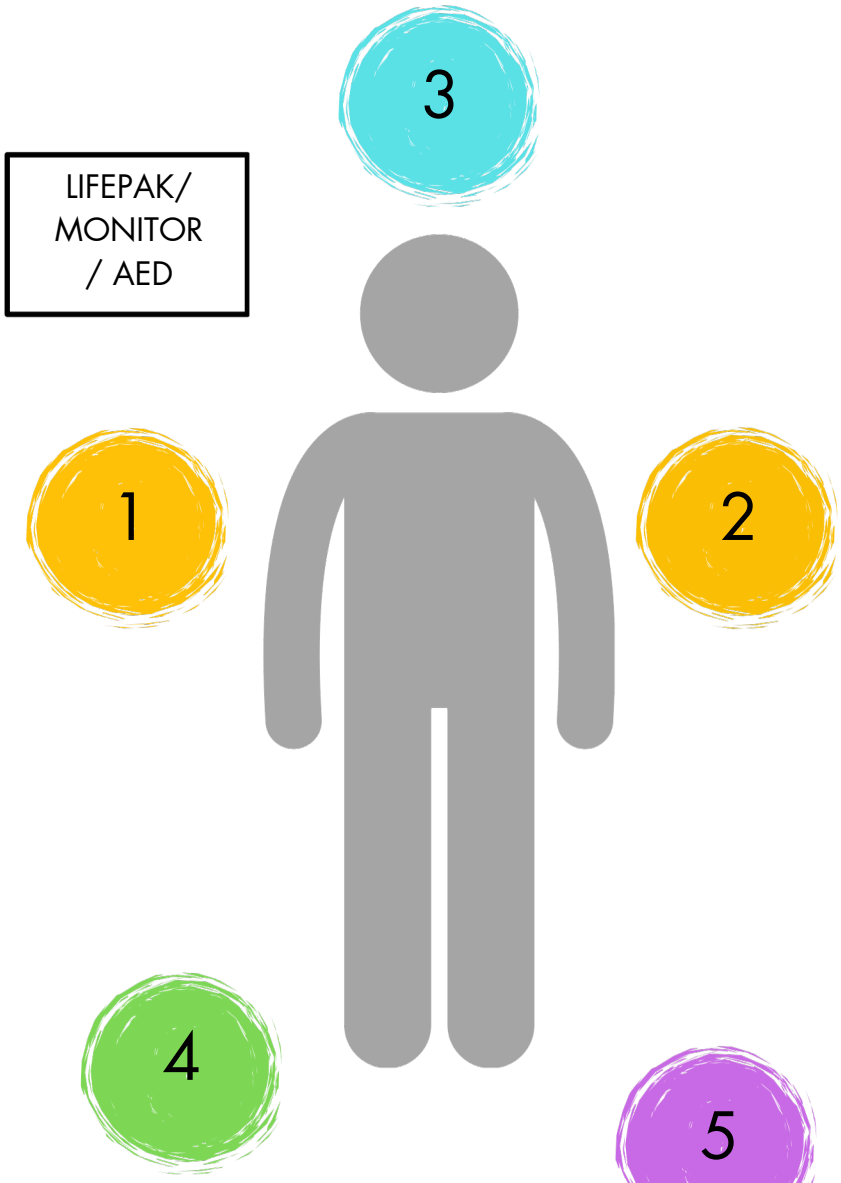
PIT CREW CPR CONT.

AIRWAY Open airway with basic maneuvers. Insert OPA, if not already in place. Maintain face-mask seal with two handed E-C "clamp." Adult ventilation rate: 1 breath every 6 seconds Pediatric ventilation rate: 1 breath every 3 seconds

COMPRESSOR 1
Perform 100 compressions in one minute. Then rest, while position 2 performs 100 compressions in one minute.

Apply NRB at 15L/min and insert OPA while waiting for position 3 to arrive.

After position 3 has arrived, squeeze BVM reservoir to deliver ventilations during one minute rest period.



COMPRESSOR 2
Perform 100 compressions in one minute. Then rest, while position 1 performs 100 compressions in one minute.

Apply NRB at 15L/min and insert OPA while waiting for position 3 to arrive.

After position 3 has arrived, squeeze BVM reservoir to deliver ventilations during one minute rest period.

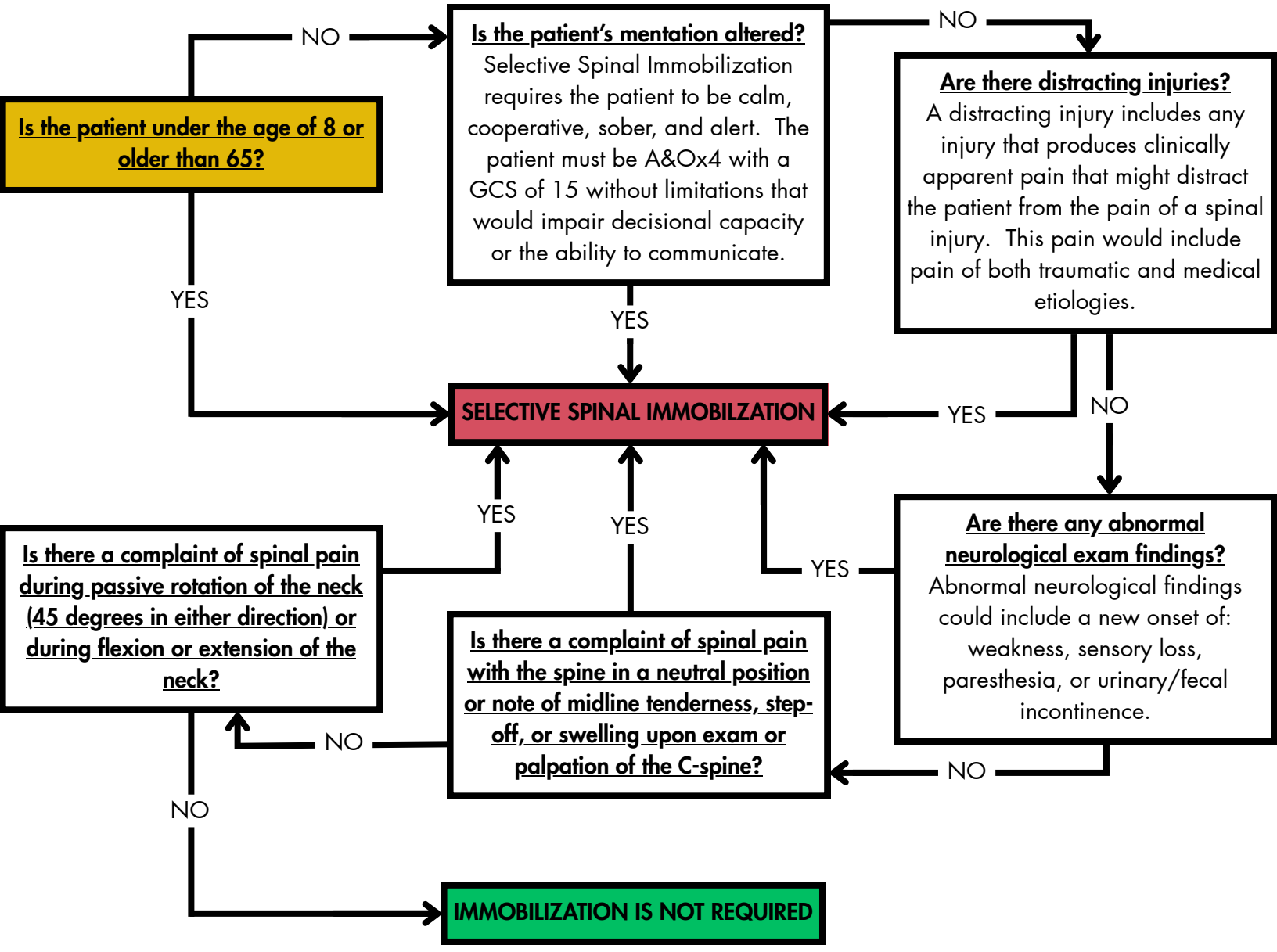
CODE COMMANDER Coach compressions and ventilations, as needed. Coordinate application of additional AED pads for vector change. If paramedic, switch monitor to manual interpretation mode. If AEMT or paramedic, establish vascular access and administer pharmacologic therapy.

LOGISTICS Gather pertinent history. Communicate with family. Develop egress plan. Assist code commander, as needed.

SELECTIVE SPINAL STABILIZATION (INCLUSION)

GENERAL

- Spinal immobilization is intended for use on blunt trauma patients in which significant evidence of spinal injury exist
- C-spine immobilization is **NOT** indicated for penetrating trauma unless a neurologic deficit is noted on assessment
- Immobilize only if indicated
- If immobilization is indicated, utilize the Selective Spinal Immobilization procedure to determine how the patient is to be immobilized and which equipment should be used
- All patients who have the following mechanism factors should be assessed for possible spinal immobilization:
  - Axial load (diving, struck by falling objects, etc.)
  - Blunt trauma (especially to the head or neck)
  - Motor vehicle crash or motorized recreational vehicle (ATV, motorcycle, etc.) crash
  - Bicycle/MVC or Pedestrian/MVC
  - Fall from standing or a height >3 feet
  - Any head/neck trauma with a complaint of head/neck injury
  - Any report of focal neurologic deficits following trauma



SELECTIVE SPINAL STABILIZATION

GENERAL

- Regardless of the age of the patient, full spinal immobilization with the use of a long spine board is not indicated in most cases
- If spinal immobilization is indicated, utilize the procedure below to determine how a patient is to be immobilized and which equipment should be used
- Whether or not a long spine board or comparable device is used, attention to spinal precautions among at risk patients is paramount. Spinal precautions include:
  - Application of a cervical collar
  - Adequate security to a stretcher
  - Minimal movements/transfers
  - Maintenance of in-line stabilization during any necessary movements/transfers
- C-spine immobilization is **NOT** indicated for penetrating trauma unless a new onset of focal neurologic deficits are noted on assessment

IMMOBILIZATION WITH THE USE OF CERVIAL COLLAR AND LONG SPINE BOARD OR COMPARABLE DEVICE

- If immobilization is indicated, full spinal immobilization with the use of a long spine board or comparable device is necessary if:
  - The patient cannot remain still or supine for any reason (e.g. distracting injuries, uncooperative, unable to follow commands, or intoxication)
  - There is a presumed new anatomical deformity to the spine
  - The patient meets Level 1 Trauma Center indications **AND** presents with at least one of the following:
    - Unconscious or AMS
    - Neurologic deficit present or reported
    - Midline spinal tenderness or deformity

IMMOBILIZATION WITH THE USE OF CERVICAL COLLAR ONLY

- If full spinal immobilization with the use of a long spine board or comparable device is not indicated, spinal immobilization can be maintained by the application of a rigid cervical collar and securing the patient firmly to the stretcher
- Patient is ambulatory or seated and has no other injury that would prevent them from standing
  - Apply the cervical collar and allow the patient to self-extricate with assistance to the nearby stretcher
  - Have the patient sit on the stretcher with the head of the stretcher in a sitting position
  - Once the patient is seated, slowly lower the head of the stretcher flat or nearly flat
  - Secure the patient to the stretcher using **ALL** seatbelts before moving the patient
- Patient is supine or has injuries that would prevent them from standing
  - Apply the cervical collar and use a long spine board or scoop stretcher to extricate the patient to the stretcher
  - Remove the patient from the long spine board or scoop stretcher while maintaining in-line stabilization
  - Leave the head of the stretcher flat or nearly flat
  - Secure the patient to the stretcher using **ALL** seatbelts before moving the patient

SYNCHRONIZED CARDIOVERSION

INDICATIONS

- Unstable patients with tachydysrhythmias
- Pulse is present

PARAMEDIC

- Attach EKG leads
- Apply defibrillation pads
- Consider the use of medications to sedate the patient prior to procedure
- Press the yellow "therapy" button on the bottom right corner of the monitor screen
- Select "Sync"
- Confirm R wave is correctly marked with triangle sense markers
  - If the marker is incorrectly placed, select another lead to increase the QRS amplitude
- Select the desired energy level per protocol
- Push the "Charge" button
- Clear the patient of any responders or bystanders
- Once fully charged, **PUSH AND HOLD** the "Shock" button
  - There may be a delay between activating the cardioversion and the actual delivery of energy
  - Stand clear of the patient until the "Energy delivered" message appears
- Check the patient's response and select the appropriate therapy
  - Perform immediate defibrillation if the patient's rhythm deteriorates into a shockable pulseless rhythm
- Repeat steps using escalating energy as provided in the protocols
- To disarm (cancel a charge)
  - Push the speed dial

TASER REMOVAL

INDICATIONS

- Local law enforcement agencies may use a conductive energy device called a Taser. This device is a less-lethal tool. When used, the device discharges a wire that contains, at the distal end, an arrow-like barbed projectile that penetrates the suspect's skin and embeds itself. This allows the officer to administer an incapacitating electrical shock. Officers may initiate an EMS response when the device is discharged. The most common injuries from Taser use are trauma from a fall due to the person's incapacitation.

GENERAL

- Before touching any patient who has been subdued using a Taser, EMS personal shall ensure the officer has disconnected the wires from the handheld unit
  - In most case the wires will be cut prior to EMS arrival
- Provide routine assessment
- Identify the location of the probes on the patient's body
  - If a probe is imbedded in the head, face, neck, groin, or spinal area, **TRANSPORT THE PATIENT TO AN EMERGENCY DEPARTMENT**
- Confer with the officer and determine the patient's condition from the time of the Taser discharge to the arrival of EMS
- Consider medical conditions which may be the underlying cause of the situation
- Obtain baseline vitals
- Obtain a history and date of last tetanus shot
- Remove barbs using an approved device or by applying firm tension to the skin, pulling it taught, while simultaneously pulling the barbs perpendicular to the body/skin
- Dispose of barbs in a "sharps" container or provide to law enforcement if requested
- Clean the puncture site and bandage
- Unless the patient has a cardiac complaint or underlying medical condition related to dysrhythmias, a 12-lead EKG is not indicated

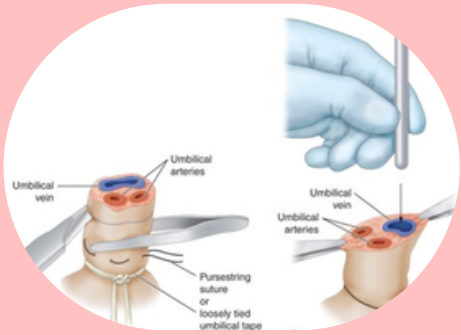
UMBILICAL VEIN CATHETERIZATION

INDICATIONS

- Preferred access for neonatal resuscitation
- Venous access for fluid and drug administration for newborns less than 14 days old

PARAMEDIC

- Keep the neonate in a warm environment
- Assess the umbilical stump for viability of access point; especially if the umbilical cord has been clamped more than 4 days prior
- Maintain a sterile environment
- Prep the umbilical cord and surrounding are with povidone-iodine solution
- Utilize an assistant to hold the clamped cord in a vertical orientation
- Use umbilical tape (or twill tape) to loosely tie around the cord and tighten to reduce bleeding
- Transect the cord 2.5cm (1 inch) from the abdominal wall using aseptic technique
- Identify the umbilical vessels
  - Umbilical vein is the single, thin-walled vessel
  - Umbilical arteries are paired, have thicker walls, usually constricted
- Insert 16g IV angiocath into the umbilical vein so that the tip is just below the skin
  - Good blood flow should be obtained to confirm proper placement
    - Approximately 1-4cm (0.5-1.5inches)
    - Avoid placing the catheter too deep
- Attach the extension set primed with a normal saline flush
  - Attempt to aspirate blood into the extension set to verify proper placement
    - If unsuccessful, re-attempt placement
- Secure the catheter to the abdominal wall with tape and the twill tape around the umbilical stump
- Rinse off the residual povidone-iodine solution with saline water and pat dry to prevent chemical burns to the skin
- Attach IV administration set and run isotonic crystalloid solution at 10mL/kg
  - Dextrose administration through an umbilical vein catheter should not exceed a concentration of 10% dextrose 4mL/kg
  - Only 4.2% sodium bicarbonate 1mEq/kg should be utilized



Umbilical vein anatomy and procedure

VASCULAR ACCESS DEVICES

INDICATIONS

- Emergent pharmacological or resuscitation intervention is necessary
- Peripheral access cannot be established
- Patient has an indwelling central venous access device

CONTRAINDICATIONS

- Suspected infection at the site
- Suspected malfunction of the site
- Ability to obtain peripheral access

GENERAL

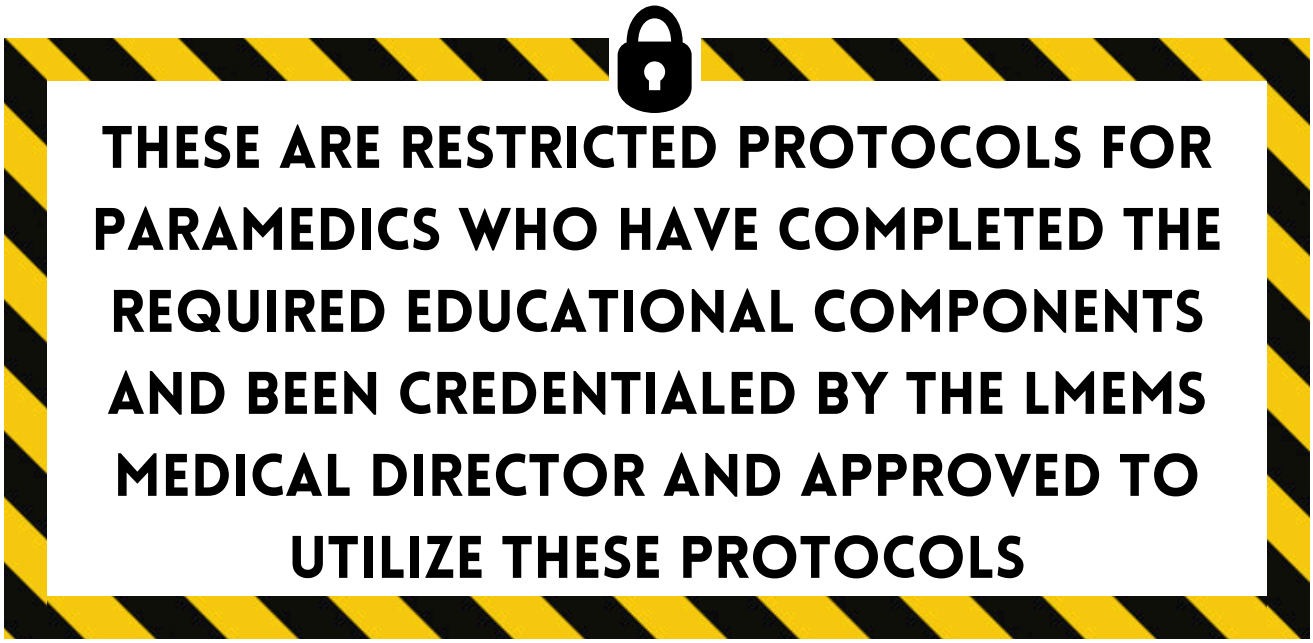
- Catheter types:
  - Open and Closed Ended Catheters (e.g. Triple Lumen, Broviac, Hickman, Groshong, PASV)
    - Typically heparinized
    - These catheter tips are typically capped to prevent air embolism
    - After use, immediately return the cap to the catheter tip
  - Implanted Venous Access Devices
    - These access devices are surgically implanted into the patient's chest; typically just inferior to the clavicle, with a self sealing injection port
    - Originates in the subclavian vein and terminates in the Superior Vena Cava
    - May be heparinized
  - PICC line
    - Long-term intravenous access device inserted into the antecubital, basilic, or cephalic veins and terminates in the Superior Vena Cava
    - May be heprainized
    - PICC lines sized 2.0 French or smaller have a flow rate of 125mL/hour
    - PICC lines sized 2.5 French or larger have a flow rate of 250mL/hour

PARAMEDIC

- Accessing an Implanted Catheter
  - Identify the site and cleanse the area with an alcohol-based cleanser
  - Use aseptic technique
  - Insert Huber needle in the center of the implanted hub
  - Attach a 10mL syringe to the extension set of the Huber needle
  - Aspirate 3-5mL of blood and discard
  - Flush the catheter 3-5mL normal saline
    - If the catheter does not flush easily, do not use this access site
  - Stabilize and secure the Huber needle
  - Attach IV administration set and confirm free flow of infusion solution to keep vein open
- Accessing a PICC line
  - If multiple lumens are noted on the PICC line, choose the largest lumen available
  - Remove the cap on the end of the catheter if applicable
  - Vigorously scrub the hub of the catheter for at least 15 seconds with an alcohol swab
  - Attach a 10mL syringe to the hub of the catheter and aspirate 3-5mL of blood and discard
  - Flush the catheter with 3-5mL normal saline
    - If the catheter does not flush easily, do not use this access site
      - Expect more resistance and a slower flush rate than a typical IV catheter
        - If the first lumen does not flush, repeat the above steps utilizing a different lumen
  - Attach IV administration set and confirm free flow of infusion solution to keep vein open

LOUISVILLE METRO EMS

RESTRICTED PROCEDURES


THESE ARE RESTRICTED PROTOCOLS FOR PARAMEDICS WHO HAVE COMPLETED THE REQUIRED EDUCATIONAL COMPONENTS AND BEEN CREDENTIALED BY THE LMEMS MEDICAL DIRECTOR AND APPROVED TO UTILIZE THESE PROTOCOLS

LOW TITER O+ WHOLE BLOOD ADMINISTRATION

THIS IS A RESTRICTED PROTOCOL FOR PARAMEDICS WHO HAVE COMPLETED THE REQUIRED EDUCATIONAL COMPONENT AND BEEN CREDENTIALED BY THE LMEMS MEDIACL DIRECTOR AND APPROVED TO UTILIZE THIS PROTOCOL

GENERAL

- Gather as much history as possible
  - Cause of hemorrhagic shock
    - Blunt vs. penetrating
    - Medical conditions (e.g. GI bleed, postpartum hemorrhage, vascular issue (e.g. bleeding shunt, fistula, or varicose vein), recent surgery, or uncontrolled epistaxis)
  - Medications (Blood thinners or anticoagulants such as Coumadin, Plavix, aspirin, Pradaxa, Xarelto, Eliquis)
    - Beta blockers and calcium channel blockers may not allow heart rate to increase appropriately
- Vital signs shall include the patient's temperature prior to and following the blood transfusion
- Blood transfusion **SHOULD NOT DELAY TRANSPORT** to the hospital
- MARCH principals apply (attempt to control bleeding prior to airway concerns)
- Consider applying a pelvic binder for suspected unstable pelvic fracture

BLOOD INCLUSION CRITERIA

- Adult patient or pediatric patient >6 years of age
  - Consult with medical direction if the patient is in hemorrhagic shock and <6 years of age
- SBP <70mmHg
- **OR** SBP <90mmHg with HR >110bpm
- **OR** EtCO2 <25mmHg
- **OR** Witnessed traumatic arrest <5 minutes of provider arrival with continuous CPR being performed throughout downtime
- **OR** Age >65 years of age with SBP <100mmHg and HR >100bpm
- Patient has no religious objection to receiving blood products

PARAMEDIC

- Massive bleeding present
  - Administer TXA 2g IV/IO slow push (ages 10 and older)
  - Administer TXA 1g IV/IO slow push (ages 6-10)
- Remove any valves present in the IV line to prevent flow reduction (saline locks)
- Administer LTOWB (if available and credentialed)
  - In general, only 1 unit (500mL) of LTOWB will be available per patient. If a second unit is available, the following general guidelines apply:
    - 6-10 years old are eligible for 500mL of LTOWB
    - 11-13 years old are eligible for 1,000mL of LTOWB
    - >13 years old are eligible for >1,000mL of LTOWB
  - Consult medical direction for further orders if needed
- If whole blood is administered
  - Administer calcium chloride
    - 2g IV/IO (ages 10 and older)
    - 1g IV/IO (ages 6-10)
- Perform needle thoracostomy if indicated
- Initiate continuous cardiac monitoring
- One IV/IO site should be used solely for blood products . Use alternative line to give all non-blood medications. As a last resort, non-blood medications can be infused through the "blood line" after blood transfusion is complete and the "blood line" is flushed with a minimum of 10mL saline

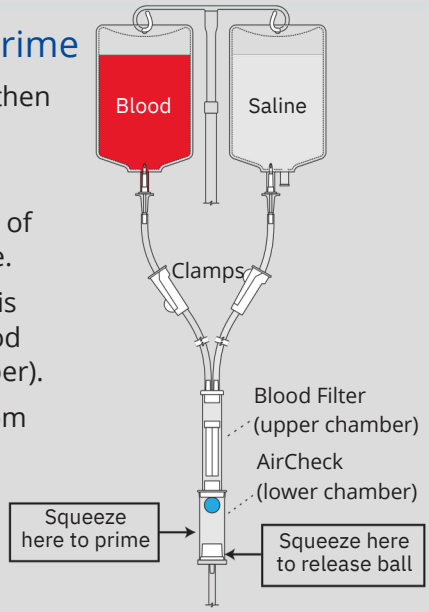
LifeFlow PLUS
Blood & Fluid Infuser

VOLUME RESUSCITATION.
WHEN MINUTES MATTER.

QUICK GUIDE

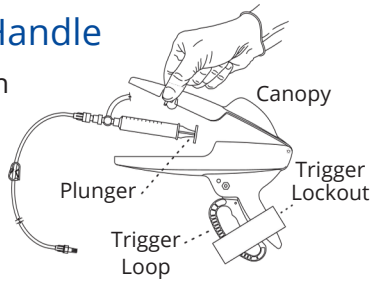
1 Set Up and Prime

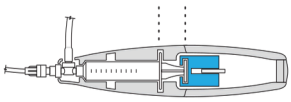
- Close both Clamps then spike both bags.
- Open saline clamp.
- Squeeze the middle of AirCheck®to prime.
- Squeeze until fl uid is halfway up the Blood Filter (upper chamber).
- If ball is at the bottom of AirCheck (lower chamber), squeeze "release" until ball fl oats.

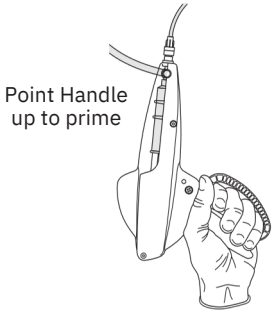


2 Syringe and Handle

- Squeeze tabs to open Canopy.
- Place syringe Plunger in blue slot with numbers up.
- Remove foam Trigger Lockout.
- Point Handle up and prime tubing by repeatedly squeezing the Trigger Loop.

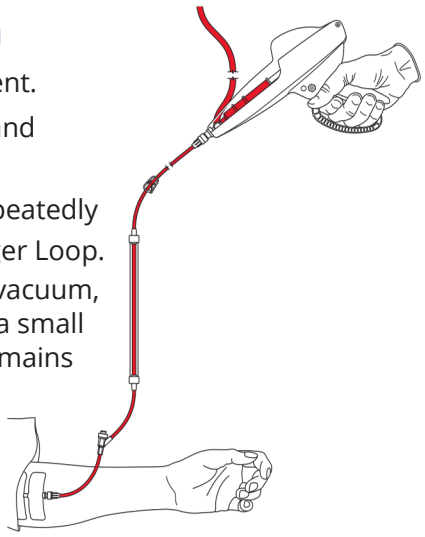






3 First Infusion

- Connect to the patient.
- Close saline clamp and open blood clamp.
- Infuse blood by repeatedly squeezing the Trigger Loop.
- To avoid creating a vacuum, stop infusing while a small amount of blood remains in the bag.
- Close blood clamp.



4 Additional Infusions

- Spike new bag, then open clamp.
- Squeeze AirCheck to prime.
- If no air is present, proceed with infusion.
- If air is present in tubing or ball is suctioned to the bottom, refer to Resetting AirCheck (see back page).

! Important

- Cleared for use with blood, blood components (red blood cells or plasma), and crystalloid and colloid resuscitative fl uids.
- When transfusing blood products, use a 22G catheter or larger.
- LifeFlow PLUS is compatible for use with all vascular access that is rated for contrast infusion pressures (300psi).

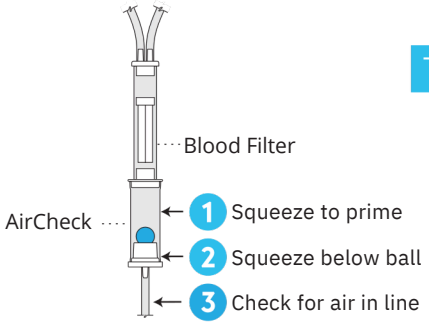
Consult IFU for full use instructions, indications, and warnings.

TRAINING VIDEO

TROUBLESHOOTING AND TIPS

RESETTING AIRCHECK

IF The ball is suctioned to the bottom of AirCheck, the Trigger Loop will not return. Disconnect from the patient.



THEN

1. Spike new bag. Open desired clamp and squeeze AirCheck to prime.
2. Squeeze where it says "release" until the ball floats.
3. Check for air in the line. Re-prime line if needed, then reconnect and infuse.

Troubleshooting

ISSUE	CHECKLIST
CANOPY WILL NOT CLOSE	1. Ensure blood tubing syringe is properly seated with numbers up. 2. Ensure canopy is properly aligned.
WILL NOT PRIME OR DIFFICULT TO START INFUSION	1. Confirm syringe Plunger is properly loaded inside blue slot. Remove and reload if necessary. 2. Ensure all appropriate clamps are open. 3. Ensure ball is floating. If it is not, squeeze "release" on the AirCheck until the ball floats. 4. Check distal clamp.
TRIGGER LOOP STOPS MOVING DURING INFUSION	1. Start at the top of tubing and check fluid bags, clamps, filter, and AirCheck per details above. 2. Check IV for occlusion. 3. Blood filter may be clogged. If so, get a new tubing set.
TRIGGER LOOP RETURNS SLOWLY	1. Tubing may need to be replaced if syringe has slowed or filter is clogged. 2. Do not force Trigger Loop open or closed if it does not move freely.

Tips and Reminders

General

- AirCheck should always remain completely filled and vertical. FLOAT BEFORE YOU FLOW.
- To avoid creating a vacuum, do not drain blood bag completely.
- For blood products, this device can be used on a single patient for up to 4 hours or until the filter clogs.

Syringe and Handle

- Trigger Loop provides tactile feel. If you notice a change in resistance, refer to troubleshooting checklist.
- The Trigger Loop is designed to break away if excessive force is applied. This is a safety feature.

For Crystalloids and Colloids

- For crystalloids and colloids, this device can be used on a single patient for up to 24 hours or maximum of 4 liters.
- If infusing saline with a 24G or smaller catheter, slow down between trigger squeezes to limit resistance.

GO SLOW FOR BETTER FLOW.

P3058 Rev D 10/2020

www.410medical.com
info@410medical.com

LifeFlow PLUS

QinFLOW
NO MORE COLD BLOOD & FLUIDS

Note: This QUICK REFERENCE SHEET does NOT contain all the guidelines as per the Instructions for Use (IFU). Therefore, please refer to the IFU for complete guidelines regarding the operation of your Warrior device! Important: Users must complete product training prior to operating the device!
Scan QR code to access all relevant information (note: authorization may be required upon 1st login) or contact us at ~~info@qinflow.com~~

WARRIOR LITE | 3 OPERATING STEPS

1 CONNECT TUBING TO CDU

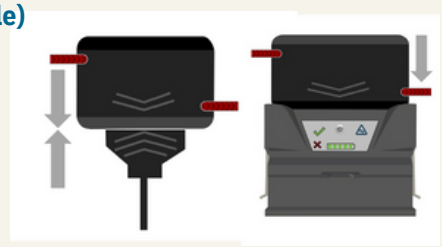
- Ensure CDU package is not compromised or expired
- Remove luer covers
- Connect tubing to CDU (the CDU inlet is the short PVC tube); don't overtighten
- The use of external infusion devices is permitted (up to 360 mmHg)

2 PRIME BOTH TUBING & CDU

- Ensure that all air is flushed out (19 ml priming volume)
- Can be primed with blood or fluid
- Consider using pressure bag or hand pump for faster priming with RBC or Whole Blood

3 CONNECT CDU TO BASE UNIT (or to Extension Cable)

- CDU protruding arrows should face the LED panel
- When using an Extension Cable, align protruding arrows on the CDU and the connector (tactile direction).
- The system will turn on automatically (else, press the on/off button located on the LED panel)
- Follow system's indications on LED panel



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WARRIOR LITE
MESSAGES & TROUBLESHOOTING SUMMARY

(note: **RED** color indicates that an action is certainly required)

V	Warming towards set temperature; make sure you have flow
V	Set temperature reached
⚠	Flow rate exceeds battery capacity. Consider reducing the flow
▮▮▮▮▮	Battery low. Still considerable volume to give with the Extra Power battery. Continue operating the device. Replace battery when the battery is critically low (all bars blinking)
No Flow	The CDU does not control the flow; hence, it cannot stop the flow. If only gravity feed is applied, it may take 30-60 seconds to prime the CDU with RBC or Whole Blood. Consider using pressure bag or hand pump to speed up the process.
Leakage	Replace CDU; reduce force if operating with manual infusers; report to QinFlow.

✕ Troubleshooting required

1. Shut the unit off (long press on the on/off button), fix flow complications, ensure that CDU is primed, and reactivate the unit (press on/off button).

If not solved:

2. Shut the unit off and replace the CDU with a fully primed one. Unit should start automatically once you connect the CDU; if not, press the on/off button.

No Display

1. Press on/off button

If not solved:

2. Replace battery

If not solved:

3. Replace CDU

Don't use device if display is compromised

Cannot Solve The Issue? The quick fix for most issues is to fix flow complications and replace CDU. If still not resolved, even after reviewing the IFU, contact us at info@qinflow.com or open support ticket on our website (QinFlow.com >> Services & Support >> Open Support Ticket)

RAPID SEQUENCE INTUBATION

THIS IS A RESTRICTED PROTOCOL FOR PARAMEDICS WHO HAVE COMPLETED THE REQUIRED EDUCATIONAL COMPONENT AND BEEN CREDENTIALED BY THE LMEMS MEDIACL DIRECTOR AND APPROVED TO UTILIZE THIS PROTOCOL

INDICATIONS

- At least one of the following:
  - Failure to maintain oxygenation
  - Failure to maintain adequate ventilation
  - Inability to protect the airway
  - Inability or failure to manage the airway by other means (BVM, SGA, etc.)

PARAMEDIC

- Monitoring
  - Cardiac monitor, pulse oximetry, blood pressure, and continuous EtCO2 are required for all patients
  - All monitoring equipment should be placed prior to, during, and after any airway procedure
- Pre-oxygenation
  - Position the patient supine in the "sniffing" position
  - Elevate the occiput so that the ears and sternal notch are parallel to the floor
  - Regardless of SpO2, place spontaneously breathing patients on a NRB 15LPM or ventilate with a BVM 15LPM
  - EtCO2 should be attached to the BVM circuit when in use
- Preparation
  - Assemble all equipment (e.g. suction, BVM, video laryngoscope, ET tube, bougie, stylet, SGA)
  - Establish and ensure patent IV/IO
  - Prepare etomidate 0.3mg/kg
  - Prepare versed 2mg
  - Prepare succinylcholine 1.5mg/kg
  - Assign team roles and perform a verbal walk-through utilizing the PACE plan and close loop communication
  - Apply NC 25LPM
    - Do not utilized a side-stream EtCO2 device
- Induction
  - Complete the checklist prior to attempt
  - Administer etomidate 0.3mg/kg IV/IO **AND** versed 2mg IV/IO and flush with normal saline
  - Immediately administer succinylcholine 1.5mg/kg IV/IO and flush with normal saline
  - Continue to provide pre-oxygenation during the onset of medications (45-90 seconds)
  - Once the jaw is flaccid, perform laryngoscopy
    - If SpO2 drops below 93%, ventilate and oxygenate with SGA
    - Second attempt may be made once SpO2 is above 93%
      - If SGA unsuccessful, ventilate with two-handed BVM
        - If unable to oxygenate with the BVM, perform a cricothyrotomy per protocol
- Post-procedure
  - Confirm placement with EtCO2
    - If there is no waveform, the intubation is unsuccessful
    - Remove the tube and ventilate with SGA/BVM
  - Assess for bilateral breath sounds
  - Secure the tube with a commercial device
  - Document the depth of the tube at the teeth

LOUISVILLE METRO EMS

PHARMACOPEIA

ACETAMINOPHEN

- Class
  - Antipyretic
  - Analgesic
- Indications
  - Fever ≥100.5° F
  - Child has not had acetaminophen in the previous 4 hours
- Contraindications
  - Airway compromise
  - Active, severe liver disease
- Dosage and administration
  - PEDIATRIC FEVER
    - EMT, AEMT, and Paramedic (temperature ≥100.5° F)
      - 15mg/kg PO

ADENOSINE

- Class
  - Antidysrhythmic Class V
  - Endogenous nucleotide
- Indications
  - Stable, regular, narrow complex supraventricular tachycardia
- Contraindications
  - Hypersensitivity
  - 2nd or 3rd degree block
  - Wide complex, irregular tachycardia
  - Poison or drug induced tachycardia
- Dosage and administration
  - ADULT TACHYDYSRHYTHMIA
    - Paramedic (stable SVT refractory to vagal maneuvers)
      - 12mg IV/IO rapid push followed by flush
        - May repeat x1 after 2 minutes
  - PEDIATRIC TACHYDYRHYTHMIA
    - Paramedic (stable SVT refractory to vagal maneuvers)
      - 0.1mg/kg (max 6mg) IV/IO rapid push followed by flush
        - May repeat 0.2mg/kg (max 12mg) rapid push followed by flush

ALBUTEROL

- Class
  - Beta-2 adrenergic agonist
  - Sympathomimetic
  - Bronchodilator
- Indications
  - Bronchospasm with COPD or asthma patients
  - Exacerbation of previously diagnosed asthma
  - Wheezing
- Contraindications
  - Hypersensitivity
  - Tachycardic dysrhythmia
- Dosage and administration
  - CONGESTIVE HEART FAILURE/ACUTE PULONARY EDEMA
    - EMT, AEMT, and Paramedic (severe wheezing)
      - 2.5mg nebulized
  - ADULT ALLERGIC REACTION/ANAPHYLAXIS
    - EMT,AEMT, and Paramedic (wheezing and bronchospasm)
      - 2.5mg nebulized
        - May repeat x1 after 5 minutes
  - ADULT ASTHMA/COPD/WHEEZING
    - EMT (wheezing)
      - 2.5mg nebulized (with ipratropium bromide 0.5mg)
        - May repeat x1
    - AEMT and Paramedic (wheezing)
      - 2.5mg nebulized (with ipratropium bromide 0.5mg)
        - May repeat very 5 minutes
  - PEDIATRIC ALLERGIC REACTION/ANAPHYLAXIS
    - EMT, AEMT, and Paramedic (wheezing and bronchospasm)
      - 2.5mg nebulized
        - May repeat x1 after 5 minutes
  - PEDIATRIC ASTHMA
    - EMT (wheezing)
      - 2.5mg nebulized (with ipratropium bromide 0.5mg)
        - May repeat x1 after 5 minutes
    - AEMT and Paramedic (wheezing)
      - 2.5mg nebulized (with ipratropium bromide 0.5mg)
        - May repeat every 5 minutes (max total 4 doses)

AMIODARONE

- Class
  - Antidysrhythmic Class III
- Indications
  - Pulseless ventricular fibrillation refractory to defibrillation
  - Pulseless ventricular tachycardia refractory to defibrillation
  - Stable ventricular tachycardia with a pulse
- Contraindications
  - 2nd or 3rd degree heart block
  - Medication induced ventricular dysrhythmias
  - Hypotension
  - Cardiogenic shock
  - Bradycardia
  - Narrow complex QRS (<0.12)
  - Hypersensitivity
- Dosage and administration
  - ADULT NON-TRUAMATIC CARDIAC ARREST
    - Paramedic (pulseless VT or VF)
      - 300mg IV/IO
        - May repeat 150mg IV/IO after 5 minutes
  - ADULT TACHYDYSRHYTHMIAS
    - Paramedic (stable, wide complex regular tachycardia)
      - 150mg IV/IO infused over 10 minutes
  - PEDIATRIC NON-TRAUMATIC CARDIAC ARREST
    - Paramedic (pulseless VT or VF)
      - 5mg/kg (max 300mg) IV/IO
  - PEDIATRIC TACHYDYSRHYTHMIAS
    - Paramedic (stable wide complex regular tachycardia)
      - 5mg/kg (max 150mg) IV/IO infused over 10 minutes
- Infusions
  - ADULT STABLE, WIDE COMPLEX, REGULAR TACHYDYSRHYTHMIA
    - 150mg IV/IO over 10 minutes
      - Mix 150mg amiodarone into 40mL D5W
      - Utilize a 10 drop/mL IV administration set and flow controller extension set
      - Prime the entire IV administration set and flow controller extension set
      - Rotate flow controller to 250mL/hour
      - Open all clamps on IV administration set and extension and allow the 40mL of prepared medication infusion to be administered over 10 minutes
  - PEDIATRIC STABLE, WIDE COMPLEX, REGULAR TACHYDYSRHYTHMIA
    - (Utilize Handtevy) 5mg/kg (max 150mg) IV/IO over 10 minutes
      - Mix weight-based amiodarone into 40mL D5W
      - Utilize a 10 drop/mL IV administration set and flow controller extension set
      - Prime the entire IV administration set and flow controller extension set
      - Rotate flow controller to 250mL/hour
      - Open all clamps on IV administration set and extension and allow the 40mL of prepared medication infusion to be administered over 10 minutes

ASPIRIN

- Class
  - Platelet aggregation inhibitor
  - NSAID
- Indications
  - Chest pain suggestive of ACS
  - Anginal equivalents suggestive of ACS
- Contraindications
  - Hypersensitivity
- Dosage and administration
  - ISCHEMIC CHEST PAIN/ACUTE CORONARY SYNDROME/STEMI
    - EMT, AEMT, Paramedic (ACS symptoms)
      - 324mg PO chewed thoroughly

ATROPINE

- Class
  - Anticholinergic agent
- Indications
  - Symptomatic bradycardia
  - Organophosphate poisoning
  - Nerve agent antidote
- Contraindications
  - Tachycardia
  - Hypersensitivity
  - Hypovolemic shock
- Dosage and administration
  - ADULT BRADYDYSRHYTHMIAS
    - Paramedic (symptomatic bradycardia)
      - 1mg IV/IO
        - May repeat every 5 minutes (max total 3mg)
  - ADULT ALTERED MENTAL STATUS
    - Paramedic (organophosphate poisoning)
      - 2mg IV/IO
        - May repeat 4mg IV/IO every 3 minutes until fully atropinized
  - PEDIATRIC BRADYDYSRHYTHMIAS
    - Paramedic (increased vagal tone and symptomatic bradycardia)
      - 0.02mg/kg (minimum single dose 0.1mg) (max single dose 0.5mg) IV/IO
        - May repeat x1
  - PEDIATRIC ALTERED MENTAL STATUS
    - Paramedic (organophosphate poisoning)
      - 0.02mg/kg IV/IO
        - May repeat every 3 minutes until fully atropinized

CALCIUM CHLORIDE

- Class
  - Electrolyte
- Indications
  - Hyperkalemia
  - Calcium channel blocker overdose
- Contraindications
  - Suspected digitalis toxicity
- Dosage and administration
  - ADULT NON-TRAUMATIC CARDIAC ARREST
    - Paramedic (suspected hyperkalemia or calcium channel overdose)
      - 1g IV/IO
        - May repeat every 5 minutes (max total 3g)
  - ADULT TRAUMATIC CARDIAC ARREST
    - Paramedic (administration concurrent with whole blood transfusion)
      - 2g IV/IO
  - ADULT TRAUMATIC SHOCK
    - Paramedic (administration concurrent with whole blood transfusion)
      - 2g IV/IO
  - ADULT BRADYDYSRHTHMIAS
    - Paramedic (suspected hyperkalemia or calcium channel blocker overdose)
      - 1g IV/IO slow push
  - ADULT TACHYDYSRHTHMIAS
    - Paramedic (suspected hyperkalemia)
      - 1g IV/IO slow push
        - May repeat every 5 minutes (max total 3g)
  - ADULT ALTERED MENTAL STATUS
    - Paramedic (suspected calcium channel blocker overdose)
      - 1g IV/IO slow push
        - May repeat every 5 minutes (max total 3g)
  - PEDIATRIC NON-TRAUMATIC CARDIAC ARREST
    - Paramedic (suspected calcium channel blocker overdose)
      - 20mg/kg IV/IO
  - PEDIATRIC BRADYDYSRHTHMIAS
    - Paramedic (suspected calcium channel blocker overdose)
      - 20mg/kg IV/IO slow push
  - PEDIATRIC ALTERED MENTAL STATUS
    - Paramedic (suspected calcium channel blocker overdose)
      - 20mg/kg IV/IO slow push
        - May repeat after 10 minutes
  - PEDIATRIC TRAUMATIC SHOCK
    - Paramedic (administration concurrent with whole blood transfusion)
      - 1g IV/IO

DEXTROSE

- Class
  - Carbohydrate
- Indications
  - Relative or clinical (BGL <60mg/dL) hypoglycemia
  - Altered mental status
- Contraindications
  - Hyperglycemia
- Dosage and administration
  - ADULT NON-TRAUMATIC CARDIAC ARREST
    - AEMT and Paramedic (suspected hypoglycemia)
      - 25g of D50% IV/IO
  - ADULT ALTERED MENTAL STATUS
    - AEMT and Paramedic (relative or clinical hypoglycemia)
      - 25g of D50% IV/IO
        - May repeat x1
  - ADULT DIABETIC EMERGENCIES
    - AEMT and Paramedic (relative or clinical hypoglycemia)
      - 25g of D50% IV/IO
        - May repeat x1
      - **OR** infuse 25g of D10% IV/IO
  - PEDIATRIC NON-TRAUMATIC CARDIAC ARREST
    - AEMT and Paramedic (suspected hypoglycemia)
      - 4mL/kg of D10% IV/IO
  - PEDIATRIC ALTERED MENTAL STATUS
    - AEMT and Paramedic (relative or clinical hypoglycemia)
      - 4mL/kg of D10% IV/IO
        - May repeat x1
  - PEDIATRIC DIABETIC EMERGENCIES
    - AEMT and Paramedic (relative or clinical hypoglycemia)
      - 4mL/kg of D10% IV/IO

DILTIAZEM HYDROCHLORIDE

- Class
  - Calcium channel blocker overdose
- Indications
  - Control of rapid ventricular rates caused by atrial flutter or atrial fibrillation
- Contraindications
  - Hypotension
  - 2nd or 3rd degree heart block
  - Wide complex tachycardia
  - Cardiogenic shock
- Dosage and administration
  - TACHYDYSRHYTHMIAS
    - Paramedic (stable narrow complex irregular tachydysrhythmias)
      - 0.25mg/kg (max 20mg) IV/IO slow push over 5 minutes
        - May repeat at 0.35mg/kg (max 25mg) IV/IO slow push
        - If rate control is achieved, infuse at 5mg/hour IV/IO
- Infusion
  - ADULT STABLE, NARROW COMPLEX, IRREGULAR TACHYDYSRHYTHMIA
    - 5mg/hour
      - Mix 25mg diltiazem into 100mL D5W
      - Utilize a 60 drop/mL IV administration set and flow controller extension set
      - Prime the entire IV administration set and flow controller extension set
      - Rotate flow controller to 20mL/hour
      - Open all clamps on IV administration set and extension and allow medication to be infused

DIPHENHYDRAMINE

- Class
  - Antihistamine
  - Anticholinergic
- Indications
  - Allergic reactions
  - Anaphylaxis
  - Acute dystonic reactions
- Contraindications
  - Hypersensitivity
- Dosage and administration
  - ALLERGIC REACTIONS/ANAPHYLAXIS
    - AEMT and Paramedic (allergic reaction and anaphylactic reaction)
      - 50mg IV/IO/IM
  - ALTERED MENTAL STATUS
    - Paramedic (acute dystonic reaction)
      - 50mg IV/IO/IM
  - PEDIATRIC ALLERGIC REACTION/ANAPHYLAXIS
    - AEMT and Paramedic (allergic reaction and anaphylactic reaction)
      - 1mg/kg (max 50mg) IV/IO/IM
  - PEDIATRIC ALTERED MENTAL STATUS
    - Paramedic (acute dystonic reaction)
      - 1mg/kg (max 50mg) IV/IO/IM

DROPERIDOL

- Class
  - Antiemetic
  - Antipsychotic
- Indications
  - Nausea
  - Acute psychosis
- Contraindications
  - Hypersensitivity
  - Bradycardia
  - Hypotension
- Dosage and administration
  - ISCHEMIC CHEST PAIN/ACUTE CORONARY SYNDROME/STEMI
    - Paramedic (nausea and vomiting)
      - 2.5mg IV/IO/IM
        - May repeat x1
  - ADLUT ABDOMINAL PAIN
    - Paramedic (severe abdominal pain)
      - 2.5mg IV/IO/IM
        - May repeat x1
  - AGITATED/AGGRESSIVE PATIENT
    - Paramedic (moderate agitation/aggression)
      - 5mg IM
    - Paramedic (severe agitation/aggression)
      - 5mg IM (concurrent with midazolam 5mg)
  - ADULT NAUSEA/VOMITING
    - Paramedic (severe nausea and vomiting)
      - 2.5mg IV/IO/IM
        - May repeat x1
  - PEDIATRIC ABDOMINAL PAIN
    - Paramedic (severe nausea and vomiting)
      - 0.01mg/kg (max 1.25mg) IV/IO/IM
  - PEDIATRIC NAUSEA/VOMITING
    - Paramedic (severe nausea and vomiting)
      - 0.01mg/kg (max 1.25mg) IV/IO/IM

EPINEPHRINE

- Class
  - Alpha and beta adrenergic agonist
  - Sympathomimetic
- Indications
  - Cardiac arrest
  - Severe bronchospasm
  - Asthma
  - Anaphylaxis
  - Acute allergic reaction
  - Hypotension
- Contraindication
  - Hypertension
  - Hypothermia
  - Hypovolemic shock
- Dosage and administration
  - ADULT NON-TRAUMATIC CARDIAC ARREST
    - AEMT and Paramedic
      - 1mg 1:10,000 solution IV/IO
        - May repeat every 5 minutes (max 4mg)
        - If hypothermic, only administer 1 dose
  - ADULT TRAUMATIC CARDIAC ARREST
    - AEMT (cardiac arrest secondary to trauma)
      - 1mg 1:10,000 solution IV/IO
        - Repeat every 5 minutes (max 4mg)
    - Paramedic (traumatic cardiac arrest with organized PEA >40bpm, VT, or VF)
      - 1mg 1:10,000 solution IV/IO
  - ADULT ALLERGIC REACTION/ANAPHYLAXIS
    - EMT, AEMT, and Paramedic (severe signs and symptoms of allergic reaction/anaphylaxis >30kg)
      - 0.3mg 1:1,000 solution IM
        - May repeat x1 after 5 minutes
  - ADULT ASTHMA/COPD/WHEEZING
    - Paramedic (impending respiratory failure)
      - 0.3mg 1:10,000 solution IM
        - May repeat x1 after 5 minutes
  - ADULT BRADYDYSRHYTHMIAS
    - Paramedic (continued hypoperfusion)
      - 20mcg IV/IO pushed every 3 minutes (max total 100mcg)
      - **OR** infuse 2-10mcg/min. and titrate to effect
  - ADULT POST ROSC CARE
    - Paramedic (continued hypoperfusion post ROSC)
      - 20mcg IV/IO pushed every 3 minutes (max total 100mcg)
      - **OR** infuse 2-10mcg/minute and titrate to effect

EPINEPHRINE CONT.

- PEDIATRIC NON-TRAUMATIC CARDIAC ARREST
  - AEMT and Paramedic
    - 0.01mg/kg 1:10,000 solution IV/IO
      - Repeat every 5 minutes (max 4 doses)
      - If hypothermic, only administer 1 dose
- PEDIATRIC TRAUMATIC CARDIAC ARREST
  - AEMT (cardiac arrest secondary to trauma)
    - 0.1mg/kg 1:10,000 solution IV/IO
  - Paramedic (traumatic cardiac arrest with organized PEA >40bpm, VF, or VT)
    - 0.1mg/kg 1:10,000 solution IV/IO
- PEDIATRIC BRADYDYSRHYTHMIAS
  - Paramedic (continued hypoperfusion)
    - 0.01mg/kg 1:10,000 solution IV/IO
      - Repeat every 5 minutes (max 4 doses)
- PEDIATRIC ALLERGIC REACTION/ANAPHYLAXIS
  - EMT, AEMT, and Paramedic (severe signs/symptoms of allergic reaction <30kg)
    - 0.15mg 1:1,000 solution IM
      - May repeat x1 after 5 minutes
    - Paramedic (severe signs/symptoms of allergic reaction)
      - Infuse 1mcg/minute and titrate to effect
- PEDIATRIC ASTHMA/WHEEZING
  - Paramedic (impending respiratory failure or unable to tolerate nebulizer)
    - 0.15mg 1:1,000 IM
      - May repeat x1 after 5 minutes
- PEDIATRIC CROUP
  - AEMT and Paramedic (severe respiratory distress with suspected croup)
    - 3mg 1:1,000 solution mixed with 3mL normal saline nebulized
- PEDIATRIC NEWBORN RESUSCITATION
  - Paramedic (HR<60bpm after 30 seconds of compressions and adequate airway management)
    - 0.01mg/kg 1:10,000 IV/IO (umbilical access preferred)
      - Repeat every 5 minutes if HR<60bpm

- Infusion
  - ADULT ANAPHYLACTIC SHOCK
    - 1mcg/minute, titrate to effect
      - Mix 1mg epinephrine (1:10,000 **OR** 1:1,000) with 1L LR or any other isotonic crystalloid
        - Mixed concentration is 1mcg/mL
      - Utilize a 10 drop/mL IV administration set
      - Utilize the drop counting method to adjust dose as needed
        - 10 drops/minute=1mcg infused/minute
        - 20 drops/minute=2mcg infused/minute

EPINEPHRINE CONT.

- PEDIATRIC ANAPHYLACTIC SHOCK
  - 1mcg/minute, titrate to effect
    - Mix 0.5mg epinephrine (1:10,000 **OR** 1:1,000) with 500mL normal saline
      - Mixed concentration is 1mcg/mL
    - Utilize a 60 drop/mL IV administration set
    - Utilize the drop counting method to adjust dose as needed
      - 30 drops/minute=0.5mcg infused/minute
      - 60 drops/minute=1mcg infused/minute
- ADULT CONTINUED HYPOPERFUSION IN BRADYCARDIA
  - 2-10mcg/minute, titrate to effect
    - Mix 1mg epinephrine (1:10,000 **OR** 1:1,000) with 1L LR or any other isotonic crystalloid
      - Mixed concentration is 1mcg/mL
    - Utilize a 10 drop/mL IV administration set
    - Utilize the drop counting method to adjust dose as needed
      - 20 drops/minute=2mcg infused/minute
      - 100 drops/minute=10mcg infused/minute

ETOMIDATE

- Class
  - Non-barbiturate sedative hypnotic
- Indications
  - Induction agent for drug assisted intubation
  - Induction agent for rapid sequence intubation
- Contraindications
  - Absence of a gag reflex
  - No intent to perform drug assisted intubation
  - Hypersensitivity
- Dosage and administration
  - RESPIRATORY DISTRESS OR FAILURE/DRUG ASSISTED INTUBATION
    - Paramedic (achieving sufficient relaxation prior to intubation)
      - 0.3mg/kg IV/IO slow push over 30 seconds
        - Repeat 0.1mg/kg IV/IO slow push if insufficient relaxation
  - RAPID SEQUENCE INTUBATION
    - Specially Credentialed Paramedic (induction during RSI)
      - 0.3mg/kg IV/IO (concurrent with midazolam 2mg IV/IO)

FENTANYL

- Class
  - Opioid analgesic
- Indications
  - Analgesia for moderate to severe, acute pain associated with burns, isolated injuries, and other pain syndromes
- Contraindications
  - Depressed level of consciousness
  - Depressed respiratory drive
  - Hypotension
  - Suspected hypovolemia
  - Hypersensitivity
- Dosage and administration
  - ADULT PAIN MANAGEMENT
    - AEMT and Paramedic (moderate to severe, acute pain)
      - 50mcg IV/IO/IN
        - May repeat x1 (max total 100mcg)
  - ADULT ABDOMINAL PAIN
    - AEMT and Paramedic (moderate to severe, acute pain >6/10)
      - 50mcg IV/IO/IN
        - May repeat x1 (max total 100mcg)
  - ADULT TRAUMA
    - AEMT and Paramedic (pain management)
      - 50mcg IV/IO/IN
        - May repeat x1 (max total 100mcg)
  - ADULT AMPUTATED BODY PARTS
    - AEMT and Paramedic (pain management after amputated body part)
      - 50mcg IV/IO/IN
        - May repeat x1 (max total 100mcg)
  - ADULT BURNS
    - AEMT and Paramedic (pain management with burns present)
      - 50mcg IV/IO/IN
        - May repeat x1 (max total 100mcg)
  - ADULT EYE TRAUMA
    - AEMT and Paramedic (severe pain secondary to eye trauma)
      - 50mcg IV/IO/IN
        - May repeat x1 (max total 100mcg)
  - PEDIATRIC PAIN MANAGEMENT
    - AEMT and Paramedic (moderate to severe, acute pain)
      - 1mcg/kg (max 50mcg) IV/IO slow push **OR** 1.5mcg/kg (max 50mcg) IN
        - May repeat x1 after 10 minutes to max total 100mcg
  - PEDIATRIC ABDOMINAL PAIN
    - AEMT and Paramedic (moderate to severe pain >6/10)
      - 1mcg/kg (max 50mcg) IV/IO **OR** 1.5mcg/kg (max 50mcg) IN
        - May repeat x1 after 10 minutes to max total 100mcg

FENTANYL CONT.

- PEDIATRIC TRAUMA
  - AEMT and Paramedic (pain management after trauma)
    - 1mcg/kg (max 50mcg) IV/IO **OR** 1.5mcg/kg (max 50mcg) IN
      - May repeat x1 after 10 minutes to max total 100mcg
- PEDIATRIC AMPUTATED BODY PART
  - AEMT and Paramedic (moderate to severe pain after amputation)
    - 1mcg/kg (max 50mcg) IV/IO **OR** 1.5mcg/kg (max 50mcg) IN
      - May repeat x1 after 10 minutes to max total 100mcg
- PEDIATRIC BURNS
  - AEMT and Paramedic (moderate to severe pain with burns)
    - 1mcg/kg (max 50mcg) IV/IO **OR** 1.5mcg/kg (max 50mcg) IN
      - May repeat x1 after 10 minutes to max total 100mcg
- PEDIATRIC EYE TRAUMA
  - AEMT and Paramedic (pain associated with eye trauma)
    - 1mcg (max 50mcg) IV/IO **OR** 1.5mcg/kg (max 50mcg) IN
      - May repeat x1 after 10 minutes to max total 100mcg

GLUCAGON

- Class
  - Hyperglycemic agent
  - Pancreatic hormone
- Indications
  - Hypoglycemia
  - Beta-blocker overdose
- Contraindications
  - Hyperglycemia
  - Hypersensitivity
- Dosage and administration
  - ADULT NON-TRAUMATIC CARDIAC ARREST
    - Paramedic (PEA, if suspected beta-blocker overdose)
      - 3mg IV/IO
        - May repeat x1 2mg IV/IO
  - ADULT BRADYDYRHYTHMIAS
    - Paramedic (suspected beta-blocker overdose)
      - 3mg IV/IO slow push
        - May repeat x1 at 2mg
  - ADULT ALTERED MENTAL STATUS
    - AEMT and Paramedic (hypoglycemia, if unable to tolerate oral glucose and if unable to obtain vascular access)
      - 1mg IM
    - Paramedic (suspected beta-blocker overdose)
      - 3mg IV/IO slow push
        - May repeat x1 at 2mg IV/IO slow push
  - ADULT DIABETIC EMERGENCIES
    - EMT (hypoglycemic patients unable to tolerate oral glucose **AND PATIENT HAS A PRESCRIPTION**)
      - 1mg IM
    - AEMT and Paramedic (hypoglycemic patients unable to tolerate oral glucose and unable to obtain vascular access)
      - 1mg IM
  - PEDIATRIC BRADYDYSRHYTHMIAS
    - Paramedic (suspected beta-blocker overdose)
      - 0.07mg/kg (max 5mg) IV/IO slow push over 1 minute
  - PEDIATRIC NON-TRAUMATIC CARDIAC ARREST
    - Paramedic (suspected beta-blocker overdose)
      - 0.07mg/kg (max 5mg) IV/IO
  - PEDIATRIC ALTERED MENTAL STATUS
    - AEMT and Paramedic (hypoglycemic patients unable to tolerate oral glucose)
      - 0.1mg/kg (max 1mg) IM
    - Paramedic (suspected beta-blocker overdose)
      - 0.07mg/kg (max 5mg) IV/IO
        - May repeat after 10 minutes
  - PEDIATRIC DIABETIC EMERGENCIES
    - EMT (hypoglycemic patients unable to tolerate oral glucose **AND PATIENT HAS A PRESCRIPTION**)
      - 0.1mg/kg (max 1mg) IM
    - AEMT and Paramedic (hypoglycemic patients unable to tolerate oral glucose and unable to obtain vascular access)
      - 0.1mg/kg (max 1mg) IM

GLUCOSE

- Class
  - Hyperglycemic
- Indications
  - Conscious patients with suspected or confirmed hypoglycemia
- Contraindications
  - Decreased level of consciousness
  - Unable to swallow or maintain airway
  - Nausea and vomiting
- Dosage and administration
  - ADULT ALTERED MENTAL STATUS
    - EMT, AEMT, and Paramedic (relative or clinical hypoglycemia in conscious patients with a patent airway)
      - 15g buccal
        - May repeat
  - ADULT DIABETIC EMERGENCIES
    - EMT, AEMT, and Paramedic (relative or clinical hypoglycemia in conscious patients with a patent airway)
      - 15g buccal
        - May repeat
  - PEDIATRIC ALTERED MENTAL STATUS
    - EMT, AEMT, and Paramedic (relative or clinical hypoglycemia in conscious patients with a patent airway)
      - 15g buccal
        - May repeat
  - PEDIATRIC DIABETIC EMERGENCIES
    - EMT, AEMT, and Paramedic (relative or clinical hypoglycemia in conscious patients with a patent airway)
      - 15g buccal
        - May repeat

IBUPROFEN

- Class
  - Anti-pyretic
  - NSAID
- Indications
  - Fever ≥100.5
  - Child >6 months old has not had ibuprofen in the past six hours
- Contraindications
  - Hypersensitivity
  - Active GI bleed or ulceration
  - Severe liver disease
  - Child <6 months old
- Dosage and administration
  - PEDIATRIC FEVER
    - EMT, AEMT, and Paramedic (fever ≥100.5)
      - 10mg/kg PO

IPRATROPIUM BROMIDE

- Class
  - Bronchodilator
- Indications
  - Acute exacerbation of chronic respiratory diseases such as COPD, asthma, and emphysema
  - Bronchospasm associated with COPD and emphysema
- Contraindications
  - Hypersensitivity to atropine
- Dosage and administration
  - ADULT ASTHMA/COPD/WHEEZING
    - EMT (bronchospasm)
      - 0.5mg nebulized (mixed albuterol 2.5mg)
        - May repeat x1
    - AEMT and Paramedic (bronchospasm)
      - 0.5mg nebulized (mixed with albuterol 2.5mg)
        - May repeat every 5 minutes
  - PEDIATRIC ASTHMA/WHEEZING
    - EMT (bronchospasm)
      - 0.5mg nebulized (mixed with albuterol 2.5mg)
        - May repeat x1
    - AEMT and Paramedic (bronchospasm)
      - 0.5mg nebulized (mixed with albuterol 2.5mg)
        - May repeat every 5 minutes

KETAMINE

- Class
  - Dissociative anesthetic
  - Analgesic
  - General anesthetic
- Indications
  - Agitated/violent behavior
  - Pain management
- Contraindications
  - Hypersensitivity
  - Pregnancy
  - Head trauma
  - Intracranial bleeding
- Dosage and administration
  - ADULT BRADYDYSRHYTHMIAS
    - Paramedic (pain management during pacing)
      - 0.3mg/kg IV/IO slow push
  - ADULT TACHYDYSRHYTHMIAS
    - Paramedic (pain management during cardioversion)
      - 0.3mg/kg IV/IO slow push
  - ADULT ABDOMINAL PAIN
    - Paramedic (moderate to severe pain)
      - 0.3mg/kg IV/IO
        - May repeat x1
  - ADULT PAIN MANAGEMENT
    - Paramedic (moderate to severe pain)
      - 0.3mg/kg IV/IO
        - May repeat x1
  - ADULT AMPUTATED BODY PART
    - Paramedic (pain management with amputated body part)
      - 0.3mg/kg IV/IO
        - May repeat x1
  - ADULT BURNS
    - Paramedic (pain management with burns)
      - 0.3mg/kg IV/IO
        - May repeat x1
  - ADULT EYE TRAUMA
    - Paramedic (pain management with eye trauma)
      - 0.3mg/kg IV/IO
        - May repeat x1
  - ADULT TRAUMA
    - Paramedic (pain management with trauma)
      - 0.3mg/kg IV/IO
        - May repeat x1
  - PEDIATRIC BRADYDYSRHYTHMIAS
    - Paramedic (pain management during pacing)
      - 0.3mg/kg IV/IO

KETAMINE CONT.

- PEDIATRIC TACHYDYSRHYTHMIAS
  - Paramedic (pain management during cardioversion)
    - 0.3mg/kg IV/IO
- PEDIATRIC PAIN MANAGEMENT
  - Paramedic (moderate to severe, acute pain)
    - 0.3mg/kg IV/IO
      - May repeat x1
- PEDIATRIC ABDOMINAL PAIN
  - Paramedic (moderate to severe, acute abdominal pain)
    - 0.3mg/kg IV/IO
      - May repeat x1
- PEDIATRIC TRAUMA
  - Paramedic (pain management with trauma)
    - 0.3mg/kg IV/IO
      - May repeat x1
- PEDIATRIC AMPUTATED BODY PART
  - Paramedic (severe pain with amputation)
    - 0.3mg/kg IV/IO
      - May repeat x1
- PEDIATRIC BURNS
  - Paramedic (severe pain with burns)
    - 0.3mg/kg IV/IO
      - May repeat x1
- PEDIATRIC EYE TRAUMA
  - Paramedic (severe pain with eye trauma)
    - 0.3mg/kg IV/IO
      - May repeat x1

LABETALOL

- Class
  - Beta-blocker
  - Antihypertensive
- Indications
  - Symptomatic pre-eclampsia
  - BP≥160/110mmHg in pregnant patients at least 20 weeks gestation or up to 4 weeks postpartum
- Contraindications
  - Cardiogenic shock
  - 2nd or 3rd degree AV block
  - Bradycardia
  - Hypotension
  - Head trauma
- Dosage and administration
  - OBSTETRIC EMERGENCIES
    - Paramedic (symptomatic hypertension in pregnant patients)
      - 20mg IV slow push

LIDOCAINE

- Class
  - Local anesthetic
  - Class IB antidysrhythmic
- Indications
  - Conscious IO access
  - Cardiac arrest with ventricular fibrillation or pulseless monomorphic ventricular tachycardia
- Contraindications
  - Hypersensitivity
  - 2nd or 3rd degree AV block
- Dosage and administration
  - ADULT NON-TRAUMATIC CARDIAC ARREST
    - Paramedic (VF or pulseless VT refractory to initial amiodarone)
      - 100mg IV/IO
        - May repeat x2 every 5 minutes
  - ADULT TACHYDYSRHYTHMIAS
    - Paramedic (stable, wide complex tachycardia)
      - 100mg IV/IO
  - EZ-IO PROCEDURE
    - Paramedic (conscious IO access)
      - Adult: 40mg 2% IO
      - Pediatric: 0.5mg/kg 2% IO

MAGNESIUM SULFATE

- Class
  - Electrolyte
  - Class V antidysrhythmic
- Indications
  - Eclamptic seizures
  - Torsades de pointes (polymorphic ventricular tachycardia)
  - Moderate to severe respiratory distress with bronchospasm
- Contraindications
  - AV blocks
  - Use caution with renal disease
  - Hypersensitivity
- Dosage and administration
  - ADULT NON-TRAUMATIC CARDIAC ARREST
    - Paramedic (pulseless polymorphic ventricular tachycardia)
      - 2g IV/IO
  - ADULT TACHYDYSRHYTHMIAS
    - Paramedic (polymorphic ventricular tachycardia with a pulse)
      - 2g IV/IO slow push over 2 minutes
  - ADULT ASTHMA/COPD/WHEEZING
    - Paramedic (moderate to severe respiratory distress)
      - 2g IV slow push
  - OBSTETRIC EMERGENCIES
    - Paramedic (eclamptic seizures)
      - 4g IV/IO slow push over 3 minutes
  - ADULT SEIZURE
    - Paramedic (suspected eclampsia)
      - 4g IV/IO slow push over 3 minutes
  - PEDIATRIC NON-TRAUMATIC CARDIAC ARREST
    - Paramedic (suspected pulseless polymorphic ventricular tachycardia)
      - 50mg/kg (max 2g) IV/IO
  - PEDIATRIC ASTHMA/WHEEZING
    - Paramedic (severe respiratory distress)
      - 50mg/kg (max 2g) in 50mL D5W IV/IO over 10 minutes
- Infusion
  - PEDIATRIC MODERATE TO SEVERE RESPIRATORY DISTRESS
    - (Utilize Handtevy) 50mg/kg (max 2g) over 10 minutes
      - Mix weight-based magnesium sulfate with 40mL D5W
      - Utilize a 60 drop/mL IV administration set and flow controller extension set
      - Prime the entire IV administration set and flow controller set
      - Rotate flow controller to 250mL/hour
      - Open all clamps on IV administration set and extension and allow the 40mL of prepare medication infusion to be administered over 10 minutes

METHYLPREDNISOLONE

- Class
  - Corticosteroid
  - Glucocorticoid
- Indications
  - Asthma with subacute presentation
  - COPD with subacute presentation
  - Second line agent for acute adrenal crisis
- Contraindications
  - Hypersensitivity
- Dosage and administration
  - ADULT ALLERGIC REACTION/ANAPHYLAXIS
    - Paramedic (allergic reaction or anaphylaxis symptoms)
      - 125mg IV/IO
  - ADULT ASTHMA/COPD/WHEEZING
    - Paramedic (moderate to severe respiratory distress with sub acute presentation)
      - 125mg IV/IO
  - ADULT NON-TRAUMATIC SHOCK
    - Paramedic (acute adrenal crisis)
      - 2mg/kg (max 125mg) IV/IO
  - PEDIATRIC ALLERGIC REACTION/ANAPHYLAXIS
    - Paramedic (severe allergic reaction or anaphylaxis symptoms)
      - 2mg/kg (max 60mg) IV/IO
  - PEDIATRIC ASTHMA/WHEEZING
    - Paramedic (moderate to severe respiratory distress with subacute presentation)
      - 2mg/kg (max 60mg) IV/IO
  - PEDIATRIC NON-TRAUMATIC SHOCK
    - Paramedic (acute adrenal crisis)
      - 2mg/kg (max 125mg) IV/IO

MIDAZOLAM

- Class
  - Benzodiazepine
- Indications
  - Sedation for cardioversion or pacing
  - Seizure
  - Drug assisted intubation
  - Rapid sequence intubation
  - Moderate to severe agitation
- Contraindications
  - Respiratory depression
  - Hypoperfusion
  - Concurrent use with other CNS depressants
- Dosage and administration
  - ADULT BRADYDYSRHYTHMIAS
    - Paramedic (sedation prior to or during pacing)
      - 2mg IV/IO
        - May repeat x1
      - **OR** 10mg IN
  - ADULT TACHYDYSRHYTHMIAS
    - Paramedic (sedation prior to cardioversion)
      - 2mg IV/IO
      - **OR** 10mg IN
  - ADULT AGITATED/AGGRESSIVE PATIENT
    - Paramedic (moderate agitation/aggression refractory to initial droperidol)
      - 5mg IM
    - Paramedic (severe agitation/aggression
      - 5mg IM (concurrent with droperidol 5mg)
  - OBSTETRIC EMERGENCIES
    - AEMT and Paramedic (eclamptic seizure)
      - 2mg IV/IO slow push
        - Repeat every five minutes or until the seizure stops
      - **OR** 10mg IM/IN
  - ADULT RESPIRATORY DISTRESS OR FAILURE/DRUG ASSISTED INTUBATION
    - Paramedic (facilitating intubation or maintaining sedation)
      - 2mg IV/IO
        - May repeat every 5 minutes if SBP $\geq$100mmHg
  - ADULT RAPID SEQUENCE INTUBATION
    - Specially Credentialed Paramedic (RSI)
      - 2mg IV/IO
  - ADULT SEIZURE/STATUS EPILECTICUS
    - AEMT and Paramedic (active seizure)
      - 2mg IV/IO
        - Repeat every 5 minutes or until the seizure stops
      - **OR** 10mg IM/IN

MIDAZOLAM CONT.

- ADULT HYPERTHERMIA
  - Paramedic (shivering during active cooling)
    - 2mg IV/IO
- PEDIATRIC BRADYDYSRHYTHMIAS
  - Paramedic (sedation prior to pacing)
    - 0.1mg/kg (max 2mg) IV/IO/IN
- PEDIATRIC TACHYDYSRHYTHMIAS
  - Paramedic (sedation prior to cardioversion)
    - 0.1mg/kg (max 2mg) IV/IO/IN
- PEDIATRIC SEIZURE/STATUS EPILEPTICUS
  - AEMT and Paramedic (active seizure)
    - 0.15mg/kg (max 2mg) IV/IO/IM/IN
      - Repeat every 5 minutes or until the seizure stops
- PEDIATRIC HYPERTHERMIA
  - Paramedic (shivering during active seizure)
    - 0.1mg/kg (max 1mg) IV/IM/IN

NALOXONE

- Class
  - Narcotic antagonist
- Indications
  - Opiate overdose with respiratory depression
  - Coma of unknown origin
- Contraindications
  - Use caution with narcotic-dependent patients
  - Use caution with neonate of narcotic-dependent mothers
- Dosage and administration
  - ADULT NON-TRAUMTIC CARDIAC ARREST
    - AEMT and Paramedic (asystole or PEA if suspected opiate overdose)
      - 2mg IV/IO
  - ADULT ALTERED MENTAL STATUS
    - EMT (suspected opiate overdose with respiratory depression)
      - 2-4mg IN
        - Repeat every 5 minutes (max total 8mg)
    - AEMT and Paramedic (suspected opiate overdose with respiratory depression)
      - 0.4-2mg IV/IO
        - Repeat every 5 minutes (max total 8mg)
  - ADULT PAIN MANAGEMENT
    - AEMT and Paramedic (respiratory depression after fentanyl administration)
      - 0.4-2mg IV/IO/IN
        - Repeat every 5 minutes if needed
  - PEDIATRIC NON-TRAUMATIC CARDIAC ARREST
    - AEMT and Paramedic (asystole or PEA if suspected opiate overdose)
      - 0.1mg/kg (max 2mg) IV/IO/IN
        - May repeat x4 every 5 minutes (max total 5 doses)
  - PEDIATRIC ALTERED MENTAL STATUS
    - EMT (suspected opiate overdose with respiratory depression)
      - 0.1mg/kg (max 2mg) IN
        - May repeat every 5 minutes (max total 2mg)
    - AEMT and Paramedic (suspected opiate overdose with respiratory depression)
      - 0.1mg/kg (max 2mg) IV/IO/IN
        - May repeat every 5 minutes (max total 2mg)
  - PEDIATRIC PAIN MANAGEMENT
    - Paramedic (respiratory depression after fentanyl administration)
      - 0.1mg/kg (max 2mg) IV/IO/IN titrated to respiratory status

NITROGLYCERIN

- Class
  - Vasodilator
  - Nitrate
- Indications
  - Acute angina pectoris
  - Ischemic chest pain
  - Pulmonary edema secondary to CHF
- Contraindications
  - Recent use of erectile dysfunction medications (Cialis, Viagra, etc.)
  - Hypotension
  - Hypovolemia
  - Head injury
- Dosage and administration
  - CONGESTIVE HEART FAILURE/ACUTE PULMONARY EDEMA
    - EMT (chest pain **IF THE PATIENT HAS A PRESCRIPTION**)
      - 0.4mg SL
        - May repeat every 5 minutes if SBP ≥100mmHg
    - AEMT and Paramedic (pulmonary edema)
      - 0.4mg SL
        - May repeat every 5 minutes if SBP ≥90mmHg
  - ISCHEMIC CHEST PAIN/ACUTE CORONARY SYNDROME/STEMI
    - EMT (chest pain **IF THE PATIENT HAS A PRESCRIPTION**)
      - 0.4mg SL
        - May repeat every 5 minutes if SBP ≥100mmHg
    - AEMT and Paramedic (chest pain)
      - 0.4mg SL
        - May repeat every 5 minutes if SBP ≥90mmHg

NOREPINEPHRINE

- Class
  - Sympathomimetic
  - Vassopressor
- Indications
  - Distributive shock
  - Cardiogenic shock
  - Neurogenic shock
  - Hypotension
- Contraindications
  - Hypovolemia
  - Pregnancy
- Dosage and administration
  - BRADYDYSRHYTHMIAS
    - Paramedic (continued hypotension)
      - Infuse 8-12mcg/minute
        - Titrate to SBP ≥90mmHg and MAP >65
  - NON-TRAUMATIC SHOCK
    - Paramedic
      - Infuse 8-12mcg/minute
        - Titrate to SBP ≥90mmHg and MAP >65
  - POST-ROSC CARE
    - Paramedic (continued hypoperfusion)
      - Infuse 8-12mcg/minute
        - Titrate to SBP ≥90mmHg and MAP >65
- Infusion
  - ADULT NON-TRAUMATIC SHOCK AND CONTINUED HYPOPERFUSION
    - 8-12mcg/minute, titrate to effect
      - Mix 4mg norepinephrine into 250mL normal saline
        - Mixed concentration is 16mcg/mL
      - Utilize a 60 drop/mL IV administration set
      - Utilize the drop counting method to adjust dose as needed
        - 30 drops/minute=8mcg infused/minute
        - 45 drops/minute=12mcg infused/minute

ONDANSETRON

- Class
  - Serotonin receptor antagonist
  - Antiemetic
- Indications
  - Nausea/vomiting
- Contraindications
  - Hypersensitivity
- Dosage and administration
  - ISCHEMIC CHEST PAIN/ACUTE CORONARY SYNDROME/STEMI
    - AEMT and Paramedic (severe nausea and vomiting)
      - 4mg IV/IO/SL
        - May repeat x1
  - ADULT ABDOMINAL PAIN
    - AEMT and Paramedic (severe nausea and vomiting)
      - 4mg IV/IO/SL
        - May repeat x1
  - ADULT NAUSEA AND VOMITING
    - AEMT and Paramedic (severe nausea and vomiting)
      - 4mg IV/IO/SL
        - May repeat x1
  - ADULT PAIN MANAGEMENT
    - AEMT and Paramedic (narcotic associated nausea and vomiting)
      - 4mg IV/IO/SL
        - May repeat x1
  - ADULT EYE TRAUMA
    - AEMT and Paramedic (severe nausea)
      - 4mg IV/IO/SL
        - May repeat x1
  - PEDIATRIC ABDOMINAL PAIN
    - AEMT and Paramedic (severe nausea and vomiting)
      - 0.1mg/kg (max 4mg) IV/IO **OR** 4mg SL (if >4 years old)
        - May repeat x1 to max total 4mg
  - PEDIATRIC NAUSEA AND VOMITING
    - AEMT and Paramedic (severe nausea and vomiting)
      - 0.1mg/kg (max 4mg) IV/IO **OR** 4mg SL (if >4 years old)
        - May repeat x1 to max total 4mg
  - PEDIATRIC PAIN MANAGEMENT
    - AEMT and Paramedic (narcotic associated nausea and vomiting)
      - 0.1mg/kg (max 4mg) IV/IO **OR** 4mg SL (if >4 years old)
        - May repeat x1 to max total 4mg
  - PEDIATRIC EYE TRAUMA
    - AEMT and Paramedic (for narcotic associated nausea and vomiting)
      - 0.1mg/kg (max 4mg) IV/IO **OR** 4mg SL (if >4 years old)
        - May repeat x1 to max total 4mg

OXYTOCIN

- Class
  - Pituitary hormone
  - Uterine vasoconstrictor
- Indications
  - Postpartum hemorrhage after infant and placental delivery
- Contraindications
  - Presence of a second fetus
- Dosage and administration
  - NON-TRAUMATIC SHOCK
    - Paramedic (postpartum hemorrhage)
      - 10U IM
  - OBSTETRIC EMERGENCIES
    - Paramedic (postpartum hemorrhage)
      - 10U IM

SODIUM BICARBONATE

- Class
  - Systemic hydrogen ion buffer
  - Alkalizing agent
- Indications
  - Known or suspected acidosis during cardiac arrest
  - Tricyclic antidepressant, aspirin, and phenobarbital overdose
  - Hyperkalemia
  - Crush injuries
- Contraindications
  - Metabolic or respiratory acidosis
  - Hypocalcemia
- Dosage and administration
  - ADULT NON-TRAUMATIC CARDIAC ARREST
    - Paramedic (prolonged acidosis, hyperkalemia, or overdose of TCA, aspirin, or phenobarbital
      - 100mEq IV/IO
  - ADULT BRADYDYSRHYTHMIAS
    - Paramedic (suspected acidosis or hyperkalemia)
      - 100mEq IV/IO
  - ADULT TACHYDYSRHYTHMIAS
    - Paramedic (suspected hyperkalemia)
      - 100mEq IV/IO
  - ADULT ALTERED MENTAL STATUS
    - Paramedic (suspected TCA overdose)
      - 100mEq IV/IO
  - ADULT AGITATED/AGRESSIVE PATIENT
    - Paramedic (sudden witnessed cardiac arrest secondary to hypermetabolic state)
      - 100mEq IV/IO
        - May repeat 50mEq every 10 minutes
  - PEDIATRIC BRADYDYSRHYTHMIAS
    - Paramedic (suspected prolonged acidosis)
      - 1mEq/kg IV/IO
        - 4.2% concentration recommended for infants younger than 1 month
  - PEDIATRIC NON-TRAUMATIC CARDIAC ARREST
    - Paramedic (suspected prolonged acidosis, hyperkalemia, or overdose)
      - 1mEq/kg IV/IO
        - May repeat every 10 minutes
        - 4.2% concentration recommended for infants younger than 1 month
  - PEDIATRIC ALTERED MENTAL STATUS
    - Paramedic (suspected TCA, aspirin, or phenobarbital overdose)
      - 1mEq/kg IV/IO

SUCCINYLCHOLINE

- Class
  - Depolarizing neuromuscular blocker
- Indications
  - Rapid sequence intubation
- Contraindications
  - Malignant hyperthermia
  - Hypersensitivity
- Dosage and administration
  - RAPID SEQUENCE INTUBATION
    - Specially Credentialled Paramedics (RSI)
      - 1.5mg/kg IV/IO

TRANEXAMIC ACID

- Class
  - Plasminogen inhibitor
  - Antifibrinolytic agent
  - Hemostatic agent
- Indications
  - Blunt or penetrating trauma with hemodynamic compromise
  - Hemorrhage
- Contraindications
  - <6 years old
  - Hypersensitivity
  - History of pulmonary embolism or DVT
  - Use caution with renal insufficiency
- Dosage and administration
  - ADULT TRAUMATIC CARDIAC ARREST
    - Paramedic (severe bleeding)
      - 2g IV/IO slow push
  - ADULT NON-TRAUMATIC SHOCK
    - Paramedic (catastrophic hemorrhage of medical origin)
      - 2g IV/IO slow push
  - ADULT TRAUMATIC SHOCK
    - Paramedic (hypoperfusion secondary to traumatic injury)
      - 2g IV/IO slow push
  - OBSTETRIC EMERGENCIES
    - Paramedic (postpartum hemorrhage)
      - 2g IV/IO slow push
  - ADULT DENTAL/ORAL TRAUMA
    - Paramedic (moderate oropharyngeal hemorrhage)
      - Direct pressure on affected area with TXA soaked gauze
    - Paramedic (severe oropharyngeal hemorrhage)
      - 500mg in 5mL normal saline nebulized (preferred)
      - **OR** 2g IV/IO
  - ADULT TRAUMA
    - Paramedic (significant hemorrhage)
      - 2g IV/IO slow push
  - PEDIATRIC NON-TRAUMATIC SHOCK
    - Paramedic (catastrophic hemorrhage of medical origin)
      - (<6 years old) 15mg/kg IV/IO slow push **(CONTACT MEDICAL CONTROL FOR CONSULT)**
      - (6-10 years old) 1g IV/IO slow push
      - (>10 years old) 2g IV/IO slow push
  - PEDIATRIC TRAUMATIC CARDIAC ARREST
    - Paramedic (severe bleeding of traumatic origin)
      - (<6 years old) 15mg/kg IV/IO slow push **(CONTACT MEDICAL CONTROL FOR CONSULT)**
      - (6-10 years old) 1g IV/IO slow push
      - (>10 years old) 2g IV/IO slow push

TRANEXAMIC ACID CONT.

- PEDIATRIC TRAUMA
  - Paramedic (significant hemorrhage following trauma)
    - (<6 years old) 15mg/kg IV/IO slow push **(CONTACT MEDICAL CONTROL FOR CONSULT)**
    - (6-10 years old) 1g IV/IO slow push
    - (>10 years old) 2g IV/IO slow push
- PEDIATRIC DENTAL/ORAL TRAUMA
  - Paramedic (moderate oropharyngeal bleeding)
    - Direct pressure on affected area with TXA soaked gauze
  - Paramedic (severe oropharyngeal bleeding)
    - (<6 years old) 15mg/kg IV/IO slow push **(CONTACT MEDICAL CONTROL FOR CONSULT)**
    - (6-10 years old) 500mg in 5mL normal saline nebulized (preferred) **OR** 1g IV/IO slow push
    - (>10 years old) 2g IV/IO slow push
- PEDIATRIC TRAUMATIC SHOCK
  - Paramedic (significant hemorrhage following trauma)
    - (<6 years old) 15mg/kg IV/IO slow push **(CONTACT MEDICAL CONTROL FOR CONSULT)**
    - (> 6 years old) 1g IV/IO slow push
    - (>10 years old) 2g IV/IO slow push