FORT WAYNE FIRE DEPARTMENT

CLINICAL STANDING ORDERS PROTOCOLS & PROCEDURES

2022.3.1

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Date: 3/24/22

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Date: 3/9/2022

ADULT STANDING ORDERS

PEDIATRIC STANDING ORDERS

PEDIATRIC STANDING ORDERS CONT.

PROCEDURES

MEDICATION LIST

FORMULARY CONT.

GENERAL STANDING ORDER GUIDELINES

APPROVED FOR ALL LEVELS

1. Basic EMTs, Advanced EMTs, and Paramedics can perform up to their level as certified/licensed by the state of Indiana and locally credentialed.
2. Assure scene safety before entering scene.
3. Cervical Spine, Airway, Breathing, and Circulation are the initial treatments unless otherwise stated.
4. Provide supplemental oxygen via appropriate means to keep saturation >93%.
5. Obtain history of present illness, medical history, medications, and allergies when possible.
6. All stable patients will have their vital signs checked every 30 minutes, critical patients every 10 minutes as treatment permits. Vitals include level of consciousness, skin color, temperature, texture, respiratory rate, lung sounds, heart rate, blood pressure and pulse oximetry. If able, continually monitor the patient's vitals with automated equipment if available.
7. On-line Medical Control is the on-duty ER physician at your hospital. If you are not a hospital provider, then it is the closest participating hospital within the county you are providing care in.
8. Standing order(s) may be initiated prior to contacting Medical Control. In time critical emergencies such as serious trauma, myocardial infarction, and stroke it is imperative to contact Medical Control as a soon as the situation is known, so that the receiving hospital can prepare for the arrival of the patient. Include patient's name and date-of-birth in the report with time critical emergencies.
9. Pediatric length-based color-coded resuscitation tapes should be used for critical pediatric patients. Doses listed on the resuscitation tapes serve as an acceptable dosing option.
10. Some standing orders list medication options; however, not all medications will be carried by all services. Please refer to local and service specific drug lists.
11. If a medication/procedure has had time to be effective and is not effective, go to the next treatment in the standing order.
12. When there is no standing order for a particular situation, any orders must be obtained from Medical Control.
13. Use the cardiac monitor when patient's heart rate is below their age-appropriate range, above their age-appropriate range, irregular, when completing a procedure that may affect heart function, syncope, or on any patient that may be having heart related symptoms.
14. Lights and sirens response to the hospital should be limited to time critical emergencies.
15. Report any possible criminal activity; including, but not limited to, child protective and adult protective issues, scene deaths, and suicide attempts to the proper authorities.

AIRWAY CONTROL

BASIC EMT

1. Evaluate the airway. Take into account the possibility of cervical injury. Secure the airway by positioning, oropharyngeal airway, or nasopharyngeal airway if possible.
2. Place supraglottic airway if necessary.
3. Provide continuous waveform ETCO2 (if available)

ADVANCED EMT

4. Consider **Continuous Positive Airway Pressure (CPAP)** for patients who present with dyspnea caused from:
   - ➢ heart failure
   - ➢ acute cardiogenic pulmonary edema
   - ➢ pneumonia

CPAP:

- ➢ chronic obstructive pulmonary disease (asthma, bronchitis, emphysema)

Shortness of breath AND:

- ➢ Evidence of respiratory distress (accessory muscles, tachypnea)
- ➢ Open airway
- ➢ Over 12 years old and able to fit the CPAP mask

CONTRAINDICATIONS

- ➢ Pneumothorax
- ➢ Respiratory arrest
- ➢ Uncontrolled vomiting

PROCEDURE

A. Start CPAP at ambient pressure
   - ➢ 0 cm/H_2O

B. Slowly titrate the pressure to patient comfort and clinical improvement:
   1. **CHF**: maximum **10 cm/H_2O**
   2. All other shortness of breath / dyspnea (**COPD, Asthma, etc**.): **5 cm/H_2O**

C. If persistently hypotensive, may need to consider discontinuing CPAP

5. Trauma patients and pediatric patients airway should be maintained by BLS means if possible.

PARAMEDIC

6. Consider intubating patients who are unable to be adequately oxygenated by BLS means. Endotracheal intubation should not significantly delay transport. Oxygen by nasal cannula on highest flow rate should be applied before and during intubation

AIRWAY CONTROL cont.

attempts. If an endotracheal tube (ETT) is not passed after a total of two attempts at visualization and/or ETT passage, a non-visualized airway should be placed. "Attempt" is defined by the National Association of EMS Physicians as: "Insertion of laryngoscope blade into mouth (for orotracheal methods)".

- EMS personnel are required to confirm endotracheal tube placement on every intubation with:
  a. visualization
  b. 5-point auscultation
  c. chest rise
  d. continuous waveform $ETCO_2$
- Post Intubation treatment:

SEDATION

Midazolam (Versed) Up to 5 mg IV, IO, IN, or IM may repeat to a total dose of 10 mg. Contraindicated with hypotension.

OR

Ketamine (Ketalar) 1 mg/kg IV / IO may repeat once (call medical control for further orders)

PAIN MANAGEMENT

Fentanyl (Sublimaze) **First choice for hemodynamic instability, extremes of age

Adult Patients

- 1 mcg/kg IV/IO/IM/IN slowly every 5 minutes
  (not to exceed 100 mcg per unit dose) a maximum total dose of 200 mcg

Hydromorphone (Dilaudid) **Appropriate when longer duration of effect desired

Adult Patients

- 0.5 – 1.0 mg IV/IO/IM every 10 min to max of 2mg
  Geriatric Patients (greater than 65 years)
- 0.5mg IV/IM every 10 min to max of 1 mg

The patient will receive only one of the two drugs by standing order.

- PEEP valves may be used at 5 cm H_2O, if available, but may be contraindicated in hypotension.
- Tidal volume 5 – 8 ml/kg and rate 8 – 12 breaths / minute with spontaneous circulation. Titrate to keep end tidal CO_2 35-45.
- Tidal volume 500 – 600 ml and rate 8 – 10 with cardiac arrest.
- Consider placing cervical collar to reduce the risk of extubation

AIRWAY CONTROL cont.

7. When all reasonable attempts to provide an adequate airway by less invasive means have failed, consider performing an invasive airway procedure.

Surgical Cricothyrotomy (age greater than or equal to 5 years)

1. Make a vertical, midline incision through the skin over the cricothyroid membrane
2. Carefully incise through the cricothyroid membrane.
3. Spread tracheal incision with scalpel handle.
4. Assess and maintain opening with finger or other device.
   a. Consider ET introducer (bougie)
5. Insert tube through the incision and advance caudally (toward the feet).
6. Secure tube and dress incision site with 4x4's.
7. Continue to ventilate the patient via bag-valve-mask during the procedure if able.
8. Reassess airway and ventilatory status frequently.
9. **CONFIRM TUBE PLACEMENT**
   - ➢ EMS personnel are required to confirm cricothyrotomy tube placement on every surgical airway:
     a. 5-point auscultation
     b. chest rise
     c. continuous waveform ETC0_2.

Needle Cricothyrotomy (age less than 5 years)

1. Locate the Cricothyroid membrane.
2. Puncture cricothyroid membrane with a catheter over the needle and saline filled syringe. Direct the needle toward the feet and aspirate for air. Once in the trachea advance the catheter.
3. Attach a 3.0 mm endotracheal adapter to the catheter and ventilate.

ALLERGIC REACTION

BASIC EMT

1. Remove offending agent if possible.
2. Assist patient with administration of own Epi-pen.

ADVANCED EMT

3. **Albuterol** 5 mg aerosol OR **Xopenex (levalbuterol)** 1.25mg aerosol
   - ➢ May repeat as necessary

Start here if anaphylactic reaction:

4. **Epinephrine**
   a. **1:1,000** 0.3 mg (0.3 ml) IM
   b. Repeat every 5 - 10 min as needed twice
   c. Consider giving only ½ dose for:
   Elderly, known hypertension, known heart disease, arrhythmia

4. Fluid bolus 250 ml
5. Repeat fluid boluses as indicated if:
   - ➢ No evidence of pulmonary edema.
   - ➢ Contact Medical Control to give more than 2,000 ml.

PARAMEDIC

6. **Benadryl (diphenhydramine)** 50 mg IV / IO / IM
7. **Epinephrine IV/IO**
   a. For severe, life-threatening reactions (shock, severe bronchospasm or stridor) unresponsive to IM Epinephrine
      - ➢ Mix Epinephrine 1 mg in NS 1000 ml
      - ➢ Piggyback into wide open IV / IO
      - ➢ Start at 1 ml/min (1 mcg/min) and titrate to effect every 1 minute
      - ➢ Monitor closely for hyperdynamic effects (heart rate and blood pressure)

BEHAVIORAL COMBATIVE PATIENT

BASIC EMT / ADVANCED EMT

Use of physical restraints is appropriate when less restrictive measures are ineffective, and the restraints are necessary to protect the patient or others from injury.

1. Consider Excited Delirium Syndrome
   - ➢ Delirium (confusion)
   - ➢ Agitation with bizarre or destructive behavior
   - ➢ Tactile Hyperthermia
2. Confused or combative patients should be assessed and restrained physically prior to transport.
3. Law enforcement should be involved if indicated.
4. Check for weapons prior to transport.
5. Notify receiving hospital that restraints are in place and assistance will be necessary.
6. Monitor the patient and pulses distal to the restraint.
7. Position the patient in a supine or side lying position if possible.

Physical restraints include:

- ➢ Soft restraints
- ➢ Leather restraints
- ➢ Hand Cuffs: If used may only be secured to the cot and **not the vehicle** of transport. Law enforcement is encouraged to accompany the patient. If this is not possible, the EMS personnel **MUST HAVE** in his/her possession the **KEYS** to the cuffs.

PARAMEDIC

8. Coordinate restraint plan with Law Enforcement Officer
9. Rapid sedation immediately following restraint

Suspected Excited Delirium:

- ➢ **Versed (midazolam)** up to 10 mg IM/IN – May repeat in 5 minutes IV, IM or IN

  OR

- ➢ **Ketamine (Ketalar)** 300mg IM (if available)
- ➢ Establish IV access when able
- ➢ Cooling with ice packs in groin, axilla, and neck
- ➢ NS 1000 ml IV bolus

BEHAVIORAL COMBATIVE PATIENT cont.

Suspected behavioral/combative patient w/o signs of Excited Delirium:

- **Midazolam (Versed)** Up to 5 mg IV, IO, IN, or IM may repeat to a total dose of 10 mg. Contraindicated with hypotension.

OR

- **Ketamine (Ketalar)** 300 mg IM or if IV established, 1 mg/kg IV / IO may repeat once (call medical control for further orders)

BRONCHOSPASM (ASTHMA/COPD)

BASIC EMT

1. BLS may help patient administer own inhaler.

ADVANCED EMT

2. **Albuterol** 5 mg aerosol OR **Xopenex (levalbuterol)** 1.25 mg aerosol
   - ➢ May repeat as necessary
3. **Atrovent (ipratropium bromide)** 0.5 mg aerosol.
4. Consider CPAP

CPAP:

Shortness of breath AND:

- ➢ Evidence of respiratory distress (accessory muscles, tachypnea)
- ➢ Open airway
- ➢ Over 12 years old and able to fit the CPAP mask

CONTRAINDICATIONS

- ➢ Pneumothorax
- ➢ Respiratory arrest
- ➢ Uncontrolled vomiting

PROCEDURE

D. Start CPAP at ambient pressure
   - ➢ 0 cm/H_2O

E. Slowly titrate the pressure to patient comfort and clinical improvement:
   3. **CHF**: maximum **10 cm/H_2O**
   4. All other shortness of breath / dyspnea: (**COPD, Asthma, etc**.): **5 cm/H_2O**

If persistently hypotensive, may need to consider discontinuing CPAP

PARAMEDIC

5. **Methylprednisolone (Solumedrol)** (if available) 125 mg IV / IO for cases of severe asthma
6. **Consider Epinephrine**
   - ➢ Use only in immediately life-threatening condition.
   - ➢ Use with caution in heart disease, hypertension, tachyarrhythmias, age greater than 50.
   - ➢ Use 0.3 mg (0.3 ml) of **1:1,000** IM

BRONCHOSPASM (ASTHMA/COPD) cont.

COVID-19 Suspected Patients:

- Avoid the use of nebulizer medications or CPAP (if at all possible). Maintain basic measures such as O^2 via nasal cannula and surgical mask or O^2 via non-rebreather mask.
- **PPE USE IS MANDATORY**

BURNS

BASIC EMT

1. Remove patient from source and stop the burning process.
   - ➢ Remove clothes and jewelry.
   - ➢ Brush any dry powders from patient.
   - ➢ Irrigate chemical burns with copious amounts of normal saline or water.
   - ➢ Continuously irrigate the eyes if involved with saline.
2. Apply dry, clean dressings. May consider moist dressings for comfort if less than 10% Body Surface Area (BSA) involved.
3. Identify source, duration of exposure, and presence of enclosed space.
4. Look for other trauma.
5. Determine percent of BSA involved.

ADVANCED EMT

6. IV access with two (2) large bore catheters using Normal Saline.
   - ➢ Bolus NS 500 ml
7. If systolic blood pressure less than 100 give fluid boluses of 500 ml in addition to above. May repeat boluses times three.

PARAMEDIC

8. Consider pain management (contraindicated in hypotension):

➢ **Fentanyl (Sublimaze) **First choice for hemodynamic instability, extremes of age**
Adult Patients
➢ 1 mcg/kg IV/IO/IM/IN slowly every 5 minutes
(not to exceed 100 mcg per unit dose) a maximum total dose of 200 mcg

➢ **Hydromorphone (Dilaudid) **Appropriate when longer duration of effect desired**
Adult Patients
➢ 0.5 – 1.0 mg IV/IO/IM every 10 min to max of 2mg

Geriatric Patients (greater than 65 years)
➢ 0.5mg IV/IM every 10 min to max of 1 mg

Both **Dilaudid** and **Fentanyl** can be administered slow IV or IM.

The patient will receive only one of the two drugs by standing order.

9. For severe discomfort not relieved by pain management medications, consider sedation (contraindicated in hypotension):

➢ **Midazolam (Versed)** Up to 5 mg IV, IO, IN, or IM may repeat to a total dose of 10 mg.

BURNS cont.

OR

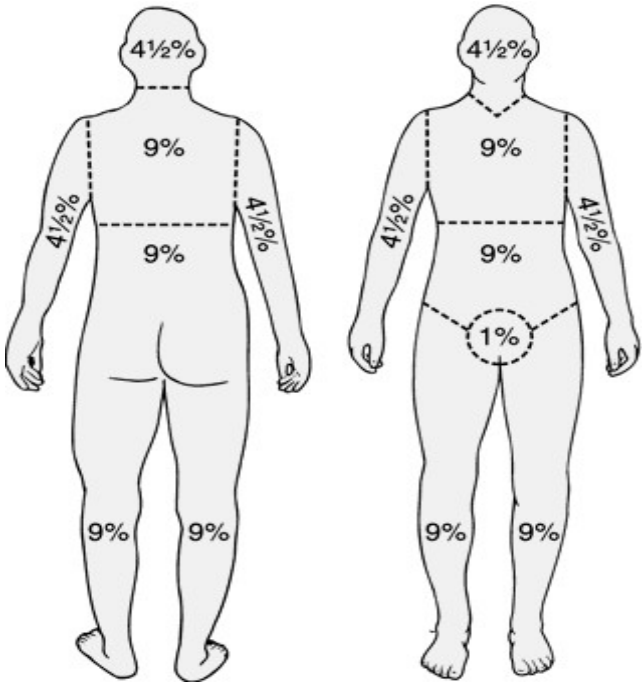
- **Ketamine (Ketalar)** 300 mg IM, or if IV established, 1 mg/kg IV / IO may repeat once (call medical control for further orders)

10. Consider early aggressive airway management.
11. Monitor for hypothermia.
12. CONTACT MEDICAL CONTROL.

The patient should be transported to the closest appropriate hospital.
Please see local procedures and protocols.

BURN DIAGRAM

Rule of Nines



BRADYCARDIA SYMPTOMATIC

PARAMEDIC

1. With clinical symptoms of poor perfusion consider any or all the following:
   - ➢ Consider **Atropine** 0.5 mg IV. May repeat to a total dose of 3 mg.
   - ➢ **Epinephrine IV / IO**
     - **a.** Mix Epinephrine 1 mg in NS 1000 ml
     - **b.** Piggyback into wide open IV
     - **c.** Start at 1 ml/min and titrate by 1 mcg/min every 1 minute to systolic blood pressure > 90
     - **d.** Monitor closely for hyperdynamic effects (heart rate and blood pressure)
   - ➢ Consider transcutaneous pacing
     - **a.** Consider sedation for pacing:

Sedation:

- ➢ **Midazolam (Versed)** Up to 5 mg IV, IO, IN, or IM may repeat to a total dose of 10 mg.

OR

- ➢ **Ketamine (Ketalar)** 300 mg IM, or if IV established, 1 mg/kg IV / IO may repeat once (call medical control for further orders)

CONTACT MEDICAL CONTROL

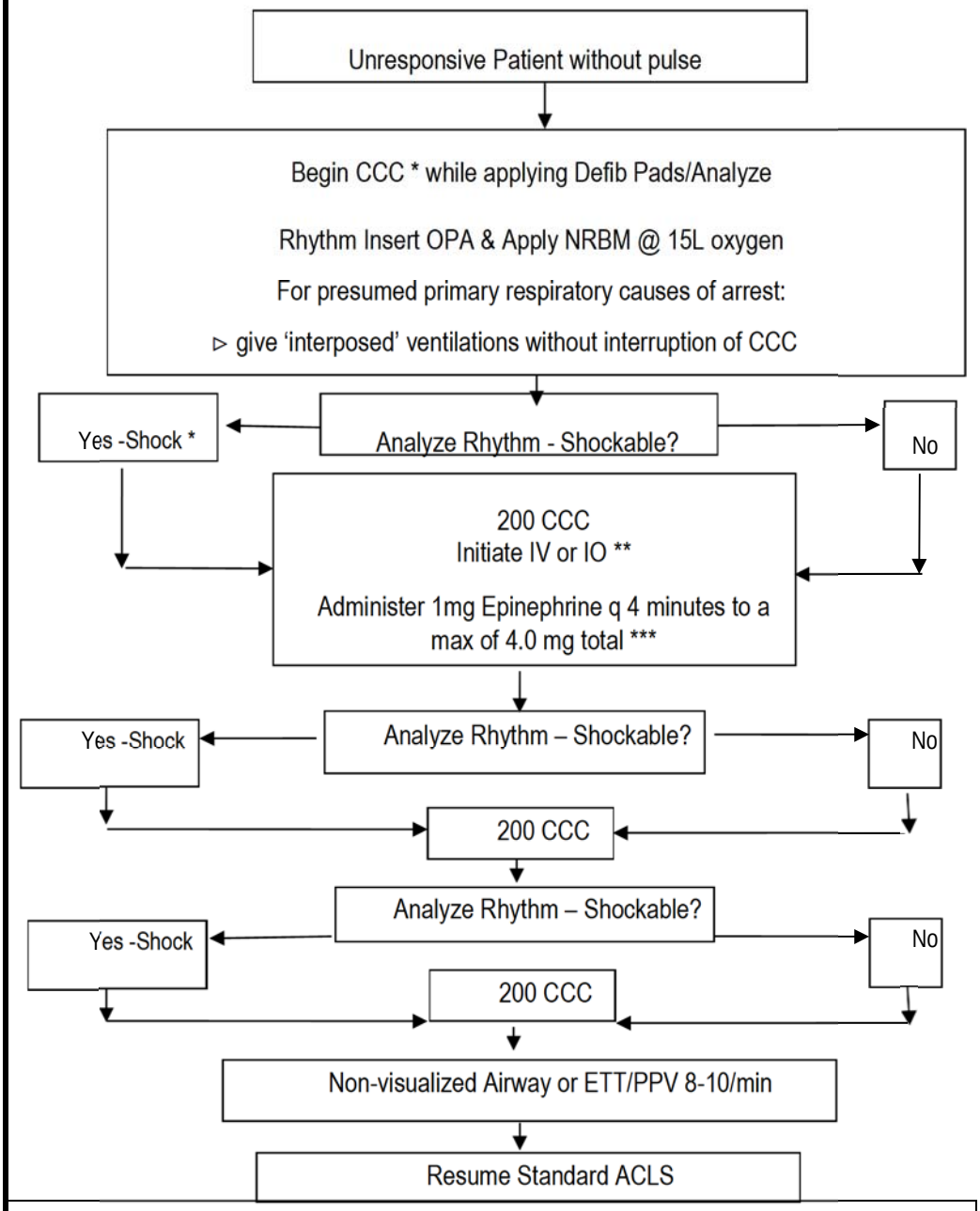
CARDIAC ARREST - CCR

*200 Continuous Chest Compressions (CCC) must be completed prior to or coincide with any further interventions. If it is determined that first responders have already completed cycles of CCC with NRBM then continue with the resuscitation from that point.

*** IV/IO Advanced and Paramedic only*

***Epinephrine Advanced/Paramedic only

- Shock using an AED or maximum energy
- End-tidal CO2 should be used to monitor effectiveness of chest compression (if available)
- 'Interposed' ventilations for respiratory causes of arrest at 8-10/min without pausing compressions both before and after an advanced airway is placed.
- Stay on scene, when possible



Advanced EMT:

- After 25 minutes of no shock advised: Prepare for 12 Lead, stop CPR, obtain 12 Lead, resume CPR, and transmit to PRMC or Lutheran. Continue CPR algorithm until confirmation from medical control to terminate resuscitation.
- If at any point, AED advises "shock advised", shock patient, transport to nearest hospital ER.
- If you obtain ROSC, transport promptly to closest PCI capable hospital.

CARDIAC ARREST – ACLS

For cardiopulmonary arrest of cardiac or unknown cause begin CCR prior to standard ACLS.

Ventricular Fibrillation / Ventricular Tachycardia without pulses

ADVANCED EMT

1. **Epinephrine** 1 mg IV every 4 minutes to a max of 4.0 mg.

PARAMEDIC

2. Give **1 Shock,** repeat every 2 minutes**.**
3. **Cordarone (Amiodarone)** 300 mg IV/IO, may repeat 150 mg IV in 5 minutes.
4. **Magnesium Sulfate** 1 – 2 g IV/IO for Torsades de Pointes (polymorphic ventricular tachycardia) or persistent V-fib
5. **Refractory Ventricular Fibrillation / Ventricular Tachycardia**: If three defibrillation attempts are unsuccessful:
   - ➢ Vector change: consider new positioning of defibrillation pads

Asystole / Pulseless Electrical Activity (PEA)

ADVANCED EMT

6. **Epinephrine** 1 mg IV/IO every 4 minutes to a max of 4.0 mg.

PARAMEDIC

7. **Consider H's & T's:**
   - ➢ Hypovolemia
   - ➢ Hypoxia
   - ➢ Hydrogen ion (acidosis)
   - ➢ Hypo-/hyperkalemia
   - ➢ Hypothermia
   - ➢ Toxins
   - ➢ Tamponade, cardiac
   - ➢ Tension pneumothorax
   - ➢ Thrombosis (coronary or pulmonary)
   - ➢ Trauma

8. **Consider Termination of Resuscitation as follows:**

CARDIAC ARREST – ACLS cont.

INDICATIONS

- Adult victim of non-traumatic cardiac arrest
- Advanced airway (Endotracheal Tube or Non-visualized Airway)
- IV or IO access and ACLS medications
- No return of spontaneous circulation
- Any 25-minute period of continuous asystole
- Persistent V-fib / V-tach after 45 minutes of resuscitative efforts
- Duration of cardiac arrest resuscitation for other situations should be guided by the following factors:

    - Witnessed
    - bystander CPR
    - co-morbidity factors
    - end-tidal CO_2

CONTRAINDICATIONS

- Potentially treatable cause of condition
- Judgment of paramedic that termination of arrest would be inappropriate due to factors such as:

    - Arrest in public place
    - Perception of family non-acceptance
    - Communication barrier with family
    - Safety of crew

PROCEDURE

1. On-line Medical Control contacted for approval of termination.
2. Family notification and support when present.
3. Family MD or Specialist notification for signature on death certificate.
4. Notify the coroner as indicated by local protocol.
5. Notify funeral service for removal of the body.
6. Remain with body until it is turned over to appropriate authority such as coroner, police, or funeral home.

CHEST PAIN / ACUTE CORONARY SYNDROME

BASIC EMT

1. Oxygen if oxygen saturation <= 93 or evidence of respiratory distress
2. Obtain 12-lead EKG (if available) and transmit as soon as possible for chest / arm / neck / epigastric pain, shortness of breath, diaphoresis, syncope, or dizziness thought to be of possible cardiac etiology
3. **Aspirin** four 81 mg orally (baby aspirin).
4. **Nitroglycerin**
   - ➢ May assist patient in taking **his/her own prescribed** nitroglycerin.
   - ➢ Hold if systolic blood pressure less than 100.
   - ➢ Give one tablet sublingual every 5 minutes up to 3 tablets.
   - ➢ DO NOT USE IF RECENT USE of erectile dysfunction medications. MAY RESULT IN INTRACTABLE HYPOTENSION if given within 24 – 48 hours.

ADVANCED EMT

5. **Nitroglycerin** (if cardiac etiology suspected)
   - ➢ 0.4 mg SL tabs or metered dose spray every 5 minutes x 3 as needed
   - ➢ Hold if systolic blood pressure less than 100.
   - ➢ DO NOT USE IF RECENT USE of erectile dysfunction medications. MAY RESULT IN INTRACTABLE HYPOTENSION if given within 24 – 48 hours.

PARAMEDIC

6. For continued moderate to severe pain consider pain management:

Pain Management:

Fentanyl (Sublimaze) **First choice for hemodynamic instability, extremes of age

Adult Patients

- ➢ 1 mcg/kg IV/IO/IM/IN slowly every 5 minutes (not to exceed 100 mcg per unit dose) a maximum total dose of 200 mcg

Hydromorphone (Dilaudid) **Appropriate when longer duration of effect desired

Adult Patients

- ➢ 0.5 – 1.0 mg IV/IO/IM every 10 min to max of 2mg

Geriatric Patients (greater than 65 years)

- ➢ 0.5mg IV/IM every 10 min to max of 1 mg

The patient will receive only one of the two drugs by standing order.

CHEST PAIN / ACUTE CORONARY SYNDROME cont.

7. Consider **Nitro Paste** (if available) 1-inch paste placed on lateral aspect of arm or left upper chest.

If 12-lead EKG indicates ST segment myocardial infarction, the patient should be transported to the closest hospital capable of emergent percutaneous coronary intervention (PCI). Please see local procedures and protocols.

CONTACT MEDICAL CONTROL

POST-CARDIAC ARREST

BASIC EMT

1. Ventilation: Tidal volume 5 – 8 ml/kg of ideal body weight and rate 8 – 12 breaths/ minute with spontaneous circulation. Titrate to keep end tidal CO_2 35 –45.
2. Oxygen if oxygen saturation <= 93 or evidence of respiratory distress
3. Obtain 12 lead EKG (if available) and transmit.

ADVANCED EMT

4. Maintain SBP greater than 90.
5. Consider treatment for post-cardiac arrest non-traumatic shock:
   - ➢ Fluid bolus 250 ml IV / IO
   - ➢ Repeat fluid boluses as indicated if:
- No evidence of pulmonary edema.

Contact Medical Control to give more than 2000 ml.

PARAMEDIC

6. If persistent hypotension, despite fluid boluses, consider administration of an Epinephrine drip:

➢ Mix **Epinephrine**: 1.0 mg in NS 1000 ml

➢ Piggyback into wide open IV / IO

1. Start at 1 ml/min and titrate by 1.0 mcg/min every 1 minute
2. Titrate to maintain SBP 90 – 100 mm/HG.
7. Suppress any patient movement (shivering, seizure activity or gasping) by considering sedation:

Sedation:

➢ **Midazolam (Versed)** Up to 5 mg IV, IO, IN, or IM may repeat to a total dose of 10 mg.

OR

➢ **Ketamine (Ketalar)** 300 mg IM, or if IV established, 1 mg/kg IV / IO may repeat once (call medical control for further orders)

CONTACT MEDICAL CONTROL. Patients with return of spontaneous circulation should be transported to the closest hospital capable of therapeutic hypothermia and emergent percutaneous coronary intervention.

TACHYCARDIA PULSE GREATER THAN 150

PARAMEDIC

If unstable perform immediate synchronized cardioversion at recommended max joule setting for your monitor and consider sedation:

Sedation:

- **Midazolam (Versed)** Up to 5 mg IV, IO, IN, or IM may repeat to a total dose of 10 mg.

OR

- **Ketamine (Ketalar)** 300 mg IM, or if IV established, 1 mg/kg IV / IO may repeat once (call medical control for further orders)

If stable establish IV access and obtain 12-lead EKG.

WIDE QRS greater than= 0.12 sec

Regular Monomorphic Rhythm

1. Consider **Adenosine** 6 mg rapid IV followed by saline flush.
   - If needed, may follow up with 12 mg dose.
2. **Cordarone (Amiodarone)** 150 mg IV/IO over 10 minutes
3. If needed, repeat **Cordarone** (**Amiodarone**)

   150 mg IV/IO
4. Contact Medical Control

Irregular Polymorphic VT (torsades)

1. Prepare to defibrillate

Irregular Rhythm (Atrial Fibrillation, etc)

1. Observe
2. Contact Medical Control

Torsades de Pointes

1. **Magnesium** 2 grams IV / IO over 5-10 minutes
2. Contact Medical Control

NARROW QRS less than 0.12 sec

Regular Rhythm (SVT)

1. Attempt vagal maneuvers
2. **Adenosine** 6 mg rapid IV
   - Must be rapidly given and flushed with 20 ml of saline.
   - If needed, may follow up with 12 mg dose.
3. Contact Medical Control.

Irregular Rhythm (Atrial Fibrillation or Atrial Flutter)

1. Observe
2. Contact Medical Control.

Search for and treat possible contributing factors:

- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-/hyperkalemia
- Hypothermia
- Toxins
- Tamponade, cardiac
- Tension pneumothorax
- Thrombosis (coronary or pulmonary)
- Trauma

TERMINATION OF RESUSCITATION

PARAMEDIC

INDICATIONS

1. Adult victim of non-traumatic cardiac arrest
2. Advanced airway (Endotracheal Tube or Non-visualized Airway)
3. IV or IO access and ACLS medications
4. No return of spontaneous circulation
5. Any 25-minute period of continuous asystole
6. Persistent V-fib / V-tach after 45 minutes of resuscitative efforts
7. Duration of cardiac arrest resuscitation for other situations should be guided by the following factors:

    - ➢ Witnessed
    - ➢ bystander CPR
    - ➢ co-morbidity factors
    - ➢ end-tidal CO2

❖ If the following criteria are met, the decision of termination may be made without contacting OLMC:

- ADULT patient, arrest not witnessed by EMS
- No shockable rhythm identified, currently in asystole
- No ROSC or initiation of transport
- 25 minutes of care has been administered, including 4 rounds of Epi
- Hypothermia not thought to be the cause of the cardiac arrest

CONTRAINDICATIONS

1. Potentially treatable cause of condition

2. Judgment of paramedic that termination of arrest would be inappropriate due to factors such as:

- ➢ Arrest in public place
- ➢ Perception of family non-acceptance
- ➢ Communication barrier with family
- ➢ Safety of crew

PROCEDURE

1. On-line Medical Control contacted for approval of termination, if they do not meet the above criteria stated above.

TERMINATION OF RESUSCITATION cont.

2. Family notification and support when present.

3. Family MD or Specialist notification for signature on death certificate.

4. Notify the coroner as indicated by local protocol.

5. Notify funeral service for removal of the body.

6. Remain with body until it is turned over to appropriate authority such as coroner, police, or funeral home.

CERVICAL SPINE STABILIZATION

BASIC EMT / ADVANCED EMT / PARAMEDIC

These patients generally require immobilization with a cervical collar:

a. High risk injury (high speed MVC, axial loading injury)
b. Focal neurological deficits such as paralysis
c. Intoxication or altered mental status
d. Age > 65
e. Presence of midline bony tenderness of the spine
f. Midline spinal pain with movement of the neck

*Patients **without any of the above** findings may be transported without a cervical collar.*

Extrication devices: Use the long spine board, scoop stretcher, vacuum mattress, short board, or Kendrick Extrication Device (KED) only as needed to minimize movement of the patient when moving them from the point of injury to the stretcher. This may be removed as needed prior to transport unless it is necessary for patient safety.

Altered mental status: A multi system blunt trauma patient, such as from a high velocity crash or significant fall, who is unable to follow commands due to combativeness, intoxication, or decreased mental status, should remain on the backboard, scoop, or vacuum mattress for their safety until handoff to the ED.

Alert and cooperative: Patients with normal mental status can participate in their movement to the cot with specific instructions to limit neck movement and stop if any movement increases any neck pain.

Penetrating trauma: These patients do not need cervical collars.

Airway concerns: Techniques to stabilize the spine should not supersede airway concerns particularly in the case of excessive bleeding or difficulty with visualization.

CLOSED HEAD INJURY

BASIC EMT

1. Stabilize cervical spine following spinal stabilization protocol.
2. Document GCS.
3. Oxygen if oxygen saturation <= 93% or evidence of respiratory distress. Avoid hypoxemia (saturation < 90%)

ADVANCED EMT / PARAMEDIC

4. Attempt to sustain systolic blood pressures above 100.
5. If altered level of consciousness, check blood sugar and treat accordingly.

GLASCOW COMA SCORE

Eye Opening Response	
Spontaneous	4
To Voice	3
To Pain	2
None	1
Best Verbal Response	
Oriented	5
Confused	4
Inappropriate Words	3
Incomprehensible Sounds	2
None	1
Best Motor Response	
Obeys Commands	6
Localizes Pain	5
Withdraws to Pain	4
Flexion to Pain	3
Extension to Pain	2
None	1
TOTAL POSSIBLE	**15**

CONGESTIVE HEART FAILURE/PULMONARY EDEMA

BASIC EMT

1. Apply high flow oxygen

ADVANCED EMT

2. Consider CPAP:

CPAP

Shortness of breath AND:

- Evidence of respiratory distress (accessory muscles, tachypnea)
- Open airway
- Over 12 years old and able to fit the CPAP mask

CONTRAINDICATIONS

- Pneumothorax
- Respiratory arrest
- Uncontrolled vomiting

PROCEDURE

Start CPAP at ambient pressure

- 0 cm/H_2O

Slowly titrate the pressure to patient comfort and clinical improvement:

- **CHF**: maximum **10 cm/H_2O**
- All other shortness of breath / dyspnea: (**COPD, Asthma, etc**.): **5 cm/H_2O**

If persistently hypotensive, may need to consider discontinuing CPAP

PARAMEDIC

3. Give sublingual **Nitroglycerin** if patient is not hypotensive (blood pressure > 100).
   i. DO NOT USE IF RECENT USE of erectile dysfunction medications. MAY RESULT IN INTRACTABLE HYPOTENSION if given within 24 – 48 hours.
   ii. Repeat SL **Nitroglycerin** every 5 minutes if dyspnea persists and BP remains elevated.

DIABETIC EMERGENCIES/ALTERED LEVEL OF CONSCIOUSNESS

Hypoglycemia

BASIC EMT

1. Blood Glucose level should be determined prior to treatment (if available)
2. If level is less than 60 mg/dl AND patient has an intact gag reflex and is responsive.
   - ➢ Oral **Glucose** 30 Gm PO. Repeat to desired effect.

ADVANCED EMT / PARAMEDIC

3. If level is less than 60mg/dl with a decreased level of consciousness.
   - ➢ **$D_{10}W$** up to 250ml, titrate to mental status and glucose >80
   - ➢ **Glucagon** 1mg IM if difficulty obtaining IV, repeat after fifteen (15) minutes if no result is obtained.

Hyperglycemia

1. Check finger stick glucose.
   - ➢ If glucose is greater than 300 mg/dl and evidence of DKA (altered mental status, elevated respiratory rate) then:
     - ➢ obtain IV access and give NS 250 ML BOLUS.
     - ➢ IV attempts should not significantly delay transport.

DIALYSIS AND HYPERKALEMIA

Renal-failure patients and particularly those on dialysis are at an increased risk of hyperkalemia (elevated potassium), especially in the face of missing their usual dialysis. This may cause arrhythmias and even cardiac arrest.

INDICATIONS

- ➢ Known renal failure or dialysis **with** hemodynamic instability or cardiac arrest
- ➢ EKG findings of hyperkalemia
  - Widening of QRS
  - Peaked T waves in precordial leads
  - Loss of P wave
  - Bradycardia
  - Sine Wave

PARAMEDIC

1. Calcium Chloride 1.0 gram IV/IO
2. Sodium Bicarbonate 50.0 mEq IV/IO

DO NOT RESUSCITATE

BASIC EMT / ADVANCED EMT / PARAMEDIC

PATIENT VIABILITY

If there is any possibility that life exists or when in doubt → RESUSCITATE.

DO NOT RESUSCITATE IF:

1. Decapitation
2. Decomposition
3. Rigor mortis
4. Dependent lividity
5. Injuries that are conclusively incompatible with life
   - ➢ massive head and/or chest.

SPECIAL CONSIDERATIONS

- ➢ **Multiple Casualties** = Begin START Triage
- ➢ **Living Will** = Do not accept, begin resuscitation
- ➢ **POST or DNR orders issued by patient's physician** = Visualize the signed POST/DNR form, do not resuscitate, and contact Medical Control.
- ➢ **Patient's Doctor wishes DNR** = If patient's doctor is immediately available, do not resuscitate, and contact Medical Control.

DROWNING

A patient who is submerged for one hour or less and is pulseless and apneic shall be resuscitated. Consider resuscitation of pediatric patients who have been in icy water for prolonged periods.

Routine cervical spine stabilization is **NOT** necessary; however, cervical spine stabilization should be initiated if any of the following exist:

- history of diving
- use of a water slide
- signs of injury
- signs of alcohol intoxication

BASIC EMT / ADVANCED EMT

1. Check pulse, if absent and patient is apneic begin CPR and apply AED.
2. Advise Medical Control of situation as soon as possible.

PARAMEDIC

3. Secure airway per standing order.
   Care should be used during ET tube attempts as this may induce ventricular fibrillation.
4. If hypothermic, treat arrhythmias or absence of rhythm per specific protocols; however, give only one round of drugs before contacting Medical Control.

EXCITED DELIRIUM SYNDROME

INDICATIONS

- Delirium (confusion)
- Agitation with bizarre or destructive behavior
- Tactile Hyperthermia

BASIC EMT / ADVANCED EMT

1. Call for Law Enforcement Officer assistance and paramedic backup.

PARAMEDIC

2. Coordinate restraint plan with Law Enforcement Officer
3. Rapid sedation immediately following restraint
   - **Versed (midazolam)** up to 10 mg IM/IN – May repeat in 5 minutes IV, IM or IN

OR

Ketamine (Ketalar) 300 mg IM (if available)
However, if IV is already established, administer 1 mg/kg IV / IO. May repeat IV dose once.

4. Establish IV access when able
5. Cooling with ice packs in groin, axilla, and neck
6. NS 1000 ml IV bolus

HEAT EMERGENCIES

BASIC EMT

1. Move patient to a cool environment and begin cooling process.
   - ➢ Air conditioner on high in ambulance
   - ➢ Cool packs to the patient's neck, groin, and axilla
   - ➢ Wash down with wet sponge or towels.

ADVANCED EMT / PARAMEDIC

2. IV of NS 500 ml bolus.

HYPOTHERMIA

BASIC EMT

1. Handle patient gently
2. Initiate re-warming techniques.
3. If pulseless and unresponsive, CCR
   - ➢ Defibrillate only once using AED.

ADVANCED EMT

4. IV access with warmed Normal Saline if available.

PARAMEDIC

If core temperature is less than 30ºC (86ºF):

- ➢ If pulseless and in Ventricular Fibrillation or Ventricular Tachycardia defibrillate only once as indicated.
- ➢ Administer one round of ACLS medications per appropriate protocol then contact Medical Control.

Handle patient gently and use caution with endotracheal intubation as both may induce ventricular fibrillation.

If core temperature is greater than 30ºC (86ºF):

- ➢ Follow regular cardiac arrest guidelines.

Consider aeromedical transport. Patients who are severely hypothermic may require cardiopulmonary bypass.

NON-TRANSPORTED PATIENT

All patients will be transported to a hospital emergency department unless the patient refuses transport.

BASIC EMT / ADVANCED EMT / PARAMEDIC

The following guidelines are to be observed.

1. If a patient initially refuses necessary care the Paramedic/AEMT/EMT will enlist the aid of friends, family, co-workers, or significant others, as well as address any concerns the patient may have in order to convince him/her to agree to needed treatment and/or transportation.
2. To accept the patient's decision not to receive treatment and/or transportation the patient (or responsible party, if the patient is a minor or declared legally incompetent) **must** meet all the following criteria:
   a. Not appear to be under the influence of drugs or alcohol
   b. Have normal mental status, indicated by:
      - ➢ Normal/appropriate speech
      - ➢ Orientation to person, place, and time
      - ➢ Appropriate, rational thinking
   c. The patient exhibits no signs, symptoms, or historical data suggestive of a potentially life-threatening illness, injury, or other condition (see below).
   d. The patient has access to a phone or "significant others" to help her/him obtain further care if needed.
   e. The patient/responsible party has been instructed to seek follow-up medical care as soon as possible.
   f. The patient/responsible party has read (or has been read) all statements on the Refusal form and appears to have an understanding of them.
3. If any of the criteria listed above are absent
   - ➢ **MEDICAL CONTROL** must be contacted for review and assistance (see #15)
   - ➢ **The results of this consultation must be documented**.

REFUSAL BY ALS OR WITH ONLINE MEDICAL CONTROL

4. In the event any of the following criteria are present
   - ➢ BLS providers may accept release only after contacting Medical Control.

NON-TRANSPORTED PATIENT cont.

5. In each of the following circumstances, the patient must be evaluated by an ALS provider:
   - ➢ If, in the judgment of the BLS provider, the patient has/is suffering from a potentially life or limb-threatening event it is appropriate that the patient be examined by an ALS provider.
   - ➢ Near drowning
   - ➢ Chest pain of any type
   - ➢ Respiratory distress
   - ➢ Cardiac irregularity (too fast, too slow, irregular, or weak pulse)
   - ➢ Serious blunt or any penetrating head, neck, chest or abdominal injury
   - ➢ Symptomatic hypotension (weak rapid pulse, lightheadedness, altered level of consciousness)
   - ➢ Symptomatic hypertension (headache, vertigo, disequilibrium, visual problems, altered level of consciousness)
   - ➢ Diabetic related emergencies
   - ➢ All facial burns, all electrical burns, and/or any 2ND or 3RD degree (partial or full-thickness) burns covering 10% or more of the body
   - ➢ Overdose or accidental poisoning
   - ➢ First time seizures, repetitive seizures, or failure to fully recover from the postictal state
   - ➢ Severe orthopedic injuries (e.g., multiple, proximal, or open fractures)
   - ➢ Head injury with history of loss of consciousness
     a. alteration in level of consciousness from baseline
     b. CSF/blood from ears or nose
   - ➢ Signs or symptoms suggestive of a spinal injury
     a. lateralizing numbness, tingling, weakness
   - ➢ History of loss of consciousness from any cause (syncope)
6. In all the other circumstances, it is appropriate for the BLS provider to accept a release and disregard the ALS unit.

PROCEDURE

7. The patient (or the patient's guardian if applicable) will be advised that transport is indicated for further evaluation and care by the emergency department physician.
8. The patient (or guardian) will be informed that he/she **has not been** evaluated by a physician.
9. The patient (or guardian) will be informed that significant medical problems may exist
   - ➢ that these potential problems **cannot** be fully described at this time
   - ➢ may possibly lead to significant disability or even death.

NON-TRANSPORTED PATIENT cont.

10. The patient (or guardian) will be asked if they understand the risks in refusing further medical care.
11. The patient (or guardian) will be instructed that he/she may call 911 at any time should they change their mind and wish to be seen by a physician.
12. The Paramedic/AEMT/EMT will complete the Refusal form and read it to the patient.
13. All areas of the Refusal form must be completed and appropriate signatures obtained.
14. If any **"NO"** box on the Refusal form is checked
    - **MEDICAL CONTROL** must be contacted prior to completion of any signature of release.
15. If Medical Control is required
    - communication will be established with the emergency department physician at the intended receiving facility or the supervising hospital
    - the physician will be apprised of the situation and asked for recommendations
    - the physician may ask to speak directly to the patient
    - the name of the physician, the hospital and recommendations will be recorded.
16. The patient will be encouraged to sign the Refusal form.
17. A run sheet with vital signs and pertinent medical information will be completed.
18. If a patient is less than 18 years old
    - only the parent
    - legal guardian
    - or adult sibling (in that order) may refuse care
        - exception is compelling evidence of emancipation.

Emancipation is defined under Indiana Code 16-36-1-3(a)(2)(B)-(E) as:

(B) is:

(i) at least fourteen (14) years of age;

(ii) not dependent on a parent for support;

(iii) living apart from the minor's parents or from an individual in loco parentis; and

(iv) managing the minor's own affairs;

(C) is or has been married;

(D) is in the military service of the United States; or

(E) is authorized to consent to the health care by any other statute

MOTOR VEHICLE CRASH CARD

A person who was involved in a motor vehicle crash and meets all of the criteria listed below will be eligible for a Motor Vehicle Crash Card.

- Person was involved in a motor vehicle crash.
- Does not have any complaints.
- No visible signs of significant injury.
- No behavior problems that places the person or others at risk.
- Person is NOT less than 18 years of age.
- No signs of intoxication

If patient does not meet <u>ALL</u> the above listed criteria a complete Refusal Of Transportation form must be completed.

OBSTETRICS

BASIC EMT / ADVANCED EMT

1. Obtain Obstetric History
   Prepare for delivery if:
   - ➢ Crowning
   - ➢ Contractions less than 2 minutes apart
   - ➢ Bulging perineum or involuntary pushing with contractions

   Transport ALL pregnant patients in left lateral recumbent position.

IF delivery is imminent prepare for birth

- ➢ Check for the umbilical cord around the neck and if present attempt to slide the cord over the head.
- ➢ If the cord is too tight to slide over the head then clamp and cut the cord.
- ➢ Clamp the cord approximately 6-8 inches from the baby and then another 2 inches closer to the mother.

APGAR Scoring System

Sign	0	1	2
Appearance (Skin Color)	Blue, pale	Body pink, blue extremities	Completely pink
Pulse Rate (Heart Rate)	Absent	Less than 100/minute	Greater than 100/minute
Grimace (Irritability)	No response	Grimace	Cough, sneeze, cry
Activity (Muscle Tone)	Limp	Some flexion	Active motion
Respirations (Breathing Effort)	Absent	Slow, irregular	Good, crying

OVERDOSE

BASIC EMT

1. Carbon Monoxide
   - ➢ 100% oxygen
2. Suspected opiate overdose with respiratory depression (shallow, slow respirations)
   - ➢ Apply oxygen with nonrebreather or BVM
   - ➢ **Naloxone (Narcan)**, if available
     - Assemble prefilled syringe & mucosal atomizer device (MAD)
     - Place tip of MAD into nostril and briskly push the plunger forward administering 1 ml in each nostril (1mg/ml)
     - The effect of **naloxone (Narcan)** may be shorter than the effects of the opiate. Monitor closely for recurrence of respiratory depression.
     - Alternatively, may use prepackaged 4 mg nasal spray (if available)
     - Consider repeating dose in 5 to 10 minutes

Patients that receive naloxone (Narcan) may have rapid onset of withdrawal symptoms, including agitation, vomiting, and violent behavior.

ADVANCED EMT / PARAMEDIC

3. Suspected Opiate Overdose
   - ➢ If significant respiratory depression, **naloxone (Narcan)** up to 2 mg IV, IO, IM.
     - ▪ Begin at 0.5 mg for respiratory depression
     - ▪ Begin at 2 mg for cardiac arrest
   - ➢ Repeat until adequate respiratory effort.

CONTACT MEDICAL CONTROL

PAIN MANAGEMENT

BASIC EMT / ADVANCED EMT

1. Assess patient's pain on a subjective pain scale (1-10).
   - ➢ The patient should perceive a decrease in their pain with the following measures.
2. Appropriate splinting, ice, position of comfort.

PARAMEDIC

INDICATIONS

- ➢ Extremity injury (including hip and shoulder injury)
- ➢ Back or flank pain.
- ➢ Abdominal pain: give initial dose only.
- ➢ Burns
- ➢ Chest Pain

CONTACT MEDICAL CONTROL for other indications

CONTRAINDICATIONS

CONTACT MEDICAL CONTROL prior to administration of pain medication if any of the following are observed:

- ➢ Altered Level of Consciousness, any etiology
- ➢ Hypotension, auscultated B/P less than 100 mmHG
- ➢ Respiratory compromise, hypoxemia
- ➢ Pregnancy

Fentanyl (Sublimaze) *****First choice for hemodynamic instability, extremes of age*

Adult Patients

- ➢ 1 mcg/kg IV/IO/IM/IN slowly every 5 minutes (not to exceed 100 mcg per unit dose) a maximum total dose of 200 mcg

Hydromorphone (Dilaudid) **Appropriate when longer duration of effect desired

Adult Patients

- ➢ 0.5 – 1.0 mg IV/IO/IM every 10 min to max of 2mg

Geriatric Patients (greater than 65 years)

- ➢ 0.5mg IV/IM every 10 min to max of 1 mg

Both **Dilaudid** and **Fentanyl** can be administered slow IV or IM, however, **the patient will receive only one of the two drugs by standing order.**

PAIN MANAGEMENT cont.

Morphine Sulfate (to replace above opiates in cases of drug shortages)

Adult Patients

- *Up to 4 mg IV/IM every 5 minutes up to a total of 12 mg*

Geriatric Patients (greater than 65 years of age)

- *2 mg IV push slowly every 5 minutes up to a total of 12 mg*

PHYSICIAN ON SCENE

BASIC EMT / ADVANCED EMT / PARAMEDIC

Upon request by any physician on the scene to give orders or directions the personnel will:

1. Verify the physician's credentials and document his/her name.
2. Inform the physician
   - ➢ that personnel are operating under the control of the base station physician and routine standing orders,
   - ➢ that personnel can take orders only from the base station physician,
   - ➢ of the procedure for taking over Medical Control.

If the physician at the scene INSISTS on assuming Medical Control, the medics will:

1. Inform the base station physician of the request,
2. Allow the physician at the scene to speak with the base station physician as necessary,
3. Follow directions of the base station physician.

Should, at any time, the physician at the scene give **inappropriate directions** or orders, which could **adversely affect patient care** the personnel will:

1. Immediately inform the base station physician of the situation.
2. **Follow direction and orders of the base station physician**.

If the on-scene physician does not wish to accompany the patient to the hospital, control will revert back to the base station physician during transport.

CONTACT MEDICAL CONTROL as soon as possible to update them of the situation.

SEDATION

PARAMEDIC

INDICATIONS

1. Chemical restraint of the combative patient to ensure safety of the patient and crew when physical restraint is ineffective.
2. Cardioversion.
3. Transcutaneous pacing.
4. Facilitation of endotracheal intubation both before and after procedure.
5. Burns or objective severe traumatic injury uncontrolled by opiates

Midazolam (Versed) Up to 5 mg IV, IO, IN, or IM may repeat to a total dose of 10 mg. Contraindicated with hypotension.

OR

Ketamine (Ketalar) 300 mg IM, however, if IV is established, administer 1 mg/kg IV / IO. May repeat IV dose once.

Lorazepam (Ativan) to replace above benzodiazepine in cases of drug shortages
2 mg IV may repeat initial dose once.

SEIZURES

BASIC EMT / ADVANCED EMT

1. Bedside blood glucose if available.

PARAMEDIC

2. For active seizures

   Midazolam (Versed) 5mg if IV / IO is already established. Can administer up to 10mg IN/IM if no IV/IO established.

   ➢ May repeat initial dose once.

Lorazepam (Ativan) to replace above benzodiazepine in cases of drug shortages
2 mg IV may repeat initial dose once.

SEPSIS

BASIC EMT

1. If suspected or documented infection:
   - ➢Check temperature and screen for Systemic Inflammatory Response Syndrome (SIRS). Notify medical control if any two of the following are present:
     1. Temperature less than 96.8 OR greater than or equal to 101
     2. Blood Pressure less than 90 systolic
     3. Heart Rate greater than 90
     4. Respiratory Rate greater than 20

ADVANCED EMT

2. Normal Saline 500 ml bolus
   - ➢Repeat to total of up to 3000ml if Mean Arterial Pressure (MAP)< 65
     1. MAP = 1/3 (SBP – DBP) + DBP

PARAMEDIC

3. If persistent hypotension despite fluid boluses, consider an Epinephrine drip:

Epinephrine Drip

1. Mix Epinephrine 1 mg in NS 1000 ml
2. Piggyback into wide open IV / IO
3. Start at 1 ml/min and titrate by 1 mcg/min every 1 minute.
4. Titrate to MAP > 65

SHOCK NON-TRAUMATIC

BASIC EMT

1. Consider causes of non-traumatic shock and treat accordingly, such as:
   - ➢ Anaphylaxis
   - ➢ Sepsis

ADVANCED EMT

1. Fluid bolus 250 ml IV / IO
2. Repeat fluid boluses as indicated if:
   - ➢ No evidence of pulmonary edema.
   - ➢ Contact Medical Control to give more than 2000 ml.

PARAMEDIC

3. If persistent hypotension despite fluid boluses, consider an Epinephrine drip:

Epinephrine Drip

1. Mix Epinephrine 1 mg in NS 1000 ml
2. Piggyback into wide open IV / IO
3. Start at 1 ml/min and titrate by 1 mcg/min every 1 minute.
4. Titrate to MAP > 65

STROKE

BASIC EMT / ADVANCED EMT / PARAMEDIC

1. Identify time symptoms first noticed AND time last seen normal.
    a. Patients may be eligible for intervention for up to 24 hours
2. Complete **BEFAST** exam, if positive do **C-STAT** exam. Document findings.
    a. If FAST positive & C-STAT negative – transport to closest appropriate facility
    b. If FAST positive & C-STAT ***positive*** – transport to closest neurological interventional facility (*Lutheran Hospital or Parkview Regional Medical Center)*
3. Obtain family member/next of kin contact information (cell and home phones).
4. Limit scene time as much as possible.
5. **Oxygen** if oxygen saturation <= 93 or evidence of respiratory distress
6. **Check blood sugar.** Treat hypoglycemia only if glucose level is less than 60 mg/dl.
7. Determine if currently taking Warfarin (Coumadin, Jantoven), Dabigatran (Pradaxa), Rivaroxaban (Xarelto), Apixaban (Eliquis), Edoxaban (Savaysa).

BEFAST	
Balance	**Is the patient losing their coordination or balance?** **Is the patient having trouble walking?**
Eyes	**Is the patient having trouble seeing out of one or both eyes?** **Any changes in vision?**
Face	**Ask the person to smile** Does one side of the face droop? Look closely at **their** teeth. Can you count the same # of teeth on each side?
Arms	**Ask the person to raise both arms** Does one arm drift downward?
Speech	**Ask the person to repeat a simple sentence** Are the words slurred? Can he/she repeat the sentence correctly?
Time	**Identify time of onset and time last normal** Time is brain!

STROKE cont.

C-STAT (Large Vessel Occlusion Assessment) Exam Steps		
Item	**Finding**	**Meaning**
Gaze	**Abnormal (Conjugate Gaze Deviation)**	**Positive C-STAT**
Arm weakness	**Abnormal (arm drift within 10 seconds)**	**Arm Weakness + Altered Level of Consciousness = Positive C-STAT**
Level of consciousness (Confusion)	**Abnormal (incorrectly states: age or month; AND cannot follow commands: open/close eyes or hands)**	

****EARLY NOTIFICATION OF THE ED IS CRITICAL.**

SYNCOPE

BASIC EMT / ADVANCED EMT

1. 12 lead (if available) ECG and transmit
2. Check blood sugar**.** Treat hypoglycemia only if glucose level is less than 60 mg/dl.

PARAMEDIC

3. Cardiac Monitor for arrhythmias.
4. 12 lead ECG

TRAUMA MANAGEMENT

BASIC EMT

1. Airway: Trauma patient's and pediatric patient's airway should be maintained by BLS means if possible.
    - ➢ Evaluate the airway. Take into account the possibility of cervical injury. Secure the airway by positioning, oropharyngeal airway, or nasopharyngeal airway if possible.
    - ➢ Place supraglottic airway if necessary.
    - ➢ Provide continuous waveform ETCO2 (if available)

2. Consider cervical spine stabilization

    These patients generally require immobilization with a cervical collar:

    a. High risk injury (high speed MVC, axial loading injury)
    b. Focal neurological deficits such as paralysis
    c. Intoxication or altered mental status
    d. Age > 65
    e. Presence of midline bony tenderness of the spine
    f. Midline spinal pain with movement of the neck

*Patients **without any of the above** findings may be transported without a cervical collar.*

Extrication devices: Use the long spine board, scoop stretcher, vacuum mattress, short board, or Kendrick Extrication Device (KED) only as needed to minimize movement of the patient when moving them from the point of injury to the stretcher. This may be removed as needed prior to transport unless it is necessary for patient safety.

Altered mental status: A multi system blunt trauma patient, such as from a high velocity crash or significant fall, who is unable to follow commands due to combativeness, intoxication, or decreased mental status, should remain on the backboard, scoop, or vacuum mattress for their safety until handoff to the ED.

Alert and cooperative: Patients with normal mental status can participate in their movement to the cot with specific instructions to limit neck movement and stop if any movement increases any neck pain.

Penetrating trauma: These patients do not need cervical collars.

TRAUMA MANAGEMENT cont.

Airway concerns: Techniques to stabilize the spine should not supersede airway concerns particularly in the case of excessive bleeding or difficulty with visualization.

3. Breathing
   - ➢ Assist with high flow oxygen.
4. Circulation
   - ➢ Control severe bleeding per BLS standards.
     - Direct Pressure
     - Tourniquet for extremity bleeding
     - Wound packing for significant external bleeding where tourniquet cannot be used or is ineffective utilizing gauze or hemostatic agents (preferred if available)
5. Scene time should be limited to 10 minutes or less when possible.
6. Prevent hypothermia.
7. Contact Medical Control early

ADVANCED EMT

8. Establish two (2) large bore IV's.
   a. Consider saline lock(s)
   - ➢ IV's will not delay transport.
9. If BP < 90, Normal Saline titrated to keep systolic blood pressure 90-100

PARAMEDIC

10. Consider intubating patients who are unable to be adequately oxygenated by BLS means. Endotracheal intubation should not significantly delay transport. If an endotracheal tube (ETT) is not passed after a total of two attempts at visualization and/or ETT passage, a non-visualized airway should be placed. "Attempt" is defined by the National Association of EMS Physicians as: "Insertion of laryngoscope blade into mouth (for orotracheal methods)".
    - ➢ EMS personnel are required to confirm endotracheal tube placement on every intubation with:
      a. visualization
      b. 5-point auscultation
      c. chest rise
      d. continuous waveform $ETCO_2$
    - ➢ Post Intubation treatment, consider sedation and/or pain management:

    Sedation:
    Midazolam (Versed) Up to 5 mg IV, IO, IN, or IM may repeat to a total dose of 10 mg. *Contraindicated with hypotension*.

OR

TRAUMA MANAGEMENT cont.

Ketamine (Ketalar) 300 mg IM, however, if IV is established, administer 1 mg/kg IV / IO. May repeat IV dose once.

Pain Management:
Fentanyl (Sublimaze) *****First choice for hemodynamic instability, extremes of age*

Adult Patients

- 1 mcg/kg IV/IO/IM/IN slowly every 5 minutes (not to exceed 100 mcg per unit dose) a maximum total dose of 200 mcg

Hydromorphone (Dilaudid) **Appropriate when longer duration of effect desired

Adult Patients

- 0.5 – 1.0 mg IV/IO/IM every 10 min to max of 2mg

Geriatric Patients (greater than 65 years)

- 0.5mg IV/IM every 10 min to max of 1 mg

Both **Dilaudid** and **Fentanyl** can be administered slow IV or IM, however, **the patient will receive only one of the two drugs by standing order.**

- PEEP valves may be used at 5 cm H_2O, if available, but may be contraindicated in hypotension.
- Tidal volume 5 – 8 ml/kg of ideal body weight and rate 8 – 12 breaths / minute with spontaneous circulation. Titrate to keep end tidal CO_2 35-45.
- Tidal volume 500 – 600 ml and rate 8 – 10 with cardiac arrest.
- Consider placing cervical collar after the airway is secured to reduce the risk of extubation.

11. When all reasonable attempts to provide an adequate airway by less invasive means have failed, consider performing an invasive airway procedure:

Surgical Cricothyrotomy (age greater than or equal to 5 years)

1. Make a vertical, midline incision through the skin over the cricothyroid membrane
2. Carefully incise through the cricothyroid membrane.
3. Spread tracheal incision with scalpel handle.
4. Assess and maintain opening with finger or other device.
   a. Consider ET introducer (bougie)
5. Insert tube through the incision and advance caudally (toward the feet).
6. Secure tube and dress incision site with 4x4's.
7. Continue to ventilate the patient via bag-valve-mask during the procedure if able.

TRAUMA MANAGEMENT cont.

8. Reassess airway and ventilatory status frequently.
9. CONFIRM TUBE PLACEMENT
   - ➢ EMS personnel are required to confirm cricothyrotomy tube placement on every surgical airway:
     a. 5-point auscultation
     b. chest rise
     c. continuous waveform $ETCO_2$.

Needle Cricothyrotomy (age less than 5 years)

1. Locate the Cricothyroid membrane.
2. Puncture cricothyroid membrane with a catheter over the needle and saline filled syringe. Direct the needle toward the feet and aspirate for air. Once in the trachea advance the catheter.
3. Attach a 3.0 mm endotracheal adapter to the catheter and ventilate.

12. If significant trauma, SBP < 90, less than 3 hours since injury, and/or heart rate > 110:
    a. **Tranexamic Acid (TXA)**
    - ➢ 1 gram in 100 ml NS over 10 minutes IV / IO
13. If traumatic arrest
    a. Resuscitate - if any of the following signs of life are present:
       • EMS witnessed arrest
       • Any Electrocardiographic Activity
       • Any spontaneous respirations
       • Movement
       • Pupillary reaction
       • Electrocution or Lightning Strikes
    b. When trauma insufficient to explain cardiac arrest, refer to CCR/ACLS Protocol.
    c. Consider needle chest decompression bilaterally if known or suspected chest injury
    d. Contact medical control after 15 minutes of resuscitation efforts to discuss the need to continue active resuscitation efforts when on scene. However, if already enroute and further efforts are felt to be futile, consider transporting quietly to the hospital without active resuscitation efforts after contacting OLMC during transport.

AEROMEDICAL TRANSPORT

Possible indications for an air ambulance include but are not limited to

- ➢ Patients triaged directly to a trauma center
- ➢ Extended scene time (entrapment and/or extrication)
- ➢ Critical burns
- ➢ Multiple critical victims
- ➢ Road conditions inhibiting rapid ground transportation

In general, when response time to the scene by an air ambulance exceeds the transport time to a hospital by ground transport, the patient should be transported by ground.

TRAUMA DESTINATION TRIAGE

The following patients should be transported **directly to a verified trauma center**:

- Glasgow Coma Scale <= 13
- Systolic blood pressure < 90
- Respiratory rate < 10 or > 29 or need for ventilator support (<20 in infant aged <1 year)
- All penetrating injuries to head, neck torso, and extremities proximal to elbow or knee
- Chest wall instability or deformity (e.g. flail chest)
- Two or more proximal long-bone fractures
- Crushed, degloved, mangled, or pulseless extremity
- Amputation proximal to wrist or ankle
- Pelvic fractures
- Open or depressed skull fracture
- Paralysis

EMT judgment, medical control, and local policies should direct transport destination of patients with significant **mechanism of injury or other special patient considerations**:

- Falls
    - Adults: > 20 ft. (one story is equal to 10 ft.)
    - Children: > 10 ft. or 2-3 times the height of the child
- High-Risk Auto Crash
    - Intrusion, including roof: > 12 in. occupant side; > 12 in. any site
    - Ejection (partial or complete) from automobile
    - Death in same passenger compartment
    - Vehicle telemetry data consistent with high risk injury
- Auto v. Pedestrian/Bicyclist Thrown, Run Over, or with Significant (> 20 MPH) Impact
- Motorcycle Crash > 20 MPH
- Age
    - Older Adults: Risk of injury death increases after age 55
        - SBP < 110 may represent shock after age 65
        - Low impact mechanisms (e.g. ground level falls) may result in severe injury
    - Children: Should be triaged preferentially to pediatric-capable trauma centers
- Anticoagulation and Bleeding Disorders
    - Patients with head injury are at high risk for rapid deterioration
- Burns
    - Without other trauma mechanism: Triage to burn facility
    - With trauma mechanism: Triage to trauma center
- Pregnancy > 20 weeks

TRAUMATIC ARREST

*****When trauma is insufficient to explain cardiac arrest, refer to CCR/ACLS Protocol.**

Do Not Resuscitate

- Decapitation
- Hemicorpectomy
- Rigor Mortis/Dependent Lividity
- Decomposition
- GSW Head
- Drowning- >1 hour submerged. Resuscitate more aggressively pediatric cold-water drowning.

Resuscitate - if any of the following signs of life are present

- EMS witnessed arrest
- Any Electrocardiographic Activity
- Any spontaneous respirations
- Movement
- Pupillary reaction
- Electrocution or Lightning Strikes

BASIC EMT

1. Airway

➢ Follow Trauma Management Airway:

- ➢ Trauma patients and pediatric patients airway should be maintained by BLS means if possible.
- ➢ Evaluate the airway. Take into account the possibility of cervical injury. Secure the airway by positioning, oropharyngeal airway, or nasopharyngeal airway if possible.
- ➢ Place supraglottic airway if necessary.
- ➢ Provide continuous waveform ETCO2 (if available)
- ➢ Consider cervical spine stabilization

2. Breathing
   - ➢ Assist with high flow oxygen.
3. Circulation
   - ➢ Control severe bleeding per BLS standards.
     - Direct Pressure
     - Tourniquet for extremity bleeding
     - Wound packing for significant external bleeding where tourniquet cannot be used or is ineffective utilizing gauze or hemostatic agents (preferred if available)
4. Initiate chest compressions

TRAUMATIC ARREST cont.

ADVANCED EMT

5. Establish two (2) large bore IV's or IO
   - ➢ 1000 ml Normal Saline bolus

PARAMEDIC

6. Consider intubating patients who are unable to be adequately oxygenated by BLS means. Endotracheal intubation should not significantly delay transport. If an endotracheal tube (ETT) is not passed after a total of two attempts at visualization and/or ETT passage, a non-visualized airway should be placed. "Attempt" is defined by the National Association of EMS Physicians as: "Insertion of laryngoscope blade into mouth (for orotracheal methods)".
   - ➢ EMS personnel are required to confirm endotracheal tube placement on every intubation with:
     e. visualization
     f. 5-point auscultation
     g. chest rise
     h. continuous waveform $ETCO_2$

7. Tidal volume 500 – 600 ml and rate 8 – 10 with cardiac arrest.

8. When all reasonable attempts to provide an adequate airway by less invasive means have failed, consider performing an invasive airway procedure:

Surgical Cricothyrotomy (age greater than or equal to 5 years)

1. Make a vertical, midline incision through the skin over the cricothyroid membrane
2. Carefully incise through the cricothyroid membrane.
3. Spread tracheal incision with scalpel handle.
4. Assess and maintain opening with finger or other device.
5. Consider ET introducer (bougie)
6. Insert tube through the incision and advance caudally (toward the feet).
7. Secure tube and dress incision site with 4x4's.
8. Continue to ventilate the patient via bag-valve-mask during the procedure if able.
9. Reassess airway and ventilatory status frequently.
10. CONFIRM TUBE PLACEMENT
    - ➢ EMS personnel are required to confirm cricothyrotomy tube placement on every surgical airway:
      d. 5-point auscultation
      e. chest rise
      f. continuous waveform $ETC0_2$.

TRAUMATIC ARREST cont.

Needle Cricothyrotomy (age less than 5 years)

1. Locate the Cricothyroid membrane.
2. Puncture cricothyroid membrane with a catheter over the needle and saline filled
3. syringe. Direct the needle toward the feet and aspirate for air. Once in the trachea advance the catheter.
4. Attach a 3.0 mm endotracheal adapter to the catheter and ventilate.

9. Needle chest decompression bilaterally if known or suspected chest injury

10. If ROSC
    - ➢ **Tranexamic Acid (TXA)** 1 gram in 100 ml NS over 10 minutes IV / IO

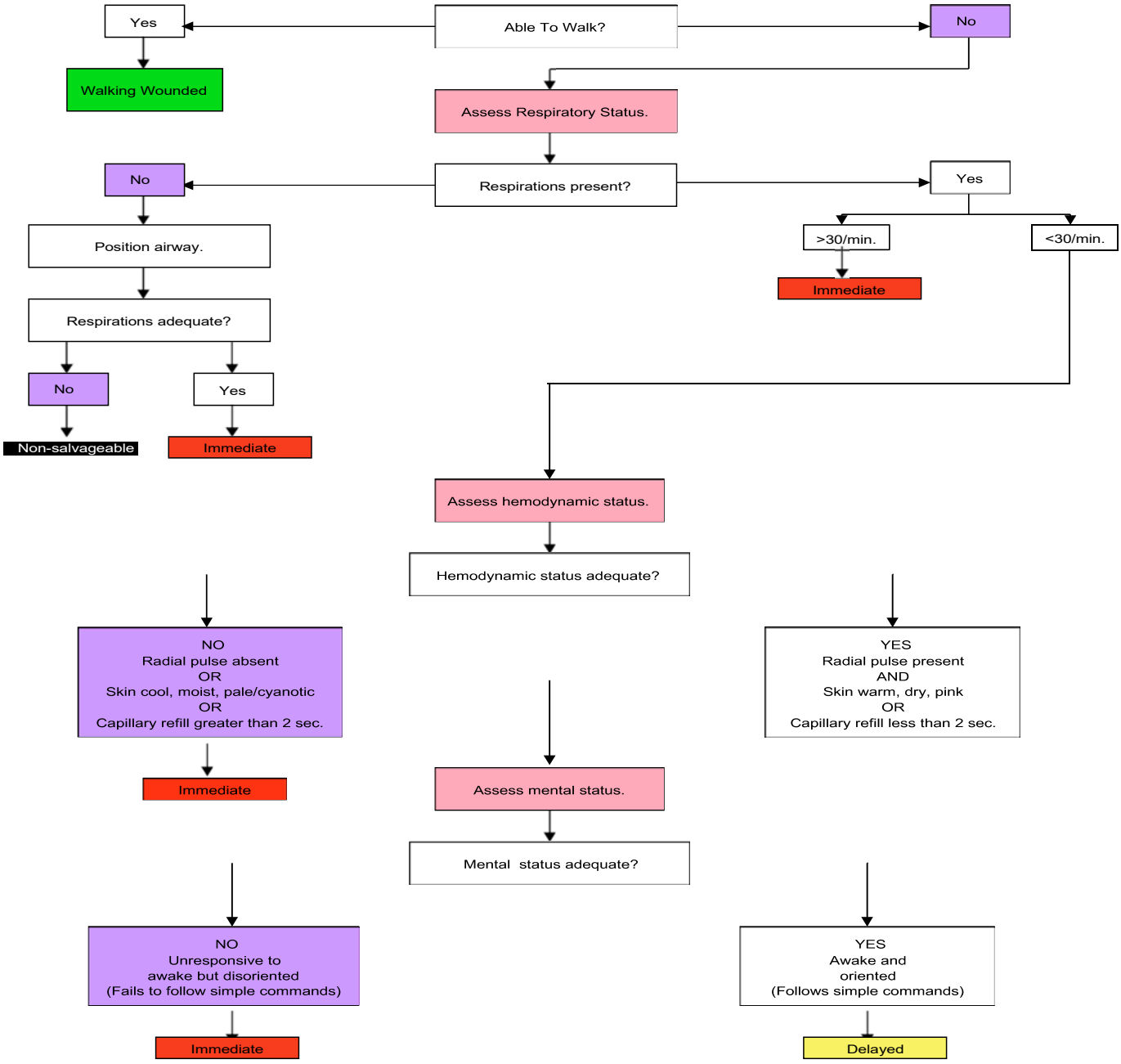
11. When trauma insufficient to explain cardiac arrest, refer to CCR/ACLS Protocol.

TERMINATE RESUSCITATION

Contact medical control after 15 minutes of resuscitation efforts to discuss the need to continue active resuscitation efforts.

- If already enroute and further efforts are felt to be futile, consider transporting quietly to the hospital without active resuscitation efforts after contacting OLMC during transport.

TRIAGE - START



VOMITING/NAUSEA

ADVANCED EMT / PARAMEDIC

1. Obtain IV access with NS 250 ml bolus unless contraindicated.
2. **Zofran (ondansetron)** 4 mg IM/IV OR 4 mg Oral Disintegrating Tablet (ODT)
   - ➢ May repeat once in 10 minutes as needed.
   - ➢ May give ODT before IV access is obtained.

PEDIATRIC ALLERGIC REACTION

BASIC EMT

1. Remove offending agent if possible.
2. Assist patient with administration of own Epi-pen or Epi-pen Jr.
3. BLS may administer Epi-pen (if available).
   - ➢ 15 – 30 kg — Epi-pen Jr.
   - ➢ Greater than 30 kg — Epi-pen

ADVANCED EMT

4. **Albuterol**
   - ➢ less than 10 kg — 2.5 mg aerosol
   - ➢ greater than 10 kg — 5 mg aerosol
   - ➢ may repeat as needed reassessing every 5 minutes

OR

Xopenex (levalbuterol)

- ➢ 0.625 mg aerosol
- ➢ May repeat as needed

Start here if anaphylactic reaction, then give above medications second.

6. **Epinephrine**
   - ➢ **1:1000** 0.01mg/kg (0.01 ml/kg) IM maximum 0.3 mg (0.3 ml)
   - ➢ Repeat every 5 - 10 min as needed X 2

7. **Normal Saline**
   - ➢ 20 ml / kg for hypotension

PARAMEDIC

8. **Benadryl(diphenhydramine)**
   - ➢ 1 mg/kg IV, IO, IM
   - ➢ Maximum 50 mg
9. **Epinephrine IV**
   - ➢ For severe, life-threatening reactions (shock, severe bronchospasm or stridor), unresponsive to IM Epinephrine
   - ➢ Mix Epinephrine 1 mg in NS 1000 ml
   - ➢ Piggyback into wide open IV / IO
   - ➢ Start at 0.1 ml/kg/min (0.1 mcg/kg/min) and titrate to effect by 0.1 ml/kg/min every 1 minute to age appropriate systolic blood pressure

PEDIATRIC BRONCHOSPASM / ASTHMA

BASIC EMT

1. May help patient administer own inhaler.

ADVANCED EMT

2. **Albuterol** aerosol
   - ➢ Less than 10 kg use 2.5 mg
   - ➢ Greater than 10 kg use 5 mg

OR

Xopenex (levalbuterol)
- ➢ 0.625 mg aerosol
- ➢ May repeat Albuterol or Xopenex as necessary

3. **Atrovent (ipratropium bromide)** 0.5 mg aerosol.
4. Consider CPAP

CPAP

Shortness of breath AND:
- ➢ Evidence of respiratory distress (accessory muscles, tachypnea)
- ➢ Open airway
- ➢ Over 12 years old and able to fit the CPAP mask

CONTRAINDICATIONS
- ➢ Pneumothorax
- ➢ Respiratory arrest
- ➢ Uncontrolled vomiting

PROCEDURE

Start CPAP at ambient pressure
- ➢ 0 cm/H_2O

Slowly titrate the pressure to patient comfort and clinical improvement:

7. **CHF**: maximum **10 cm/H_2O**
8. All other shortness of breath / dyspnea: (**COPD, Asthma, etc**.): **5 cm/H_2O**

Monitor for tachyarrhythmias

PEDIATRIC BRONCHOSPASM/ASTHMA cont.

PARAMEDIC

5. **Epinephrine**
   - ➢ Use only in immediately life-threatening condition.
   - ➢ 0.01 mg/kg (0.01 ml/kg) of **1:1000** IM, maximum of 0.3 mg.

PEDIATRIC BURNS

BASIC EMT

1. Remove patient from source and stop the burning process.
   - ➢ Remove clothes and jewelry.
   - ➢ Brush any dry powders from patient.
   - ➢ Irrigate chemical burns with copious amounts of normal saline or water.
   - ➢ Continuously irrigate the eyes if involved with saline.
2. Apply dry, clean dressings. May consider moist dressings for comfort if less than 10% Body Surface Area (BSA) involved.
3. Identify source, duration of exposure, and presence of enclosed space.
4. Look for other trauma (explosions).
5. Determine % of BSA involved.

ADVANCED EMT

6. IV access with two (2) large bore catheters using Normal Saline.
   - ➢ For significant burns give 20 ml/kg
7. If hypotensive give fluid additional boluses of 20 ml/kg

PARAMEDIC

8. Consider pain management.

Pain Management:

INDICATIONS

- ➢ Extremity injury (including hip and shoulder injury)
- ➢ Back or flank pain.
- ➢ Abdominal pain: give initial dose only.
- ➢ Burns

CONTACT MEDICAL CONTROL for other indications.

CONTRAINDICATIONS

CONTACT MEDICAL CONTROL prior to administration of pain medication if any of the following are observed:

- ➢ Age less than one year
- ➢ Altered Level of Consciousness, any etiology
- ➢ Respiratory compromise, hypoxemia
- ➢ Pregnancy

PEDIATRIC BURNS cont.

- ➢ Hypotension (see pediatric vitals table):

NORMAL PEDIATRIC VITALS

AGE	RESPIRATORY RATE	HEART RATE	BLOOD PRESSURE
Infant (1 to 12 mo)	30 to 60	100 to 160	greater than 60 mm Hg or strong central pulse
Toddler (1 to 3 yr)	24 to 40	90 to 150	greater than 70 mm Hg or strong central pulse
Preschooler (4 to 5 yr)	22 to 34	80 to 140	greater than 75 mm Hg
School-age (6 to 12 yr)	18 to 30	70 to 120	greater than 80 mm Hg
Adolescent (13 to 18 yr)	12 to 16	60 to 100	greater than 90 mm Hg

Fentanyl – *Age 2 and Greater*

- ➢ Give 1 mcg/kg IV/IO/IM/IN slowly every 5 minutes (not to exceed 100 mcg per unit dose) to a total dose of 200 mcg

9. For severe discomfort not relieved by pain management medications, consider sedation.

Sedation:

INDICATIONS

- ➢ Chemical restraint of the combative patient to ensure safety of the patient and crew when physical restraint is ineffective.
- ➢ Cardioversion.
- ➢ Transcutaneous pacing.
- ➢ Facilitation of endotracheal intubation both before and after procedure.
- ➢ Pleural decompression.
- ➢ Burns

PEDIATRIC BURNS cont.

Midazolam (Versed) 0.1 mg/kg to a maximum dose of 5 mg IV, IO, IM, or IN.

- ➢ May repeat initial dose once.
- ➢ Contraindicated with hypotension.

OR

Ketamine (Ketalar) 1.0 mg/kg IV

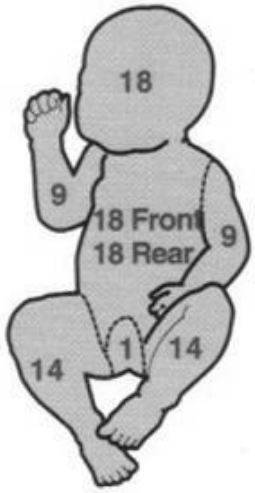
- ➢ May repeat initial dose once
- ➢ Contact Medical Control for further orders

10. Consider early aggressive airway management.
11. Monitor for hypothermia.
12. CONTACT MEDICAL CONTROL.

The patient should be transported to the closest appropriate hospital. Please see local procedures and protocols.

PEDIATRIC BURN DIAGRAM

Rule of Nines



Morphine Sulfate (*to replace above opiates in cases of drug shortages)*

- ➢ *Give 0.1 mg/kg IV slowly maximum 4 mg every 5 minutes*
- ➢ *up to a total of three doses*

Lorazepam (Ativan) *to replace above benzodiazepine in cases of drug shortages*

- ➢ *0.1 mg/kg to a maximum dose of 2 mg IV / IM, may repeat initial dose once.*

PEDIATRIC BRADYCARDIA WITH PULSES 'SYMPTOMATIC'

BASIC EMT / ADVANCED EMT

1. Chest compressions if:
   - ➢ Infant heart rate is less than 60 bpm.

PARAMEDIC

2. **Epinephrine**
   - ➢ **1:10,000** 0.01mg/kg (0.1 ml/kg) IV / IO or **1:1000** 0.1 mg/kg (0.1 ml/kg) ET tube.
   - ➢ Repeat every 4 minutes until blood pressure is adequate for age.
3. **Atropine**
   - ➢ 0.02 mg/kg,
     a. maximum 0.5 mg
   - ➢ May repeat once if increased vagal tone or primary AV block.
4. Consider cardiac pacing.

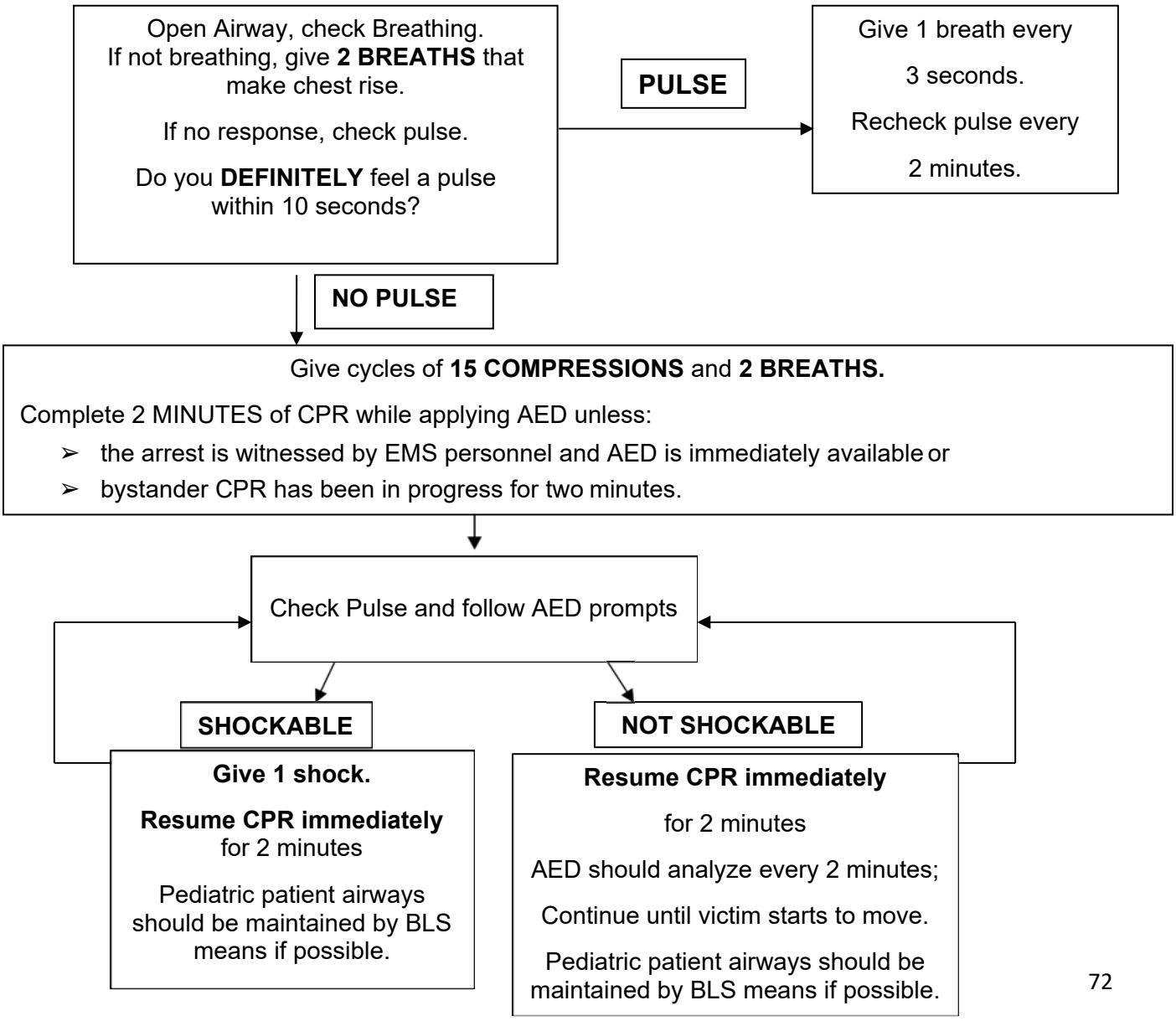
NORMAL PEDIATRIC VITALS

AGE	RESPIRATORY RATE	HEART RATE	BLOOD PRESSURE
Infant (1 to 12 mo)	30 to 60	100 to 160	greater than 60 mm Hg or strong central pulse
Toddler (1 to 3 yr)	24 to 40	90 to 150	greater than 70 mm Hg or strong central pulse
Preschooler (4 to 5 yr)	22 to 34	80 to 140	greater than 75 mm Hg
School-age (6 to 12 yr)	18 to 30	70 to 120	greater than 80 mm Hg
Adolescent (13 to 18 yr)	12 to 16	60 to 100	greater than 90 mm Hg

PEDIATRIC CARDIAC ARREST - BLS

BASIC EMT / ADVANCED EMT / PARAMEDIC

1. Step through adult algorithm with the following changes:
   - ➢ Chest compressions at a rate 100/minute.
   - ➢ One cycle of CPR = 15 compressions and 2 breaths.
   - ➢ AED:
     - Utilize appropriate defib pad size. If a pediatric pad system is not available, you may use adult pads.
     - ***If child less than 8 yrs of age, utilize a standard AED***
     - ***If child is 8 years of age or greater, you may utilize the LifePak15 in AED Mode***



PEDIATRIC CARDIAC ARREST - BLS cont.

***** Pediatric Destination: Transport pediatric cardiac arrests to the closest appropriate pediatric specialty center (Lutheran Hospital or Parkview Regional Medical Center). If airway cannot be adequately managed, transport to the closest emergency department.***

PEDIATRIC CARDIAC ARREST - ALS

ASYSTOLE / PEA

ADVANCED EMT / PARAMEDIC

1. **Epinephrine**
   - ➢ **1:10,000** 0.01 mg/kg IV / IO (0.1 ml/kg) or **1:1,000** 0.1mg/kg (0.1 ml/kg) ET tube.
   - ➢ Repeat every 4 minutes.

VENTRICULAR FIBRILLATION OR VENTRICULAR TACHYCARDIA WITHOUT PULSES

ADVANCED EMT

2. **Epinephrine**
   - ➢ **1:10,000** 0.01 mg/kg IV / IO (0.1 ml/kg) or **1:1,000** 0.1mg/kg (0.1 ml/kg) ET tube.
   - ➢ Repeat every 4 minutes.

PARAMEDIC

3. Defibrillate patient at
   - ➢ 2 THEN 10 Joules / kg
4. **Cordarone (Amiodarone)**
   - ➢ 5mg/kg IV / IO over 1-2 minutes.
   - ➢ Repeat up to 15 mg/kg every 5 minutes. Maximum dose 300 mg.
5. Consider **Magnesium Sulfate**
   - ➢ 25 mg/kg IV / IO over 5 minutes for Torsades de Pointes.
   - ➢ Repeat initial dose once.
   - ➢ Maximum total dose 2gm.

The preferred route of drug administration IV / IO.

- ➢ Endotracheal drugs may be given only if IV and IO are unobtainable.
- ➢ Flush with a minimum of 5 ml of saline.

***** Pediatric Destination: Transport pediatric cardiac arrests to the closest appropriate pediatric specialty center (Lutheran Hospital or Parkview Regional Medical Center). If airway cannot be adequately managed, transport to the closest emergency department.***

PEDIATRIC TACHYCARDIA WITH PULSES 'SYMPTOMATIC'

PARAMEDIC

WIDE QRS greater than 0.09 sec

Regular Rhythm, Possible Ventricular Tachycardia and Unstable

1. Synchronized cardioversion:
   a. 1 Joules / kg
   b. Increase to 2 Joules / kg
   c. Consider sedation:

➢ **Midazolam (Versed)** 0.1 mg/kg to a maximum dose of 5 mg IV, IO, IM, or IN.
   ➢ May repeat initial dose once.
   ➢ Contraindicated with hypotension.

OR

Ketamine (Ketalar) 1.0 mg/kg IV

   ➢ May repeat initial dose once
   ➢ Contact Medical Control for further orders

Regular Rhythm and QRS monomorphic consider

1. **Adenosine** 0.1mg/kg rapid bolus (max 6mg) Second dose 0.2mg/kg rapid bolus (max 12mg).

2. **Cordarone (Amiodarone)**

   5 mg / kg IV / IO over 10 minutes,

   max 150 mg.

3. Contact Medical Control.

NARROW QRS less than = 0.09 sec

Supraventricular Tachycardia

1. Infants greater than = 200 bpm
2. Children greater than = 180 bpm
3. Attempt vagal maneuvers
4. **Adenosine** 0.1 mg/kg, maximum 6 mg rapid IV
   ➢ Must be rapidly given and flushed with 20 ml of saline.
   ➢ May repeat double the original dose one time as needed.
5. Contact Medical Control to consider Synchronized Cardioversion.

For all tachycardias, search for and treat possible contributing factors:

- ➢ Hypovolemia
- ➢ Hypoxia
- ➢ Hydrogen ion (acidosis)
- ➢ Hypo-/hyperkalemia
- ➢ Hypoglycemia
- ➢ Hypothermia
- ➢ Toxins
- ➢ Tamponade, cardiac
- ➢ Tension pneumothorax
- ➢ Thrombosis (coronary or pulmonary)
- ➢ Trauma

PEDIATRIC DIABETIC (HYPOGLYCEMIA)

BASIC EMT

1. Blood Glucose level should be determined prior to treatment.
2. If level is less than 60 mg/dl AND patient has an intact gag reflex and is responsive.
   - ➢ Oral Glucose 30 gm PO. Repeat to desired effect.

ADVANCED EMT / PARAMEDIC

3. If level is less than 60 mg/dl with a decreased level of consciousness.

➢ **D10** 5 ml/kg up to 250ml

4. **Glucagon** IM if no IV access available
   - ➢ Less than 20 kg 0.5 mg IM
   - ➢ Greater than 20 kg 1.0 mg IM
   - ➢ Repeat after fifteen (15) minutes if indicated.

NEONATAL RESUCITATION

Recognition:

Newly born infant meeting any of the following criteria:

- Less than term gestation (37 weeks gestation)
- Not crying/breathing
- Heart Rate < 100 bpm
- Poor muscle tone
- Labored breathing/gasping or persistent central cyanosis (5-10 min)

BASIC EMT

➢ **Routine patient care - Perform the following within the first 60 seconds of delivery:**
- Warm the infant and maintain normothermia.
- Position the infant to establish and maintain a patent airway.
- Clear airway secretions by suctioning with a bulb syringe or suction catheter only if secretions are copious and/or obstructing the airway or positive pressure ventilation is required.
- Stimulate the infant.
- Assess breathing and heart rate (HR) [HR should be assessed by auscultation of the apical pulse or by palpating the base of the umbilical cord].

➢ **If the infant's HR is >100 bpm, *but* breathing is labored *or* there is persistent central cyanosis:**
- Reposition and clear the airway as indicated.
- Utilize pulse oximetry to assess oxygenation (SpO2 should be measured utilizing the right hand [pre-ductal]).
- Provide supplemental oxygen if needed to achieve targeted preductal oxygen saturations as outlined in Table 1 below.
- Monitor and reassess.
- If the infant becomes apneic, begins gasping or the HR decreases to < 100 bpm, manage as below.

➢ **If the infant is/becomes apneic, or gasping or the HR < 100 bpm:**
- Provide positive pressure ventilation (PPV) at a rate of 40-60 bpm.
- In term infants (>37 weeks), initial PPV may be provided with room air.
- In infants of < 35 weeks gestation, initial PPV should be provided with low concentrations of Oxygen (1-4 lpm). Titrate supplemental oxygen to achieve targeted preductal oxygen saturations in Table 1 below.

NEONATAL RESUCITATION cont.

- Continue to monitor HR and provide PPV until the HR > 100
- Supplemental Oxygen should be titrated down as soon as possible.

➢ **If the HR is < 60 bpm:**
- Provide PPV with supplemental Oxygen at a rate of 40-60 bpm for a period of 30 seconds. If the HR increases to > 60 bpm, but is < 100 bpm, monitor HR and continue to provide PPV until the HR is > 100 bpm.
- If the HR remains < 60 bpm after 30 seconds of PPV, provide external chest compressions following current AHA Guidelines for CPR at a 3:1 ratio of compressions to ventilations (90 compressions and 30 breaths to achieve approximately 120 events/minute*). Infants requiring continued chest compressions should receive PPV with high concentration (100%) oxygen.*
- Reassess the HR every 60 seconds. If the heart rate fails to increase, check for adequate chest rise and take corrective actions as indicated.

➢ All critically ill neonates should have their blood glucose determined.

➢ Calculate and document a 1 and 5 minute APGAR Scores (calculation of APGAR scores should not delay resuscitation) see Table 2 below.

➢ Transport patient to the nearest appropriate Hospital Emergency Facility.

ADVANCED EMT

➢ Consider IV access if patient not improving to prepare for medication administration.

➢ For patients requiring continued chest compressions
- Administer Epi (1:10,000) 0.01 mg/kg IV, repeat every 4 min.

➢ If hypovolemia is suspected (pale skin, poor perfusion, weak pulse, HR unresponsive to resuscitative measures above)
- Consider Normal Saline at 10 ml/kg over 5-10 minutes (may repeat x1)

➢ If hypoglycemia is present (blood glucose <50 mg/dl), administer D10% dose at 5 ml/kg at a rate of 1ml/min and recheck the blood glucose level.

NEONATAL RESUCITATION cont.

PARAMEDIC

- Provide advanced airway management only if patient's airway cannot be managed by BLS means.

Targeted Preductal SpO_2 After Birth	
1 min	60%-65%
2 min	65%-70%
3 min	70%-75%
4 min	75%-80%
5 min	80%-85%
10 min	85%-95%

APGAR Scoring System

Sign	0	1	2
Appearance (Skin Color)	Blue, pale	Body pink, blue extremities	Completely pink
Pulse Rate (Heart Rate)	Absent	Less than 100/minute	Greater than 100/minute
Grimace (Irritability)	No response	Grimace	Cough, sneeze, cry
Activity (Muscle Tone)	Limp	Some flexion	Active motion
Respirations (Breathing Effort)	Absent	Slow, irregular	Good, crying

NEONATAL PEARLS:

- Patients not meeting the above criteria should remain with the mother and be provided routine post-partum newborn infant care as outlined in the Obstetrics Protocol.
- Pulse oximetry is inaccurate in determining heart rate during the first few minutes of life and should not be used for this purpose.
- In uncompromised neonates, blood oxygen levels may not reach extra uterine levels until approximately 10 minutes after birth.
- Preductal oxygen saturations are more representative of brain oxygenation.

NEONATAL RESUCITATION cont.

- Peripheral cyanosis affects the hands and feet and is caused by peripheral vasoconstriction. It is a common benign condition in the newborn.
- Central cyanosis affects the mucous membranes, lips, skin, and nailbeds, should be considered pathological until proven otherwise.
- Initiating resuscitation with high oxygen concentrations (≥65%) is not recommended and to reduce the risks associated with hyperoxia, supplemental oxygen concentrations should be weaned as soon as possible.
- Infants born through meconium-stained amniotic fluid who are vigorous with good respiratory effort and muscle tone may stay with the mother to receive the initial steps of newborn care.
- Routine intubation for tracheal suctioning in the presence of meconium staining is not recommended.
- When providing PPV, a manometer should be used to monitor the positive inspiratory pressure (PIP) delivered. An initial inflation pressure of 20 cmH20 may be effective, but ≥30-40 cmH20 may be required in some term infants without spontaneous breathing.
- Risk for hypoglycemia include prematurity, small for gestational age, infant of a diabetic mother, stress or sickness.
- A general rule of thumb for normal neonatal blood pressure is that the MAP should equal the gestational age in weeks.
- Rapid administration of large volumes of resuscitation fluids neonates has been associated with intraventricular hemorrhage. Resuscitation fluids should be administered over 5-10 minutes.
- A Micro-Preemie neonate is one weighing under 1 lb. or < 26 weeks gestation. These neonates should not be dried and stimulated. Initial care should focus on temperature control and ventilatory support along with gentle handling.

PEDIATRIC OVERDOSE

BASIC EMT

1. Carbon Monoxide
   - ➢ 100% oxygen

ADVANCED EMT / PARAMEDIC

2. Opiate Overdose
   - ➢ If significant respiratory depression
     a. give **Narcan (naloxone)** 0.1 mg/kg IV or IM or IN (maximum dose 2 mg)
   - ➢ Repeat to a maximum of 2 mg until adequate respiratory effort.

CONTACT MEDICAL CONTROL

PEDIATRIC PAIN MANAGEMENT

BASIC EMT / ADVANCED EMT

1. Assess patient's pain on a subjective pain scale (faces or 1 - 10).
   - ➢ The patient should perceive a decrease in their pain with the following measures.
2. Appropriate splinting, ice, position of comfort.

PARAMEDIC

INDICATIONS

- ➢ Extremity injury (including hip and shoulder injury)
- ➢ Back or flank pain.
- ➢ Abdominal pain: give initial dose only.
- ➢ Burns

CONTACT MEDICAL CONTROL for other indications.

CONTRAINDICATIONS

CONTACT MEDICAL CONTROL prior to administration of pain medication if any of the following are observed:

- ➢ Age less than two years
- ➢ Altered Level of Consciousness, any etiology
- ➢ Hypotension see pediatric vital table, see page 57.
- ➢ Respiratory compromise, hypoxemia
- ➢ Pregnancy

Fentanyl – Age 2 and Greater

- ➢ Give 1 mcg/kg IV/IO/IM/IN slowly every 5 minutes (not to exceed 100 mcg per unit dose) to a total dose of 200 mcg

Morphine Sulfate (*to replace above opiates in cases of drug shortages)*

- ➢ *Give 0.1 mg/kg IV slowly maximum 4 mg every 5 minutes*
- ➢ *up to a total of three doses*

PEDIATRIC SEDATION

PARAMEDIC

INDICATIONS

1. Chemical restraint of the combative patient to ensure safety of the patient and crew when physical restraint is ineffective.
2. Cardioversion.
3. Transcutaneous pacing.
4. Facilitation of endotracheal intubation both before and after procedure.
5. Pleural decompression.
6. Burns

Midazolam (Versed) 0.1 mg/kg to a maximum dose of 5 mg IV, IO, IM, or IN.

- ➢ May repeat initial dose once.
- ➢ Contraindicated with hypotension.

OR

Ketamine (Ketalar) 1.0 mg/kg

- ➢ May repeat initial dose once
- ➢ Contact Medical Control for further orders

Lorazepam (Ativan) *to replace above benzodiazepine in cases of drug shortages*

- ➢ *0.1 mg/kg to a maximum dose of 2 mg IV / IM, may repeat initial dose once.*

PEDIATRIC SEIZURE

BASIC EMT / ADVANCED EMT

1. Bedside blood glucose if available.

PARAMEDIC

IF ACTIVELY SEIZING:

2. **Midazolam (Versed)** 0.2 mg/kg IM / IN / IV / IO up to 5 mg
   - ➢ IM dosing (or IN if available) is preferred initially unless an IV / IO is already established.
   - ➢ May repeat initial dose once.

Lorazepam (Ativan) *to replace above benzodiazepine in cases of drug shortages*

- ➢ *0.1 mg/kg to a maximum dose of 2 mg IV / IM, may repeat initial dose once.*

PEDIATRIC SHOCK

INDICATIONS

Signs and symptoms of hypovolemia:

- ➢ Cool clammy skin
- ➢ Decreased level of consciousness
- ➢ Capillary refill greater than 2 seconds
- ➢ Diminished peripheral pulses.

ADVANCED EMT

1. If anaphylaxis:
   - **Epinephrine**
     - ➢ **1:1000** 0.01mg/kg (0.01 ml/kg) IM maximum 0.3 mg (0.3 ml)
     - ➢ Repeat every 5 - 10 min as needed X 2

2. Fluid bolus Normal Saline 20 ml/kg
3. Repeat fluid bolus once as indicated if:
   - ➢ No evidence of pulmonary edema

PARAMEDIC

4. If patient does not respond to fluid boluses, consider an Epinephrine drip.

- ➢ Mix Epinephrine 1 mg in NS 1000 ml
- ➢ Piggyback into wide open IV/IO
- ➢ Start at 0.1 ml/kg/min (0.1 mcg/kg/min) and titrate to effect by 0.1 ml/kg/min every 1 minute to age appropriate systolic blood pressure, not to exceed 1.0 mcg/min.

PEDIATRIC SHOCK cont.

NORMAL PEDIATRIC VITALS

AGE	RESPIRATORY RATE	HEART RATE	BLOOD PRESSURE
Infant (1 to 12 mo)	30 to 60	100 to 160	greater than 60 mm Hg or strong central pulse
Toddler (1 to 3 yr)	24 to 40	90 to 150	greater than 70 mm Hg or strong central pulse
Preschooler (4 to 5 yr)	22 to 34	80 to 140	greater than 75 mm Hg
School-age (6 to 12 yr)	18 to 30	70 to 120	greater than 80 mm Hg
Adolescent (13 to 18 yr)	12 to 16	60 to 100	greater than 90 mm Hg

PEDIATRIC VOMITING/NAUSEA

ADVANCED EMT / PARAMEDIC

1. Obtain IV access with NS 20 ml/kg bolus unless contraindicated.
2. **Zofran (ondansetron)** 0.1 mg/kg IV to a maximum single dose 4 mg OR

   Oral Disintegrating Tablet (ODT).

   ➢ May repeat once in 10 minutes as needed.

PROCEDURES

AIRWAY MANAGEMENT AND VENTILATION SUPPORT

Clinical Statement: Good basic life support (BLS) skills in airway management are paramount, and should always be performed first, before advanced life support (ALS) techniques are employed. Often no ALS procedures are needed if the provider's BLS techniques are well practiced and executed accurately in the patient's time of need.

Only Orotracheal Intubations are allowed by Standing Order in the TRAA system. Nasotracheal Intubation may be attempted ONLY with Medical Control permission.

Indications for Orotracheal Intubation:

- Respiratory or cardiac arrest
- Respiratory distress secondary to trauma or disease
- Absent gag reflex due to unconsciousness or altered mental status
- Impending airway occlusion secondary to airway burns, anaphylaxis or foreign body obstruction

Contraindications for Orotracheal Intubation:

- Presence of permanent tracheostomy
- Situations where attempts to intubate could induce laryngospasm
- Presence of gag reflex

Complications of Intubation:

- Hypoxia due to prolonged intubation attempts
- Esophageal intubation
- Mainstem bronchus intubation
- Laryngospasm
- Aspiration
- Vagal stimulation causing arrhythmias
- Injury to upper airway structures due to aggressive intubation techniques
- Trauma to vocal cords, broken teeth

Upon recognition of airway or respiratory insufficiency that cannot be managed adequately by basic means the airway shall be secured by:

- **Oral endotracheal intubation (unconscious, no gag reflex)**
- **A Non-visualized airway (I-GEL) (unconscious, no gag reflex)**
- **Cricothyrotomy (if unable to control by any other means)**

PROCEDURE FOR ETI PLACEMENT

BASIC EMT / ADVANCED EMT

- Take infection control precautions
- Open airway manually, head tilt chin-lift technique or jaw thrust for trauma victims
- Utilize airway adjunct, OPA
- Ventilate with BVM:
  - 8 to 10 per minute for CP
  - 10-12 breaths for perfusing patient

    Enough tidal volume to achieve normal chest rise

- Pre-oxygenate patient for at least 30 seconds prior to intubation attempt

PARAMEDIC

- Select appropriate sized ETT with stylette or Bougie device
- Suction must be available for use as needed. Consider utilizing the S.A.L.A.D. technique.
- If ETT is not passed after total of two attempts at visualization and/or ETT passage, a non-visualized airway should be placed
- Sedation as needed following ETI.

Adult Patients:

Midazolam (Versed) Up to 5 mg IV, IO, IN, or IM may repeat to a total dose of 10 mg. Contraindicated with hypotension.

OR

Ketamine (Ketalar) 300 mg IM, however, if IV is established, administer 1 mg/kg IV / IO. May repeat IV dose once.

Pediatric Patients:

Midazolam (Versed) 0.1 mg/kg to a maximum dose of 5 mg IV, IO, IM, or IN.

- May repeat initial dose once.
- Contraindicated with hypotension.

OR

Ketamine (Ketalar) 1.0 mg/kg

- May repeat initial dose once
- Contact Medical Control for further orders

- Pain Control:

Adult Patients

Fentanyl (Sublimaze) *****First choice for hemodynamic instability, extremes of age***

- 1 mcg/kg IV/IO/IM/IN slowly every 5 minutes (not to exceed 100 mcg per unit dose) a maximum total dose of 200 mcg

Hydromorphone (Dilaudid) **Appropriate when longer duration of effect desired

Adult Patients

- 0.5 – 1.0 mg IV/IO/IM every 10 min to max of 2mg

Geriatric Patients (greater than 65 years)

- 0.5mg IV/IM every 10 min to max of 1 mg

Both **Dilaudid** and **Fentanyl** can be administered slow IV or IM, however, **the patient will receive only one of the two drugs by standing order.**

Pediatric Patients:

Fentanyl – Age 2 and Greater

- Give 1 mcg/kg IV/IO/IM/IN slowly every 5 minutes, (not to exceed 100 mcg per unit dose) to a total dose of 200 mcg

- K-Y Gel for tube lubricant as necessary
- Secure the tube in place with commercial securing device and consider a cervical collar for tube/head immobilization even without trauma.
- PEEP valves may be used at 5cm H_2O, if available but may be contraindicated in hypotension
- Tidal volume 5-8 ml/kg of ideal body weight and rate 8-12 breaths/minute with spontaneous circulation
- Tidal volume 500-600 ml and rate 8-10 breaths/minute with cardiac arrest
- During CPR, with advanced airway in place, give continuous chest compressions without pauses for breaths

Intubation Placement Verification

- Visualization of tube passing through the vocal cords, noting cords above ET balloon
- 5-point auscultation (direct auscultation of the chest (anterior, below clavicles and axillary)) for positive breath sounds/abdomen *for the absence* of breath sounds.
- Fogging of the ETT with positive breath sounds.
- Equal rise and fall of the chest.
- SpO_2 should be monitored before and after intubation.
- Continuous waveform $ETCO_2$ (Capnography) **within 1 minute** after ET placement. $ETCO_2$ should be closely monitored any time patient is moved.
- ETT placement should be reconfirmed any time the patient is moved.

BLOOD GLUCOSE FINGER STICKS

BASIC EMT / ADVANCED EMT / PARAMEDIC

Clinical Statement: If hypoglycemia is suspected, the patient presents with an altered mental status, or the cause of unresponsiveness is unknown, it is important to establish a baseline blood glucose level.

Procedure:

1. Prepare the blood glucose meter, including a test strip and a lancet.
2. Cleanse the skin with an alcohol preparation.
3. Allow the skin to dry before performing the finger stick.
4. Use the lancet to perform a finger stick. Wipe away the first drop of blood with 4x4.
5. Squeeze the finger, if necessary, to get a second drop of blood.
6. Apply the blood to the test strip. You may do this by holding the strip to the finger to draw the blood into the strip.
7. Read the blood glucose level displayed on the glucometer.
8. Assess the puncture site and apply direct pressure or a bandage to the site if bleeding continues.

CARDIOVERSION

PARAMEDIC

Indications: Synchronized cardioversion is the recommended treatment for a patient presenting with a hemodynamically unstable condition secondary to a tachycardic heart rhythm (except sinus tachycardia). The patient usually presents with a heart rate over **150** beats per minute with serious signs and symptoms indicating a decrease in cardiac output caused by the tachycardia. Signs and Symptoms of decreased cardiac output include: hypotension, dizziness, chest pain, shortness of breath, pulmonary edema, pale, cold or diaphoretic skin, syncope, and altered level of consciousness.

Procedure for Cardioversion:

1. Take Infection Control Precautions
2. Apply the monitor leads to the patient. The patient must be continuously monitored.
3. Confirm the dysrhythmia and assess for the presence of a carotid pulse (only patients with pulses are candidates for Cardioversion).
4. If Stable, complete 12 lead EKG
5. Apply Oxygen, have advanced airway equipment set up and ready for use
6. Establish Saline Lock or IV.
7. Explain procedure to patient, sedate if needed:

Sedation:

Adult Patients:

Midazolam (Versed) Up to 5 mg IV, IO, IN, or IM may repeat to a total dose of 10 mg. Contraindicated with hypotension.

OR

Ketamine (Ketalar) 300 mg IM, however, if IV is established, administer 1 mg/kg IV / IO. May repeat IV dose once.

Pediatric Patients:

Midazolam (Versed) 0.1 mg/kg to a maximum dose of 5 mg IV, IO, IM, or IN.

- ➢ May repeat initial dose once.
- ➢ Contraindicated with hypotension.

OR

Ketamine (Ketalar) 1.0 mg/kg

- ➢ May repeat initial dose once
- ➢ Contact Medical Control for further orders

8. Turn on defibrillation/cardioversion function on the cardiac monitor
9. Apply defibrillation/cardioversion pads on bare chest and confirm proper placement: Right Sternal border at 2nd ICS, and Left anterior Axillary line at 5th ICS

CARDIOVERSION cont.

10. Press the "sync" button on monitor and confirm the "R" wave is being sensed by the computer by observing the R wave markers on the monitor screen.
11. Select the appropriate energy level and charge the unit
    NOTE: ***Reconfirm that the rhythm requires cardioversion and machine is in "sync" mode***
12. Say “Everyone Stand Clear” Confirm that everyone is clear.
13. ***Press and Hold*** Shock button until energy is delivered.
14. Identify the post cardioversion rhythm and check for presence of pulses
15. Repeat as indicated by SO if rhythm persists
16. Document all cardioversion attempts, including information in regard to energy levels and any rhythm changes. Attach any paper tracing with patient care record (appropriately labeled with patient’s name, date and time.) include any clinical changes in the patient in your documentation.

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

ADVANCED EMT / PARAMEDIC

1. Shortness of breath AND:
   - ➢ Evidence of respiratory distress (accessory muscles, tachypnea)
   - ➢ Open airway
   - ➢ Over 12 years old and able to fit the CPAP mask

CONTRAINDICATIONS

- ➢ Pneumothorax
- ➢ Respiratory arrest
- ➢ Uncontrolled vomiting

PROCEDURE

1. Start CPAP at ambient pressure
   - ➢ 0 cm/H_2O
2. Slowly titrate the pressure to patient comfort and clinical improvement:
   9. **CHF**: maximum **10 cm/H_2O**
   10. All other shortness of breath / dyspnea: (**COPD, Asthma, etc**.): **5 cm/H_2O**
3. If persistently hypotensive, may need to consider discontinuing CPAP

CRICOTHYROTOMY

PARAMEDIC

Clinical Statement: A cricothyrotomy may be used in cases where the airway or associated structures are either damaged or obstructed in such a fashion as to make any ALS or BLS methods of airway maintenance impossible.

INDICATIONS:

- Airway Obstructions that cannot be removed by and BLS or ALS techniques
- Traumatic Arrest
- Severe facial fractures
- Unable to intubate due to facial trauma or anatomical abnormalities

COMPLICATIONS:

- Hemorrhage – **may be severe**
- Injury to thyroid or parathyroid glands
- Damage to larynx
- False passage of needle or tube into soft tissue
- Subcutaneous or mediastinal emphysema
- Damage to the esophagus

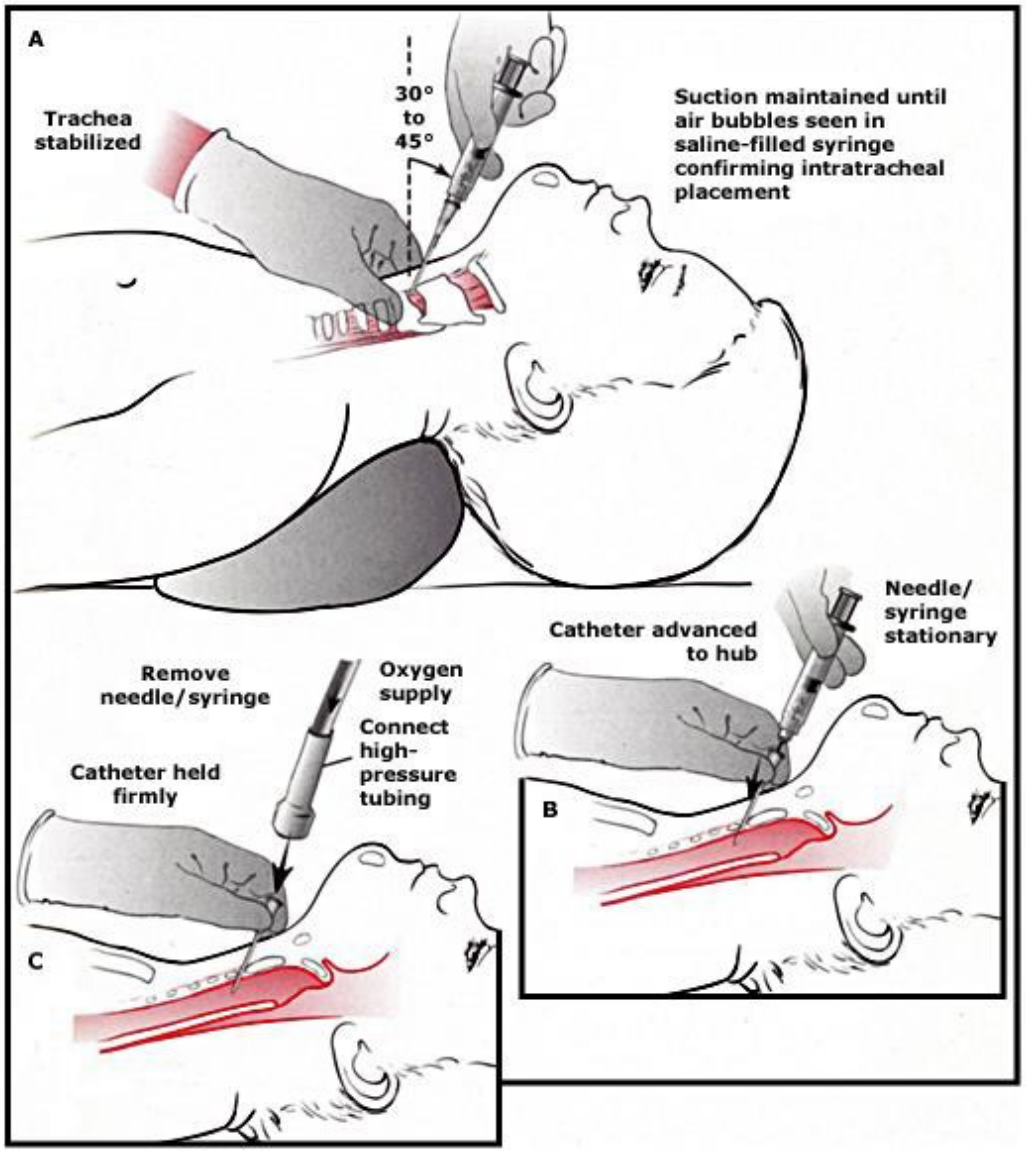
NEEDLE CRICOTHYROTOMY: < 5 years of age

Equipment Needed:

- Gloves and goggles
- Alcohol or Betadine wipes
- Tape
- Pediatric BVM
- ETCO2
- 14g needle
- 10 cc syringe with 3cc normal saline
- #3 ET tube with adapter

Procedure for Needle Cricothyrotomy
➢ Take infection control precautions
➢ Expose the neck, hyperextend if not trauma related.
➢ Identify the cricothyroid membrane
➢ Stabilize the larynx with thumb and third finger while palpating for the V – notch (cricothyroid membrane). Swab clean with betadine or alcohol wipes.
➢ Attach the 10cc syringe filled with 3cc of NS
➢ Puncture cricothyroid membrane at 30 – 45 degrees inferiorly (towards the feet) while aspirating for air bubbles.
➢ Once in trachea, attach # 3 ET adapter to the 14g

➢ Ventilate with BVM while looking for chest rise and fall, auscultating lung sounds, and confirming with ETCO2. ***Allow passive exhalation for a longer period of time than was allowed for ventilation***
➢ Secure with tape
➢ Observe insertion site to ensure no edema, bleeding or subcutaneous emphysema develop around airway



CRICOTHYROTOMY cont.

SURGICAL CRICOTHYROTOMY: >= 5 years of age

Equipment Needed:

- Gloves and goggles
- Alcohol or Betadine wipes
- Tape
- Adult BVM
- ETCO2
- Scalpel
- #6 ET tube with adapter
- Boujie
- McGill Forceps

Procedure for Surgical Cricothyrotomy

- Take infection control precautions
- Expose the neck, hyperextend if not trauma related
- Identify the cricothyroid membrane. ***See Figure 1.***
- Stabilize the larynx with thumb and third finger while palpating for the V – notch (cricothyroid membrane). Swab clean with betadine or alcohol wipes.
- With scalpel, make vertical incision over cricothyroid membrane to expose the membrane. Use direct pressure to control bleeding.
- Use thumb and forefinger to spread skin to expose membrane. Incise membrane.
- Using handle of scalpel or McGill forceps, enlarge opening in membrane to place Boujie introducer, then pass # 6 ET tube in trachea.
- Pass ET tube caudally (toward the feet) into opening approximately 1" to 1½" and inflate cuff.
- Using BVM with 100% O_2, ventilate while checking for chest rise and fall, auscultating the chest for breath sounds, and confirm with ETCO2.
- If breath sounds and + ETCO2 present, secure the ET tube to the neck and dress around the incision with an occlusive dressing.
- ET tube may be shortened from the top for easier management, cut off desired amount and reattach the tube adapter for BVM application.

CRICOTHYROTOMY cont.

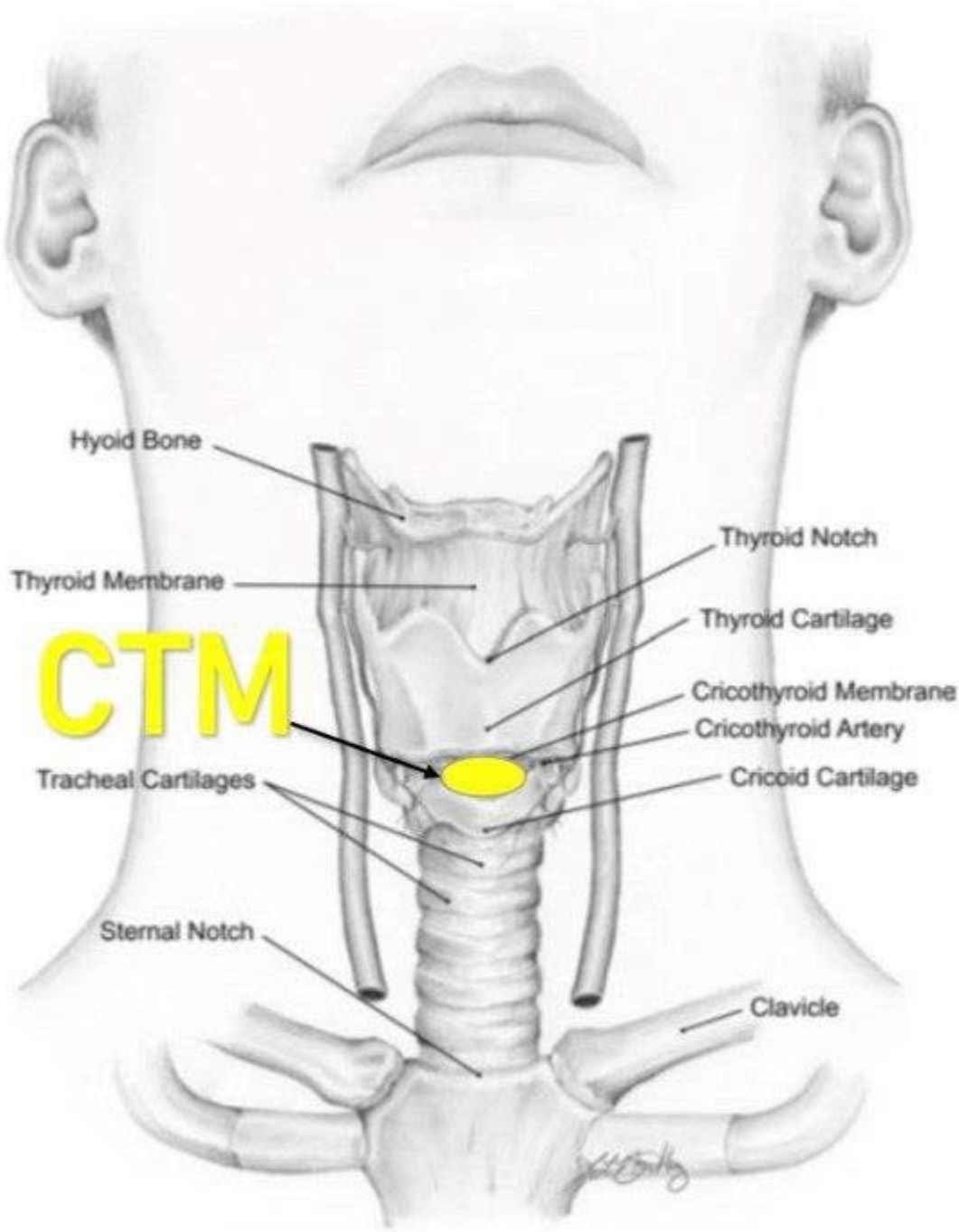


Figure 1. Anatomy of the larynx.

FIELD AMPUTATION

PARAMEDIC

Although rare, a field amputation may need to be considered in the following situations:

- A life-threatening injury PLUS the need for amputation/extrication OR a non life-threatening injury BUT the need for amputation/extrication.

Guidance from medical control from the closest trauma facility or facility that may have mobile resources should be initiated; however, if there would be a significant delay in resources or guidance, the procedure should be performed. The final decision to perform a field amputation should include consultation with on- scene resources, medical control, and the trauma service for the receiving hospital.

Contact with the receiving facility should be maintained with frequent updates until the patient arrives at the emergency room.

Prepare all necessary emergency equipment for the procedure and any equipment, such as intubation and other advanced airway equipment, in the event of complications.

1. **Ketamine IV** (adults/peds) 1mg/kg (May repeat in 5-10 mins)

   Ketamine IM adults 5mg/kg and peds 5mg/kg (May repeat in 12-25mins)

   OR

   Midazolam (Versed) Up to 5 mg IV, IO, IN, or IM may repeat to a total dose of 10 mg.

2. Apply a tourniquet above the site to assist in controlling bleeding during the amputation.

3. Prepare and drape the site using betadine and sterile burn dressings keeping in mind visualization of the incision site.

4. Using a scalpel, cut circumferentially around the limb until contact is made with the bone.

5. Using a Gigli saw, saw though the bone freeing the patient. If Gigli saw is unavailable or patient is inaccessible, use another appropriate device at scene.

6. Dress the wound and leave the tourniquet in place.

7. If the amputated part cannot be transported with the patient, instructions need to be given to the resources remaining on scene for disposition of the part.

I-GEL PLACEMENT

BASIC EMT / ADVANCED EMT / PARAMEDIC

ADVANTAGES:

- Primary backup airway for ALS
- Uses a “blind” insertion technique
- Allows for rapid airway control independent of patient’s position
- No cuff inflation, in turn, creating less trauma/compression to tissues/airway structures

INDICATIONS

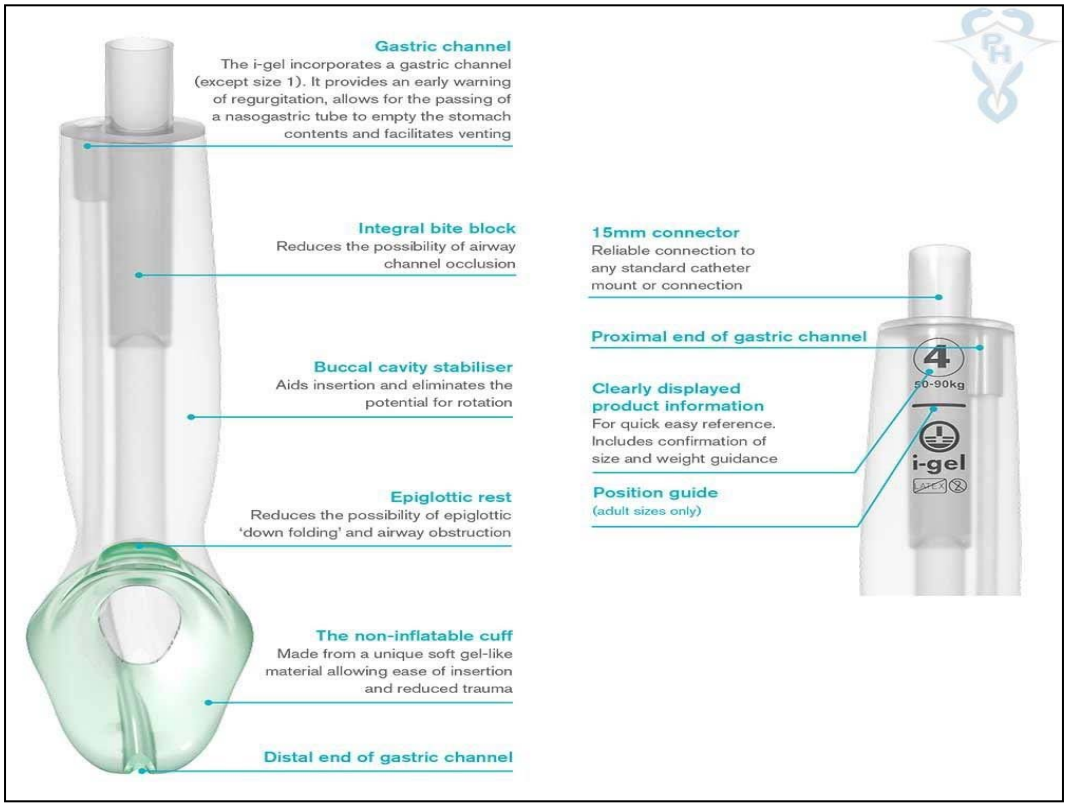
- Resuscitation of the unconscious patient without a gag reflex present
- Airway Control during respiratory arrest and/or cardiac arrest
- Failed ET intubation attempts

CONTRAINDICATIONS

- No more than 3 attempts at placement/per patient
- Patients that have ingested caustic substances
- Patients with esophageal disease
- Patients with a gag reflex

DISADVANTAGES:

- Does not protect the airways from effects of regurgitation or aspiration.



I-GEL PLACEMENT cont.

Procedure for Placement:

- ➢ Take infection control precautions
- ➢ Obtain appropriate size I-Gel utilizing the weight range guide for ideal body weight.

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+

- ➢ Ventilate with BVM:
  - o 8 to 10 per minute for CPR
  - o 10-12 breaths for perfusing patient

Enough tidal volume to achieve normal chest rise

- ➢ Pre-oxygenate patient for at least 30 seconds prior to placement attempt
- ➢ Assure that I-Gel is intact and has not been damaged.
- ➢ Utilizing the I-Gel cradle, place a small bolus of water-based lubricant onto the middle of the smooth surface of the cradle.
- ➢ Lubricate the I-Gel by 'painting' a thin layer of lubricant along the back, sides, and front of cuff. Assure that there is no bolus of lubricant remaining in the bowl of the I-Gel. Too much lubricant can adversely affect the I-Gel from staying in place.
- ➢ Lay I-Gel back into the cradle until ready for insertion.

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

Figure 9

Figure 10

Figure 11

Figure 12

I-GEL PLACEMENT cont.

- ***Optional***: Preload I-Gel with appropriate size French suction catheter into the gastric chamber.

I-Gel size	French Suction Size
1	N/A
1.5	10
2	12
2.5	12
3	12
4	12
5	14

- Place the head in a "sniffing" position or perform jaw-thrust maneuver.
- Suction airway.
- Remove lubricated I-Gel from cradle and grasp at the bite block area. The cuff of the I-Gel should be facing the chin.
- Open the airway and introduce the soft tip of the I-Gel into the mouth along the hard palate while gliding backwards/downwards with continuous gentle pressure until definitive resistance is met and the teeth are resting on the integral bite block. ***Sometimes a feel of initial resistance and then a 'give-way' is felt before definitive end point resistance is met. This is due to the I-Gel passing through the faucial pillars.***
- Attach ETCO2 and BVM with high flow oxygen and proceed to confirm placement. ***$ETCO_2$ must be monitored and recorded on all patients with I-Gels***
- Oxygen is free flowing.
    - Auscultate for gurgling sounds in stomach. If no sounds are heard over stomach, watch for chest rise, and auscultate the chest for breath sounds bilaterally. If chest rises, with each ventilation, and you hear breath sounds, continue ventilations. ***If unable to confirm or ventilate, remove device and ventilate the patient via simple airway adjunct and BVM with high flow O2.***
- Secure I-Gel utilizing commercial securing device. If no commercial securing device is available, secure I-Gel utilizing tape in a 'maxilla to maxilla' fashion.
- Apply cervical collar to patient.

I-GEL PLACEMENT cont.

IV / VASCULAR ACCESS

ADVANCED EMT

1. Vascular access should be obtained when the Advanced EMT or Paramedic feel it is necessary either for the immediate or potential future need of medications or fluid administration.
2. Saline lock is the preferred IV access unless fluid administration is anticipated.
3. **Establishing IV access should never delay transport in the critically ill patient and should be obtained on the scene only if immediately necessary.**
4. Each Advanced EMT/Paramedic should generally be limited to two IV attempts
   - ➢ unless the clinical situation warrants further repeated attempts.

INTRAOSSEOUS / IO ACCESS

1. In critical patients who are in immediate need of vascular access peripheral IV attempts should be limited to two or less before attempting IO access.

PARAMEDIC

INTRAOSSEOUS / IO ACCESS

6. Adults: **Lidocaine** 20 – 40 mg IO slowly as needed for pain prior to bolus

   Pediatrics: **Lidocaine** 0.5 mg/kg IO slowly as needed for pain prior to bolus

EXTERNAL JUGULAR

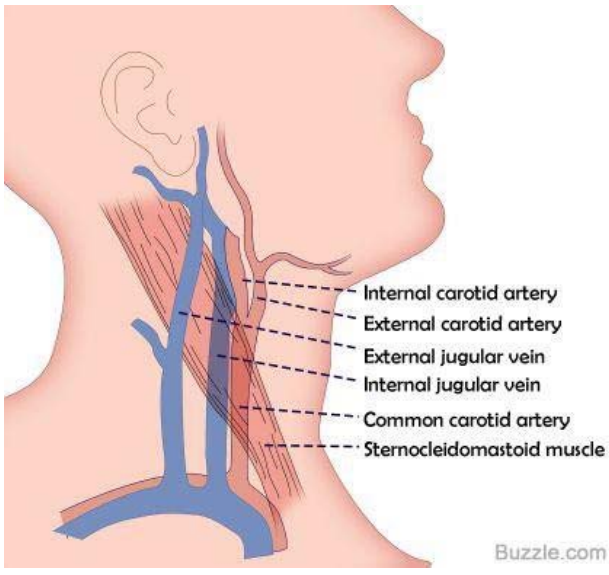
1. The External Jugular site may be used in critical patients with poor extremity venous access.

Some systems may routinely find benefit in obtaining blood samples for use by the receiving hospital. Please follow local protocol.

IV ACCESS, EXTERNAL JUGULAR

CLINICAL STATEMENT:

To provide intravascular access in medical and trauma situations where no other peripheral site is available. The external jugular vein runs downward and obliquely backward behind the angle of the jaw until it pierces the deep fascia of the neck just above the middle of the clavicle; the external jugular vein ends in the subclavian vein, where valves retard backflow of blood.



IV / VASCULAR ACCESS cont.

Equipment Needed for EJ access:

- Gloves
- Alcohol or Betadine wipes
- Angiocath
- IV set, drip set, NS
- Tegaderm and tape
- 10 cc syringe of NS

COMPLICATIONS:

- Air embolism
- Gross hematoma
- Arterial puncture
- Infection
- Vital structure damage
- Pneumo/hemothorax

PROCEDURE:

1. Position patient supine/trendelenburg if possible.
2. Turn head to opposite side of intended venipuncture site if no evidence or index of suspicion of C-spine injury.
3. Cleanse skin.
4. Align the catheter down in the direction of the vein, with the catheter point aimed toward the shoulder on the side of the venipuncture.
5. Make the puncture midway between the angle of the jaw and the midclavicular line; stabilize the vein by placing a finger lightly on top of it just above the clavicle.
6. Watch for flash. If no flash and in vein, remove the stylette and aspirate using a syringe.
7. Prevent air embolism; do not allow air to enter the catheter or tubing prior to connection. ***Trendelenburg positioning helps to reduce the risk of air emboli as does using a gloved finger to tamponade the vein.***
8. Secure the IV. Do not restrict by applying dressing too tightly.

EZ I/O (ADULT AND PEDIATRIC)

INDICATIONS:

- Altered LOC
- Respiratory Compromise
- Hemodynamic Instability
- Any patient that requires immediate vascular access for life-saving medications or fluids
- Adult patients weighing 40.0 kg or more
- Pediatric patients weighing 3.0-39.0 kg

CONTRAINDICATIONS:

- Fracture at the site (Tibia or Humerus)

- Previous orthopedic procedures near insertion site
- Infection at the insertion site
- Inability to locate landmarks or excessive tissue noted

Equipment Needed:

- EZ-IO Driver
- Tape or IO Tegaderm
- 10cc syringe
- IV set, drip set, NS
- EZ-IO needle (Adult or Pediatric)
- Alcohol or Betadine wipes
- 2% Lidocaine

Procedure for I/O Placement

- Select the insertion site
    - **Adult proximal tibia**
        - One fingerbreadth medial to the tibial tuberosity, on flat aspect
    - **Pediatric proximal tibia**
        - One finger width distal to tibial tuberosity or two finger widths below the patella
    - **Adult distal tibia**
        - Two finger widths proximal to the medial malleolus and midline on the medial shaft
    - **Pediatric distal tibia**
        - One finger width proximal to the medial malleolus along the flat aspect of the medial distal tibia
    - **Adult proximal humerus or greater tubercle** - *Bariatric needle should be utilized*
        - Palpate and identify the midshaft humerus and continue palpating toward the proximal aspect of the humeral head. You should feel the greater tubercle (protrusion near the shoulder).
    - **Pediatric proximal humerus** – *Bariatric needle should be utilized*
        - Slide thumb up the anterior shaft of the humerus until you feel the greater tubercle, this is the surgical neck. Approximately 1 cm above the surgical neck is the insertion site.

**If the patient "fits" on the Broselow tape, THINK PINK and use EZ IO PD*

***For humeral site make sure patient's hand is resting on the abdomen and elbow is adducted and positioned at the spine.*

Procedure after site is selected:

- Prepare the site with alcohol and/or betadine

IV / VASCULAR ACCESS cont.

- Prepare IO driver and needle set and load needle onto the driver
- Hold the IO driver in one hand and stabilize the site
- Position the driver at the insertion site with the needle at a 90 degree angle to the surface of the bone
- Insert the needle through the skin. When the needle hits resistance from the bone, make sure the 5 mm black line is still visible above the skin.
- Power the driver on while applying minimal pressure.
- Insert the needle until a change in resistance is noted. Remove the driver from the needle set and the stylet from the catheter.
- Attach the connection tubing.
- **For conscious patients, slowly administer 20-40 mg (adults) or 0.5 mg/kg (pediatrics) of 2% Lidocaine into IO port BEFORE the 10 ml syringe flush. "Flush to flow" Without the lidocaine the conscious patient will experience pain!**
- Use a syringe to rapidly infuse 10 ml of normal saline – if no infiltration is seen, attach the IV line and infuse fluids and/or medications as usual.
- For adults the IV bag may need to be under pressure.
- Secure the needle and tubing.
- Monitor the EZ-IO site and patient condition.

LVAD (LEFT VENTRICULAR ASSIST DEVICE)

Clinical Statement: This procedure applies to the management of all patients who have a LVAD (left ventricular assist device) implanted. A ventricular device is a mechanical pump that is used to support heart function and blood flow in people who have weakened hearts. The device takes blood from the lower chamber of the heart and helps pump it to the body and vital organs just as a healthy heart would.

BASIC EMT

1. Establish patent airway
2. Provide supplemental O2 if necessary
3. Listen to patient's chest.
    - If you hear the whirling sound of the LVAD, DO NOT PERFORM CPR. The LVAD device has been surgically placed into the left ventricle and CPR could dislodge the device.
    - HOWEVER, if you cannot hear the device then CPR should be performed per cardiac arrest protocol and AED applied.
4. Record and monitor vital signs
5. If patient is presenting with chest pain, abdominal pain above the umbilicus, nausea, dizziness, chest tightness, shortness of breath, or any other complaint consistent with cardiac presentation, obtain a 12 Lead and transmit to the closest LVAD capable hospital (**Parkview Regional or Lutheran**) for interpretation.
6. Contact the phone number on their device to contact the LVAD coordinator for assistance.

ADVANCED EMT

1. Establish IV/IO access
    - If evidence of dehydration, bolus 250 ml of Normal Saline with a max of 500 ml of Normal Saline until patient is normotensive (equal to or greater than a MAP of 65). If patient shows signs of pulmonary edema, peripheral edema, or JVD, withhold fluid bolus.

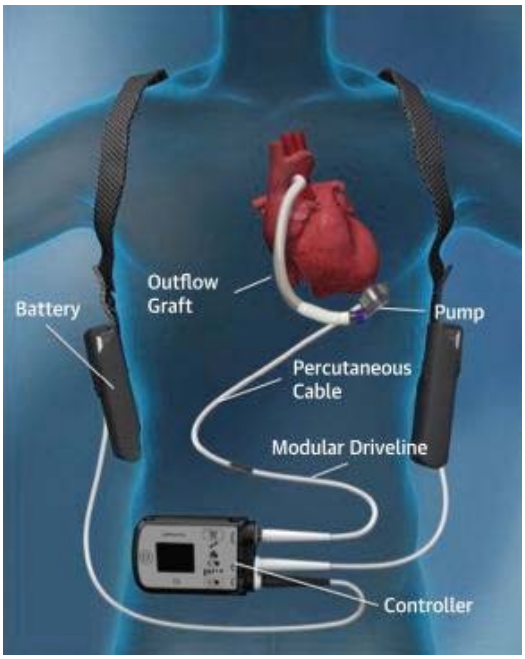
PARAMEDIC

1. Provide cardiac monitoring.
2. Obtain 12 Lead and evaluate
3. Treat all dysrhythmias as per standing orders
4. Transport to nearest LVAD capable hospital (**Parkview Regional or Lutheran**).

LVAD (LEFT VENTRICULAR ASSIST DEVICE) cont.

Clinical PEARLS:

- In majority of these patients, a pulse will not be palpable. This occurs because the LVAD unloads the ventricle in a continuous fashion and therefore the aortic valve may not open with each contraction.
- A manual blood pressure may not be obtainable. Your treatment of the patient will be based on the mean arterial pressure, in which it should present between 60-90. You should be able to obtain a pressure that presents with a narrow pulse pressure by utilizing an automated B/P cuff.
- Pulse oximetry may not be accurate due to the continuous flow nature of the LVAD.
- If the patient is unconscious, unresponsive to stimuli, and pulseless:
  - Listen to the patient's chest
  - If you hear the whirling sound of the LVAD, DO NOT PERFORM CPR. The LVAD device has been surgically placed into the left ventricle and CPR could dislodge the device.
  - HOWEVER, if you cannot hear the device then CPR should be performed per cardiac arrest protocol.
- Record blood glucose if any weakness, altered mental status, or history of diabetes.
- Call the number on the device for the LVAD coordinator. They will be a great resource in assisting you while caring for your LVAD patient.
- LVAD patients always carry a "backup bag" which contains 2 extra fully charged batteries and a second controller. Make sure to always bring this emergency backup equipment with the patient to the hospital.
- Transport these patients to the closest LVAD center (**Parkview Regional or Lutheran**). If possible, also bring the significant other/caretaker who is well versed on this device to assist you during transport, especially if the patient is unconscious or an unreliable resource for information.



MASSIVE HEMORRHAGE CONTROL

BASIC EMT

1. Don proper PPE
2. Apply **direct pressure** to sites of hemorrhage
3. Apply **tourniquet** early to affected extremity/extremities if hemorrhage is uncontrolled with direct pressure. Tourniquets should be applied high and tight
4. Record time of tourniquet application
5. Introduce **hemostatic agent** (i.e. combat gauze) or kerlix into the wound via the **wound packing method**. *The hemostatic agent will not work if it is unable to come in contact with the sources of the hemorrhage.*

Groin: Apply direct pressure by placing numerous dressings over the groin area and kneeling on the affected area to provide constant pressure without becoming fatigued. Consider rapid deployment of hemostatic dressing via the wound packing method.

Axillary: Apply direct pressure and consider rapid deployment of hemostatic dressing via the wound packing method.

Neck: Apply direct pressure and consider rapid deployment of hemostatic dressing via the wound packing method.

6. Maintain warmth with blankets and climate controls in ambulance

ADVANCED EMT

7. Titrate IV fluid administration based on level of consciousness and radial pulses, not blood pressure
8. Consider warm fluids if available.

PARAMEDIC

9. Provide rapid transport via ground if less than 30 minutes from a Verified Trauma Center.
10. Consider aeromedical transport if greater than 30 minutes from a Verified Trauma Center.
11. Contact Medical Control with questions and for direction if needed.

MUCOSAL ATOMIZATION DEVICE (MAD)

BASIC EMT / ADVANCED EMT / PARAMEDIC

1. May be used to administer Versed, Ativan, Fentanyl, and Narcan (**based on level of certification**) to adult and pediatric patients.
2. Draw up an extra 0.1 ml of the medication to account for the dead space in the device.
3. Maximum total drug delivery is 2 ml.
4. Briskly compress the syringe plunger to deliver half of the medication into one nostril.
5. Administer the remaining medication into the other nostril.

NEBULIZED MEDICATION

ADVANCED EMT / PARAMEDIC

Clinical Statement: A nebulizer is used to aerosolize medications into a mist for delivery directly to the lungs.

Nebulized Medication Procedure:

1. Explain procedure to patient
2. Add medication to nebulizer chamber
   Adult:
   - ➢ **Albuterol** aerosol 5 mg OR **Xopenex (levalbuterol)** 1.25 mg aerosol
   - ➢ may repeat as necessary
   - ➢ **Atrovent** aerosol 0.5 may be added to Albuterol administration (one-time dose only)

   Pediatric:
   - ➢ **Albuterol** aerosol
   - ➢ Less than 10 kg use 2.5 mg
   - ➢ Greater than 10 kg use 5 mg

   OR

   Xopenex (levalbuterol)
   - ➢ 0.625 mg aerosol
   - ➢ May repeat Albuterol or Xopenex as necessary

   Atrovent (ipratropium bromide) 0.5 mg aerosol may be added to Albuterol administration (one-time dose only)

3. Assemble equipment to oxygen source, adjust oxygen to 6 liters per minute
4. Pt sits upright, lips sealed tightly around mouthpiece, instruct to breathe deeply and slowly through the mouth
5. Treatment may be administered through nonrebreather mask, CPAP, or BVM if necessary

For In-Line Neb Use, see Figure 1:


Corrugated Tubing from Nebulizer
Clear Elbow
T-piece and Nebulizer
PEEP Valve
SMART BVM PEEP attachment for PEEP valve
ETCO2 Filterline
SMART BVM
BVM Mask
Nebulizer O2 Tubing

Figure 1

NERVE AGENT

Clinical Statement: This SO will be implemented under MCI, Hazmat and/or WMD conditions. Therefore, it is understood that ALS, BLS, and Firefighters will be utilizing the DuoDote™ auto-injector for intramuscular injection (IM)

Each DuoDote™ Auto-Injector Delivers: Using the 2-chamber BinaJect™ drug delivery system, contains 2.1 mg atropine in 0.7 mL and 600 mg pralidoxime chloride in 2 mL sequentially using a single needle.

Indications: Antidote for organophosphate (nerve agent/insecticide) poisoning

Mild Exposure Symptoms	Treatment
Pinpoint pupils	One (1) DuoDote™ Kit IM
Runny nose	Repeat every 10 mins. IM as needed. Max of three doses.
Localized muscle twitches	
Sweating	

Moderate Exposure Symptoms	Treatment
Muscular weakness	One (1) or two (2) DuoDote™ Kit IM
Vomiting & Diarrhea	Support ventilation if needed. Consider intubation to protect the airway. Repeat DuoDote™ Kit IM every 10 mins. as needed. Max of three doses.
Increased respiratory distress	

Severe Exposure Symptoms	Treatment
Unconscious	Three (3) DuoDote™ Kits IM
Seizing or postictal	Treat seizures as per protocol
Apneic or severe dyspnea	Support ventilation
Twitching or flaccid	Intubate to protect airway
Effects in two or more body systems	Repeat DuoDote™ Kit IM every 10 mins. as needed. Max of three doses.

NERVE AGENT cont.

DUODOTE ADMINISTRATION PROCEDURE

Instructions:

1. Remove the Nerve Agent Antidote Kit (DuoDote™) from its storage location
2. With your non-dominant hand, hold the auto injectors by the plastic clip so that the larger auto injector is on top and both are positioned in front of you at eye level.
3. With the other hand, check the injection site (thigh or buttocks) for buttons or objects in pockets, which may interfere with the injections.
4. Grasp the DuoDote™ (Green-tipped) auto-injector with the thumb and first two fingers
5. Pull the injector out of the clip with a smooth motion.
6. Hold the auto injector like a pen or pencil, between the thumb and first two fingers
7. Position the green tip of the auto injector against the injection site (thigh or buttocks)
8. Apply firm, even pressure (not a jabbing motion) to the injector until it pushes the needle into the thigh or buttock
9. Hold the injector firmly in place for least 10 seconds.
10. Carefully remove the auto injector.
11. Place the used auto injector into a sharps container.
12. Document the number of auto-injectors administered on an ambulance run report or (in a mass causality situation) on the triage tag.

PLEURAL DECOMPRESSION

PARAMEDIC

INDICATIONS:

- Tension pneumothorax causing hypoactive breath sounds with signs of shock.

CONTRAINDICATIONS:

- Absence of a tension pneumothorax

Equipment Needed:

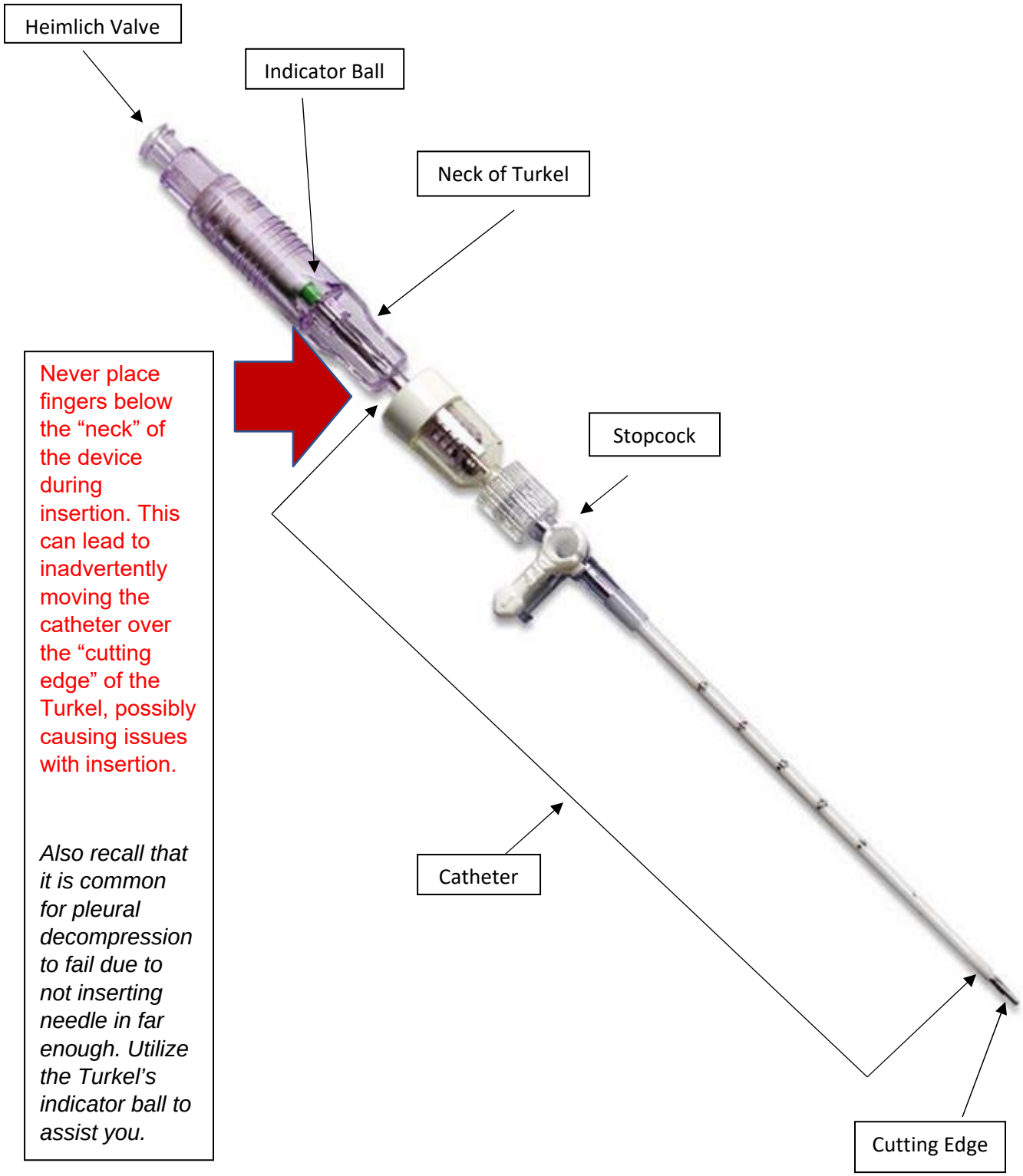
- Gloves and goggles
- Alcohol or Betadine wipes
- Scalpel
- Turkel needle

Pleural Decompression Procedure

- Identify appropriate Site
  - 4th intercostal space, midaxillary line
  - 2nd intercostal space, midclavicular line
- Prep Site
- Take scalpel and create a small 'knick' at the site you wish to place Turkel needle.
- Assure that you are holding the 'neck' of the Turkel (space above the indicator ball) to assure that you do not inadvertently slide the catheter over the cutting edge of the Turkel.
- Insert Turkel needle just over (superior to) rib. Indicator ball will turn red initially.
- Once in the parietal space, the indicator ball should turn green and you should hear a rush of air from the heimlich valve at the top of the device.
- Advance catheter into chest and withdraw needle
- If no air is aspirated review adequacy of technique, remove needle leaving catheter in place, and dress site as appropriate
- Assure that the stopcock on the device is closed to keep air from entering the parietal space.
- Advise medical control physician of procedure
- Monitor patient to assure adequate re-expansion of lung
  - Breath sounds
  - Neck veins
  - Vital signs
  - Oximetry
- If tension pneumothorax recurs, open stopcock to release built up air.
  - Consider possibility of bilateral pneumothorax.
  - If hemothorax present, close stopcock. Do not hook up to suction.

****REMEMBER*****Go just above the rib!* All of the major structures, arteries, veins, and nerves lie below the rib. The closer you stay to the top of the rib, the less chance of complications.

PLEURAL DECOMPRESSION cont.



Never place fingers below the "neck" of the device during insertion. This can lead to inadvertently moving the catheter over the "cutting edge" of the Turkel, possibly causing issues with insertion.

Also recall that it is common for pleural decompression to fail due to not inserting needle in far enough. Utilize the Turkel's indicator ball to assist you.

TRACHEOSTOMY CHANGE

PARAMEDIC

INDICATIONS:

- Presence of Tracheostomy site
- Urgent or emergent indication to change the tube, such as obstruction that will not clear with suction, dislodgement, or inability to oxygenate/ventilate the patient without other obvious explanation.

Procedure:

1. Have all airway equipment prepared for standard airway management, including equipment of orotracheal intubation and failed airway. (i.e. bougie)
2. Have airway device (endotracheal tube or tracheostomy tube) of the same size as the tracheostomy tube currently in place as well as 0.5 size smaller available (e.g., if the patient has a #6.0 Shiley, then have a 6.0 and a 5.5 tube).
3. Lubricate the replacement tube(s) and check the cuff.
4. Remove the tracheostomy tube from mechanical ventilation devices and use a bag-valve apparatus to pre-oxygenate the patient as much as possible.
5. Once all equipment is in place, remove devices securing the tracheostomy tube, including sutures and/or supporting bandages.
6. If applicable, deflate the cuff on the tube. If unable to aspirate air with a syringe, cut the balloon off to allow the cuff to lose pressure.
7. Remove the tracheostomy tube.
8. Insert the replacement tube. Confirm placement via standard measures except for esophageal detection (which is ineffective for surgical airways). ***Monitor closely for Subcutaneous Emphysema indicating the presence of a "false lumen" intubation.***
9. If there is any difficulty placing the tube, re-attempt procedure with the smaller tube. ***Consider utilizing a bougie to guide the tube.***
10. If difficulty is still encountered, use standard airway procedures such as oral bag-valve mask or endotracheal intubation (as per protocol). More difficulty with tube changing can be anticipated for tracheostomy sites that are immature – i.e., less than two weeks old. Great caution should be exercised in attempts to change immature tracheostomy sites due to higher possibility of a "False Lumen".
11. Document procedure, confirmation, patient response, and any complications in the Patient Care Record (PCR).

VENTILATORS

Clinical Statement: Ventilators are to be used in the ventilation and resuscitation of patients who are experiencing respiratory distress or insufficiency. Ventilators can be used to ventilate a patient who is being managed by **BLS or ALS means**. For respiratory resuscitation to be most effective, the ventilator needs to be initiated as soon as appropriate for patient care, (*i.e. as soon as assisted ventilations are begun*).

Definition & Terms:

- **Demand Valve**: A valve that delivers gas at a flow related to the inspiratory efforts of the patient.
- **Expiratory Phase**: Interval from the start of the expiratory flow to the start of inspiratory flow.
- Frequency: The number of ventilation cycles per minute (breaths/minute).
- **Inspiratory Flow**: The flow delivered through the patient valve by the ventilator during the inspiratory phase.
- **Minute Volume**: The volume of gas delivered per minute (respiratory rate x tidal volume).
- **Relief Valve**: The valve which limits maximum patient inflation pressure by venting excess gas into the atmosphere.
- **Tidal Volume**: The volume of gas delivered to the patient during the inspiratory phase.

Equipment Needed:

- AutoVent 3000
- Oxygen source
- Ventilator Circuit Tubing
- ETCO2

PROCEDURE: AutoVent 3000 Ventilator

- Connect to gas (oxygen) supply/Turn on oxygen.
- Use Table to set Frequency:

	CPR	Rescue Breathing
Adult	8-10	12
Child	20	12-20
Infant	20	12-20

- Check function by briefly blocking Patient Valve (check green ball indicator, **see Figure 1.**)
- Adjust Tidal Volume to Initial Setting (6-8cc/kg of ideal body weight).
- Connect the ventilator to mask, endotracheal tube, or supraglottic airway.
- Assess breath sounds and observe for bilateral chest expansion (mid-axillary line)
- Continue monitoring $ETCO_2$ ($ETCO_2$ must be monitored within 1 minute of ETI or Non-Visualized Airway placement.)
- Assess proper function of the Vent by monitoring the visual green ball indicator on Patient Valve

Failure of proper movement of green ball indicator:

- Excessive "Tidal Volume"
- Incorrectly positioned airway
- Kinked endotracheal tube
- Vent Circuit disconnect

Clinical Statement: The AutoVent incorporates a demand valve and has the ability to detect spontaneous breathing by an adult patient and ventilate appropriately to the level of spontaneous breathing.

Figure 1

Green Indicator Ball

12 LEAD EKG

Clinical Statement: The 12-lead ECG Analysis is useful in the diagnosis and treatment of patients with acute myocardial infarction (AMI).

INDICATIONS:

A 12 Lead EKG is ***required*** for all patients who meet the following indications:

- Non-traumatic chest pain in anyone greater than age 25. (NAEMSP definition)
- Patients who present with Signs/Symptoms consistent with cardiac related problems: i.e. Syncope, Weakness, Arrhythmias, Congestive Heart Failure, Shortness of Breath and Atypical AMI symptoms.

A12 Lead EKG is ***strongly recommended*** for all patients who meet the following indications:

- Diabetics with associated medical complaints over the age of 35.
- Chest Trauma
- Oxygen deprivation, smoke inhalation, carbon monoxide poisoning, or asphyxia

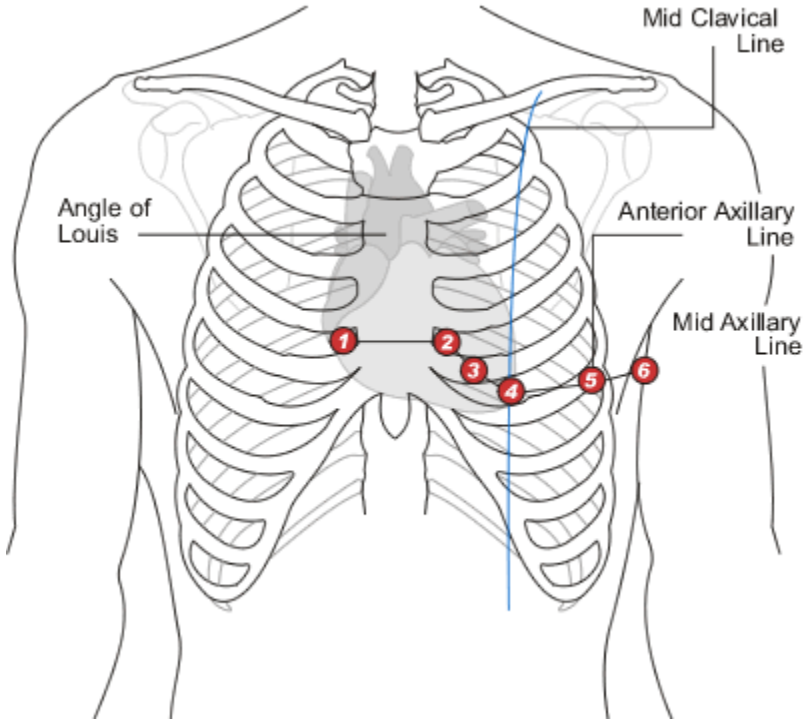
Classic 12 Lead Placement

Lead	Electrode Location
V1	4th intercostal space at the right border of the sternum
V2	4th intercostal space at the left border of the sternum
V3	Midway between location V2 & V4
V4	At the mid-clavicular line at the 5th intercostal space
V5	At the anterior axillary line on the same horizontal level as V4
V6	At the mid-axillary line on the same horizontal level at V4 & V5
Right Arm (RA) & Left Arm (LA)	Traditionally placed anywhere on the arm. Alternate placement to reduce muscle artifact is midway between the elbow and the shoulder, **but not on the torso**.
Right Leg (RL) and Left Leg (LL)	Traditionally placed a few inches above the ankle. Alternate placement to reduce muscle artifact is on the upper leg, **but not on the torso.**

See Figure 1.

12 LEAD EKG cont.

Figure 1



Contiguous Leads:

I Lateral Circumflex Artery	aVR	V1 Septal Left Anterior Descending Artery	V4 Anterior Right Coronary Artery
II Inferior Right Coronary Artery	aVL Lateral Circumflex Artery	V2 Septal Left Anterior Descending Artery	V5 Lateral Circumflex Artery
III Inferior Right Coronary Artery	AVF Inferior Right Coronary Artery	V3 Anterior Right Coronary Artery	V6 Lateral Circumflex Artery

12 LEAD EKG cont.

*Consider utilizing the mnemonic **PAILS** to detect reciprocal changes*:

P – **P**osterior wall MI, may have reciprocal changes in the **A**nterior leads.

A – **A**nterior wall MI, may have reciprocal changes in the **I**nferior leads.

I – **I**nferior wall MI, may have reciprocal changes in the **L**ateral leads.

L – **L**ateral wall MI, may have reciprocal changes in the **S**eptal leads.

S – **S**eptal wall MI, may have reciprocal changes in the **P**osterior leads.

MEDICATION LIST

MEDICATION	INDICATION	ADULT DOSAGE	PEDIATRIC DOSAGE	OLMC REQUIRED
Adenocard (Adenosine)	Tachycardia	6.0 mg rapid IV push. Repeat, if needed at 12.0 mg rapid IV push.	0.1 mg/kg, max of 6.0 mg. Repeat, if needed, double the original dose.	NO
Albuterol (Proventil)	Allergic reaction	5.0 mg nebulized. Repeat as needed.	<10 kg, 2.5 mg nebulized. >10 kg, 5.0 mg nebulized.	NO
	Bronchospasm/Wheezing	5.0 mg nebulized. Repeat as needed.	<10 kg, 2.5 mg nebulized. >10 kg, 5.0 mg nebulized.	NO
Amiodarone (Cordarone)	V-Fib/Pulseless V-Tach	300.0 mg IV/IO. Repeat, if needed at 150.0 mg IV/IO	5.0 mg/kg IV/IO. Repeat every 5 minutes as needed to a max of 300.0 mg	NO
	Tachycardia (Wide)	150.0 mg IV/IO over 10 minutes	5.0 mg/kg IV/IO over 10 minutes to a max of 150.0 mg	NO
Aspirin	Cardiac chest pain	324.0 mg	N/A	NO
Atropine	Symptomatic Bradycardia	0.5 mg IV/IO every 5 minutes. Max of 3.0 mg	0.02 mg/kg IV/IO. Minimum of 0.1 mg.	NO
			Child: Max 1.0 mg	NO
			Infant: Max 0.5 mg	NO
Atrovent (Ipratropium)	Bronchospasm/Wheezing	0.5 mg nebulizer	0.5 mg nebulizer	NO
Benadryl (diphenhydramine)	Allergic Reaction	50.0 mg IV/IO/IM	1.0 mg/kg IV/IO/IM. Max dose 50.0 mg	NO
Calcium Chloride	Hyperkalemia	1.0 gram IV/IO	N/A	NO
	Dialysis	1.0 gram IV/IO	N/A	NO
Dextrose (D10W)	Serum glucose < 60mg/dl	Up to 250.0 ml IV/IO	5.0 ml/kg IV/IO. Max of 250.0 ml	NO
Dilaudid (Hydromorphone)	Pain	0.5 mg IM/IV/IO. Repeat as needed every 10 minutes. Max of 2.0 mg.	N/A	NO
		Geriatric: 0.5 mg IM/IV/IO. Repeat as needed every 10 minutes. Max of 1.0 mg.		NO
Epinephrine	V-Fib/Pulseless V-Tach/PEA/Asystole	1.0 mg (1:10,000) IV/IO. Repeat every 4 minutes. Max dose of 4.0 mg.	0.01 mg/kg IV/IO. Repeat every 4 minutes. Max dose of 4.0mg	NO
	Asthma	0.3 mg (1:1,000). Repeat every 5-10 minutes as	0.01 mg/kg IM. Repeat every 5-10 minutes as	NO

		needed. Max of 3 doses total.	needed. Max of 3 doses total.	
	Anaphylaxis	0.3 mg (1:1,000). Repeat every 5-10 minutes as needed. Max of 3 doses total.	0.01 mg/kg IM. Repeat every 5-10 minutes as needed. Max of 3 doses total.	NO
	Bradycardia (symptomatic)	N/A	0.01 mg/kg IM. Repeat every 4 minutes as needed until B/P appropriate for age.	
Epinephrine Drip	Anaphylaxis	1.0 mcg/min IV/IO. Titrate by 1.0 mcg every minute as needed.	0.1 mcg/kg/min IV/IO. Titrate by 0.1 mcg/kg every minute as needed. Not to exceed 1.0 mcg/min	NO
	Bradycardia (symptomatic)	1.0 mcg/min IV/IO. Titrate by 1.0 mcg every minute as needed.	N/A	NO
	Non-Traumatic Shock	1.0 mcg/min IV/IO. Titrate by 1.0 mcg every minute as needed.	0.1 mcg/kg/min IV/IO. Titrate by 0.1 mcg/kg every minute as needed. Not to exceed 1.0 mcg/min	NO
	Sepsis	1.0 mcg/min IV/IO. Titrate by 1.0 mcg every minute as needed.	0.1 mcg/kg/min IV/IO. Titrate by 0.1 mcg/kg every minute as needed. Not to exceed 1.0 mcg/min	NO
Epi Pen	Anaphylaxis	0.3 mg via Auto Injector	Epi-Pen Jr: 15-30 kg. Ep-Pen: >30 kg	NO
Fentanyl (Sublimaze)	Pain	1.0 mcg/kg IV/IO/IM/IN. Repeat every 5 minutes as needed. Single dose max: 100.0 mcg. Total dose max: 200.0 mcg.	1.0 mcg/kg IV/IO/IM/IN. Repeat every 5 minutes as needed. Single dose max: 100.0 mcg. Total dose max: 200.0 mcg (Age 2 or greater)	NO
Glucose Paste	Glucose serum below 60 mg/dl	30.0 grams	30.0 grams	NO
Glucagon	Glucose serum below 60 mg/dl	1.0 mg IM. Repeat in 15 minutes as needed.	<20 kg: 0.5 mg IM. >20 kg: 1.0 mg IM Repeat in 15 minutes as needed.	NO
Ketalar (ketamine)	Excited Delirium	300.0 mg IM	N/A	NO
	Sedation	300.0 mg IM. If IV/IO established, 1.0 mg/kg. May repeat IV/IO dose once.	1.0 mg IV/IO. May repeat IV/IO dose once.	NO

Lidocaine	Pain control for conscious patient needing IO access	20.0-40.0 mg IO SLOW push prior to bolus	0.5 mg/kg IO SLOW push prior to bolus	NO
Magnesium Sulfate	Torsades de Pointes	1.0-2.0 grams IV/IO	25.0 mg/kg IV/IO. Max dose of 1.0 gram.	NO
	Persistent/Refractory V-Fib	1.0-2.0 grams IV/IO	25.0 mg/kg IV/IO. Max dose of 1.0 gram.	NO
Narcan (naloxone)	Opiate overdose with significant respiratory depression	Up to 2.0 mg IV/IM/IN/IO. Repeat as needed. No max dose.	0.1 mg/kg IV/IM/IN/IO. Repeat as needed. Max dose: 2.0 mg	NO
Nitro Tab/Spray	Chest Pain	0.4 mg SL. Repeat every 5 minutes. Max dose: 3 tabs/sprays	N/A	NO
	Pulmonary Edema	Maintain Systolic B/P > 100 mmHg	N/A	NO
Sodium Bicarbonate	Tricyclic Overdose	1.0 mEq/kg	N/A	YES
	Hyperkalemia	50.0 mEq	N/A	NO
	Dialysis	50.0 mEq	N/A	NO
TXA (tranexamic acid)	Trauma	1.0 gram in 100.0 cc bag of NS over 10 minutes	N/A	NO
Versed (midazolam)	Excited Delirium	Up to 10.0 mg IV/IM. May repeat once.	N/A	NO
	Sedation	Up to 5.0 mg IV/IO/IM/IN. May repeat once as needed. Max total dose of 10.0 mg	Up to 0.1 mg/kg IV/IO/IN. May repeat once as needed. Max total dose is 5.0 mg	NO
	Seizures	Up to 5.0 mg IV/IO/IM/IN. May repeat once as needed. Max total dose of 10.0 mg	0.2 mg IV/IO/IN/IM to a max of 5.0 mg. May repeat once as needed.	NO
Zofran (ondansetron)	Nausea & Vomiting	4.0 mg IV/IO. May repeat in 10 minutes if needed. Max total dose: 8.0 mg 4.0 mg ODT if IV/IO access not obtained. May repeat in 10 minutes. Max total dose: 8.0 mg	0.1 mg/kg IV/IO. May repeat in 10 minutes if needed. Max single dose: 4.0 mg.	NO

CLINICAL ADMINISTRATIVE POLICIES

CORONER'S INVESTIGATION

Clinical Statement: This policy will set standards for charting, communications and the responsibilities of the medics and the supervisor when dealing with suspected or confirmed coroner's cases.

A CORONER'S CASE INVOLVES:

- Homicide
- Suicide
- Accidental Death
- Any death where there is a question whether the person died a natural death.
- Any death involving trauma.
- Any hospital inpatient who sustains a documented injury as a patient and subsequently expires.
- Any person who dies while incarcerated.
- Any child who expires unless an established chronic disease exists, and the child was under the care of a physician prior to death for that disease.
- Coroner's jurisdiction covers all Allen County cases as well as victims from outside the county or state that are transported to a local hospital.
- Natural deaths where there is no family physician or a family physician refuses to sign a death certificate

VIABILITY:

- Use the DNR protocol to determine viability.
- If the patient is not viable and is DAS, DO NOT disturb the patient or their environment.
- If the scene is disturbed while attempting to determine viability or during patient care, remember exactly the patient's relationship to a stationary object.

CHARTING AND DOCUMENTATION:

- Sign in/out of the scene as needed.
- On a full chart, sketch the position of the body/bodies as they relate to a fixed object at the scene. A window, pole, bush, etc. will suffice and stick drawings will be acceptable.
- Narrative must describe the drawing in detail. Include physical exam of the patient, how found, position, etc.
- Contacting the coroner, provide the following information:
  - Name, address, date of death, date of birth, SS#, physical description, race, clothing, time of death, who pronounced death, location, next of kin (notified?), and funeral home.
- Do not give out any copies of the chart. Copies will be requested through TRAA.

****** REMEMBER, IF YOU MOVED THE VICTIM (DAS) OR TRANSPORTED (VIABLE), YOUR CHART MAY BE THE ONLY RECORD OF THEIR POSITION. EVERY DETAIL YOU CAN REMEMBER IS CRUCIAL. ******

PATIENT CARE AMBULATION

All ambulatory and non-ambulatory patients will be placed on a stretcher and moved to the ambulance. If an ambulatory patient refuses or circumstances prevent the paramedic/AEMT/EMT from placing the patient on a stretcher, they will then thoroughly document all specifics of the event.

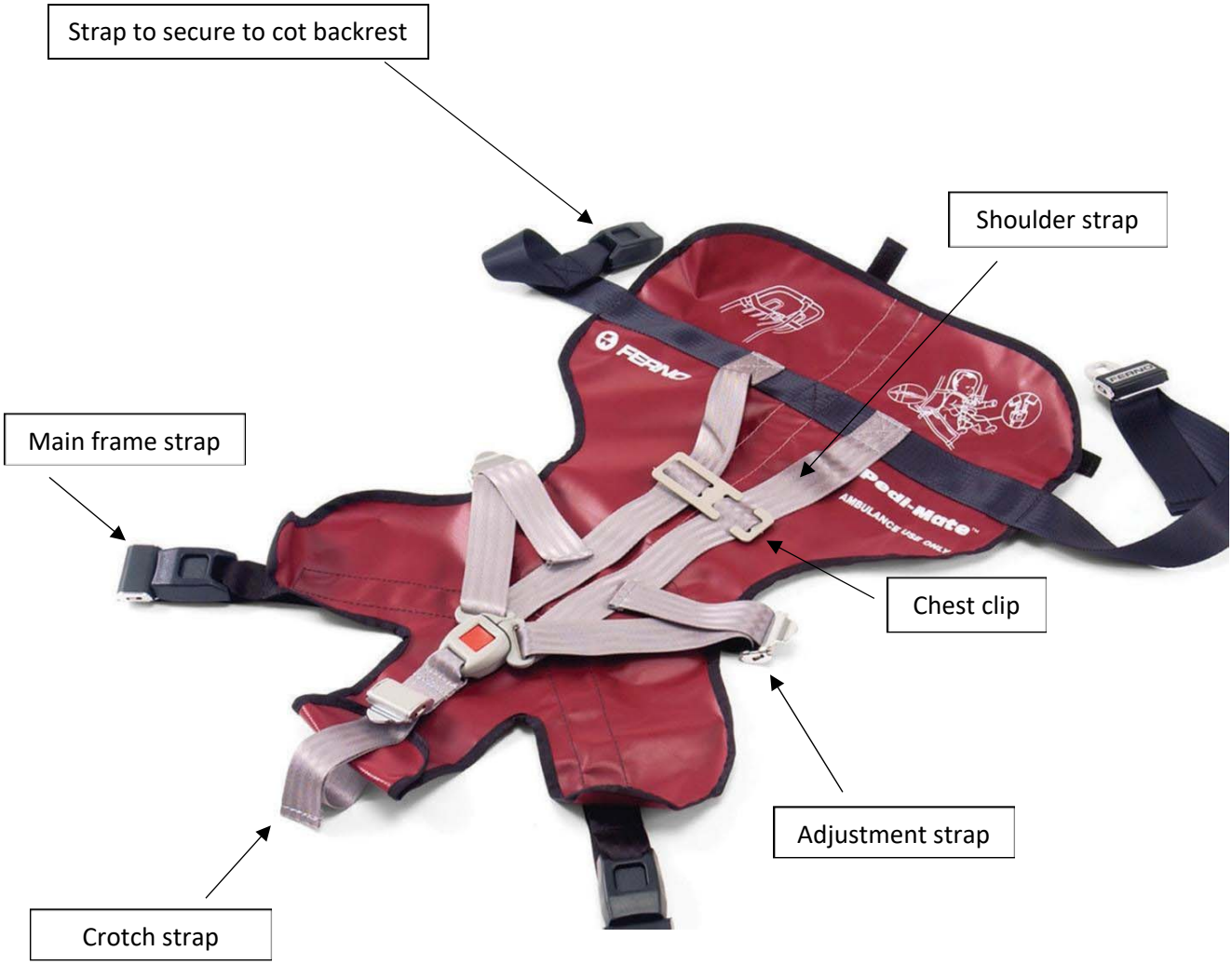
Acceptable means for moving a patient to a stretcher are:

- Stair chair
- Red lift square
- Mega Mover
- Scoop stretcher
- Long spine board
- KED
- Pediatric immobilizer

PEDI-MATE

Purpose: The Pedi-Mate is to be used to secure the pediatric patient safely to the stretcher. Using this device allows the patient to be secured while also allowing access to the patient for clinical care during transport. This device is only to be used on the stretcher.

- Load Limit for this device: 10-40 lbs. (4.5-18.1 kg)



Procedure:

1. Raise the cot backrest at an angle between 15º and 45º. This will keep the patient's shoulders higher than the pelvis and maintain the proper center of gravity.
2. Unroll the Pedi-Mate® spread it flat on the cot mattress with all straps extended. Center the device (left to right) on the mattress of the cot.

PEDI-MATE cont.

3. Position the device with the black backrest strap at the point where you expect the patient's shoulders to rest (*see Figure 1*).

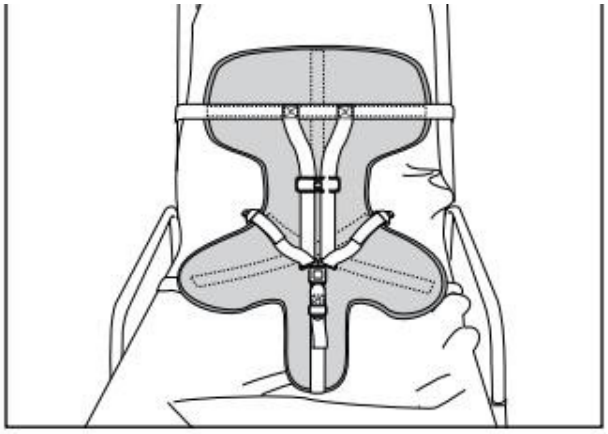


Figure 1

4. Run the ends of the backrest strap around the cot backrest until they meet in the back, then fasten the buckle and fasten firmly, assuring that the black strap is at the patient's shoulder level (*see Figure 2*).

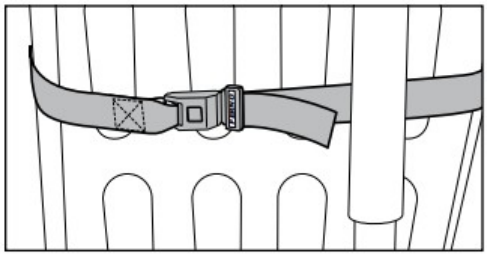


Figure 2

5. Fasten the main frame straps by threading the male end downward between the cot main frame and the mattress/next to the railings. Be sure to tighten these straps evenly to keep the device centered.
6. Pull the crotch strap buckle up between the patient's legs and lay the strap on the patient's abdomen.
7. Lift the shoulder straps over the patient's shoulders and lock the half buckle into the central buckle (*see Figure 3*).

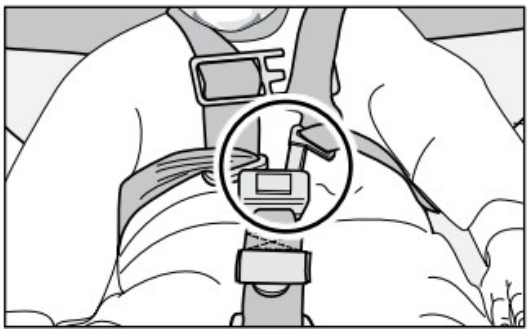


Figure 3

PEDI-MATE cont.

8. Thread the left shoulder strap through the chest clip and slide the chest clip to armpit level (*see Figure 4*).

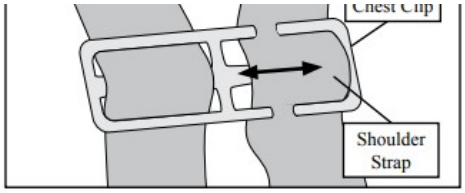


Figure 4

9. Snug the shoulder strap (A) against the shoulder and chest by pulling section B of the strap with one hand while steadying the central buckle with the other hand. Repeat on other side (*see Figure 5*).

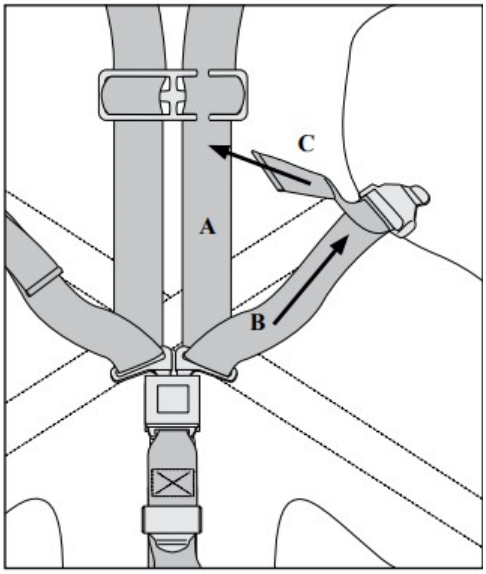


Figure 5

10. Snug the crotch strap by pulling on the free end of the strap (*see Figure 6*)

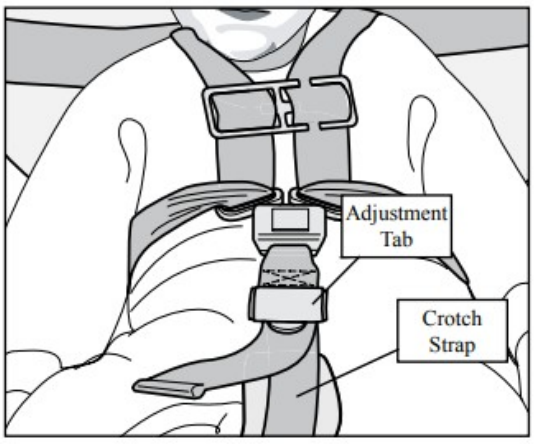


Figure 6

SCOPE OF PRACTICE

1. The EMT/AEMT and the Paramedic will work together to assess the patient's condition and determine the appropriate care.

2. Assessment should include the probability of the patient's condition deteriorating during transport and the potential for active or additional ALS intervention beyond the scope of practice for the EMT/AEMT. As the highest level of medical authority at the scene, the paramedic will be responsible for the patient care.

Scope of Practice EMT	Scope of Practice AEMT	Scope of Practice Paramedic
Initial Patient Assessment	Initial Patient Assessment/Management	Initial Patient Assessment/Management
Airway Management per BLS means SO/Protocol/Procedures as Prescribed by the Medical Director	Airway Management per BLS means SO/Protocol/Procedures as Prescribed by the Medical Director	BLS/ALS Interventions SO/Protocol/Procedures as Prescribed by the Medical Director ACLS Interventions
Apply ECG Monitor Record tracings Run 12 Lead ECGs and transmit	Apply ECG Monitor Record tracings Run 12 Lead ECGs and transmit	12 Lead ECG interpretation
Obtain Blood Glucose Level	Initiate IV or IO access	
Act as sole provider on BLS unit and provide care within the Scope of Practice for the EMT B. Assist Paramedic as requested within the Scope of Practice for the EMT B. It is recognized that the EMT B may administer specific medications under certain circumstances per Scope of Practice.	Assist Paramedic as requested within the Scope of Practice for the AEMT. It is recognized that the AEMT may administer specific medications under certain circumstances per Scope of Practice.	

Role of the EMT	Role of AEMT	Role of Paramedic
Perform skills approved for EMT as defined by Protocols and SO of System	Perform skills approved for AEMT as defined by Protocols and SO of System	Perform skills approved for Paramedic as defined by Protocols and SO of System
Care for patient who requires BLS interventions only	Care for patient who requires BLS and ALS, within Scope for AEMT, interventions only	Care for patient who requires BLS or ALS interventions
	Care for patient who has potential to require ALS interventions within AEMT Scope	Care for patient who has potential to require ALS interventions
		Care for patients who result from a request for a County assist

STANDARD OF CARE

Clinical Statement: The Mission of the Three Rivers Ambulance Authority is to provide compassionate quality care and service built around the needs of the patient and communities we serve through effective partnerships. The Paramedic, Advanced EMT and EMT will work to provide care under the medical direction of the EMS Foundation and the Medical Director. Standing Orders and Protocols will serve as guidelines for prehospital medical care and will provide a consistent ALS and BLS Team Approach to patient care. All field clinicians are expected to use clinical knowledge and training to employ critical decision-making skills to deliver patient care. They are accountable to the System and the public through a continuous quality assurance and improvement process.

1. Ambulances within the System will be certified in the State of Indiana as either an Advance Life Support (ALS) unit or Basic Life Support (BLS) unit.

2. ALS units will be staffed with two Paramedics, or a Paramedic and an Advanced EMT or EMT.

3. BLS units will be staffed with an Advanced EMT and EMT, or two EMTs.

4. The on-scene EMS clinician with the highest level of certification is responsible for the initial assessment of all patients unless the number of patients or the severity of injuries makes this unmanageable.

5. In situations in which a higher level of care has been requested by the initial EMS provider, the EMS Clinician responding to the call will help throughout the transport regardless of impression of the patient.

6. When an ambulance is staffed with two different levels of EMS certification, it is understood that the primary caregiver may be determined based on the care needs of the patient. The following conditions are examples in which delegation of care may be considered:

a) The patient is stable and does not meet any of the criteria for advanced level care:

- Shortness of breath or acute dyspnea
- Chest pain or anginal equivalent
- New onset altered level of consciousness
- Uncontrollable bleeding
- Unconsciousness
- Seizures
- Patient meets Trauma Alert Criteria
- Patient meets Medical Alert Criteria
- Shock signs/symptoms (hemodynamically unstable patient)
- OB at >20 weeks with contractions and Evidence of meconium staining OR Vaginal bleeding
- Childbirth prior to 38 weeks gestation
- Syncope or near-syncope
- Uncertainty about the patient's status

STANDARD OF CARE cont.

b) The initial assessment findings and anticipated patient needs have been provided to the EMS clinician assuming care.

c) The EMS clinician assuming care is comfortable with accepting responsibility for patient treatment and transport.

d) The patient has not received any ALS treatment requiring assessment or monitoring outside the scope of practice of the receiving EMS clinician.

e) Documentation of assessment findings and treatment up to the transfer of care will be fully documented by the initial care provider.

In the case of a BLS unit being the first-in resource for a patient meeting the criteria for advanced level care AND the BLS crew can transport the patient to an Emergency Department in less time than it would take for an ALS unit to make contact, the BLS crew should initiate transport. Waiting for an ALS unit to arrive should not cause a delay in transporting a patient to definitive care. If feasible, an ALS unit intercept may be considered.

EMS clinicians working within the System will function under Standing Orders and Protocols that apply to their respected certification level. It is understood that situations will arise where SOs and Protocols will not conform to the patient's needs. In these cases, EMS clinicians should consult with the base physician/Medical Control for direction.

STANDING ORDER / PROTOCOL / PROCEDURE

The terms "Protocol" and "Standing Order" are not used interchangeably.

Protocol	A standardized system of medical care delivery for specific situations that requires online (direct telephone or radio contact) approval prior to implementation on a run.
Standing Order	Certain steps in advanced management for which prior approval has been obtained which does not require "on line" (direct telephone or radio contact) approval prior to implementation during a run.
Procedure	A specific set of instructions and steps for implementation of a skill

The use of Standing Orders and/or Protocols is considered minimum treatment for all patients perceived to require ALS intervention at the discretion of the caregiver making the patient evaluation.

Medical Control Signature: Authorization and Signature are required for any request made to Medical Control by the Paramedic during the course of patient care. This specifically refers to the administration of medication or procedures not covered by Standing Orders.

VERBAL REPORT REQUIREMENTS

All Calls

1. Ambulance unit identification number.
2. Estimated time of arrival (ETA)
3. Patient age and sex.
4. Chief complaint identified by paramedic/patient.
5. Mental status: alert and oriented. If not alert, then level of consciousness using Glasgow Coma scale, including best motor, verbal and eyes responses.
6. Vital signs (V/S): “stable” or give numerical values for respiratory rate (RR), Blood pressure (BP), and Heart rate (HR), oxygen saturation, and glucose.
7. Treatment already given that will make a difference to how emergency department will receive the patient.
8. Relevant out-of-hospital diagnostics (i.e.12 lead ECG findings).

Subsets of patients *

1. Trauma center destination patients.
2. Burn center destination patients.
3. STEMI alert destination patients.
4. Post cardiac arrest (Hypothermia protocol) destination patients.
5. CVA/stroke patients.
6. Medical control needed

***Notify the receiving ER of the type of “activate” by radio report immediately after ETA (see above)**

FORMULARY

ADENOCARD (ADENOSINE)

Indications:

- Supraventricular Tachycardia SVT (including WPW) refractory to vagal maneuvers
- Consider in Regular Wide Complex Tachycardia

Contraindications:

- Known Sick sinus syndrome
- Known History of Long QT Syndrome
- Irregular Wide-complex tachycardia

Precautions:

- Advising patient of the side effects of adenosine prior to administering can help minimize patient anxiety
- Large bore IV, antecubital access or IO access IV wide open during administration
- Start your EKG printout before administration and continue printing through bolus and conversion.
- Administration of adenosine can cause a period of asystole & various conversion dysrhythmias, be patient, most will transiently resolve.

Side Effects:

- Flushing
- Dizziness
- Chest Pain
- Lightheadedness
- Dyspnea
- Numbness
- Headache
- Nausea/Vomiting
- Diaphoresis
- Palpitations
- Metallic Taste Interactions
- Additive Effects: Digoxin, calcium channel blockers
- Antagonistic Effects: Methylxanthines (caffeine, theophylline)
- Potentiating Effects: Dipyridamole (Persantine), Carbamazepine (Tegretol)

Class: Supraventricular Antiarrhythmic, Nucleoside

Mechanism of Action: Slows tachycardias associated with the AV node via modulation of the autonomic nervous system without causing negative inotropic effects. It acts directly on sinus pacemaker cells and vagal nerve terminals to decrease chronotropic & dromotropic activity. Slows conduction through the AV node, blocks reentry pathways through the AV node, can transiently slow conduction in the SA node.

ADENOCARD (ADENOSINE) cont.

Concentration: 6.0 mg/2.0 ml

Dosage:

Adult:

- **Regular Narrow Complex Tachycardia**
  1st Dose: 6.0 mg IV/IO rapid bolus followed by a rapid 20.0 ml flush
  2nd Dose: 12.0 mg IV/IO rapid bolus followed by a rapid 20.0 ml flush

- **Regular Wide Complex Tachycardia**
  Consider 6.0 mg IV/IO rapid bolus followed by a rapid 20.0 ml flush

Pediatric:

- **1st Dose:** 0.1 mg/kg (0.03ml/kg) IV/IO rapid bolus followed by a rapid 20.0 ml flush

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.9ml	0.12ml	0.15ml	0.18ml	0.21ml	0.24ml	0.27ml	0.3ml	0.33ml	0.36ml	0.39ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
0.42ml	0.45ml	0.48ml	0.51ml	0.54ml	0.57ml	0.60ml	0.63ml	0.66ml	0.69ml	0.72ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
0.75ml	0.78ml	0.81ml	0.84ml	0.87ml	0.90ml	0.93ml	0.96ml	0.99ml	1.02ml	1.05ml

36KG
1.08ml

- **2nd Dose:** 0.2 mg/kg (0.07ml/kg) IV/IO rapid bolus followed by a rapid 20.0 ml flush

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.21ml	0.28ml	0.35ml	0.42ml	0.49ml	0.56ml	0.63ml	0.70ml	0.77ml	0.84ml	0.91ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
0.98ml	1.05ml	1.12ml	1.19ml	1.26ml	1.33ml	1.4ml	1.47ml	1.54ml	1.61ml	1.68ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
1.75ml	1.82ml	1.89ml	1.96ml	2.03ml	2.1ml	2.17ml	2.24ml	2.31ml	2.38ml	2.45ml

36KG
2.52ml

ALBUTEROL (PROVENTIL)

Indications:

- Bronchospasm (may or may not hear wheezing)

Contraindications:

- None in the emergency setting

Side Effects:

- Palpitations
- Tachycardia
- Anxiety/Nervousness
- Dizziness
- Headache
- Tremor
- N/V
- Less frequent HTN, Dysrhythmias, Chest Pain
- Antagonistic Effects: Beta blockers
- Additive Effects: MAOI's, TCA's, other sympathomimetic drugs

Class: Beta2 Agonist, Sympathomimetic

Mechanism of Action: Acts selectively on Beta2 receptor sites in the lungs, relaxing bronchial smooth muscle, decreasing airway resistance, & relief of bronchospasm. Although Albuterol is beta selective, it will cause some CNS stimulation, cardiac stimulation, increased diuresis, & gastric acid secretion.

Concentration: 2.5 mg/3 ml

Dosage:

Adult:

- **Allergic Reaction**
  5.0 mg via Nebulizer. Repeat as needed.

- **Bronchospasm (Asthma/COPD)**
  5.0 mg via Nebulizer. Repeat as needed.

Pediatric:

- **Allergic Reaction**
  Less than 10 kg use 2.5 mg via, Greater than 10 kg use 5 mg via nebulizer. Repeat as needed.
- **Bronchospasm (Asthma)**
  Less than 10 kg use 2.5 mg, Greater than 10 kg use 5 mg via nebulizer. Repeat as needed.

AMIODARONE (CORDARONE)

Indications:

- Ventricular Arrhythmias or Wide Complex Tachycardia with or without a pulse

Contraindications:

- Bradycardia
- 2nd/3rd Degree Block
- None in Cardiac Arrest

Adverse effects:

- Vasodilation
- Hypotension
- Bradycardia
- AV block
- Increased QT interval
- V-Tach

Class: Antiarrhythmic, Primarily Class III but has properties of all of the Vaughan Williams classifications

Mechanism of Action: Prolongs the duration of the action potential and refractory period of all Cardiac fibers. Depresses the Phase 0 slope by causing a sodium blockade. Causes a Beta block as well as a weak calcium channel blockade. Primarily a Potassium-channel blocker (Class III antiarrhythmic) blocks the potassium channels that are responsible for phase 3 repolarization. Blocking these channels slows (delays) repolarization, which leads to an increase in action potential duration and an increase in the effective refractory period (ERP). Relaxes vascular smooth muscle, decreases peripheral vascular resistance, and increases coronary contractility. Drug has a rapid onset.

Concentration: 150.0 mg/3.0 ml

Dosage:

Adult:

- **Wide Complex Tachycardia w/Pulses**
  1st Dose: 150.0 mg IV/IO over 10 minutes
  2nd Dose: Repeat 150.0 mg IV/IO over 10 minutes (if needed)

- **V-Fib/V-Tach Cardiac Arrest**
  1st Dose: 300.0 mg IV/IO bolus (may administer 2nd dose in 5 minutes if needed)
  2nd Dose: 150.0 mg IV/IO bolus (if needed)

AMIODARONE (CORDARONE) cont.

Pediatric:

- **Wide Complex Tachycardia w/Pulses**

  5.0 mg/kg IV/IO over 10 minutes

  Max dose 150.0 mg

Place weight based appropriate milliliters of Amiodarone into a 100.0 ml bag of NS and administer over 10 minutes.

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.3ml	0.4ml	0.5ml	0.6ml	0.7ml	0.8ml	0.9ml	1.0ml	1.1ml	1.2ml	1.3ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
1.4 ml	1.5ml	1.6ml	1.7ml	1.8ml	1.9ml	2.0ml	2.1ml	2.2ml	2.3ml	2.4ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
2.5ml	2.6ml	2.7ml	2.8ml	2.9ml	3.0ml	3.0ml	3.0ml	3.0ml	3.0ml	3.0ml

36KG
3.0ml

- **V-Fib/V-Tach Cardiac Arrest**

  5.0 mg/kg IV/IO over 1-2 minutes

  Repeat up to 15 mg/kg every 5 minutes to a maximum dose of 300.0 mg (if needed)

Draw up appropriate milliliters and administer bolus IV/IO

Pediatric 1st Dose:

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.3ml	0.4ml	0.5ml	0.6ml	0.7ml	0.8ml	0.9ml	1.0ml	1.1ml	1.2ml	1.3ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
1.4ml	1.5ml	1.6ml	1.7ml	1.8ml	1.9ml	2.0ml	2.1ml	2.2ml	2.3ml	2.4ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
2.5ml	2.6ml	2.7ml	2.8ml	2.9ml	3.0ml	3.1ml	3.2ml	3.3ml	3.4ml	3.5ml

36KG
3.6ml

AMIODARONE (CORDARONE) cont.

Pediatric 2nd Dose:

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.3ml	0.4ml	0.5ml	0.6ml	0.7ml	0.8ml	0.9ml	1.0ml	1.1ml	1.2ml	1.3ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
1.4ml	1.5ml	1.6ml	1.7ml	1.8ml	1.9ml	2.0ml	2.1ml	2.2ml	2.3ml	2.4ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
2.5ml	2.6ml	2.7ml	2.8ml	2.9ml	3.0ml	2.9ml	2.8ml	2.7ml	2.6ml	2.5ml

36KG
2.4ml

Pediatric 3rd Dose:

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.3ml	0.4ml	0.5ml	0.6ml	0.7ml	0.8ml	0.9ml	1.0ml	1.1ml	1.2ml	1.3ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
1.4ml	1.5ml	1.6ml	1.7ml	1.8ml	1.9ml	2.0ml	1.8ml	1.6ml	1.4ml	1.2ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
1.0ml	0.8ml	0.6ml	0.4ml	0.2ml	No 3rd Dose	No 3rd Dose	No 3rd Dose	No 3rd Dose	No 3rd Dose	No 3rd Dose

36KG
No 3rd Dose

No 3rd Dose d/t max dose met.

Pediatric 4th Dose:

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.3ml	0.4ml	0.5ml	0.6ml	0.7ml	0.8ml	0.9ml	1.0ml	1.1ml	1.2ml	1.3ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
1.4ml	1.5ml	1.2ml	0.9ml	0.6ml	0.3ml	No 4th Dose	No 4th Dose	No 4th Dose	No 4th Dose	No 4th Dose

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
No 4th Dose	No 4th Dose	No 4th Dose	No 4th Dose	No 4th Dose	No 4th Dose	No 4th Dose	No 4th Dose	No 4th Dose	No 4th Dose	No 4th Dose

36KG
No 4th Dose

No 4th Dose d/t max dose met.

Pediatric 5th Dose:

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.3ml	0.4ml	0.5ml	0.5ml	0.7ml	0.8ml	0.9ml	1.0ml	1.1ml	1.2ml	0.8ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
0.2ml	No 5th Dose	No 5th Dose	No 5th Dose	No 5th Dose	No 5th Dose	No 5th Dose	No 5th Dose	No 5th Dose	No 5th Dose	No 5th Dose

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
No 5th Dose	No 5th Dose	No 5th Dose	No 5th Dose	No 5th Dose	No 5th Dose	No 5th Dose	No 5th Dose	No 5th Dose	No 5th Dose	No 5th Dose

36KG
No 5th Dose

No 5th Dose d/t max dose given.

Pediatric 6th Dose:

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.3ml	0.4ml	0.5ml	0.6ml	0.7ml	0.8ml	0.9ml	1.0ml	0.5ml	No 6th Dose	No 6th Dose

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
No 6th Dose	No 6th Dose	No 6th Dose	No 6th Dose	No 6th Dose	No 6th Dose	No 6th Dose	No 6th Dose	No 6th Dose	No 6th Dose	No 6th Dose

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
No 6th Dose	No 6th Dose	No 6th Dose	No 6th Dose	No 6th Dose	No 6th Dose	No 6th Dose	No 6th Dose	No 6th Dose	No 6th Dose	No 6th Dose

36KG
No 6th Dose

No 6th Dose d/t max dose met.

AMIODARONE (CORDARONE) cont.

Pediatric 7th Dose:

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.3ml	0.4ml	0.5ml	0.6ml	0.7ml	0.8ml	0.6ml	No 7th Dose	No 7th Dose	No 7th Dose	No 7th Dose

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
No 7th Dose	No 7th Dose	No 7th Dose	No 7th Dose	No 7th Dose	No 7th Dose	No 7th Dose	No 7th Dose	No 7th Dose	No 7th Dose	No 7th Dose

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
No 7th Dose	No 7th Dose	No 7th Dose	No 7th Dose	No 7th Dose	No 7th Dose	No 7th Dose	No 7th Dose	No 7th Dose	No 7th Dose	No 7th Dose

36KG
No 7th Dose

No 7th Dose d/t max dose met.

Pediatric 8th Dose:

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.3ml	0.4ml	0.5ml	0.6ml	0.7ml	0.4ml	No 8th Dose	No 8th Dose	No 8th Dose	No 8th Dose	No 8th Dose

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
No 8th Dose	No 8th Dose	No 8th Dose	No 8th Dose	No 8th Dose	No 8th Dose	No 8th Dose	No 8th Dose	No 8th Dose	No 8th Dose	No 8th Dose

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
No 8th Dose	No 8th Dose	No 8th Dose	No 8th Dose	No 8th Dose	No 8th Dose	No 8th Dose	No 8th Dose	No 8th Dose	No 8th Dose	No 8th Dose

36KG
No 8th Dose

No 8th Dose d/t max dose met.

AMIODARONE (CORDARONE) cont.

Pediatric 9th Dose:

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.3ml	0.4ml	0.5ml	0.6ml	0.4ml	No 9th Dose	No 9th Dose	No 9th Dose	No 9th Dose	No 9th Dose	No 9th Dose

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
No 9th Dose	No 9th Dose	No 9th Dose	No 9th Dose	No 9th Dose	No 9th Dose	No 9th Dose	No 9th Dose	No 9th Dose	No 9th Dose	No 9th Dose

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
No 9th Dose	No 9th Dose	No 9th Dose	No 9th Dose	No 9th Dose	No 9th Dose	No 9th Dose	No 9th Dose	No 9th Dose	No 9th Dose	No 9th Dose

36KG
No 9th Dose

No 9th Dose d/t at max dose.

ASPIRIN (ACETYLSALICYLIC ACID)

Indications:

- Suspected ACS
- STEMI

Contraindications:

- Allergy
- Ulcer
- GI bleeding

Precautions: Other blood thinners Pregnancy Category D.

Side effects:

- N/V
- Diarrhea
- Heartburn
- GI bleeding

Class: Analgesic, Antipyretic, NSAID, platelet inhibitor

Mechanism of Action: Inhibits the formation of prostaglandins associated with pain, fever, and inflammation. Inhibits platelet aggregation by acetylating cyclooxygenase permanently disabling it so that it cannot synthesize prostaglandins and Thromboxanes. Since Thromboxane A2 is important in clotting its absence does not allow blood to clot effectively.

Concentration: 81.0 mg/ 1 tablet

Dosage:

Adult:

- **Chest Pain/STEMI**
  81.0 mg chewable baby aspirin PO x 4

Pediatric:

- Not to be administered to pediatrics

ATROPINE

Indications:

- Symptomatic Bradycardia (if TCP is not immediately available)
- Organophosphate poisoning

Contraindications:

- A-Fib
- A-Flutter
- May be useful in Blocks caused by Digoxin

Precautions:

- Slow administration of atropine can cause paradoxical bradycardia

Side effects:

- Pupil dilation
- Tachycardia
- V-Tach/V-Fib
- HA,
- Dry mouth

Class: Parasympatholytic, Anticholinergic

Mechanism of Action: Competitive antagonist that selectively blocks all muscarinic responses to acetylcholine. Blocks vagal impulses, thereby increasing SA node discharge, thereby enhancing AV conduction and cardiac output. Potent antisecretory effects caused by the blocking of acetylcholine at the muscarinic site. Atropine is also useful in the treatment of the symptoms associated with nerve agent poisoning. Rapid onset, peak in 2-4m IV, half-life 2-3h.

Concentration: 1.0 mg/10.0 ml

Dosage:

Adult:

- **Symptomatic Bradycardia**
  0.5 mg IV/IO
  May repeat to a total dose of 3.0 mg

- **Organophosphate Poisoning**
  Contact Medical Control

Pediatric:

- **Symptomatic Bradycardia**
  0.02 mg/kg,
  Maximum 0.5 mg (single dose)

ATROPINE cont.

May repeat once if increased vagal tone or primary AV block.

- **Organophosphate Poisoning**
  Contact Medical Control

Pediatric 1st Dose:

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.6ml	0.8ml	1.0ml	1.2ml	1.4ml	1.6ml	1.8ml	2.0ml	2.2ml	2.4ml	2.6ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
2.8ml	3.0ml	3.2ml	3.4ml	3.6ml	3.8ml	4.0ml	4.2ml	4.4ml	4.6ml	4.8ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
5.0ml	5.0ml	5.0ml	5.0ml	5.0ml	5.0ml	5.0ml	5.0ml	5.0ml	5.0ml	5.0ml

36KG
5.0ml

Pediatric 2nd Dose (if needed):

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.6ml	0.8ml	1.0ml	1.2ml	1.4ml	1.6ml	1.8ml	2.0ml	2.2ml	2.4ml	2.6ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
2.8ml	3.0ml	3.2ml	3.4ml	3.6ml	3.8ml	4.0ml	4.2ml	4.4ml	4.6ml	4.8ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
5.0ml	5.0ml	5.0ml	5.0ml	5.0ml	5.0ml	5.0ml	5.0ml	5.0ml	5.0ml	5.0ml

36KG
5.0ml

ATROVENT (IPRATROPIUM)

Indications:

- Respiratory Distress (Bronchial asthma, reversible bronchospasm associated with chronic bronchitis and emphysema),
- Drowning
- Organophosphate Exposure (hypersalivation)

Contraindications:

- Known hypersensitivity

Precautions:

- Use caution when administering this drug to elderly patients and those with cardiovascular disease or hypertension

Side effects:

- Palpitations
- Anxiety
- Dizziness
- Headache
- Nervousness
- Tremor
- Hypertension
- Arrhythmias
- Chest pain
- Nausea/Vomiting

Class: Anticholinergic

Mechanism of Action: Ipratropium is a parasympatholytic used in the treatment of respiratory emergencies. It causes a decrease of the smooth muscle tissue of the bronchioles ability to constrict and dries respiratory tract secretions. Ipratropium acts by blocking acetylcholine.

Concentration: 0.5 mg/2.5ml

Dosage:

Adult:

- **Bronchospasm (Asthma/COPD)**
  0.5 mg via nebulizer (may only give one dose)

Pediatric:

- **Bronchospasm (Asthma)**
  0.5 mg via nebulizer (may only give one dose)

BENADRYL (DIPHENHYDRAMINE)

Indications:

- Allergic Reaction
- Anaphylaxis
- Adult dystonic reaction

Contraindications:

- Known allergy

Precautions:

- Antihistamine Toxicity (*Remember: "red as a beet, dry as a bone, hot as a hare, blind as a bat, mad as a hatter, and full as a flask."*)
- Brugada-like ECG patterns are seen with anticholinergic toxicity.
- Elimination mechanism concerns
- Potent anticholinergic agent
- Pregnancy Category B

Side effects:

- Mydriasis
- Photophobia
- Ataxia
- Tachycardia
- Dizziness
- Drowsiness

Class: Antihistamine, Ethanolamine, Anticholinergic

Mechanism of Action: Diphenhydramine blocks the effects of Histamine (H1 histamine) on the H1 receptor site through a competitive competition for the peripheral H1 site. When diphenhydramine is bound the H1 site cannot be stimulated preventing the effects of histamines (swelling, etc…). As an antihistamine, diphenhydramine is one of the most effective antihistamines. Onset of 15m IV, peak 1-4h, ½ life 2-10h.

Concentration: 50.0 mg/1.0 ml

Dosage:

Adult:

- **Allergic Reaction**
  50.0 mg IV/IO/IM

Pediatric:

- **Allergic Reaction**
  1.0 mg/kg IV/IO/IM

BENADRYL (DIPHENHYDRAMINE) cont.

Max dose of 50.0 mg

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.06ml	0.08ml	0.1ml	0.12ml	0.14ml	0.16ml	0.18ml	0.2ml	0.22ml	0.24ml	0.26ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
.28ml	0.3ml	0.32ml	0.34ml	0.36ml	0.38ml	0.4ml	0.42ml	0.44ml	0.46ml	0.48ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
0.5ml	0.52ml	0.54ml	0.56ml	0.58ml	0.6ml	0.62ml	0.64ml	0.66ml	0.68ml	0.7ml

36KG
0.72ml

CALCIUM CHLORIDE

Indications:

- Calcium channel blocker toxicity/overdose
- Acute hyperkalemia
- Acute hypocalcemia
- Acute Hypermagnesemia
- Hydrofluoric Acid Burn

Contraindications:

- None in the emergency setting

Side Effects:

- Arrhythmias
- cardiac arrest
- Syncope,
- Nausea/Vomiting
- Hypotension
- Necrosis with extravasation.
- May antagonize the effects of calcium channel blockers

Class: Inotropic Agent (electrolyte)

Mechanism of Action: Replaces elemental calcium, which is essential for regulating excitation threshold of nerves and muscles. Calcium is also essential for blood clotting mechanisms, maintenance of renal function, and bone tissues. Calcium increases myocardial contractile force and ventricular automaticity. Additionally, serves as an antidote for magnesium sulfate toxicity and calcium channel blocker toxicity. Onset and peak are immediate, lasting 20-30 minutes (possibly up to 60 minutes).

Concentration: 1.0 gram/10.0 ml

Dosage:

Adult:

- **Dialysis and Hyperkalemia**
  1.0 gram IV/IO

Pediatric: Contact Medical Control

DEXTROSE (D5%W)

Indications:

- Symptomatic Hypoglycemia
- Cardiac Arrest (Newly Born with heart rate < 60)
- Altered mentation with Glucose level < 60
- Use for medication drips.

Contraindications:

- None with symptomatic hypoglycemia.
- Use with caution in patients with suspected increased ICP.

Side Effects:

- Patients may complain of warmth, pain, or burning at the injection site.
- Extravasation causes necrosis.
- Infusing through larger vessels decreases the risk of necrosis

Class: Carbohydrate

Mechanism of Action: Principal form of glucose used by the body. Dextrose (aka. glucose) is one of the basic building blocks of all sugars. Glucose is a monomer and is therefore readily processed in the blood. Through glycolysis glucose is turned into pyruvate giving off a small amount of chemical energy (ATP). Pyruvate is further processed through the Citric Acid Cycle (Kreb's Cycle) yielding even more energy (GTP, FADH2 and NADH) and CO2.

Dosage: N/A

DEXTROSE (D10%W)

Indications:

- Symptomatic Hypoglycemia
- Cardiac Arrest (Newly Born with heart rate < 60)
- Altered mentation with Glucose level < 60

Contraindications:

- None with symptomatic hypoglycemia.
- Use with caution in patients with suspected increased ICP.

Side Effects:

- Patients may complain of warmth, pain, or burning at the injection site.
- Extravasation causes necrosis.
- Infusing through larger vessels decreases the risk of necrosis

Class: Carbohydrate

Mechanism of Action: Principal form of glucose used by the body. Dextrose (aka. glucose) is one of the basic building blocks of all sugars. Glucose is a monomer and is therefore readily processed in the blood. Through glycolysis glucose is turned into pyruvate giving off a small amount of chemical energy (ATP). Pyruvate is further processed through the Citric Acid Cycle (Kreb's Cycle) yielding even more energy (GTP, FADH2 and NADH) and CO2.

Concentration: 25.0 grams/250.0 ml

Dosage:

Adult:

- **Hypoglycemia**
  Up to 250.0 ml, titrate to mental status and blood glucose > 80 mg/dL

Pediatric:

- **Hypoglycemia**
  5.0 ml/kg, up to 250.0 ml

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
15.0ml	20.0ml	25.0ml	30.0ml	35.0ml	40.0ml	45.0ml	50.0ml	55.0ml	60.0ml	65.0ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
70.0ml	75.0ml	80.0ml	85.0ml	90.0ml	95.0ml	100.0ml	105.0ml	110.0ml	115.0ml	120.0ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
125.0ml	130.0ml	135.0ml	140.0ml	145.0ml	150.0ml	155.0ml	160.0ml	165.0ml	170.0ml	175.0ml

36KG
175.0ml

DEXTROSE (D50%W)

Indications:

- Symptomatic Hypoglycemia
- Cardiac Arrest (Newly Born with heart rate < 60)
- Altered mentation with Glucose level < 60

Contraindications:

- None with symptomatic hypoglycemia.
- Use with caution in patients with suspected increased ICP.

Side Effects:

- Patients may complain of warmth, pain, or burning at the injection site.
- Extravasation causes necrosis.
- Infusing through larger vessels decreases the risk of necrosis

Class: Carbohydrate

Mechanism of Action: Principal form of glucose used by the body. Dextrose (aka. glucose) is one of the basic building blocks of all sugars. Glucose is a monomer and is therefore readily processed in the blood. Through glycolysis glucose is turned into pyruvate giving off a small amount of chemical energy (ATP). Pyruvate is further processed through the Citric Acid Cycle (Kreb's Cycle) yielding even more energy (GTP, FADH2 and NADH) and CO2.

Concentration: 25.0 grams/50.0 ml

Dosage: N/A

DILAUDID (HYDROMORPHONE)

Indications:

- Extremity injury (including hip and shoulder injury)
- Back or flank pain.
- Abdominal pain: give initial dose only.
- Burns
- Chest Pain

Contraindications:

- Altered Level of Consciousness, any etiology
- Hypotension, auscultated B/P less than 100 mmHg
- Respiratory compromise, hypoxemia
- Pregnancy

Side Effects:

- Lightheadedness
- Dizziness
- Sedation
- Respiratory depression
- Nausea/Vomiting
- Sweating
- Flushing
- Dysphoria
- Euphoria
- Dry mouth

Class: Schedule II opioid analgesic

Mechanism of Action: opioid receptor agonist; inhibits ascending pain pathways, thus altering response to pain; main therapeutic action is analgesia

Concentration: 1.0 mg/1.0 ml

Dosage:

Adult:

- **Pain Management**
  0.5 – 1.0 mg IV/IO/IM every 10 min to max of 2mg

  Geriatric Patients (greater than 65 years)
  0.5mg IV/IM every 10 min to max of 1 mg

Pediatric: Contact Medical Control

EPINEPHRINE (1:1,000)

Indication:

- Cardiac Arrest
- Bradycardia
- Allergic Reaction/Anaphylaxis
- Respiratory Distress with presumed bronchospasm

Contraindications: None in the Emergency setting

Side effects:

- Palpitations
- Anxiety
- Tremulousness
- Headache
- Dizziness
- Nausea/Vomiting
- Increased myocardial oxygen demand

Class: Sympathetic Agonist, Sympathomimetic. Epinephrine is a naturally occurring catecholamine. It is a potent alpha- and beta-adrenergic stimulant with more profound beta effects.

Mechanism of Action: Epinephrine works directly on alpha- and beta-adrenergic receptors with effects of increased heart rate, cardiac contractile force, increased electrical activity in the myocardium, increased systemic vascular resistance, increased blood pressure, and increased automaticity. It also causes bronchodilation.

Concentration:

- **Ampule:** 1.0 mg/1.0 ml OR **Multi-Dose Vial:** 30.0 mg/30.0 ml

Dosage:

Adult:

- **Allergic Reaction**
  0.3 mg IM
  Repeat every 5-10 minutes x 2 as needed (total of 3 doses)
  Consider only giving ½ dose for elderly, known HTN, known heart disease, arrhythmia

- **Bronchospasm (Asthma)**
  0.3 mg IM
  Use with caution in heart disease, HTN, tachyarrhythmias, age greater than 50

- **Bradycardia Symptomatic**
  Mix 1.0mg of Epi 1:1,000 into a 1,000 ml bag of NS
  Piggyback into wide open IV/IO

EPINEPHRINE (1:1,000) cont.

Begin dose at 1.0 ml (1.0 mcg)/ 1.0 min
Titrate by 1.0 mcg every minute to systolic B/P of 90 mmHg

Pediatric:

- **Allergic Reaction**
  0.01mg/kg (0.01 ml/kg) IM maximum 0.3 mg (0.3 ml)
  Repeat every 5 - 10 min as needed X 2 (three doses total)

- **Pediatric Bronchospasm/Asthma**
  0.01mg/kg (0.01 ml/kg) IM maximum 0.3 mg (0.3 ml)

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.03ml	0.04ml	0.05ml	0.06ml	0.07ml	0.08ml	0.09ml	0.10ml	0.11ml	0.12ml	0.13ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
0.14ml	0.15ml	0.16ml	0.17ml	0.18ml	0.19ml	0.2ml	0.21ml	0.22ml	0.23ml	0.24ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
0.25ml	0.26ml	0.27ml	0.28ml	0.29ml	0.3ml	0.3ml	0.3ml	0.3ml	0.3ml	0.3ml

36KG
0.3ml

- **Pediatric Bradycardia Symptomatic**
  If IV/IO access not obtainable, 1:1,000 Epi, 0.1 mg/kg (0.1 ml/kg) **ET tube**.
  Repeat every 4 minutes until blood pressure is adequate for age.

- **Pediatric Cardiac Arrest w/o IV/IO access**
  If IV/IO access not obtainable, 1:1,000 Epi, 0.1 mg/kg (0.1 ml/kg) **ET tube**.
  Repeat every 4 minutes to a max of 4.0mg

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.3ml	0.4ml	0.5ml	0.6ml	0.7ml	0.8ml	0.9ml	1.0ml	1.1ml	1.2ml	1.3ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
1.4ml	1.5ml	1.6ml	1.7ml	1.8ml	1.9ml	2.0ml	2.1ml	2.2ml	2.3ml	2.4ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
2.5ml	2.6ml	2.7ml	2.8ml	2.9ml	3.0ml	3.1ml	3.2ml	3.3ml	3.4ml	3.5ml

36KG
3.6ml

EPINEPHRINE (1:10,000)

Indication:

- Cardiac Arrest
- Bradycardia
- Allergic Reaction/Anaphylaxis
- Respiratory Distress with presumed bronchospasm

Contraindications: None in the Emergency setting

Side effects:

- Palpitations
- Anxiety
- Tremulousness
- Headache
- Dizziness
- Nausea/Vomiting
- Increased myocardial oxygen demand

Class: Sympathetic Agonist, Sympathomimetic. Epinephrine is a naturally occurring catecholamine. It is a potent alpha- and beta-adrenergic stimulant with more profound beta effects.

Mechanism of Action: Epinephrine works directly on alpha- and beta-adrenergic receptors with effects of increased heart rate, cardiac contractile force, increased electrical activity in the myocardium, increased systemic vascular resistance, increased blood pressure, and increased automaticity. It also causes bronchodilation.

Concentration: 1.0 mg/10.0 ml

Dosage:

Adult:

- **Cardiac Arrest**
  1.0 mg IV/IO
  Administer every 4 minutes
  Max of 4.0 mg total

Pediatric:

- **Cardiac Arrest**
  0.01mg/kg IV/IO
  Administer every 4 minutes
  Max of 4.0 mg total

EPINEPHRINE (1:10,000) cont.

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG
0.3ml	0.4ml	0.5ml	0.6ml	0.7ml	0.8ml	0.9ml	1.0ml	1.1ml	1.2ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG
1.4ml	1.5ml	1.6ml	1.7ml	1.8ml	1.9ml	2.0ml	2.1ml	2.2ml	2.3ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG
2.5ml	2.6ml	2.7ml	2.8ml	2.9ml	3.0ml	3.1ml	3.2ml	3.3ml	3.4ml

36KG
3.6ml

FENTANYL (SUBLIMAZE)

Indications:

- Extremity injury (including hip and shoulder injury)
- Back or flank pain.
- Abdominal pain: give initial dose only.
- Burns
- Chest Pain

Contraindications:

- Altered Level of Consciousness, any etiology
- Hypotension, auscultated B/P less than 100 mmHG
- Respiratory compromise, hypoxemia
- Pregnancy
- Age less than two years old

Side effects:

- Muscle rigidity - particularly involving the muscles of respiration
- Respiratory depression
- Apnea
- Rigidity
- Bradycardia
- Hypotension
- Dizziness
- Blurred vision
- Nausea/Vomiting
- Diaphoresis

Class: Synthetic opioid, Schedule II controlled substance

Mechanism of Action: Competitive agonist that binds to opioid receptors which are found principally in the central and peripheral nervous system.

Concentration: 100.0 mcg/2.0 ml

Dosage:

Adult:

- **Pain Management**
  1.0 mcg/kg IV/IO/IM/IN slowly every 5 minutes
  (not to exceed 100 mcg per unit dose) a maximum total dose of 200 mcg

Pediatric:

- **Pain Management (2 yrs of age or greater)**
  1.0 mcg/kg IV/IO/IM/IN slowly every 5 minutes
  (not to exceed 100 mcg per unit dose) a maximum total dose of 200 mcg

FENTANYL (SUBLIMAZE) cont.

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.06ml	0.08ml	0.1ml	0.12ml	0.14ml	0.16ml	0.18ml	0.2ml	0.22ml	0.24ml	0.26ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
0.28ml	0.3ml	0.32ml	0.34ml	0.36ml	0.38ml	0.4ml	0.42ml	0.44ml	0.46ml	0.48ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
0.5ml	0.52ml	0.54ml	0.56ml	0.58ml	0.6ml	0.62ml	0.64ml	0.66ml	0.68ml	0.7ml

36KG
0.72ml

GLUCAGON

Indications:

- If level is less than 60mg/dl with a decreased level of consciousness.
- Esophageal obstruction
- Beta-Blocker overdose

Contraindications: None in the emergency setting, however, Glucagon for hypoglycemia is only effective if there are sufficient stores of glycogen in the liver.

Side effects:

- Hypotension
- Dizziness
- Headache
- Nausea/Vomiting

Class: Hormone secreted by the alpha cells of the pancreas

Mechanism of Action: Glucagon causes a breakdown of stored glycogen to glucose and inhibits the synthesis of glycogen from glucose. Glucagon exerts a positive inotropic action on the heart and decreases renal vascular resistance.

Concentration: 1.0 mg/1.0 ml

Dosage:

Adult:

- **Hypoglycemia**
  1.0 mg IM if difficulty obtaining IV
  Repeat after fifteen (15) minutes if no result is obtained.

Pediatric:

- **Hypoglycemia**
  Less than 20 kg 0.5 mg IM
  Greater than 20 kg 1.0 mg IM
  Repeat after fifteen (15) minutes if indicated.

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.5ml	0.5ml	0.5ml	0.5ml	0.5ml	0.5ml	0.5ml	0.5ml	0.5ml	0.5ml	0.5ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
0.5ml	0.5ml	0.5ml	0.5ml	0.5ml	0.5ml	1.0ml	1.0ml	1.0ml	1.0ml	1.0ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
1.0ml	1.0ml	1.0ml	1.0ml	1.0ml	1.0ml	1.0ml	1.0ml	1.0ml	1.0ml	1.0ml

36KG
1.0ml

GLUCOSE (ORAL)

Indications:

- Glucose level is less than 60 mg/dl AND patient has an intact gag reflex and is responsive.

Contraindications:

- Patient cannot follow commands
- Patient cannot protect their own airway

Side Effects:

- Nausea/Vomiting

Class: Carbohydrate, Monosaccharide

Mechanism of Action: After absorption from GI tract, glucose is distributed in the tissues and provides a increase in circulating blood sugar.

Concentration: 15.0 grams glucose/tube

Dosage:

Adult:

- **Hypoglycemia**
  30.0 grams PO (by mouth)
  Repeat to desired effect.

Pediatric:

- **Hypoglycemia**
  30.0 grams PO (by mouth)
  Repeat to desired effect.

KETAMINE (KETALAR)

Indications:

- Pain
- Excited Delirium
- Sedation

Contraindications:

- Uncontrolled Hypertension
- Head Injury
- Hypersensitivity

Precautions: Laryngospasms and other forms of airway obstruction have occurred. Use with caution in patients with history of Schizophrenia. Be aware that in lower dosing some patients may experience partial disassociation.

Side effects:

- Respiratory depression
- Laryngospasms
- Hypertension
- Emergence Reactions (Hallucinations, Delirium)
- Dizziness
- Nausea/Vomiting

Class: Ketamine hydrochloride is a rapid-acting dissociative anesthetic. Schedule III controlled substance

Mechanism of Action: The anesthetic state produced by ketamine hydrochloride has been termed "dissociative anesthesia" in that it appears to selectively interrupt association pathways of the brain before producing somatesthetic sensory blockade. It may selectively depress the thalamoneocortical system before significantly obtunding the more ancient cerebral centers and pathways (reticular-activating and limbic systems).

Concentration: 500.0 mg/10.0 ml

Dosage:

Adult:

- **Excited Delirium**
  300.0 mg IM
  If IV established: 1.0 mg/kg
  May repeat IV dose once as needed.

- **Sedation**
  300.0 mg IM
  If IV established: 1.0 mg/kg

KETAMINE (KETALAR) cont.

May repeat once if needed

Pediatric:

- **Sedation**
  1.0 mg/kg IV/IO

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.06ml	0.08ml	0.1ml	0.12ml	0.14ml	0.16ml	0.18ml	0.2ml	0.22ml	0.24ml	0.26ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
0.28ml	0.3ml	0.32ml	0.34ml	0.36ml	0.38ml	0.4ml	0.42ml	0.44ml	0.46ml	0.48ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
0.5ml	0.52ml	0.54ml	0.56ml	0.58ml	0.6ml	0.62ml	0.64ml	0.66ml	0.68ml	0.7ml

36KG
0.72ml

LIDOCAINE HCL 2%

Indications:

- Cardiac Arrest (V-Fib/Pulseless V-Tach)
- Post Resuscitation Care
- Wide Complex Tachycardia with a Pulse
- Pain Management for IO Flush

Contraindications:

- Second and third degree heart blocks
- CHF

Precautions: CNS depression may occur when the drug exceeds 300mg/hr. Lidocaine should be used with caution when administered concomitantly with Procainamide and beta-blockers as drug toxicity may result

Side effects:

- Drowsiness
- Seizures
- Confusion
- Hypotension
- Bradycardia
- Heart blocks
- Nausea/Vomiting
- Respiratory arrest
- Cardiac arrest

Class: Antiarrhythmic (Class 1b), Sodium channel blocker

Mechanism of Action: Lidocaine depresses depolarization and automaticity in the ventricles, and increases the ventricular fibrillation threshold by increasing phase IV repolarization

Concentration: 100.0 mg/5.0 ml

Dosage:

Adult:

- **IO insertion in the conscious patient**
  20.0 – 40.0 mg IO

Pediatric:

- **IO insertion in the conscious patient**
  0.5 mg/kg

LIDOCAINE HCL 2% cont.

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.07ml	0.1ml	0.12ml	0.15ml	0.17ml	0.2ml	0.22ml	0.25ml	0.27ml	0.3ml	0.32ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
0.35ml	0.37ml	0.4ml	0.42ml	0.45ml	0.47ml	0.5ml	0.52ml	0.55ml	0.57ml	0.6ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
0.62ml	0.65ml	0.67ml	0.7ml	0.72ml	0.75ml	0.77ml	0.8ml	0.82ml	0.85ml	0.87ml

36KG
0.9ml

MAGNESIUM SULFATE

Indications:

- Cardiac Arrest (V-Fib/Pulseless V-Tach)
- Wide Complex Tachycardia with a Pulse (Torsade de Pointes)
- Respiratory Distress or Failure (asthma, COPD)
- OB seizures (eclampsia).

Contraindications:

- Hypotension
- Third degree AV block
- Routine dialysis patients
- Known hypocalcemia.

Precautions: Magnesium Sulfate should be administered slowly to minimize side effects. Use with caution in patients with known renal insufficiency. In hypermagnesemia Calcium Chloride should be available as an antidote if serious side effects occur.

Side effects:

- Hypotension
- Cardiac arrest
- Respiratory/CNS depression
- Flushing
- Sweating
- Bradycardia
- Decreased deep tendon reflexes
- Drowsiness
- Respiratory depression
- Arrhythmia
- Hypothermia
- Itching/rash.

Class: Antiarrhythmic (Class V), Electrolyte

Mechanism of Action: Magnesium Sulfate is a salt that dissociates into the Magnesium cation and the sulfate anion. Magnesium is an essential element in numerous biochemical reactions that occur within the body. Magnesium Sulfate acts as a calcium channel blocker and blocks neuromuscular transmission. Hypomagnesemia can cause refractory ventricular fibrillation. Magnesium Sulfate is also a central nervous system depressant used for seizures associated with eclampsia and it is also a bronchodilator

Concentration: 10.0 grams/20.0 ml

Dosage:

Adult:

MAGNESIUM SULFATE cont.

- **Cardiac Arrest** (Refractory V-Fib or Torsades de Pointes)
- 1.0 - 2.0 grams IV/IO

Pediatric:

- **Cardiac Arrest** (Torsades de Pointes)
- 25.0 mg/kg over 5 minutes
  Repeat initial dose once.
  Maximum total of 2.0 grams

Pediatric 1st & 2nd Dose

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.15ml	0.2ml	0.25ml	0.3ml	0.35ml	0.4ml	0.45ml	0.5ml	0.55ml	0.6ml	0.65ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
0.7ml	0.75ml	0.8ml	0.85ml	0.9ml	0.95ml	1.0ml	1.05ml	1.1ml	1.15ml	1.2ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
1.25ml	1.3ml	1.35ml	1.4ml	1.45ml	1.5ml	1.55ml	1.6ml	1.65ml	1.7ml	1.75ml

36KG
1.8ml

NARCAN (NALOXONE)

Indications:

- Reversal of respiratory depression caused by opiates or synthetic narcotics

Contraindications:

- Known allergy
- known hypersensitivity
- neonates with narcotic use by mother

Side effects:

- Tachycardia
- hypotension with rapid administration
- HTN
- Dysrhythmias
- Nausea/Vomiting
- Diaphoresis.
- In neonates, opioid withdrawal may be life-threatening if not recognized.

Class: Opioid antagonist

Mechanism of Action: Naloxone hydrochloride is an opioid antagonist that antagonizes opioid effects by competing for the same receptor sites. Naloxone hydrochloride reverses the effects of opioids, including respiratory depression, sedation, and hypotension.

Concentration: 2.0 mg/2.0 ml

Dosage:

Adult:

- **Overdose** (respiratory depression in suspected opiate overdose)
  1.0 ml in each nostril (IN)(1.0mg/ml) via MAD device
  If significant respiratory depression:
  Up to 2.0 mg IV/IO/IM
  - Begin at 0.5 mg for respiratory depression
  - Begin at 2.0 mg for cardiac arrest

  Repeat until adequate respiratory effort.

Pediatric:

- **Overdose** (respiratory depression in suspected opiate overdose)
  0.1 mg/kg IV/IM/IN (maximum dose of 2.0 mg)
  Repeat to a maximum of 2.0 mg until adequate respiratory effort.

NARCAN (NALOXONE) cont.

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.3ml	0.4ml	0.5ml	0.6ml	0.7ml	0.8ml	0.9ml	1.0ml	1.1ml	1.2ml	1.3ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
1.4ml	1.5ml	1.6ml	1.7ml	1.8ml	1.9ml	2.0ml	2.0ml	2.0ml	2.0ml	2.0ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
2.0ml	2.0ml	2.0ml	2.0ml	2.0ml	2.0ml	2.0ml	2.0ml	2.0ml	2.0ml	2.0ml

36KG
2.0ml

NITROGLYCERIN (SPRAY/TABLET)

Indications:

- Chest Pain
- CHF/Pulmonary Edema

Contraindications:

- Hypotension (B/P less than 100 mmHg systolic)
- Hypovolemia
- Severe bradycardia
- Use of erectile dysfunction drugs within past 24hrs up to 48 hours depending on use of extended-release medications.

Precautions:

- Headache
- Tachycardia

Side effects:

- Hypotension
- Syncope

Class: Nitrate

Mechanism of Action: Potent vasodilator with antianginal, anti-ischemic, and antihypertensive effects. Relaxes vascular smooth muscle by an unknown mechanism. Decreases peripheral vascular resistance, preload, and afterload. Onset 1-3m SL, 30m transdermal. Peak 5-10m SL. Duration is 20-30m SL, 3-6h transdermal.

Concentration: 400.0 mcg/1 spray or 400.0 mcg/1 tablet (0.4mg)

Dosage:

Adult:

- **Chest Pain/Acute Coronary Syndrome**
  0.4mg SL tabs or metered dose spray
  Every 5 minutes
  Repeat total of 3 doses

- **Congestive Heart Failure/Pulmonary Edema**
  Administer every 5 minutes
  Maintain B/P 100 mmHg systolic

Pediatric: Contact Medical Control

SODIUM BICARBONATE

Indications:

- Metabolic Acidosis
- Hyperkalemia
- Tricyclic or Phenobarbital Overdose
- Crush Syndrome

Contraindications:

- Alkalosis

Side Effects:

- Alkalosis
- Hyperirritability
- Seizures
- Tetany (electrolyte imbalance)
- Cardiac & respiratory arrest
- Lowering of serum potassium,
- Decreased fibrillation threshold.

Class: Alkalinizing Agent

Mechanism of Action: In the presence of hydrogen ions, sodium bicarbonate dissociates to sodium and carbonic acid, the carbonic acid picks up a hydrogen ion changing to bicarbonate and then dissociates into water and CO2, functioning as an effective buffer and alkalinizing the blood. In summary, increases plasma bicarbonate, which can buffer metabolic acids and move TCAs and phenobarbital off receptor sites and back into circulation.

Concentration: 50.0 mEq/50.0ml

Dosage:

Adult:

- **Dialysis and Hyperkalemia**
  50.0 mEq IV/IO

Pediatric: Contact Medical Control

TRANEXAMIC ACID (TXA)

Indications:

- Moderate to severe hemorrhage
- injury < 3 hours old
- SBP < 90 mmHg, *and/or*
- HR > 110

Contraindications:

- Hypersensitivity to tranexamic acid or any of the ingredients.
- Isolated head injury

Side effects:

- Dizziness
- Nausea/Vomiting
- Chest pain

Class: Antifibrinolytic Agent

Mechanism of Action: Tranexamic acid is a competitive inhibitor of plasminogen activation, and at much higher concentrations, a noncompetitive inhibitor of plasmin

Concentration: 1.0 gram/10.0 ml

Dosage:

Adult:

- **Trauma Management**
  1.0 gram mixed in a 100.0 ml bag of NS over 10 minutes

Pediatric: Contact Medical Control

VERSED (MIDOZOLAM)

Indications:

- Sedation
- Seizure control
- Excited Delirium

Contraindications:

- Allergy
- Hypotension
- Shock
- Coma

Precautions: Premedication with an opiate may potentiate midazolam and lead to apnea.

Side effects:

- Nausea/Vomiting
- Headache
- Drowsiness
- Lethargy
- Cough
- Hiccups
- Respiratory Depression
- Apnea
- Hypotension
- Cardiac Arrest
- Paradoxical CNS stimulation (i.e. Valium Rage)

Class: Short-acting benzodiazepine central nervous system (CNS) depressant. Schedule IV Controlled Substance

Mechanism of Action: Acts at the level of the limbic, thalamic, and hypothalamic regions of the CNS through potentiation of GABA (inhibitory neurotransmitter). Decreases neural cell activity in all regions of CNS. Anxiety is decreased by inhibiting cortical and limbic arousal. Promotes relaxation through inhibition of spinal motor reflex pathway, also depresses muscle & motor nerve function directly. As an anticonvulsant, augments presynaptic inhibitions of neurons, limiting the spread of electrical activity. However, it does not alter the electrical activity of the seizure's focus. Midazolam has twice the affinity for benzodiazepine receptors than diazepam and has more potent amnesic effects. It is short acting and roughly 3-4 times more powerful than diazepam.

Concentration: 5.0 mg/1.0 ml

Dosage:

VERSED (MIDOZOLAM) cont.

Adult:

- **Excited Delirium**
  Up to 10.0 mg IM/IN
  May repeat in 5 minutes via IV/IM/IN

- **Sedation**
  Up to 5.0 mg IV/IO/IN/IM
  May repeat to a total dose of 10.0 mg

- **Seizures**
  If no IV/IO established: 10.0 mg IM/IN
  If IV/IO established: 5.0 mg IV/IO
  May repeat initial dose once.

Pediatric:

- **Sedation**
  0.1 mg/kg IV/IO/IM/IN
  Max dose of 5.0 mg
  May repeat initial dose once

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.06ml	0.08ml	0.1ml	0.12ml	0.14ml	0.16ml	0.18ml	0.2ml	0.22ml	0.24ml	0.26ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
0.28ml	0.3ml	0.32ml	0.34ml	0.36ml	0.38ml	0.4ml	0.42ml	0.44ml	0.46ml	0.48ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
0.5ml	0.52ml	0.54ml	0.56ml	0.58ml	0.6ml	0.62ml	0.64ml	0.66ml	0.68ml	0.7ml

36KG
0.72ml

- **Pediatric Seizures**
  0.2 mg/kg IM/IN/IV/IO up to 5.0 mg
  IM or IN dosing is preferred initially unless an IV/IO has already been established
  May repeat initial dose once

VERSED (MIDOZOLAM) cont.

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.12ml	0.16ml	0.2ml	0.24ml	0.28ml	0.32ml	0.36ml	0.4ml	0.44ml	0.48ml	0.52ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
0.56ml	0.6ml	0.64ml	0.68ml	0.72ml	0.76ml	0.8ml	0.84ml	0.88ml	0.92ml	0.96ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
1.0ml	1.04ml	1.08ml	1.12ml	1.16ml	1.2ml	1.24ml	1.28ml	1.32ml	1.36ml	1.4ml

36KG
1.44ml

ZOFRAN (ONDANSETRON)

Indications:

- Nausea/Vomiting

Contraindications:

- Known allergy

Class: Anti-emetic, Selective Serotonin (5HT3) Receptor Antagonist

Mechanism of Action: Ondansetron reduces the activity of the vagus nerve, which activates the vomiting center in the medulla oblongata and also blocks serotonin receptors in the chemoreceptor trigger zone. It has little effect on vomiting caused by motion sickness. Safely tolerated at high dose ranges.

Concentration: 4.0 mg/1 ODT (tablet)

4.0 mg/2.0 ml

Dosage:

Adult:

- Vomiting/Nausea
  4.0 mg IV or 4.0 mg ODT (Oral Disintegrating Tablet)
  May repeat once in 10 minutes as needed
  May give ODT before IV access is obtained

Pediatric:

- Vomiting/Nausea
  0.1 mg/kg IV or ODT (Oral Disintegrating Tablet)
  Max single dose of 4.0 mg
  May repeat once in 10 minutes as needed
  May give ODT before IV access obtained

3KG	4KG	5KG	6KG	7KG	8KG	9KG	10KG	11KG	12KG	13KG
0.15ml	0.2ml	0.25ml	0.3ml	0.35ml	0.40ml	0.45ml	0.5ml	0.55ml	0.60ml	0.65ml

14KG	15KG	16KG	17KG	18KG	19KG	20KG	21KG	22KG	23KG	24KG
0.7ml	0.75ml	0.8ml	0.85ml	0.9ml	0.95ml	1.0ml	1.05ml	1.1ml	1.15ml	1.2ml

25KG	26KG	27KG	28KG	29KG	30KG	31KG	32KG	33KG	34KG	35KG
1.25ml	1.3ml	1.35ml	1.4ml	1.45ml	1.5ml	1.55ml	1.6ml	1.65ml	1.7ml	1.75ml

36KG
1.8ml