

# PARAMEDIC TREATMENT PROTOCOL

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## **Part I. GENERAL OPERATIONS**

### **A. Introduction:**

The purpose of protocols in the Lincoln Fire & Rescue Emergency Medical Services system is to establish guidelines between EMS administration, the EMS provider and medical direction for the management, treatment, and transport of specific medical emergencies.

The protocols set forth are neither designed nor intended to limit the EMS provider in the exercise of good judgment or initiative in taking reasonable action in extraordinary circumstances. These protocols are intended to assist in achieving excellent, consistent pre-hospital care for patients. The following protocols are not intended to provide a solution to every problem which may arise.

Pre-hospital care is a shared responsibility between the physician and the EMS provider. The services which EMS providers are authorized to perform pursuant to the Nebraska Emergency Medical Services Rules and Regulations shall be performed by the EMS provider only pursuant to the written or verbal authorization of the operational medical director or medical control. The National Education Standards and the National EMS Scope of Practice Model shall be the reference for standard of care. In the Lincoln Fire & Rescue Emergency Medical Services system, in all cases where written protocols, directives and policies do not address patient care or disposition, the National Education Standards and the National EMS Scope of Practice Model shall be the standard.

The following treatment guidelines are for use by field personnel and the Medical Control physician. They have been developed to help ensure standardized, quality medical care and to promote rapid and appropriate quality treatment of all patients regardless of economic or social status in the quickest and most efficient manner possible.

The protocols contained in this document are detailed for Advanced Life Support (ALS) treatment modalities and are intended for use by all ALS providers operating within the Lincoln Fire & Rescue EMS System.

Without actual On-Line Medical Direction, the field provider should not deviate from these guidelines relating to treatment. If extenuating circumstances necessitate deviation from these guidelines, they must be explicitly detailed in the patient care report. Under no circumstances should providers deviate beyond their Medical Director approved scope of practice.

Although these guidelines attempt to cover most situations the field provider will encounter, it is impossible to delineate all possible situations the field provider will face. When faced with occurrences that are not specifically addressed in these guidelines, the provider shall seek the input of On-Line Medical Direction for advice and direction. It must be emphasized when presented with a situation which is not covered by these

guidelines; the most appropriate decision is the one which best serves the interests of the patient and the patient's family.

## **B. Definitions:**

### **The Lincoln Emergency Medical Services System:**

The Lincoln Fire & Rescue Emergency Medical Services System is comprised of those agencies and personnel who facilitate the delivery of pre-hospital health services to the citizens of Lincoln, Nebraska, and selected surrounding communities. From the access to emergency medical services, through the actual field treatment and/or transportation, to the evaluation and continuous improvement of medical providers and functions, the System is a chain, with each link dependent upon the others to provide emergency medical care to the victims of illness or injury. Specifically, the System includes the public, the Emergency 911 Communications Center, Lincoln Fire and Rescue, and the Lincoln Police Department.

### **Medical Control:**

Conceptually, Medical Control is the authority granted to field providers enabling them to perform out-of-facility assessments and treatments. Actual Medical Control is comprised of the Physician Medical Director, the Quality Improvement staff, and the licensed physicians and advanced practice providers designated and authorized to provide Medical Direction.

### **Medical Direction:**

Medical Direction is the actual medical advice and guidance afforded field providers for various types of medical or traumatic emergencies. Medical Direction can be provided either "off-line" or "on-line". Off-line Medical Direction is the written standards of care prescribed by Medical Control. These standards take the form of medical guidelines to be followed when presented with field interventions. These guidelines establish interventions which may be initiated without the actual consultation with a physician. On-Line Medical Direction is the actual verbal authority and advice given to a field provider for certain treatment modalities. For the purposes of uniformity, the written guidelines may include treatment options available only after consultation with On-Line Medical Direction.

### **Advanced Life Support (ALS):**

Advanced Life Support is defined as those treatment modalities which are performed to treat airway obstructions, respiratory and/or cardiac arrest and to provide emergency lifesaving care. Examples include synchronized cardioversion, intubation, rapid sequence intubation [RSI], intravenous/intraosseous [IV/IO] insertion, medication administration, pleural needle decompression, transcutaneous external cardiac pacing, and any other treatment modalities as may be authorized by Medical Control. A paramedic may function within their scope of practice pursuant to Nebraska Health and Human Services 172 NAC 11 chapter 11 001. Paramedic Practices and Procedures in accordance with the medical treatment protocols with the following exceptions invoked by the physician medical director for the Lincoln EMS System:

1. Administration of activated charcoal is not approved for the Paramedic

2. The use of an ophthalmoscope not approved for the Paramedic
3. The use of an otoscope not approved for the Paramedic
4. Insertion of nasogastric tubes is not approved for the Paramedic.

It is the responsibility of each individual provider to assure they function within their scope of practice, State regulations, and according to the medical treatment protocols. Any deviation from scope of practice, State regulations or the medical treatment protocols must be reported to the on-duty EMS Supervisor, and the Chief of EMS.

**Paramedic, System Paramedic Intern:**

An EMS Provider licensed by the State of Nebraska as a Paramedic who has received the Lincoln EMS protocols and the EMSOA policy and procedures manual and has completed their hospital O.R. rotation with a minimum of one live intubation and is undergoing an orientation program designed to integrate the provider into the EMS system. System Intern paramedics may perform all ALS procedures described within the protocols when under the direct supervision of a system certified paramedic. All other treatment modalities will be limited to that of BLS until the provider has completed System Certification.

**System Certified Paramedic:**

An EMS Provider licensed by the State of Nebraska as a Paramedic that has met all the requirements to maintain Medical Control authorization to perform BLS and ALS skills within the Lincoln EMS System. The System Certified Paramedic is authorized to initiate, on Standing Order, every treatment modality indicated in the Medical Treatment Protocols except those that are specified by “[Medical Direction]”.

**Paramedic Preceptor:**

A System certified paramedic who has been authorized by Medical Control to supervise, orient, train, and evaluate paramedic students (students) and paramedic interns (interns.)

**Paramedic Student (Student):**

A person enrolled in an approved paramedic training program. The student will only be authorized to perform skills up to their current level in the training program and while under the direct supervision of a system certified paramedic. For the complete list of ALS interventions that are not authorized for students, please refer to policy 8 the EMSOA System Policies and Procedures manual.

**C. Patient Management – Standards of ALS Care:**

1. Apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
2. Cardiac rhythms are correctly identified and documented in the ePCR.
3. All medications shall be administered by the appropriate dose and route of administration.

4. **Medication preparation and administration:** To ensure the proper medication is prepared and administered, the paramedic who prepares the medication should administer it. This guideline is established for both labeled prefilled syringes/containers and for medications which need to be drawn up from a vial or ampule. The label should be read immediately to verify it is the intended medication. The label should be read again when drawing the medication from the vial or ampule or preparing the prefilled syringe.
5. Prior to administering medication(s) to a pediatric patient, the correct dose and volume must be verified utilizing the Handtevy guide. Utilization of the Handtevy guide is also strongly recommended for all adult patients.
  - a. Cross-check the concentration of the medication listed in Handtevy with the concentration of the medication available. Medication supply shortages may result in concentration differences between what is on hand versus in the guide.
6. Prior to administering the medication to the patient, a medication administration cross-check must be performed utilizing a second EMS provider when one is present.
  - a. Medication Administration Cross-Check – medication verified prior to administration following the procedure listed on the Medication Administration Cross-Check reference card.
  - b. If a second provider is not available, the medic giving the medication must conduct the cross-check procedure by themselves utilizing the criteria on the reference card.
7. **Medication exchanges or “Handing off” medications:** One medic preparing the medication and “handing off” the medication for another medic to administer increases the chance for medication error and should rarely occur in the Lincoln EMS system. If there is no other option than “handing off” a medication, the medic who prepares the medication shall state the name of the medication, intended dose, and volume to administer to the receiving medic, and the receiving medic shall verbally repeat the information for confirmation. Once the correct medication, dose, and volume have been confirmed, the medication shall be administered according to the appropriate medical treatment protocol.
8. Medications administered to adults via the endotracheal tube (ETT) route should be given at 2 times the recommended IV dose. Those medications that can be administered via the ETT are Naloxone (Narcan), and Epinephrine. Medications given via ETT for neonates should be diluted in 1-2 mL of NS.
9. Venous access shall be established via intravenous or intraosseous techniques for the purpose of medication administration, fluid administration, or as deemed necessary by the provider as the patient’s condition or treatment modalities warrant.
10. All skills are accomplished quickly and efficiently utilizing proper technique.



11. All venipuncture for intravenous therapy is established using aseptic technique, in an expedient manner. Macro drip tubing attached to a macro bore extension set should be utilized for routine adult I.V. administration. In general, micro drip tubing should be used for piggyback medication infusions and/or pediatric patients.
12. Saline locks are established using aseptic techniques in an expedient manner. An IV extension tubing flushed with a 10 mL-prefilled syringe should be utilized for routine saline lock administration. If at any time the patient's clinical presentation changes and they require intravenous fluids or medications, an IV infusion will be established utilizing the already placed IV extension tubing.
13. All IV sites are patent and without signs of infiltration.
14. For purposes of these guidelines, IV administration shall include IO and saline locks when indicated.
15. ALL IM injections should be placed in the lateral thigh.
16. Any patient treated with controlled medications must be monitored for ETCO<sub>2</sub> and SPO<sub>2</sub> and the findings should be documented in the ePCR.
17. All airway management techniques are performed effectively and correctly.
18. There will be a designated primary airway management provider for every case that requires advanced airway control.
19. All intubation tubes are correctly placed within 30 seconds of the last mechanical ventilation. An oropharyngeal airway or other appropriate device will be utilized as a bite block immediately after advancing the intubation tube to its proper position.
20. An endotracheal intubation attempt is defined as "Anytime the laryngoscope blade is inserted into the patient's mouth".
21. Tube placement must be verified and/or monitored using all the following:
  - a. Direct auscultation
  - b. Waveform capnography
    - i. Intubated patients must be continuously monitored utilizing capnography to maintain ETCO<sub>2</sub> levels of 35-45 mmHg (30-35 mmHg for head injury patients with signs of brain stem herniation) with an SPO<sub>2</sub> greater than or equal to 94%.
22. All skills are accomplished without unnecessarily delaying on-scene time.
23. Under most circumstances, on-scene times should be limited to 20 minutes for medical patients and 10 minutes for "designated trauma" patients. If a "trauma" scene time is greater than 10 minutes, there must be a documented reason for the extended scene time.
24. No more than two (2) attempts for IV/IO access or intubations should occur on-scene. Further attempts should not delay patient transport and should be performed enroute to the hospital. IV/IO access and intubations for "trauma"

patients should be performed in route. There must be a documented reason for ALS attempts performed on trauma patients while still on scene.

25. All radio communications are professional, pertinent, and succinct.
26. Medical Direction is consulted prior to initiating those treatment modalities that can only be administered under **[Medical Direction]**.
27. If Medical Direction cannot be reached after three (3) attempts by radio due to a communications failure, one attempt must be made by cell phone. If no contact is possible, the paramedic may initiate required care according to the medical treatment guidelines. However, in these situations, an incident report must be filed with the provider's agency detailing the events surrounding the incident.
28. When appropriate, a radio report is given from the scene in a timely manner.
29. Information is presented accurately.
30. Updated radio reports are provided as indicated by changes in the patient's condition.

**D. Physician on Scene:**

1. When a physician is present on the scene and desires to direct patient care, paramedic personnel should:
  - a. Inform the physician that if the physician directs patient care, the physician must accompany the patient to the hospital.
  - b. Inform the physician at the onset that paramedic personnel have strict legal guidelines and established protocols, and they may not exceed those guidelines or protocols.
  - c. Inform the physician that any procedure outside of these legal guidelines must be carried out by the physician.
2. Paramedic personnel have the right and obligation at any time there is gross deviation from the accepted protocol to contact the receiving hospital for further instruction. The physician on the scene should be informed if contact with the hospital is being made.
3. If possible, it may be advisable to contact the receiving hospital via landline or cellular phone and have the receiving hospital physician speak directly to the physician at the scene.

**E. "Do Not Resuscitate" (DNR) Orders and Identification of CPR Only:**

1. A DNR is a written order by a physician stating that a patient should not be resuscitated or have CPR performed. A DNR must be signed by a patient, or the patient's medical POA, dated, and must identify the patient by name. If a physician's signature is not present, the check box regarding telephone order must be checked.

2. EMS providers will not initiate or continue cardiopulmonary resuscitation on a patient in cardiac arrest once a valid DNR order is confirmed. In the event of uncertainty, resuscitative measures should be initiated.
3. DNR does not mean that emergency medical care for any other medical condition will be changed or limited. Patients should receive emergency medical treatment up until the point of cardiac arrest.
4. A written DNR order must contain the patient's name and be signed by the physician or by the RN who received the order from the physician. Verbal confirmation of a DNR by a family member or friend without verification of a written DNR is not sufficient.
5. In a skilled care facility (nursing home) or Long-Term Acute Care (LTAC), DNR orders documented in the patient's medical record are considered valid if signed by the physician or by the RN per verbal order of the physician. A DNR form may be used but is not required in the nursing home setting.
6. An EMS provider can honor an effective Living Will or Health Care Power of Attorney. This applies only to adults. EMS providers can presume the validity of either of these documents if signed in Nebraska. Documents from other states in compliance with that state's laws are also valid in Nebraska.
7. Observation of an original or a photocopy of a living will, or health care power of attorney must be documented in the patient care report. The patient care report must also contain information that the patient is an adult (is 19 or older or has been married).
8. If a telephone consultation with the patient's physician or the physician's designee verifies a DNR, the paramedic can honor the order. Authorization shall be documented on the patient care report and include the physician's or physician designee's name, telephone number and time of the telephone call from the paramedic to the physician.
9. Once CPR has been initiated, resuscitative measures may be discontinued when any one of the following occurs:
  - a. A DNR or no code order is confirmed.
  - b. A physician physically present at the scene or medical control for the service, based on information from the out-of-hospital providers on scene, determines that CPR is futile or should be discontinued.
  - c. An out of hospital provider is following termination of CPR protocols that have been authorized by the Physician Medical Director. **[Medical Direction]**
  - d. Any time the scene becomes unsafe for rescuers.
10. In the event there is a question regarding a DNR or Advanced Directive, initiate resuscitation, and contact Base Physician.

11. For purposes of resuscitation, an iGel is considered an invasive airway and is contraindicated by a DNI order.

**F. Discontinue or No Initiation of CPR:**

1. Situations may occur where CPR has been initiated on an obviously deceased patient prior to the arrival of EMS. If the patient meets the following criteria, the EMS provider may discontinue CPR or may choose not to initiate CPR.
  - a. No pulse, AND
  - b. No spontaneous respirations, AND
  - c. Pupils fixed and dilated, AND
  - d. One or more of the following:
    - i. Patient with obvious lethal injury – trauma cardiac arrest with injuries incompatible with life. (I.E., massive blood loss, displacement of brain tissue, decapitation)
    - ii. Wrinkled cornea.
    - iii. Rigor mortis.
    - iv. Postmortem lividity.
    - v. Decomposition.
    - vi. Valid DNR form.
    - vii. Physician authorization.

**NOTE: Care should be taken to rule out hypothermia, acute alcoholic intoxication, and drug overdose.**

**G. Out of Hospital Confirmation of Death:**

1. The purpose of this protocol is to allow Paramedics to confirm/declare a patient dead based on certain criteria with permission of the base physician. This does not include obviously deceased patients. Permission for declaration of death will be called to the nearest hospital over radio, cell phone or landline. **[Medical Direction]**
2. Criteria for Requesting Declaration of Death in the Field:
  - a. Patient found down for unknown period. (Or greater than 10 minutes)
  - b. No CPR in progress when paramedics arrive on scene.
  - c. Patient assessed and found to have no signs of life.
  - d. Paramedic ECG evaluation is asystole in two leads.

## **H. Termination of Resuscitation:**

### **Purpose:**

1. When there is no response to pre-hospital cardiac arrest treatment, it is acceptable and often preferable to cease futile resuscitation efforts in the field.
2. For patients in cardiac arrest, pre-hospital resuscitation is initiated with the goal of returning spontaneous circulation before permanent neurologic damage occurs. In most situations, ALS providers can perform an initial resuscitation that is equivalent to an in-hospital resuscitation attempt, and there is usually no additional benefit to emergency department resuscitation in most cases.
3. CPR that is performed during patient packaging and transport is much less effective than CPR done at the scene. Additionally, EMS providers risk physical injury while attempting to perform manual CPR in a moving ambulance while unrestrained. Continuing resuscitation in futile cases increases the time that EMS crews are not available for another call, impedes emergency department care of other patients, and incurs unnecessary hospital charges.
4. When cardiac arrest resuscitation becomes futile, the patient's family should become the focus of the EMS providers. Families need to be informed of what is being done; most families understand the futility of the situation and are accepting of ceasing resuscitation efforts in the field.

### **Criteria:**

1. A cardiac arrest patient that has received resuscitation in the field but has not responded to treatment and a base physician has ordered termination of resuscitation efforts.
2. Consider field termination of resuscitation in the following situations:
  - a. There is no response to approximately 25 minutes of ALS care including ventilations with advanced airway and several "rounds" of resuscitation drugs.
  - b. During resuscitation, new information related to a "Do Not Resuscitate" (DNR) order is obtained.
3. Transport should not be initiated unless you have a "return of spontaneous circulation. (ROSC)

### **Exclusion Criteria:**

1. Consider continuing resuscitation and transporting patients with the following conditions (although under certain circumstances, a base physician may order termination of resuscitation in these conditions also):
  - a. Cardiac arrest associated with medical conditions that may have a better outcome despite prolonged resuscitation, including:
    - i. Hypothermia.
    - ii. Near-drowning.

- iii. Lightning strike.
  - iv. Electrocution.
  - v. Drug overdose.
- 2. Cardiac arrest in infants and children.
- 3. Cardiac arrest in a public place after continuing the resuscitation on scene for approximately 25 minutes.
- 4. Cardiac arrest in an environment where the bystanders do not accept the idea of ceasing efforts in the field. While most families understand the futility of the situation and are very accepting of field termination, some family members or bystanders can become hostile.
- 5. Initial rhythm of ventricular fibrillation (V-fib) or ventricular tachycardia (V-tach).
- 6. Persistent ventricular fibrillation (V-Fib) or ventricular tachycardia (V-tach), regardless of initial rhythm.
- 7. ROSC at some point during the resuscitation.

**I. Notification of Family Members:**

- 1. A death notification is an acknowledged difficult conversation even for a seasoned health care provider. The difficulty may stem from personal identification with the family or victim, recognition of the survivor's emotions, feeling of failure or fear of blame by the survivor.
- 2. The on-duty EMS Supervisor will be dispatched to every cardiac arrest when they are available, but it is acknowledged they may be unavailable for any number of reasons. In this case the most experienced medic on scene working with company officers should explain to the family what they are doing and why.

The mnemonic GRIEV\_ING© was developed by Dr. C. Hobgood MD to aid in communication with grieving survivors.

G – gather	Gather the family; ensure that all members are present.
R – resources	Call for support resources available to assist the family with their grief, i.e., chaplain services, ministers, family, and friends.
I – identify	Identify yourself, identify the deceased or injured patient by name and identify the state of knowledge of the family relative to the events of the day.
E – educate	Briefly educate the family as to the events that have occurred during the resuscitation, educate them about the current state of their loved one.

V – verify	Verify that their family member has died. Be clear! Use the words "dead" or "died."
– space	Give the family personal space and time for an emotional moment; allow the family time to absorb the information.
I – inquire	Ask if there are any questions and answer them all.
N – nuts and bolts	Inquire again if they would like you to contact a chaplain, minister, family, or friends. Offer the family the opportunity to view the body.
G – give	Give them your card and access information. Offer to answer any questions that may arise later. Always return their calls.

The GRIEV\_ING mnemonic is copyrighted C. Hobgood, MD.

3. The use of a mnemonic to help alleviate provider stress and provide structure to the message being communicated has been successfully used for years in other formats.
4. If at any time the survivors become hostile, aggressive, or unwilling to allow you to leave the patient in their surroundings, load the patient and transport to the hospital that was contacted for permission to terminate resuscitation. Notify the base physician of the events surrounding the unforeseen transport.
5. In most cases, you should be aware of whether the survivors are agreeable of not transporting before the decision is made to terminate the resuscitation.
6. The patient should be covered to the level of the chin. IVs and/or IO's should be left in place but the IV bag or bags should be removed from the tubing. All unsuccessful IV sites should be bandaged. ET tubes and I-gel Airways should be left in place with securing device still in place.
7. Law enforcement must be on scene before crews leave the scene.

## J. Refusal of Care:

1. Adults.
  - a. An adult is an individual 19 years old or older or who is or has been married (NEB REV STAT §43-2101). A competent adult (as determined by the Informed Decision-Making Refusal Form) can refuse medical services and/or transportation to a health care facility.
  - b. A legal guardian can consent to or refuse medical services and/or transportation to a health care facility for an incompetent adult.
  - c. A person appointed as a Health Care Power of Attorney can consent or refuse consent for medical services and/or transportation to a health care facility for the incompetent adult named in the power of attorney.

2. Minors.

- a. A minor is an individual under 19 years of age that has never been married. In the absence of suspected abuse and/or neglect, a parent or legal guardian can consent or refuse consent on behalf of a minor, for medical services and/or transportation to a health care facility.

3. Documentation.

- a. All consent or refusals of consent for medical treatment and/or transportation must be documented on the "Informed Decision - Making Form" and in the patient care report. When possible, the "Informed Decision-Making Form" should be signed and dated by the patient or other individual authorized to give or refuse consent. All refusals to sign a consent or refusal of consent must be documented in the patient care report or other appropriate record(s).



## Part II. GENERAL PRINCIPLES

### A. Airway and Oxygen:

1. An intact airway and adequate oxygenation and ventilation are essential for all patients with medical or traumatic conditions. Throughout this protocol, it is assumed that the Paramedic will maintain a patent airway and provide appropriate supplemental oxygenation.
2. Maintain patent airway with head-tilt/chin-lift or modified jaw thrust maneuver and consider an oral or nasal airway adjunct.
3. If the patient is ventilating adequately on their own, apply nasal cannula at 2-6 L/min or non-rebreather mask at 12-15 L/min.
4. High flow oxygen shall be avoided in medical patients unless signs of severe hypoxia are present. High flow oxygen remains the standard of care in trauma patients.
5. If NOT ventilating adequately, assist ventilations with BVM and 100% oxygen – advanced airway management may be required.
6. Consider PEEP, set PEEP valve at 5 cm of H<sub>2</sub>O initially, may titrate to max of 10 cm of H<sub>2</sub>O.
7. Anytime a patient is manually ventilated, including the use of BVM only, ETCO<sub>2</sub> shall be monitored.
8. Consider assisting ventilations in those patients whose respiratory status does not improve after receiving oxygen by non-rebreather mask.
9. If pulse oximetry is used, adjust oxygen delivery devices to an oxygen saturation of 94% or above in medical patients and 100% in trauma patients.
10. Use the trauma ET intubation method with patients who have suspected compromised cervical spines.
11. Confirm endotracheal tube placement by observing chest rise and fall and by verifying the presence of lung sounds and the absence of epigastric sounds by auscultation with a stethoscope.
12. Consider immobilizing the head with a c-collar to prevent head movement during transport when an advanced airway is placed, including ET and I-gel airways. Commercial securing devices are recommended over twill tape to secure the ET tube in place.
13. If unable to intubate after two (2) attempts, consider alternate airway management methods as directed by Medical Director such as BVM ventilation, or the I-gel Airway.

- B. RSI (Rapid Sequence Intubation) is an advanced airway management technique that requires specialized training and authorization by the Physician Medical Director. **\*\* RSI Credentialed Paramedic Only**

C. IV Therapy:

1. All IV insertions refer to peripheral IV's (extremities and external jugular vein), including saline locks and intraosseous (IO) lines. IO insertion is authorized for unstable pediatric and adult patients.
2. For trauma patients, IVs should be started enroute to the hospital, except when there is an unavoidable delay such as prolonged extrication time.
3. Large bore IVs refer to #14 or #16 plastic IV catheters - infuse at rate as indicated by pulse and blood pressure.
4. This protocol permits a maximum of three (3) attempts per patient for IV insertion.
5. Peripherally Inserted Central Catheters (PICC) may be used in emergency situations. PICC lines are located on the arm and usually contain saline but other central lines may be flushed with Heparin. **Only PICC lines may be accessed.** If a PICC line must be accessed, withdraw and discard at least 20 mL of blood and maintain sterility.
6. Under no circumstances are pre-hospital providers allowed to access a fistula. You may continue to use a fistula only if it has been accessed in the dialysis center and the dialysis nurse gives permission.
7. Fluid Therapy - Give fluid amounts as listed below. While administering a fluid bolus, frequently reassess perfusion for improvement. If perfusion improves, slow the IV to TKO and monitor closely. If patient develops fluid overload respiratory distress (dyspnea, rales, rhonchi, decreasing SpO2), slow the IV to TKO.
  - a. ADULTS: Give a 20 mL/kg bolus up to 2 L to maintain a Mean Arterial Pressure (MAP) of greater than 65mmHg. If no improvement after one bolus, contact **[Medical Direction]** for direction.
  - b. CHILDREN: Give a 20 mL/kg bolus. May repeat once. If no improvement after a total of 40 mL/kg is administered, contact **[Medical Direction]** for direction.
  - c. NEONATES: Give a 10 mL/kg bolus. If no improvement after one 10 mL/kg bolus, contact **[Medical Direction]** for direction.

D. **Body Substance Isolation:**

1. Standard practice in EMS is to use body substance isolation when caring for ALL patients. Gloves and eye protection are required on every patient contact.
2. This means wearing gloves and eye protection when administering patient care; handling blood and body fluids or surfaces or items soiled by blood and body fluids. The use of masks, aprons or gowns shall be used during procedures likely to generate splashes of blood, droplets of blood or body fluid or in cases of communicable diseases.

3. Hands shall be washed after each patient care incident, even if gloves were worn or waterless soap was used.
4. This policy also applies to immediate disposal of needles and sharps in disposable impervious SHARPS containers.
5. The practice of recapping needles is highly discouraged.
6. All personnel should wear surgical masks and/or N-95 masks when in contact with patients in which an airborne communicable disease is suspected or confirmed by history (e.g., tuberculosis, influenza, or Covid-19).

**E. Restraints:**

1. Indications:
  - a. A patient who needs transportation for medical care, who is refusing transport of care, and who is incompetent to refuse.
  - b. A person, who appears confused and who because of such confusion appears an imminent danger to others, themselves or to be gravely disabled.
2. Precautions or Considerations:
  - a. Any attempt at restraint involves risk to the patient and to the out-of-hospital provider.
  - b. The rescuer's safety must come before patient considerations.
  - c. Do not attempt to restrain the patient without adequate assistance.
3. Physical restraints are a last resort. All possible means of verbal de-escalation should be attempted first.
4. Any restrained patient may vomit, be prepared to suction, and reposition as needed. Once restrained, the patient is never to be left alone. Aspiration can occur if patient is restrained on their back and cannot protect their own airway.
5. Check restraints as soon as applied and every 10 minutes thereafter to ensure no injury to extremities.
6. Do not restrain a patient in the prone position.
7. Do not restrain a patient sandwiched between backboards, scoop stretchers or other immobilization devices.
8. Do not "hog tie" patients. (Hands restrained behind back, feet restrained together and the two restrained attached together)
9. Remove restraints only with sufficient personnel available to control the patient, and generally only in the hospital setting.
10. Other than primary psychiatric disorders, medical causes of combativeness include hypoglycemia, hypoxia, head injury, and drug ingestion.

11. Written and verbal reports must completely document the necessity for the use of physical restraints. Record the condition of the limbs before applying restraints, recheck, and record condition upon arrival at hospital.
12. If law enforcement has applied handcuffs, an officer is required to ride in the patient compartment of the ambulance to the hospital.

**F. Pain Management Non-Cardiac – Adult Criteria:**

1. Treatment options for minor pain or as an adjunct for moderate/severe pain consider the following non-opioid options:
  - a. Acetaminophen 1000 mg PO, do not repeat.
  - b. Ketorolac 30 mg IM or 15 mg IV, do not repeat.
2. Additional treatment options for non-cardiac pain may include the following. Patients receiving any of the following should also be monitored with ETCO<sub>2</sub>.
  - a. Consider Fentanyl 25-50 mcg SIVP. May repeat every 5 minutes if pain is not relieved. (Max total dose 150 mcg)
  - b. Consider Morphine Sulfate 2-4 mg SIVP. May repeat every 5 minutes if pain is not relieved. (Max total dose 10 mg) Morphine should only be considered if systolic BP is greater than 90 mmHg.
  - c. If pain is not resolved after the max dose for Fentanyl or Morphine, then consider Ketamine.
    - i. Consider Ketamine 0.25 mg/kg SIVP (Max initial dose of 20 mg). May repeat once after 10 minutes (Max total dose 40 mg).
  - d. If pain is not resolved after the max dose of Ketamine, consult base physician for further pain treatment options **[Medical Direction]**.
3. If unable to establish vascular access, consider administering intranasal Fentanyl with the mucosal atomization device. (See EMS Procedures Guide)
  - a. Consider Fentanyl 50 mcg maximum single dose. Divide between nostrils. Wait five (5) minutes before repeating, maximum total dose 100 mcg.
4. If respiratory depression occurs, begin BVM ventilations and consider:
  - a. Naloxone 0.4 mg IVP, may repeat 0.4 mg every 2-3 min to desired effect.
    - i. Total max IV dose not to exceed 4 mg.
    - ii. Titrate to improve respiratory effort rather than LOC.
  - b. If unable to establish vascular access, consider administering intranasal (IN) Naloxone by one of the following methods.
    - i. Mucosal atomization device
      1. Naloxone 2 mg, divided between nostrils.

2. Wait five minutes before repeating. Maximum IN dose of 4 mg.
  - ii. Narcan® Nasal Spray Device
    1. Administer 4 mg into a single nostril. Maximum IN dose of 4 mg.
  - iii. If patient respiratory effort does not improve with IN Naloxone:
    1. Consider one additional dose of 0.4 mg IV.
5. If hypotension develops, give a fluid bolus, and titrate to vital signs.

**G. Pain Management - Pediatric Criteria:**



1. Treatment options for minor pain or as an adjunct for moderate/severe pain consider the following non-opioid options:
  - a. Acetaminophen 10 mg/kg PO (max of 320 mg). Do not repeat.
  - b. Ketorolac 0.5 mg/kg IM or IV for patient greater than 2 years old. (max dose 20 mg IM or 10 mg IV. Do not repeat.
2. Treatment options for non-cardiac pain may include the following. Patients receiving any of the following should also be monitored with ETCO<sub>2</sub>.
  - a. Consider Fentanyl 1 mcg/kg SIVP, max initial dose of 25 mcg. Do not repeat.
  - b. Consider Morphine Sulfate 0.1 mg/kg to a maximum of 2 mg increments SIVP. May repeat every 5 minutes if pain is not relieved, max total dose 6 mg. Morphine should only be considered if systolic BP is appropriate for age.
  - c. If pain is not resolved after the max dose for Morphine Sulfate or Fentanyl, then consider Ketamine.
    - i. Consider Ketamine 0.25 mg/kg SIVP to a maximum of 10 mg. Do not repeat.

- d. If pain is not resolved after the max dose of Ketamine, consult base physician for further pain treatment options **[Medical Direction]**.
3. If unable to establish vascular access, consider administering intranasal Fentanyl with the mucosal atomization device. (See EMS Procedures Guide)
  - a. Consider Fentanyl 1 mcg/kg, maximum dose of 25 mcg. Divide between nostrils.
4. If respiratory depression occurs begin BVM ventilations and consider administering Naloxone 0.1 mg/kg, max initial dose 0.4 mg IV push. Repeat every 2-3 minutes to desired effect, total max dose not to exceed 2.0 mg.
5. If unable to establish vascular access, consider administering intranasal Naloxone with the mucosal atomization device. **(See appendix)**
  - a. Consider Naloxone 0.1 mg/kg, maximum initial dose of 2 mg. Divide between nostrils.
6. If hypotension develops, give a fluid bolus, and titrate to vital signs.

## **Part III. CARDIAC EMERGENCIES**

### **A. General Adult Cardiac Arrest Guidelines (Anyone showing signs of puberty):**

1. If a patient is in cardiac arrest, initiate High Performance-CPR (HP-CPR) and begin chest compressions immediately.
2. Attach cardiac monitor and manually interpret or use the AED to analyze the rhythm.
3. Initiate continuous chest compressions, insert an I-gel airway, and begin active ventilations on all patients.
4. If the patient presents in a shockable rhythm (ventricular fibrillation or pulseless ventricular tachycardia) deliver a defibrillation at 360 J and resume continuous chest compressions.
5. LP 15 Metronome must be used on every cardiac arrest patient.

### **B. All patients found in cardiac arrest:**

1. Perform continuous chest compressions at a rate of 100-120 compressions per minute while ventilating at a rate of 10 ventilations per minute. (One ventilation every six seconds). Do not stop compressions to ventilate.
2. If the patient presents in a shockable rhythm (ventricular fibrillation or pulseless ventricular tachycardia) deliver a defibrillation at 360 J and resume continuous chest compressions.
3. Rotate person performing compressions every 2 minutes.
4. Insert an I-gel airway. Do not delay initiation of chest compressions and defibrillation to insert the I-gel.
5. If the patient regains a pulse, acquire, and transmit a 12 lead EKG. Transport to a hospital with PCI capabilities.
6. If patient is hypothermic from exposure, follow Hypothermia Protocol for cardiac arrest guidelines.

### **C. High Quality Chest compressions:**

1. Provide adequate rate: 100-120 compressions per minute.
2. Provide adequate depth: at least 2 inches.
3. Allow full chest recoil between compressions.
4. Provide uninterrupted or minimal interruptions in chest compressions (less than 10 seconds).
5. Ensure correct hand placement on the chest.

6. Chest compressions are centered around two (2) minute cycles of 200 compressions.
7. The person providing chest compressions should be rotated every 2 minutes.

**D. Analyze rhythm and pulse checks:**

1. Manually interpret or utilize the AED to analyze the cardiac rhythm.
2. Only perform pulse checks during rhythm checks if signs of life are present, which indicates a potentially perfusing rhythm.

**E. Obtain vascular access and administer medications:**

1. Vascular access is defined as IV or IO.
  - a. Next to continuous chest compressions and electrical therapy (defibrillation), vascular access is the next most important priority. Vascular access is a higher priority than advanced airway placement.
2. Epinephrine is the most important drug to be administered.
  - a. Epinephrine 1 mg (0.1 mg/mL). Repeat every 3-5 minutes.

**F. Airway and ventilations:**

1. Evaluate the airway for complete or partial airway obstruction and treat accordingly.
2. Provide jaw thrust and suction as necessary.
3. Active ventilations are defined as:
  - a. Positive pressure ventilations utilizing a BVM
1. Placement of an advanced airway. (ET Tube)
  - a. Do not attempt to place an advanced airway until three (3) cycles of chest compressions have been completed.
  - b. Do not interrupt chest compression for placement of an advanced airway.

**G. Ventricular Fibrillation (VF) and Pulseless Ventricular Tachycardia (VT):**

1. Follow General Guidelines for Adult Cardiac Arrest.
2. Presenting rhythms of ventricular fibrillation and ventricular tachycardia will be treated as a STEMI equivalent.
3. The patient will be transported to the PCI facility of the family or power of attorney's choice (Bryan Health East Campus or CHI Health Nebraska Heart Institute).



4. If the family or power of attorney has no preference on destination, the patient can be transported to any PCI facility.
5. The provider will promptly declare a Cardiac Alert to the E.D. base physician or the nursing house supervisor at CHI Health Nebraska Heart Institute before initiating transport of the patient.
6. Unless the patient has a ROSC, a mechanical chest compression device, vascular access and advanced airway should be in place prior to patient movement and transport.
7. Transport of the patient should be initiated promptly after declaration of a Cardiac Alert, application of a mechanical chest compression device, advanced airway placement, and vascular access has been obtained.
8. If application of a mechanical chest compression device is not possible, efforts should be focused on obtaining a ROSC prior to patient movement.
9. Administer Epinephrine 1 mg (0.1 mg/mL). Repeat every 3-5 minutes to a maximum total dose of 3 mg.
10. During resuscitation, administer anti-arrhythmic.
  - a. Amiodarone 300 mg IV bolus may repeat once in 3-5 min at 150 mg IV bolus.
11. Consider Magnesium Sulfate (50%) 1gm diluted in 10mL of NS SIVP. (For torsade's de pointes or refractory ventricular fibrillation/tachycardia) May repeat once.
12. Consider Calcium Chloride (10%) 0.5-1.0 Gm. IVP (For suspected hyperkalemia or known dialysis patient). **Do not use routinely in cardiac arrest; do not mix with sodium bicarbonate in same IV.**
13. Consider Sodium Bicarbonate 1 mEq/kg IVP (For suspected hyperkalemia or known dialysis patient, TCA overdose, or known pre-existing bicarbonate responsive acidosis). **Not recommended for routine use in cardiac arrest patients.**

#### H. Return of Circulation from VF or Pulseless VT:

1. Reassess airway and breathing, treat as necessary.
2. Maintain normal ventilation rates – Avoid routine hyperventilation
3. If pulseless patient was given Amiodarone bolus, do not administer Amiodarone infusion, if Amiodarone was not given and patient regains pulse:
  - a. Start infusion of 150 mg of Amiodarone in 100 cc of NS, infuse over 10 minutes.
4. If bradycardic and unstable: Go to Bradycardia Protocol
5. If MAP less than 65:
  - a. Consider fluid bolus of 250 – 500 cc of NS

- b. Consider Dopamine drip @ 5 mcg/kg/min. Titrate to a Mean Arterial Pressure (MAP) of greater than 65mmHg. (Dose should not exceed 20 mcg/kg/min)
- c. Consider Epinephrine 10 mcg/mL by push dose (dilute boluses). Administer 10-20 mcg boluses (1-2 mL every 2 minutes). Titrate to a Mean Arterial Pressure (MAP) of greater than 65 mmHg. (Prepare Epinephrine 10 mcg/mL by adding 1 mL of Epinephrine 1 mg/mL to 100 mL normal saline) **RSI Credentialed paramedic procedure ONLY.**
- d. Consider Phenylephrine 100 mcg/mL by push dose (dilute boluses). Administer 100-200 mcg boluses (1-2 mL every 2 minutes). Prepare Phenylephrine by adding 1 mL of Phenylephrine 10 mg/mL to 100 mL normal saline). Titrate to a Mean Arterial Pressure (MAP) of greater than 65 mmHg. **RSI Credentialed paramedic procedure ONLY.**
- e. Consider Norepinephrine (Levophed) at 0.1-1.0 mcg/kg/min. Titrate to a Mean Arterial Pressure (MAP) of greater than 65mmHg. **(IV PUMP ONLY.)**

I. **Asystole:**

- 1. Follow General Guidelines for Adult Cardiac Arrest.
- 2. Verify or confirm true asystole in another lead if not using AED.
- 3. Rapid scene survey – any evidence that resuscitation should not be attempted? (DNR orders, signs of death)
- 4. If yes, withhold resuscitation efforts. See out of Hospital Confirmation of Death Protocol if needed for base station assistance.
- 5. Immediately resume resuscitation efforts.
- 6. Administer Epinephrine 1 mg (0.1 mg/mL). Repeat every 3-5 minutes to a maximum total dose of 5 mg.
- 7. Consider Calcium Chloride (10%) 0.5-1.0 Gm IVP (For suspected hyperkalemia or known dialysis patient). **Do not use routinely in cardiac arrest; do not mix with sodium bicarbonate in same IV.**
- 8. Consider Sodium Bicarbonate 1 mEq/kg IVP (For suspected hyperkalemia or known dialysis patient, TCA overdose, or known pre-existing bicarbonate responsive acidosis). **Not recommended for routine use in cardiac arrest patients.**
- 9. If return of circulation, maintain airway and cardiac output. Follow appropriate dysrhythmia protocol.
- 10. If MAP is less than 65:
  - a. Consider fluid bolus of 250 – 500 cc of NS

- b. Consider Dopamine drip @ 5 mcg/kg/min. Titrate to a Mean Arterial Pressure (MAP) of greater than 65mmHg. (Dose should not exceed 20 mcg).
- c. Consider Epinephrine 10 mcg/mL by push dose (dilute boluses). Administer 10-20 mcg boluses (1-2 mL every 2 minutes). Titrate to a Mean Arterial Pressure (MAP) of greater than 65 mmHg. (Prepare Epinephrine 10 mcg/mL by adding 1 mL of Epinephrine 1 mg/mL to 100 mL normal saline) **RSI Credentialed paramedic procedure ONLY.**
- d. Consider Phenylephrine 100 mcg/mL by push dose (dilute boluses). Administer 100-200 mcg boluses (1-2 mL every 2 minutes). Prepare Phenylephrine by adding 1 mL of Phenylephrine 10 mg/mL to 100 mL normal saline). Titrate to a Mean Arterial Pressure (MAP) of greater than 65 mmHg. **RSI Credentialed paramedic procedure ONLY.**
- e. Consider Norepinephrine (Levophed) at 0.1-1.0 mcg/kg/min. Titrate to a Mean Arterial Pressure (MAP) of greater than 65mmHg. **(IV PUMP ONLY.)**

#### J. **Pulseless Electrical Activity (PEA):**

1. Follow General Guidelines for Adult Cardiac Arrest.
2. Review causes for PEA. Treat according to protocols if condition is present:
 

Hypovolemia	Toxins – tablets/overdoses
Hypoxia	Tamponade – cardiac
Hydrogen ion (acidosis)	Tension pneumothorax
Hyper or hypokalemia	Thrombosis – coronary or pulmonary
Hypoglycemia	Trauma
Hypothermia	
3. Administer Epinephrine 1 mg (0.1 mg/mL). Repeat every 3-5 minutes to a maximum total dose of 5 mg.
4. For suspected hypovolemia - consider fluid bolus of 250 – 500 cc of NS (especially with narrow QRS and rapid rate)
5. For suspected hyperkalemia or known dialysis patient - consider Calcium Chloride (10%) 0.5-1.0Gm IVP. Do not mix with sodium bicarbonate in same IV.
6. For suspected TCA overdose, metabolic acidosis, hyperkalemia, or known pre-existing bicarbonate responsive acidosis) consider administering Sodium Bicarbonate 1 mEq/kg IVP.
7. For tension pneumothorax, perform needle decompression.
8. For hypothermia, provide warming measures.
9. For hypoglycemia, treat with D50W or D10W.

10. If return of circulation, maintain airway and cardiac output. Follow appropriate dysrhythmia protocol.

11. If MAP is less than 65:

- a. Consider fluid bolus of 250 – 500 cc of NS
- b. Consider Dopamine drip @ 5 mcg/kg/min. Titrate to a Mean Arterial Pressure (MAP) of greater than 65mmHg. (Dose should not exceed 20 mcg).
- c. Consider Epinephrine 10 mcg/mL by push dose (dilute boluses). Administer 10-20 mcg boluses (1-2 mL every 2 minutes). Titrate to a Mean Arterial Pressure (MAP) of greater than 65 mmHg. (Prepare Epinephrine 10 mcg/mL by adding 1 mL of Epinephrine 1 mg/mL to 100 mL normal saline) **RSI Credentialed paramedic procedure ONLY.**
- d. Consider Phenylephrine 100 mcg/mL by push dose (dilute boluses). Administer 100-200 mcg boluses (1-2 mL every 2 minutes). Prepare Phenylephrine by adding 1 mL of Phenylephrine 10 mg/mL to 100 mL normal saline). Titrate to a Mean Arterial Pressure (MAP) of greater than 65 mmHg. **RSI Credentialed paramedic procedure ONLY.**
- e. Consider Norepinephrine (Levophed) at 0.1-1.0 mcg/kg/min. Titrate to a Mean Arterial Pressure (MAP) of greater than 65mmHg. **(IV PUMP ONLY)**

#### K. **CPR Induced Conscious Sedation:**

1. Indications:

- a. Spontaneous eye opening, the presence of tears, purposeful movement, or verbal response in a confirmed pulseless patient with either manual or mechanical CPR in progress
- b. Consider Ketamine 1mg/kg IV, maximum initial dose of 100 mg, may repeat every 3-5 minutes as needed, total maximum dose of 300 mg.

#### L. **Bradycardias - For heart rates below 60 beats per minute:**

1. Airway, oxygen, apply cardiac monitor, obtain 12 lead ECG, and continuously monitor the patient until transferred to hospital staff.
2. Start IV with NS TKO.

**STABLE patient with NO serious signs and symptoms:**

1. Transport and OBSERVE.

**UNSTABLE patient, verify serious signs and symptoms are due to the slow rate:**

1. Atropine is not effective in 2° Type II AV block, 3° heart block or idioventricular rhythms. If these rhythms are present and patient is unstable, go directly to transcutaneous pacing (TCP).
2. Consider Atropine 1 mg IVP. May repeat every 3 to 5 minutes as needed up to maximum dose of 3 mg or 0.04 mg/kg whichever is less.
3. If no response and pacer is available, begin transcutaneous pacing. (TCP)
4. Initiate pacing in demand mode. Start at a rate of 80 beats per minute. Adjust milliamps upward as needed to achieve capture. May consider increasing pacer rate to a maximum of 100 beats per minute to obtain a BP of 100 mmHg systolic.
5. Consider patient comfort as milliamps are increased. If pacing is successful (capture is established and BP improves), consider mild sedation/pain management for discomfort related to pacing with only one of the following:
  - a. Consider Ketamine 0.25 mg/kg SIVP (max initial dose of 20 mg). May repeat once after 10 minutes (max total dose 40 mg).
  - b. Consider Fentanyl 25-50 mcg SIVP. May repeat after 5 minutes (max total dose of 150 mcg).

**NOTE: Do not delay TCP while waiting for IV access or for Atropine to take effect if patient is unstable. Never treat the combination of 3° heart block and ventricular escape beats with Amiodarone or any agent that suppresses ventricular escape rhythms. Atropine is not effective for denervated transplanted hearts.**

6. If MAP is less than 65, options for vasopressors include:
  - a. Consider Dopamine drip @ 5 mcg/kg/min. Titrate to a Mean Arterial Pressure (MAP) of greater than 65mmHg. (Dose should not exceed 20 mcg/kg/min.
  - b. Consider Epinephrine 10 mcg/mL by push dose (dilute boluses). Administer 10-20 mcg boluses (1-2 mL every 2 minutes). Titrate to a Mean Arterial Pressure (MAP) of greater than 65 mmHg. (Prepare Epinephrine 10 mcg/mL by adding 1 mL of Epinephrine 1 mg/mL to 100 mL normal saline) **RSI Credentialed paramedic procedure ONLY.**
  - c. If Dopamine is ineffective or not available, consider Norepinephrine (Levophed) at 0.1-1.0 mcg/kg/min. Titrate to a Mean Arterial Pressure (MAP) of greater than 65mmHg. **(IV PUMP ONLY.)**

**M. Ventricular Tachycardia with a Pulse (QRS greater than 0.12 milliseconds):**

**STABLE patient and NO serious signs and symptoms:**

1. Airway, oxygen, apply cardiac monitor, obtain 12 lead ECG, and continuously monitor the patient until transferred to hospital staff.
2. Start IV with NS TKO

3. Consider

- a. Adenosine 6 mg RIVP only if regular and monomorphic.
  - i. Second dose 12 mg RIVP in 1-2 min if required
- b. Amiodarone infusion - 150 mg in NS 100 cc over 10 min.
  - i. If no conversion, may repeat one time.

**UNSTABLE patient that displays serious signs and symptoms:**

1. Airway, oxygen, apply cardiac monitor, obtain 12 lead ECG, and continuously monitor the patient until transferred to hospital staff.
2. Start IV NS TKO.
3. Consider pre-medicating with only one of the following:
  - a. Consider Ketamine 0.25 mg/kg SIVP (max initial dose of 20 mg).
  - b. Consider Fentanyl 25-50 mcg SIVP. May repeat after 5 minutes (max total dose of 150 mcg).
4. Synchronized cardioversion at 100 J.
5. **IF NO RESPONSE**, continue synchronized cardioversion with increasing joule settings, 200J, and 300J.
6. After 3 synchronized cardioversions, contact medical control to repeat. **[Medical Control]**
7. IF SUCCESSFUL (at any point), maintain status with:
  - b. Amiodarone infusion – 150 mg in NS 100 cc over 10 min.
8. If polymorphic or Torsade's de pointes, consider Magnesium Sulfate 1 G diluted in 100cc of NS over 5 minutes. Use a macro drip set at 20cc/min.

**N. Paroxysmal Supraventricular Tachycardia (QRS less than 0.12 milliseconds):**

**STABLE patient and NO serious signs and symptoms:**

1. Airway, oxygen, apply cardiac monitor, obtain 12 lead ECG, and continuously monitor the patient until transferred to hospital staff.
2. Start IV with NS TKO.
3. Consider vagal maneuvers and fluid challenge.
4. Give Adenosine 6 mg RIVP and flush the line.
  - a. If no response in 2 minutes, administer Adenosine 12 mg RIVP and flush the line.

**UNSTABLE patient that displays serious signs and symptoms:**

1. Airway, oxygen, apply cardiac monitor, obtain 12 lead ECG, and continuously monitor the patient until transferred to hospital staff.
2. Start IV with NS TKO.
3. Consider pre-medicating with only one of the following:
  - a. Consider Ketamine 0.25 mg/kg SIVP (max initial dose of 20 mg).
  - b. Consider Fentanyl 25-50 mcg SIVP. May repeat after 5 minutes (max total dose of 150 mcg).
4. Synchronized cardioversion at 100 J.
5. IF NO RESPONSE, continue synchronized cardioversion with increasing joule settings, 200J, and 300J.
6. After 3 synchronized cardioversions, contact medical control to repeat **[Medical Control]**.

**O. Ventricular Ectopy with of runs of V-Tach (VT = 3 or more PVCs in a row):**

1. Airway, oxygen, apply cardiac monitor, obtain 12 lead ECG, and continuously monitor the patient until transferred to hospital staff.
2. Start IV with NS TKO.
3. For couplets, multi-focal PVCs or bigeminy.
  - a. Follow applicable protocol based on patient presentation (signs & symptoms) I.E., Chest pain, Brady dysrhythmia, Dyspnea, Hypotension Protocols.
4. For runs of V-Tach (3 or more PVCs in a row) and underlying heart rate is below 60 follow bradycardia protocol.
5. For sustained runs of V-Tach (3 or more PVCs in a row) and underlying heart rate is 60 or above:
  - b. Consider Amiodarone infusion - 150 mg in NS 100 cc over 10 min.
    - i. If no response, may repeat one time.

**P. Chest Pain or Suspected Cardiac Event:**

1. Signs & Symptoms:
  - a. Chest discomfort suggestive of ischemia which includes pain, pressure, ache, tightness. Consider location as well (substernal, epigastric, arm, jaw, neck, back and shoulder) and radiation of symptom.
  - b. Pale, diaphoresis.
  - c. Shortness of breath.



- d. Nausea, vomiting and dizziness.
  - e. Syncope or near syncope.
  - f. Diabetics, geriatrics, and females may have atypical pain or only generalized complaints.
2. Airway, oxygen, apply cardiac monitor, obtain 12 lead, and continuously monitor the patient until transferred to hospital staff.
3. Obtain 12 lead ECG within 5 minutes of being at patient side. Leave the 12 lead cables in place to obtain serial EKG's.
4. A cardiac alert will be declared based on the provider's clinical impression of myocardial infarction AND ST elevation of 2 mm in the precordial lead(s) {V1 – V6} and/or 1 mm ST elevation in the limb lead(s) {I, II, III, aVL or aVF). The cardiac alert should be declared to the receiving emergency room base physician or the nursing house supervisor at CHI Health Nebraska Heart. Hospital destination is ultimately the patient's choice **[Medical Direction]**.
5. The provider will use the Physio Control LifePak 15 algorithm interpretation as a second opinion for decision-making. If the machine interpretation reads **\*\*\*MEETS ST ELEVATION MI CRITERIA\*\*\*** but the provider does not feel the EKG meets our criteria listed in the paragraph above, the provider should contact the base physician and elicit their opinion on whether this 12 lead EKG meets STEMI criteria. **[Medical Direction]**.
6. Prophylactically apply defibrillation pads on every declared cardiac alert patient.
7. Activate the LP-15 V-fib/V-tach alarm on every cardiac alert patient.
8. Start IV with NS TKO, avoid right wrist IV access if possible.
9. Consider ASA 324 mg PO.
10. Consider Nitroglycerin 0.4 mg SL/Buccal, every 5 minutes if systolic BP remains greater than 90 mmHg. **NTG is contraindicated for patients who have used any erectile dysfunction (ED) medication within the previous 48 hours.**
  - a. Do not administer NTG with suspected inferior wall MI's (ST elevation noted in any one of the following leads - II, III and aVF).
11. Consider Fentanyl 25-50 mcg SIVP. May repeat every 5 minutes if pain is not relieved (max dose 150 mcg). If pain persists following maximum total dose Fentanyl, consult base physician for further pain treatment options **[Medical Direction]**.
12. Consider starting a second IV in route.

**Notes: As early as possible, declare a Cardiac Alert to receiving hospital and transmit 12 Lead ECG. (If capable)**



**Q. Pulmonary Edema (Dyspnea in the presence of diminished lung sounds, wheezes, rales, or frothy sputum with a BP that is hypertensive or within normal limits):**

1. Airway, oxygen, apply cardiac monitor, obtain 12 lead ECG, and continuously monitor the patient until transferred to hospital staff.
2. Place patient in an upright position (45 – 90 degrees) unless severely hypotensive.
3. Consider CPAP (see EMS Procedures Guide)
4. Start IV with NS TKO.
5. SBP < (less than) 160 mmHg:
  - a. Nitroglycerin 0.4 mg SL/Buccal, can repeat every 5 minutes if systolic BP remains greater than 120 mmHg.
6. SBP > (greater than) 160 mmHg or MAP greater than 120
  - a. Nitroglycerin 0.8 mg SL/Buccal, can repeat every 5 minutes for SBP greater than 160 mmHg or MAP greater than 120.

**R. Cardiogenic Shock (Dyspnea in the presence of diminished lung sounds, wheezes, rales, or frothy sputum with a BP that is hypotensive):**

Cardiogenic Shock (pump failure) is defined as inadequate cardiac output, as manifested by hypotension and poor peripheral perfusion in the absence of hypovolemia.

1. Airway, oxygen, apply cardiac monitor, obtain 12 lead EKG, and continuously monitor the patient until transferred to hospital staff.
2. Start IV with NS TKO.
3. Correct perfusion altering dysrhythmias according to protocol guidelines.
4. Consider fluid bolus 250-500 cc NS.
5. If MAP is less than 65, options for vasopressors include:
  - a. Consider Dopamine drip @ 5 mcg/kg/min. Titrate to a Mean Arterial Pressure (MAP) of greater than 65 mmHg. Dose should not exceed 20 mcg/kg/min.
  - b. If Dopamine is ineffective or not available, consider adding Norepinephrine (Levophed) at 0.1-1.0 mcg/kg/minute. Titrate to a Mean Arterial Pressure (MAP) of greater than 65 mmHg. **(Norepinephrine must be administered by IV PUMP ONLY.)**
  - c. If the above are ineffective, consider adding Epinephrine 10 mcg/mL by push dose (dilute boluses). Administer 10-20 mcg boluses (1-2 mL every 2 minutes). Titrate to a Mean Arterial Pressure (MAP) of greater than 65 mmHg. (Prepare Epinephrine 10 mcg/mL by adding 1 mL of Epinephrine

1 mg/mL to 100 mL normal saline) **RSI Credentialed paramedic procedure ONLY.**

- d. If the above are ineffective, consider Phenylephrine 100 mcg/mL by push dose (dilute boluses). Administer 100-200 mcg boluses (1-2 mL every 2 minutes). Prepare Phenylephrine by adding 1 mL of Phenylephrine 10 mg/mL to 100 mL normal saline). Titrate to a Mean Arterial Pressure (MAP) of greater than 65 mmHg. **RSI Credentialed paramedic procedure ONLY.**

## **Part IV. ACUTE TRAUMATIC EMERGENCIES**

### **A. General Trauma Management:**

1. Provide airway management while maintaining inline cervical spine immobilization.
2. Refer to “EMS spinal precautions and the use of the long backboard” paper located in the appendix for use of cervical.
3. Assume cervical spine injury is present and immobilize with a backboard the following patients:
  - a. Blunt trauma and altered level of consciousness.
  - b. Spinal pain or tenderness.
  - c. Neurological complaint (e.g., numbness or motor weakness).
  - d. Anatomical deformity of the spine.
  - e. High-energy mechanism of injury with any of the following:
    - i. Drug or alcohol intoxication.
    - ii. Inability to communicate.
    - iii. Distracting injury.

REMINDER: Loss of sensation or motor activity MAY NOT be present initially with cervical spine fractures.

4. Only consider helicopter transport of Trauma Center Candidates if:
  - a. Transportation by ground to the Trauma Center will be greater than 20 minutes, OR
  - b. Extrication time and ground transport time to the Trauma Center will be greater than 20 minutes.
5. Hypovolemic shock (assume shock present when pulse greater than 120 and/or a MAP less than 65 mmHg in a previously normotensive patient; or systolic blood pressure drops 40-50 mmHg in a previously hypertensive patient, especially if accompanied by pale, clammy skin, and decreased level of consciousness).
6. Apply oxygen and ventilate if necessary.
7. Place patient in shock position (feet elevated, head level). Avoid Trendelenburg position.
8. Start 1 or 2 large bore IVs with NS, fluid bolus and titrate to vital signs. Do not delay transport for IV starts.
9. Apply ECG monitor enroute.
10. Perform bilateral needle decompression in all trauma code patients.
11. See BLS protocols for Triage and Mass Casualty.

**B. Extremity Injuries - General Principles:**

1. For suspected femur fracture (open or closed), consider traction splint. Start large bore IV with NS, titrate to vital signs.
2. For suspected pelvic fractures associated with category red trauma patients, apply the SAM Pelvic Sling II. Start large bore IV with NS, titrate to vital signs.
3. For isolated extremity injuries, follow Pain Management Non-Cardiac – Adult Criteria.
4. For uncontrollable hemorrhage consider application of tourniquet.

**C. Head Injuries:**

1. Airway, oxygen, apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
  - a. Goal to maintain oxygen saturation at 100%.
2. Ventilate with adequate tidal volume at normal respiratory rate for patient age.
  - a. Maintain end-tidal CO<sub>2</sub> at 35-40 mmHg.
  - b. If signs of brain stem herniation are present, maintain end-tidal CO<sub>2</sub> at 30-35 mmHg.
3. Start large bore IV with NS enroute and titrate to vital signs.
  - a. (Goal to maintain systolic blood pressure greater than 100 mmHg).

**D. Chest Injuries:**

1. Airway, oxygen, apply cardiac monitor, and continuously monitor the patient until transferred to hospital staff.
2. For tension pneumothorax WITH EVIDENCE OF SHOCK, insert large bore catheter on the affected side at 2nd intercostal space in mid-clavicular line, or mid-axillary line at the level of the nipple in the male or the inframammary crease in the female (5th intercostal space).
3. Perform needle decompression in patients with signs of tension pneumothorax
4. Cover sucking chest wounds with occlusive dressing, remove if patient's condition deteriorates.
5. Start 1 or 2 large bore IV's with NS enroute and titrate to vital signs.
6. Consider pain management following the Pain Management Non-Cardiac – Adult Criteria.

**E. Abdominal Injuries:**

1. Airway, oxygen, apply cardiac monitor, and continuously monitor the patient until transferred to hospital staff.
2. Dress any penetrating wound with a dry sterile dressing.
3. For evisceration: DO NOT REPLACE eviscerated tissue. Cover with a moist sterile dressing. Place a dry sterile dressing over moist dressing to maintain warmth.
4. Start 1 or 2 large bore IVs with NS enroute and titrate to vital signs.
5. Consider pain management following the Pain Management Non-Cardiac – Adult Criteria.

**F. Burns:**

1. Airway, oxygen, apply cardiac monitor, and continuously monitor the patient until transferred to hospital staff.
2. Assess for inhalation burns, consider ET intubation.
3. Follow appropriate dysrhythmia protocol if indicated.
4. Consider large bore IV with NS. Titrate to vital signs.
5. Consider pain management following the Pain Management Non-Cardiac – Adult Criteria.
6. Transport to CHI Health St. Elizabeth Burn Center for suspected airway involvement and/or burns greater than 10% of total body surface area.
7. Patients who are burned but are also Category 1 trauma patients should be transported to the Bryan West Trauma Center. Burn patients that are Category 2 should be transported to CHI Health St. Elizabeth Burn Center.

**G. Crush Syndrome:**

This protocol should be applied to adult patients who are being rescued from being trapped by having an extremity muscle mass compressed for more than **four** hours or more than two hours in a cold climate, but also who have pulses distal to the compression. Preventive treatment for Crush Syndrome is secondary to primary interventions for acute traumatic injuries. The risks of Crush Syndrome are greater if the patient's extremity is hard, swollen, cold and insensitive.

1. Prior to release of compression:
  - a. Airway, oxygen, apply cardiac monitor, and continuously monitor the patient until transferred to hospital staff.

- b. Patients should have high flow oxygen applied, especially at time of compression release.
  - c. Start two (2) large bore IVs of NS at TKO. Use caution when administering fluid to pediatrics and individuals with cardiac or renal problems.
  - d. Prior to the release of compression, administer continuous Albuterol by nebulizer.
  - e. Consider pain management following the Pain Management Non-Cardiac – Adult Criteria.
  - f. Adjust one of the IVs to wide open and infuse 1000 mL of NS.
  - g. Administer Sodium Bicarbonate 50 mEq SIVP.
  - h. After the first 1000 cc of NS has been infused, mix 50mEq of Sodium Bicarbonate into the second IV bag and adjust the second IV to 500 mL per hour.
  - i. Continue running 1st IV of NS wide open.
2. After release of compression:
- a. Administer up to three (3) L of normal saline (patient must have clear lung sounds and no shortness of breath), over the first 90 minutes following release of compression.
  - b. Pay close attention to the cardiac monitor for signs of hyperkalemia. If the patient develops any of the following:
    - i. Tall, peaked T waves.
    - ii. Prolonged QT interval.
    - iii. ST depression.
    - iv. AV block or Bundle Branch Block.
    - v. Wide QRS with no P wave.
    - vi. Ventricular Fibrillation.
  - c. Administer Calcium Chloride 1 G of 10% solution mixed with 100 mL NS and infused IV over 5 minutes.
  - d. Do not mix Calcium Chloride in the same IV as Sodium Bicarbonate.
  - e. Some crush injury patients will experience a release of histamine from damaged tissue. If the patient experiences respiratory distress with bronchoconstriction.
    - i. Consider Albuterol 2.5mg/3 mL by nebulizer, may repeat twice.

#### **H. Trauma Alert Categories:**

1. Category red trauma patients should be transported to the Bryan West Trauma Center.
2. Category yellow trauma patients may be transported to CHI Health St. Elizabeth or Bryan West.
3. All Category red and Category yellow trauma alerts made from the field must be clearly documented on the patient care report.
4. Immediate transport to the nearest facility is indicated when trauma related patients meet the following criteria:
  - a. Patients with obstructed airway.
  - b. Uncontrolled respiratory distress, or
  - c. Life threatening, uncontrolled hemorrhage.
5. Patients with trauma that do not meet these guidelines, and are stable, may be taken to any hospital.
6. ANY HOSPITAL OR EMS PROVIDER HAS THE OPTION TO BYPASS TO A TRAUMA CENTER IF IT IS FELT IT IS IN THE BEST INTEREST OF THE PATIENT.

## Guideline for Field Triage of Injured Patients

### RED CRITERIA

#### High Risk for Serious Injury

*(Red Criteria transported to Bryan West)*

Injury Patterns	Mental Status and Vital Signs
Penetrating injuries to head, neck, torso, and proximal extremities	<b>All pts</b> <ul style="list-style-type: none"> <li>• Unable to follow commands (motor GCS 6)</li> <li>• RR &lt; 10 or &gt; 29 breaths/min</li> <li>• Respiratory distress or need for resp support</li> <li>• SpO<sub>2</sub>, 90% on RA</li> </ul>
Skull deformity, suspected skull fx	
Suspected spinal injury w/new motor or sensory loss	
Chest wall instability, deformity, or suspected flail chest	<b>Age 0-9 yrs</b> <ul style="list-style-type: none"> <li>• SBP &lt; 70 mm Hg + (2 x age in years)</li> </ul>
Suspected pelvic fracture	<b>Age 10-64 yrs</b> <ul style="list-style-type: none"> <li>• SBP &lt; 90 mmHg or</li> <li>• HR &gt; SBP</li> </ul>
Suspected fracture of two or more proximal long bones	
Crushed, degloved, mangled or pulseless extremity	<b>Age ≥ 65</b> <ul style="list-style-type: none"> <li>• SBP &lt; 110 mmHg or</li> <li>• HR &gt; SBP</li> </ul>
Amputation proximal to wrist or ankle	
Active bleeding requiring a tourniquet or wound packing w/continuous pressure	Trauma in presence of hypothermia < 90°F
Hanging or suspected hanging	
Drowning	

### YELLOW CRITERIA

#### Moderate Risk for Serious Injury

*(Yellow Criteria transported to either St. Elizabeth's or Bryan West)*

Mechanism of Injury	EMS Judgment
<b>High-Risk Auto Crash</b> <ul style="list-style-type: none"> <li>• Partial or complete ejection</li> <li>• Significant intrusion               <ul style="list-style-type: none"> <li>○ 12 inches occupant site OR</li> <li>○ &gt; 18 inches any site OR</li> <li>○ Need for extrication for entrapped pt</li> </ul> </li> <li>• Death in passenger compartment</li> <li>• Child (age 0-9) unrestrained or in unsecured child safety seat</li> <li>• Vehicle telemetry data consistent with severe injury</li> </ul>	<b>Consider risk factors, including:</b> <ul style="list-style-type: none"> <li>• Low-level falls in young children (age ≤ 5 yrs) or older adults (age ≥ 65 yrs) with significant head impact</li> <li>• Anticoagulant use</li> <li>• Suspicion of child abuse</li> <li>• Special, high-resource healthcare needs</li> <li>• Pregnancy &gt; 20 weeks</li> <li>• Burns in conjunction with trauma</li> <li>• Children should be triaged preferentially to pediatric capable centers</li> </ul>
Rider separated from transport vehicle with significant impact (MCC, ATV, horse, etc.)	
Pedestrian/bicycle rider thrown, run over, or with significant impact	<b>If concerned, take to trauma center</b>
Fall from height > 10 feet (all ages)	

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## **Part V. MEDICAL EMERGENCIES**

### **A. Upper Airway Obstruction:**

1. Attempt to relieve obstruction according to the American Heart Association Foreign Body Airway Obstruction (FBAO) guidelines.
2. If unsuccessful, attempt to visualize obstruction with laryngoscope and remove with Magill forceps.
3. If all of the above fail, consider cricothyrotomy.

### **B. Hypoglycemia (Altered Mental Status with History of Diabetes Mellitus):**

1. Airway, oxygen, apply cardiac monitor, and continuously monitor the patient until transferred to hospital staff.
2. Check blood sugar level.
3. Start IV with NS, titrate to vital signs.
4. If blood sugar is less than 60 mg/dL and/or signs & symptoms are present which are consistent with hypoglycemia:
  - a. Initiate an IV and establish patency.
  - b. Administer D10W with a macro drip IV set. Initially administer 100 mL (10 G) and recheck level of consciousness. If patient can eat and food is available discontinue administering D10W. If patient is obtunded, administer D10W in 50 mL boluses until patient's level of consciousness improves.
5. If unable to start an IV or patient is uncooperative:
  - a. Administer Glucagon 1.0 mg IM. (Response should be within 5-20 minutes)

### **C. Altered Mental Status, Excluding Exposure:**

1. Airway, oxygen, apply cardiac monitor, and continuously monitor the patient until transferred to hospital staff.
2. Check blood sugar level.
3. Start IV with NS, titrate to vital signs.
4. If blood sugar is less than 60 mg/dL and/or signs & symptoms are present which are consistent with hypoglycemia, follow hypoglycemia protocol.
5. If narcotic overdose suspected administer Naloxone 0.4 mg IVP every 2-3 minutes to desired effect. Total max dose not to exceed 4.0 mg. Titrate Naloxone to stimulate respiratory effort rather than LOC.
6. If unable to establish vascular access, consider administering intranasal (IN) Naloxone by one of the following methods.

- a. Pre-filled syringe with mucosal atomization device.
  - i. Consider Naloxone 2mg. Divide between nostrils.
  - ii. Wait five minutes before repeating. Maximum IN dose of 4 mg.
- b. Narcan® Nasal Spray Device
  - i. Administer 4 mg into a single nostril. Maximum IN dose of 4 mg.
- c. If patient respiratory effort does not improve with IN Naloxone:
  - i. Consider one additional dose of 0.4 mg IV.

#### D. Seizure Disorder:

1. Airway, oxygen, apply cardiac monitor, and continuously monitor the patient until transferred to hospital staff.
2. Protect patient from further injury, DO NOT restrain or force bite block.
3. If patient is actively seizing on arrival of the EMS provider.
  - a. Check blood glucose level:
    - i. If blood glucose level is less than 60 mg/dL, follow the hypoglycemia protocol.
  - b. If blood glucose level is above 60 mg/dL and the patient is actively seizing **DO NOT wait to obtain IV access.**
    - i. Administer Midazolam 10 mg IM.
  - c. Start IV with NS, titrate to obtain IV access.
4. If seizure persists after 3-5 minutes.
  - a. Administer Midazolam 2.5 mg IV, IM, or IO.
  - b. May repeat every 3-5 minutes for continued seizures.
  - c. Total maximum dose of Midazolam shall not exceed 20 mg.
5. If patient is NOT actively seizing upon arrival of EMS.
  - a. Start IV with NS, titrate to vital signs.
  - b. Check blood glucose level.
    - i. If blood glucose level is less than 60 mg/dL, follow the hypoglycemia protocol.
6. If blood glucose level is above 60 mg/dL and the patient starts actively seizing **AFTER** the arrival of EMS.
  - a. Administer Midazolam 2.5mg IV, IM, or IO.
  - b. May repeat every 3-5 minutes for continued seizures.
  - c. Total maximum dose of Midazolam shall not exceed 10 mg.

7. If narcotic overdose is suspected, administer Naloxone 0.4 mg IVP every 2-3 minutes to desired effect. Total maximum IV dose not to exceed 4 mg. Titrate Naloxone to stimulate respiratory effort rather than LOC.
8. If unable to establish vascular access, consider administering intranasal (IN) Naloxone by one of the following methods.
  - a. Pre-filled syringe with mucosal atomization device.
    - i. Consider Naloxone 2 mg. Divide between nostrils.
    - ii. Wait five minutes before repeating. Maximum IN dose of 4 mg.
  - b. Narcan® Nasal Spray Device
    - i. Administer 4 mg into a single nostril. Maximum IN dose of 4 mg.
  - c. If patient respiratory effort does not improve with IN Naloxone:
    - i. Consider one additional dose of 0.4 mg IV.

**E. ACUTE ALLERGIC REACTION OR ANAPHYLAXIS (Difficulty Breathing with urticaria, wheezing and contact with a known allergen):**

1. Urticaria or pruritis **without** signs of anaphylaxis
  - a. Consider Diphenhydramine 50 mg SIVP or deep IM.
2. Anaphylaxis (involving two or more organ systems)
  - a. MAP less than 65
    - i. Airway, oxygen apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
    - ii. Start IV with NS, titrate to vital signs.
    - iii. Consider Epinephrine 0.3 mg (1 mg/mL) IM prior to or while attempting IV/IO access.
    - iv. Epinephrine 0.3 mg (0.1 mg/mL) IVP.
      1. Consider repeating Epi every 5-10 minutes depending on VS and respiratory status.
    - v. Consider Albuterol 5 mg (2, 2.5 mg/3mL) by nebulizer. May repeat 2 times as needed for ongoing respiratory distress (max total dose 15 mg).
    - vi. Consider Diphenhydramine 50 mg SIVP or deep IM.
    - vii. Consider Epinephrine drip @ 2-10 mcg/min
    - viii. Titrate to a Mean Arterial Pressure (MAP) of greater than 65mmHg.
  - b. MAP greater than 65:
    - i. Airway, oxygen apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.

- ii. Albuterol 2.5 mg/3 mL by nebulizer, may repeat two times.
- iii. Epinephrine 0.3 mg (1 mg/mL) IM.
  - 1. Consider repeating Epinephrine in 5-10 minutes.
- iv. Start IV with NS TKO, titrate to vital signs.
- v. Consider Diphenhydramine 50 mg SIVP or deep IM.

**F. BRONCHOSPASM: ASTHMA/COPD (Difficulty breathing in the presence of wheezing and/or rhonchi with history of asthma/COPD or irritant exposure):**

1. Airway, oxygen apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
2. Administer Albuterol 5.0 mg (2, 2.5mg/3mL) by nebulizer. May repeat 2 times as needed for ongoing respiratory distress. (max total dose 15 mg)

**Or**

3. Administer Duoneb (Albuterol 2.5 mg and Ipratropium 0.5 mg) by nebulizer. May repeat twice.
4. Start IV with NS TKO, titrate to vital signs.
5. Consider Dexamethasone 10 mg IV, IM or nebulized.
6. Consider CPAP.
7. For patients in severe respiratory distress or those who are non-responsive to nebulizer treatments:
  - a. Consider Epinephrine 0.3 mg (1 mg/mL) IM or 0.3 mg (0.1mg/mL) IV for impending respiratory failure.
  - b. Consider Magnesium Sulfate 2 G diluted in 100 ml administered over 10 minutes for severe bronchoconstriction and concern for impending respiratory failure.

**G. Exposure:**

1. Lowered Skin Temperature with Altered Mental Status (Hypothermia).
  - a. Remove wet garments and protect against heat loss and wind chill. Use passive rewarming methods.
  - b. Maintain horizontal position and avoid rough movement and excess activity.
  - c. Monitor core temperature if available.
  - d. Apply cardiac monitor and continuously monitor the patient until transferred to the hospital staff.
2. If Pulse/Breathing Present.

- a. Oxygenate with warm oxygen. (If available)
  - b. Start IV with NS TKO. (Use warm IV fluid if available)
3. If Pulse/Breathing Absent.
  - a. Start CPR.
  - b. If VF/VT, defibrillate X 1.
    - i. Withhold further shocks until rewarmed.
  - c. Continue CPR if pulseless and apneic.
  - d. Ventilate with warm oxygen. (If available)
  - e. Start IV with NS TKO. (Use warm IV fluid if available)
  - f. Withhold medications until rewarmed.
4. Elevated Skin Temperature with Altered Mental Status (Hyperthermia).
  - a. Remove from environment and wrap with moist sheets.
  - b. Airway, oxygen, monitor.
  - c. Start IV with NS, titrate to vital signs.

#### H. **Hypotension in the Absence of Trauma (Hypovolemic Shock):**

Shock is present when pulse is greater than 120 and/or MAP of less than 65 mmHg in a previously normotensive patient or systolic drops 40-50 mmHg in a previously hypertensive patient, especially if accompanied by pale, clammy skin, and decreased level of consciousness.

1. Airway, oxygen, apply cardiac monitor, obtain 12 lead ECG, and continuously monitor the patient until transferred to hospital staff.
2. Start 1 or 2 large bore IV's, NS and titrate to vital signs.
  - a. Adults: Give a 20 mL/kg bolus up to 2 L to maintain a MAP greater than 65 mmHg. If no improvement after one bolus, contact **[Medical Direction]**.
  - b. Pediatrics: Give a 20 mL/kg bolus, may repeat one time. If no improvement after a total of 40 mL/kg, contact **[Medical Direction]**.
  - c. Neonates: Give a 10 mL/kg bolus. If no improvement after one 10 mL/kg bolus, contact **[Medical Direction]**.

#### I. **Poisonings/Overdoses:**

1. Ingested Poisons with Altered Mental Status.
  - a. Airway, oxygen apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
  - b. Check blood sugar level, if less than 60 follow hypoglycemia protocol.
  - c. Start IV with NS, titrate to vital signs.

- d. Consider Naloxone 0.4 mg IVP, may repeat 0.4 mg every 2-3 min to desired effect.
    - i. Total max IV dose not to exceed 4 mg.
    - ii. Titrate to improve respiratory effort rather than LOC.
  - e. If unable to establish vascular access, consider administering intranasal (IN) Naloxone by one of the following methods.
    - i. Mucosal atomization device.
      - 1. Naloxone 2mg. Divide between nostrils.
      - 2. Wait 5 minutes before repeating. Maximum IN dose of 4 mg.
    - ii. OR Narcan® Nasal Spray Device
      - 1. Administer 4 mg into a single nostril. Maximum IN dose of 4 mg.
    - iii. If patient respiratory effort does not improve with IN Naloxone:
      - 1. Consider one additional dose of 0.4 mg IV.
  - f. Treat dysrhythmias according to protocol guidelines.
2. Ingested Poisons with Intact Mental Status.
- a. Airway, oxygen apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
  - b. Check blood sugar level, if less than 60 mg/dL follow hypoglycemia protocol.
  - c. Consider IV with NS, titrate to vital signs.
  - d. Treat dysrhythmias according to protocol guidelines.
3. Known/High Suspicion of Cyclic or Tricyclic-Anti-Depressant Overdose.
- a. Airway, oxygen, apply cardiac monitor, obtain 12 lead ECG, and continuously monitor the patient until transferred to hospital staff.
  - b. Check blood sugar level, if less than 60 mg/dL follow hypoglycemia protocol.
  - c. Start IV with NS, titrate to vital signs.
  - d. If patient demonstrates one of the following, administer Sodium Bicarbonate 1 mEq/Kg SIVP:
    - i. Prolonged or widening of QRS. (Greater than 0.10 mm)
    - ii. Ventricular dysrhythmias.
    - iii. Hypotension unresponsive to fluid challenge of 500 ml NS.

- iv. Seizure with no previous history of seizures.
- 4. Known/High Suspicion of Calcium Channel Blocker Overdose.
  - a. Airway, oxygen, apply cardiac monitor, obtain 12 lead ECG, and continuously monitor the patient until transferred to hospital staff.
  - b. Check blood sugar level, if less than 60 follow hypoglycemia protocol.
  - c. Start IV with NS, titrate to vital signs.
  - d. If patient demonstrates one of the following:
    - i. Altered Mental Status.
    - ii. HR less than 60 bpm.
    - iii. Conduction delays.
    - iv. MAP less than 65.
    - v. Nausea/vomiting.
    - vi. Slurred speech.
  - e. Consider calcium chloride 1 G of 10% solution mixed with 100 mL NS and infused IV over 5 minutes.
  - f. If patient presents with persistent bradycardia or hypotension, see appropriate protocol.
- 5. Known/High Suspicion of Cholinergic Overdose.
  - a. Airway, oxygen, apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
  - b. Check blood sugar level, if less than 60 mg/dL follow hypoglycemia protocol.
  - c. Start IV with NS, titrate to vital signs.
  - d. If patient demonstrates one of the following:
    - i. Respiratory distress.
    - ii. **SLUDGEM** syndrome.
    - iii. Seizures.
    - iv. HR less than 60 bpm.
  - e. Contact base physician for patient treatment options **[Medical Direction]**.
- 6. The DuoDote auto-injectors and the CANA (Convulsant Antidote for Nerve Agent) kits previously carried on the medic units have been removed. The EMS Supervisors have access to the CDC ChemPack located at the MSC if needed for a large-scale incident.
  - a. Administer the ATNAA auto-injector as indicated.
  - b. Repeat to a total max of 3 ATNAA auto-injector administrations.

- c. For extremely severe cases, up to 3 ATNAA auto-injectors may be administered in rapid succession.
  - d. If seizure persists after 3 ATNAA auto-injector administrations, administer one Diazepam 10 mg auto-injector.
7. Toxic Inhalation.
- a. Scene Safety.
  - b. Remove from exposure.
  - c. Airway, oxygen, apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
  - d. For patients with wheezing and/or signs of bronchoconstriction.
    - i. Consider Albuterol 2.5 mg/3 ml by nebulizer, may repeat twice.
  - e. Start IV with NS, titrate to vital signs.
  - f. If only CO poisoning is suspected (absence of inhalation injury) and in the presence of any of the following symptoms:
    - i. Chest pain.
    - ii. Headache in pregnant patient.
    - iii. Altered LOC or history of unconsciousness.
    - iv. Dizziness or Seizures.
    - v. Unsteady gait or difficulty speaking.
  - g. Administer 100% oxygen by NRB mask and transport.

J. **Stroke Signs and Symptoms:**

- 1. Airway, oxygen, apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
- 2. Check blood sugar level, if less than 60 mg/dL follow hypoglycemia protocol.
- 3. Start IV with NS, with at least an 18 ga IV, titrate to vital signs. (Do not delay transport for IV start)
- 4. Perform the **BEFAST** Stroke Scale.
  - a. Assess for neurological deficit such as facial droop, localized weakness, gait or balance disturbances, slurred speech, or altered mentation.
  - b. Hemiparesis or hemiplegia.
  - c. Disconjugate gaze, forced or crossed gaze. (If patient is unable to voluntarily respond to exam, makes no discernable effort to respond or is unresponsive)
  - d. Severe headache, neck pain and/or stiffness or difficulty seeing.



5. Obtain history, determine time of signs and symptoms onset, if less than 24 hours, declare a stroke alert as soon as possible, do not wait until you are in the medic unit!
6. Report to receiving facility shall include:
  - a. **BEFAST** Stroke Scale results.
  - b. Time of onset and last time patient was seen “normal”. (Last known well)
  - c. Stated patient weight.
  - d. Blood sugar.
  - e. History of CVA/TIA, seizures and/or migraine headaches.

**K. Behavioral Emergencies:**

1. A patient with a behavioral emergency should be transported to Bryan Health West for medical clearance and psychiatric evaluation.
2. Patients who are rational and present no risk to the EMS providers or to themselves may be transported to hospital of choice.
3. Always consider a medical etiology for a behavioral emergency.

**L. Nausea and/or Vomiting:**

1. Follow appropriate protocol for patient’s condition.
2. Start IV of NS, titrate to vital signs.
3. Consider Zofran (Ondansetron) 4 mg IV or IM.

**M. Combative Patient:**

1. Follow appropriate protocol for patient’s condition.
2. Consider pharmacological restraint:
  - a. If RASS +2 or +3:
    - i. Midazolam 2.5 mg IV or IO, may repeat every 3-5 minutes as needed to a maximum total dose of 15 mg
    - or
    - ii. Midazolam 5 mg IM, may repeat every 3-5 minutes to a maximum dose of 15 mg.
  - b. If RASS +4, consider Ketamine 250 mg IM
    - i. If after 5 minutes, RASS remains +2 or +3, consider Midazolam 2.5mg IV/IO, or 5 mg IM, may repeat every 3-5 minutes to a maximum total dose of 15 mg.

- ii. If after 5 minutes, RASS remains +3 or +4, consider repeating Ketamine 250mg IM, maximum total dose 500mg.

**N. Suspected Excited Delirium:**

1. Ensure scene safety.
  - a. Safety of the provider takes precedence.
  - b. Request law enforcement if they are not already on scene.
  - c. Request EMS-1.
2. Signs and Symptoms for excited delirium may include:
  - a. Paranoia.
  - b. Disorientation.
  - c. Dissociation.
  - d. Hyper-aggression.
  - e. Tachycardia.
  - f. Hallucinations.
  - g. Diaphoresis.
  - h. Incoherent speech or shouting.
3. Utilize the restraint protocol if needed to provide safety for all involved.
  - a. Providers should utilize the “least restrictive method of restraint”. The patient should be provided with alternatives to correct inappropriate behavior to maintain a positive relationship if possible.
  - b. Remove patient from stressful environment.
4. Follow general patient care principles.
  - a. Consider all possible medical or trauma causes for behavior, e.g., hypoglycemia, overdose, substance abuse, hypoxia, head injury etc.
  - b. Obtain baseline vital signs and temperature as soon as possible.
    - i. If temperature is greater than 102, implement cooling.
  - c. Continuously monitor EKG, pulse oximetry and ETCO<sub>2</sub>.
  - d. Manage airway and oxygen therapy as indicated.
  - e. Establish vascular access if possible.
    - i. Consider fluid bolus of 1 L maximum.
5. Pharmacological restraint.
  - a. If RASS +2 or +3:

- i. Midazolam 2.5 mg IV or IO, may repeat every 3-5 minutes as needed to a maximum total dose of 15 mg
  - or
  - ii. Midazolam 5 mg IM, may repeat every 3-5 minutes to a maximum dose of 15 mg.
- b. If RASS +4, consider Ketamine 250 mg IM
  - i. If after 5 minutes, RASS remains +2 or +3, consider Midazolam 2.5mg IV/IO, or 5 mg IM, may repeat every 3-5 minutes to a maximum total dose of 15 mg.
  - ii. If after 5 minutes, RASS remains +3 or +4, consider repeating Ketamine 250mg IM, maximum total dose 500mg.
- 6. Continuously monitor and reassess patient.
  - a. Request law enforcement to accompany patient during transport.
  - b. The preferred destination for this patient is Bryan Health West.
- 7. **NOTE: If a patient with Excited Delirium suffers cardiac arrest consider the following treatments early in the resuscitation:**
  - a. Fluid bolus, 1 L maximum.
  - b. Sodium bicarbonate, 1 mEq/kg IV, or IO.
  - c. Calcium chloride 1 G IV or IO.

**O. Hyperglycemia – BS greater than 300 mg/dl:**

- a. Follow appropriate protocol for patient's condition.
- b. Start IV of NS, initiate fluid bolus of 250-500 cc Normal Saline.

**P. SEPSIS (SIRS):**

- 1. Sepsis can be identified when the following markers of the Systemic Inflammatory Response Syndrome (SIRS) are present in a patient with an obvious or suspected infection:
  - a. MAP less than 65mmHg.
  - b. Heart Rate greater than 90 beats/min.
  - c. Respiratory Rate greater than 20 breaths/min.
  - d. GCS less than 15.
  - e. Temperature greater than 38° C. (100.4° F) OR less than 36° C (96.8° F)
- 2. In addition to physiologic markers of SIRS, severe sepsis may cause hypoxia and inadequate organ perfusion, resulting in metabolic acidosis marked by

elevated blood lactate levels and decreased ETCO<sub>2</sub> levels of less than 26mmHg on at least two consecutive capnography measurements at least 5 minutes apart.

3. Sepsis treatment will be instituted for patients 18 years old or older with obvious or suspected infection and any of these criteria:
  - a. MAP less than 65mmHg.
  - b. Heart Rate greater than 90 beats/minute.
  - c. Respiratory Rate greater than 20 breaths/minute.
  - d. GCS less than 15.
  - e. ETCO<sub>2</sub> <26 mmHg, and
  - f. Temperature greater than 38° C (100.4° F) OR less than 36° C (96.8° F).
4. Airway, oxygen, apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
5. Establish IV with NS and run wide open.
  - g. Administer 30 mL/kg fluid boluses in 500 mL increments. May repeat once, if needed, to achieve a MAP greater than 65 mmHg
  - h. Repeatedly check for signs of pulmonary edema, especially for patients with CHF and end stage renal disease (ESRD) on dialysis.
  - i. If CPAP is used, PEEP airway pressures should be limited to 5 cmH<sub>2</sub>O.
6. Notify the receiving facility that you are treating a patient that may meet SIRS criteria.
7. Radio report and face-to-face report shall include the total amount of fluid infused.

## Part VI. OBSTETRICS - GYNECOLOGY

### A. Imminent Delivery with History of Pregnancy, a Palpable Uterus and Contractions:

1. Airway, oxygen, apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
2. Consider IV with NS, titrate vital signs.
3. If not crowning (no signs & symptoms of imminent delivery), transport patient in position of comfort, usually on left side.
4. If crowning present, prepare mother for delivery.
5. Allow placenta to deliver naturally. DO NOT forcibly extract. If mother allows, put baby to breast and massage fundus. Transport all tissue passed with patient to receiving facility.

### B. Neonatal Care (General Care Given Newborn):

1. EMS providers shall use the Handtevy guide for dosage guidelines and equipment recommendations for neonate patients.
2. Assess & support:
  - a. Airway - position and clear, use bulb syringe to suction mouth then nose.
  - b. Breathing – stimulate to breathe.
  - c. Circulation – assess heart rate and color.
  - d. Temperature – keep warm and dry.
3. Position and clear the airway. Stimulate breathing by drying and apply oxygen as necessary.
4. Assess respirations, heart rate and color.
5. If spontaneous respirations absent or inadequate or heart rate less than 100, provide BVM ventilations at 40 to 60 per minute.
6. Re-assess every 30 seconds, if heart rate remains less than 100, check chest movement and ventilation technique. If needed, consider endotracheal intubation.
7. If after adequate BVM ventilations with oxygen and/or intubation and the heart rate is 60 or less, start chest compressions.
  - a. Compression to ventilation ratio is 10:1, do not pause compressions for ventilation.
8. If heart rate remains less than 60 despite adequate ventilation with 100 % oxygen and chest compressions:
  - a. Administer Epinephrine 0.02 mg/kg (0.1 mg/mL) IV/IO.

- i. Epinephrine should be given rapidly and repeated every 3 to 5 minutes.
  - b. For ET administration, dose is Epinephrine 0.2 mg/kg (1 mg/mL).
  - c. Consider a 10 mL/kg NS bolus. If no improvement after one bolus, contact **(Medical Direction)**.
- C. **Hypertensive Disorders of Pregnancy – (Toxemia of Pregnancy/Eclampsia – Toxemia is characterized by hypertension and diffuse edema):**
  1. Airway, oxygen, apply cardiac monitor and continuously monitor the patient until transferred to hospital staff and position the patient on her left side.
  2. Check blood sugar level.
  3. If blood sugar is less than 60 mg/dL follow the hypoglycemia protocol.
  4. If patient is not hypoglycemic and is actively seizing upon EMS arrival,
    - a. Administer Midazolam 10 mg IM do not wait to obtain IV or IO access.
  5. Start IV with NS, titrate to vital signs.
  6. If patient begins seizing in the presence of EMS and treatment is indicated:
    - a. Administer Midazolam 2.5 mg IV, IO, or IM.
    - b. May repeat every 3-5 minutes for continued seizures to a maximum of 10 mg.
  7. If patient continues seizing,
    - a. Consider Magnesium Sulfate (50 %) 1 G diluted in 100 ml NS with a macro drip infusion set. Infusion must be over a minimum of 5 minutes (20ml/min).
    - b. If still seizing after 5 minutes, consider repeating once.
  8. Transport gently, sirens and flashing lights may precipitate seizures.
- D. **Vaginal Bleeding:**
  1. Airway, oxygen, apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
  2. Start IV NS and titrate to vital signs.

## **Part VII. PEDIATRICS**

### **A. General Guidelines:**

1. This protocol acknowledges that age limits for pediatric patients should be flexible and that the exact age of a patient is not always known. Between the ages of 13 and 16, the paramedic should use their judgment in making medical care decisions. EMS providers always have the option of contacting medical control for assistance in decision-making.
2. Pediatric medication dosages shall be used for any pediatric aged patient (age 12 years and under) less than or equal to 50 kg.
3. See General Operations section (Refusal of Care) for patient consent and refusal guidelines.
4. Parents and/or caregivers should be allowed to stay with children during assessment and transport, if appropriate.
5. EMS providers shall use the Handtevy guide for dosage guidelines and equipment recommendations for pediatric patients.
6. If the age/weight of a pediatric patient is unknown, providers shall use the Broselow tape for measuring and determining an estimated age/weight.
7. If a specific protocol is not found in the Pediatric Section, EMS providers should follow appropriate Adult Protocols, adjusting all medications and interventions to pediatric dosages and guidelines utilizing online medical control as needed.

### **B. Airway Management and Oxygen Therapy:**

1. Administer high flow oxygen by mask as needed. If patient will not tolerate mask, use high flow blow-by oxygen.
2. Do not hyperextend the neck in newborns and infants.
3. Consider appropriately sized OPA or I-gel airway for all unconscious patients.
4. When ventilation is needed, use appropriately sized bag-valve-mask device.
5. Endotracheal intubation is allowed, but not necessary when ventilations are effectively maintained with BVM.

### **C. IV Therapy:**

1. For pediatric trauma patients and for all types of shock, attempt IV starts enroute. Do not delay transport to establish an IV with a code 3 pediatric patient.
2. For pediatric patients that are in critical or unstable condition, establish an intraosseous (IO) infusion if difficult or unable to establish an IV.

## Part VIII. Pediatric Cardiac Emergencies

### A. General Guidelines:

1. If respirations are absent or inadequate, begin assisted ventilations using a bag-valve-mask with 100% oxygen.
2. Begin chest compressions if:
  - a. Asystole, as evidenced by an absent pulse.
  - b. Bradycardia (less than 60 beats/min) is causing severe cardiorespiratory compromise as evidenced by poor perfusion, hypotension, respiratory difficulty or altered mental status.
3. Apply ECG monitor and follow standing orders as indicated using protocol guidelines.
4. Consider drug overdose and/or hypoglycemia as precipitating factors in cardiopulmonary arrest. Treat confirmed hypoglycemia.
5. If BVM ventilation is effective, do not delay transport to establish ET intubation. Consider the use of an I-gel airway.

### B. Pediatric V-Fib or Pulseless Ventricular Tachycardia:

1. Initiate High Performance-CPR and immediately defibrillate once at 2 joules per kilogram.
2. Continue performing CPR for 2 minutes after defibrillation.
3. Repeat defibrillations at 4 J/kg.
4. Continue performing CPR for 2 minutes after defibrillation.
5. Repeat subsequent defibrillations at 4 J/kg, continue with 2 minutes of CPR between each shock.
6. Ventilate initially with BVM and I-gel airway, 10 times per minute with continuous compressions. Consider ET later in the arrest.
7. Deliver chest compressions at a rate of at least 100 per minute.
8. Establish IV or IO and ET at any time without interrupting CPR.
  - a. Administer Epinephrine:
    - i. **Preemie or Newborn** - 0.02 mg/kg (0.1 mg/mL) IVP every 3 to 5 minutes **OR** Epinephrine 0.2 mg/kg (1 mg/mL) ET every 3 to 5 minutes to a maximum of three total doses.
    - ii. **28 days and older** - 0.01 mg/kg (0.1 mg/mL) IVP every 3 to 5 minutes **OR** Epinephrine 0.1 mg/kg (1 mg/mL) ET every 3 to 5 minutes to a maximum of three total doses.



9. Consider Amiodarone 5 mg/kg IV bolus.
10. Consider Magnesium Sulfate (50%) 50 mg/kg (maximum **initial** dose of 1g) diluted in 10mL of NS SIVP for torsade's de pointes or refractory ventricular fibrillation/tachycardia. May repeat once.

**IF RETURN OF CIRCULATION FROM VF or PULSELESS VT:**

1. Reassess airway and breathing.
2. Maintain normal ventilation rates – Avoid routine hyperventilation.
3. If pulseless patient was given Amiodarone bolus, do not administer Amiodarone infusion, if Amiodarone was not given and patient regains pulse:
  - a. Start infusion of 5 mg/kg of Amiodarone in 100 cc of NS, infuse over 20 minutes. Maximum dose of 150 mg, do not repeat.
4. If bradycardic and unstable, go to bradycardia protocol.

**C. Pediatric Asystole or PEA:**

1. Perform 2 minutes of CPR.
2. Confirm rhythm is asystole or PEA.
3. Ventilate with BVM and I-gel airway, 10 times per minute with continuous compressions. Consider ET later in the arrest.
4. Deliver chest compressions at a rate of at least 100 per minute.
5. Establish IV or IO and ET at any time without interrupting CPR.
6. Administer Epinephrine
  - i. Preemie or Newborn - 0.02 mg/kg (0.1 mg/mL) IVP every 3 to 5 minutes **OR** Epinephrine 0.2 mg/kg (1 mg/mL) ET every 3 to 5 minutes.
  - ii. 28 days and older - 0.01 mg/kg (0.1 mg/mL) IVP every 3 to 5 minutes **OR** Epinephrine 0.1 mg/kg (1 mg/mL) ET every 3 to 5 minutes.
7. Consider treatable causes in the field:

Hypovolemia	Toxins – tablets/overdoses
Hypoxia	Tamponade – cardiac
Hydrogen ion (acidosis)	Tension pneumothorax
Hyper/hypokalemia	Thrombosis – coronary or pulmonary
Hypoglycemia	Trauma
Hypothermia	

**D. Pediatric General Cardiac Dysrhythmia:**

1. In general, pediatric patients do not have cardiac dysrhythmias due to cardiac disease. Most often, the cause of dysrhythmias in pediatrics is due to an

airway/ventilation or volume condition. For pediatric patients with signs & symptoms of poor perfusion, clear & maintain the airway, provide BVM ventilations and fluid resuscitation @ 20 mL/kg, may repeat one time.

2. Stable pediatric patient without signs and symptoms.
  - a. If tolerating the rhythm, monitor and provide supportive care without medications or electrical intervention.
3. Unstable pediatric patient with signs and symptoms.
  - a. Treatments are based on the patient's condition and how rapidly a medication may be delivered versus how rapidly an electrical therapy can be performed.

**E. Pediatric CPR Induced Conscious Sedation:**

8. Indications:
  - a. Spontaneous eye opening, the presence of tears, purposeful movement, or verbal response in a confirmed pulseless patient with either manual or mechanical CPR in progress
  - b. Consider Ketamine 1mg/kg IV, maximum initial dose of 50 mg, may repeat every 3-5 minutes as needed, total maximum dose of 150 mg.

**F. Pediatric Bradycardia with signs and symptoms of poor perfusion:**

1. Airway, oxygen, apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
2. Establish an IV or IO of NS.
3. If unstable (poor perfusion, hypotensive, respiratory distress, altered mental status), start chest compressions and assure airway and oxygen with BVM and/or endotracheal intubation.
4. If heart rate less than 60 beats/minute in infant or child and poor perfusion.
  - a. Consider Epinephrine 0.01 mg/kg (0.1 mg/mL) IV/IO every 3 to 5 minutes  
**OR** Epinephrine 0.1 mg/kg (1 mg/mL) ET every 3 to 5 minutes.
5. Consider Atropine 0.02 mg/kg IV/IO (minimum Atropine dose is 0.1 mg maximum is 0.5 mg) – for increased vagal tone or primary AV block.
  - a. May repeat once.
6. Consider Transcutaneous Pacing (TCP), pre-medicate if possible: Use only one of the following.
  - a. Ketamine 0.25 mg/kg SIVP or IO to a maximum dose of 10 mg. Do not repeat.
  - b. Fentanyl 1 mcg/kg SIVP or IO to an initial maximum dose of 25 mcg. Do not repeat.

**G. Pediatric Ventricular Tachycardia with a Pulse:**

1. Airway, oxygen, apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
2. Establish an IV or IO of NS.
3. Consider Amiodarone infusion of 5 mg/kg in 100 cc of NS, infuse over 20 minutes. Maximum dose of 150 mg, do not repeat.
4. Consider synchronized cardioversion at 1 joule/kg, pre-medicate if possible, with: Use only one of the following.
  - a. Ketamine 0.25 mg/kg SIVP or IO to a maximum dose of 10 mg. Do not repeat.
  - b. Fentanyl 1 mcg/kg SIVP or IO to an initial maximum dose of 25 mcg. Do not repeat.
5. Consider second synchronized cardioversion at 2 joules/kg.
6. If polymorphic or Torsade's de pointes, consider Magnesium Sulfate 50 mg/kg (maximum dose of 1 g) diluted in 100cc of NS over 5 minutes. Use a macro drip set at 20cc/min.

**H. Pediatric PSVT with signs and symptoms of poor perfusion:**

1. Airway, oxygen apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
2. Establish an IV or IO of NS.
3. Administer fluid bolus at 20 mL/kg, may repeat one time to increase perfusion.
4. If PSVT still present, consider adenosine 0.1 mg/kg rapid IVP. (Max dose is 5 mg)
  - a. May double and repeat dose once. (Maximum second dose is 10 mg)
5. Consider synchronized cardioversion at 1 joule/kg, pre-medicate, if possible, with: Use only one of the following.
  - a. Ketamine 0.25 mg/kg SIVP or IO to a maximum dose of 10 mg. Do not repeat.
  - b. Fentanyl 1 mcg/kg SIVP or IO to an initial maximum dose of 25 mcg. Do not repeat.
6. Consider second synchronized cardioversion at 2 joules/kg.

## Part IX – Pediatric Medical Emergencies

### I. **Pediatric Asthma (Difficulty Breathing in the presence of wheezing):**

1. Airway, oxygen, apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
2. Maintain patient in position of comfort.
3. If patient in respiratory arrest, begin ventilations with a BVM, consider endotracheal intubation.
4. Administer Albuterol 2.5 mg/3 mL by nebulizer, may repeat two times. (Max total dose 7.5 mg)

**OR**

**Administer Duoneb (Albuterol 2.5 mg and Ipratropium 0.5 mg) by nebulizer. May repeat twice.**

5. Consider Dexamethasone 0.6 mg/kg nebulized, IV or IM (max dose 10 mg).
6. For patients in severe respiratory distress that are non-responsive to nebulizer treatments:
  - a. Consider Epinephrine 0.01 mg/kg (1 mg/mL) IM or Epinephrine 0.01 mg/kg (0.1 mg/mL) IV to a max initial dose of 0.3 mg. May repeat Epinephrine every 5-10 minutes.
  - b. Magnesium sulfate (40 mg/kg IV, maximum dose of 2 G) diluted in 100 ml NS over 10 minutes should be administered for severe bronchoconstriction and concern for impending respiratory failure.

### J. **Croup (Difficulty Breathing in the presence of stridor and history of illness):**

1. Airway, oxygen, apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
2. Maintain patient in position of comfort, try to keep patient calm.
3. Consider early and rapid transport.
4. Consider Racemic Epinephrine for suspected croup.
  - a. 0.5 mL diluted in 3 mL saline by nebulizer.
  - b. Children less than 6 months old administer 0.25 mL in 3 mL NS by nebulizer.
5. Consider Dexamethasone 0.6 mg/kg nebulized, IV or IM (max dose of 10 mg).
6. Consider nebulized saline 10 mL.(may repeat as needed).
7. Consider IV of NS TKO.

**K. Pediatric Acute Allergic Reaction of Anaphylaxis (Difficulty Breathing in the presence of urticaria, wheezing and/or contact with a known allergen):**

1. Airway, oxygen apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
2. Urticaria or pruritis without signs of anaphylaxis
  - a. Consider Diphenhydramine 1 mg/kg SIVP or deep IM, maximum dose 50 mg.
3. Administer Albuterol 2.5 mg/3 mL by nebulizer, may repeat two times. (max total dose 7.5 mg)
4. Consider Epinephrine 0.01 mg/kg (1 mg/mL) IM or Epinephrine 0.01 mg/kg (0.1 mg/mL) IV to a max initial dose of 0.3 mg.
  - a. May repeat Epinephrine dose in 5-10 minutes.
5. Consider IV of NS and titrate to vital signs.
6. Consider Diphenhydramine 1mg/kg deep IM or SIVP, maximum dose of 50 mg.
7. If MAP is less than 65:
  - a. Consider Epinephrine drip @ 0.1-0.3 mcg/kg/min
  - b. Titrate to MAP greater than 65 or age-appropriate blood pressure.

**L. Pediatric Difficulty Breathing in the presence of Upper Airway Obstruction:**

1. Attempt to relieve obstruction according to the American Heart Association Foreign Body Airway Obstruction (FBAO) guidelines.
2. If the above maneuvers are unsuccessful, attempt to visualize obstruction with laryngoscope and remove with Magill forceps.
3. Airway, oxygen apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
4. If all else fails, consider needle cricothyrotomy.
5. Consider IV with NS TKO enroute.

**M. Pediatric Seizures:**

1. Airway, oxygen, apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
2. Protect patient from further injury, DO NOT restrain or force bite block.
3. If patient is actively seizing on arrival of EMS:
  - a. Check blood glucose levels:
    - i. If blood glucose is less than 60 mg/dL, follow the hypoglycemia protocol.

- b. If blood glucose level is above 60 mg/dL and the patient is actively seizing upon EMS arrival:
  - i. Administer Midazolam 0.2 mg/kg IM, DO NOT WAIT TO OBTAIN IV ACCESS.
  - ii. Maximum dose of 5 mg.
- c. Start IV with NS and titrate to vital signs.
- d. If seizures persist after 5 minutes:
  - i. Administer Midazolam 0.2 mg/kg IV, IM, or IO.
    - 1. Maximum single dose 2.5 mg.
  - ii. May repeat once after 5 minutes for persistent seizures.
    - 1. Maximum total dose of 10 mg.
- 4. If patient is not actively seizing upon arrival of EMS.
  - a. Start IV with NS, titrate to vital signs.
  - b. Check blood glucose.
    - i. If blood glucose is less than 60 mg/dL, follow the hypoglycemia protocol.
  - c. If blood glucose level is above 60 mg/dL and the patient starts actively seizing after the arrival of EMS:
    - i. Administer Midazolam 0.2 mg/kg IV, IM, or IO.
      - 1. Max single dose 2.5 mg.
    - ii. May repeat once after 5 minutes for persistent seizures.
      - 1. Maximum total dose of 5 mg.
- 5. If febrile and awake:
  - a. Consider Acetaminophen 10 mg/kg PO (max of 320 mg)

**N. Pediatric Altered Mental Status:**

- 1. Airway, oxygen apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
- 2. Check blood sugar level.
- 3. Start IV with NS and titrate to vital signs.
- 4. If blood sugar is less than 60 mmHg:
  - a. If patient is 2 years of age or older, and able to follow commands, consider oral glucose 7.5 g. May repeat one time if patient remains hypoglycemic.

- b. Consider D10W 0.5 G per kilogram of body weight up to a maximum of 10 G or 100 mL using a macro drip IV set. (D10W 1 G = 10 mL of D10W). May repeat one time if patient remains hypoglycemic.

Broselow Color	Silver	Pink	Red	Purple	Yellow	White	Blue	Orange	Green
Weight (kg)	3-4-5	6-7	8-9	10-11	12-14	15-18	19-23	24-29	30-36
Dextrose (D10W) 10 G	1.5 G 2 G 2.5 G	3.5 G	4.5 G	5.5 G	6.5 G	8.5 G	10 G	10 G	10 G
0.10 G/mL	15 mL 20 mL 25 mL	35 mL	45 mL	55 mL	65 mL	85 mL	100 mL	100 mL MAX DOSE	100 mL MAX Dose

5. If unable to start IV, administer Glucagon 0.5 mg for patients less than 20 kg and 1.0 mg for patient greater than 20 kg.

## O. Pediatric Poisonings/Overdose:

### 1. Ingested Poisons with Altered Mental Status.

- Airway, oxygen apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
- Check blood sugar level, if less than 60 follow hypoglycemia protocol.
- Start IV with NS, titrate to vital signs.
- If narcotic overdose is suspected, administer Naloxone 0.1 mg/kg IV up to a max single dose of 0.4 mg.
  - Repeat every 2-3 minutes to desired effect. Max total dose is 4 mg.
  - Titrate Naloxone to stimulate respiratory effort rather than LOC.
- If unable to establish vascular access, consider administering intranasal Naloxone with the mucosal atomization device.
  - Consider Naloxone 0.1 mg/kg, maximum initial dose of 2 mg. Divide between nostrils. May repeat one time after 5 minutes.
  - If patient respiratory effort does not improve with IN Naloxone:
    - Consider one additional dose of 0.1 mg/kg IV, max dose 0.4mg.
- Treat dysrhythmias according to protocol guidelines.

### 2. Ingested Poisons with Intact Mental Status:

- a. Airway, oxygen apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
  - b. Check blood sugar level, if less than 60 mg/dL follow hypoglycemia protocol.
  - c. Consider IV with NS, titrate to vital signs.
  - d. Treat dysrhythmias according to protocol guidelines.
3. Known/High Suspicion of Cyclic or Tricyclic-Anti-Depressant Overdose:
- a. Airway, oxygen, apply cardiac monitor, obtain 12 lead ECG, and continuously monitor the patient until transferred to hospital staff.
  - b. Check blood sugar level, if less than 60 mg/dL follow hypoglycemia protocol.
  - c. Start IV with NS, titrate to vital signs.
  - d. If patient demonstrates one of the following:
    - i. Prolonged or widening of QRS. (Greater than 0.10 mm)
    - ii. Ventricular dysrhythmias.
    - iii. Hypotension unresponsive to fluid challenge of 500 ml NS.
    - iv. Seizure with no previous history of seizures.
    1. Administer 1mEq/Kg Sodium Bicarbonate SIVP.
4. Known/High Suspicion of Calcium Channel Blocker Overdose:
- a. Airway, oxygen, apply cardiac monitor, obtain 12 lead ECG, and continuously monitor the patient until transferred to hospital staff.
  - b. Check blood sugar level, if less than 60 follow hypoglycemia protocol.
  - c. Start IV with NS, titrate to vital signs.
  - d. If patient demonstrates one of the following:
    - i. Altered Mental Status.
    - ii. HR less than 60 bpm.
    - iii. Conduction delays.
    - iv. MAP less than 65.
    - v. Nausea/vomiting.
    - vi. Slurred speech.
    1. Consider Atropine 0.02 mg/kg (0.5mg maximum) every 5 minutes, maximum total dose of 1mg.
    2. Consider calcium chloride 20 mg/kg of 10% solution mixed with 100 mL NS and infused IV over 10 minutes.



- ii. If patient presents with persistent bradycardia or hypotension, see appropriate protocol.

5. Known/High Suspicion of Cyanide Overdose:

- a. Airway, oxygen, apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
- b. Check blood sugar level, if less than 60 mg/dL follow hypoglycemia protocol.
- c. Start IV with NS, titrate to vital signs.
- d. If patient demonstrates one of the following with smoke inhalation or known exposure:
  - i. Markedly altered level of consciousness, including rapid collapse
  - ii. Seizures
  - iii. Respiratory depression or respiratory arrest
  - iv. Cardiac dysrhythmias (other than sinus tachycardia)
  - v. Severe Hypotension
    - 1. Consider hydroxocobalamin 70 mg/kg (reconstitute concentration is 25 mg/mL) Maximum single dose is 5 g.
    - 2. Each 5 g vial of hydroxocobalamin for injection is to be reconstituted with 200 mL of LR, NS, or DSW (25 mg/mL) and administered at 10–15 mL/minute
    - 3. Infuse 14ml for every 5kg of bodyweight.

6. Known/High Suspicion of Cholinergic Overdose:

- a. Airway, oxygen, apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
- b. Check blood sugar level, if less than 60 mg/dL follow hypoglycemia protocol.
- c. Start IV with NS, titrate to vital signs.
- d. If patient demonstrates one of the following:
  - i. Respiratory distress
  - ii. **SLUDGEM** syndrome
  - iii. Seizures
  - iv. HR less than 60 bpm
- e. Contact base physician for patient treatment options **[Medical Direction]**.
- f. Administer the ATNAA auto-injector as directed by **[Medical Direction]**.

**7. Toxic Inhalation:**

- a. Scene Safety.
- b. Remove from exposure.
- c. Airway, oxygen, apply cardiac monitor and continuously monitor the patient until transferred to hospital staff.
- d. For patients with wheezing and/or signs of bronchoconstriction.
  - i. Consider Albuterol 2.5 mg/3 ml by nebulizer, may repeat twice.
- e. Start IV with NS, titrate to vital signs.
- f. If CO poisoning is suspected (absence of inhalation injury) and in the presence of any of the following symptoms:
  - i. Chest pain
  - ii. Headache in pregnant patient
  - iii. Altered LOC or history of unconsciousness
  - iv. Dizziness or Seizures
  - v. Unsteady gait or difficulty speaking
- g. Administer 100% oxygen by NRB mask and transport.

**P. Nausea and/or Vomiting:**

1. Follow appropriate protocol for patient's condition.
2. Start IV of NS, titrate to vital signs.
3. Consider Zofran (Ondansetron) 0.1 mg/kg IVP, max initial dose is 4 mg.

## Appendix A - SPECIAL CONSIDERATIONS

### A. Introduction:

The Special Considerations Section consists of protocols that require extensive review, modification, planning, and training by the Medical Director prior to implementation. In general, extensive education of EMS personnel will be required to institute these protocols.

### B. Pharmacological Considerations for the intubated patient:

1. If mentation or level of consciousness improves after intubation (including IGEL), and RASS score is -2 or -3. Consider the following options:
  - a. Sedation/Pain Management
    - i. Midazolam:
      1. Adults: 2.5 mg slow IV/IO. May repeat every 3-5 minutes to a max total dose 15 mg.
      2. Pediatrics: 0.1 mg/kg slow IV/IO to a max initial dose of 2 mg, may repeat every 3-5 minutes to a maximum total dose of 10 mg.
    - ii. OR Ketamine:
      1. Adults: 1mg/kg IV/IO to a max initial dose of 100mg. May repeat every 3-5 minutes PRN to a max total maintenance dose of 300 mg.
      2. Pediatrics: 1 mg/kg IV/IO to a max initial dose of 50 mg. May repeat every 3-5 minutes PRN to a max total maintenance dose of 150 mg.
    - iii. Fentanyl:
      1. Adults: 25-50 mcg IV/IO, may repeat every 5 minutes to a maximum total dose of 150 mcg
      2. Pediatrics: 1 mcg/kg IV/IO to a maximum dose of 25 mcg
  - b. Paralysis **RSI Credentialed Paramedic ONLY**
    - i. Rocuronium (Zemuron).
      1. Adults: 1 mg/kg IV/IO to a maximum dose of 100 mg
      2. Pediatrics: 1 mg/kg IV/IO to a maximum dose of 50 mg

### C. Rapid Sequence Intubation (RSI):

**\*\* THIS PROCEDURE MAY ONLY BE PERFORMED BY THOSE LF&R MEDICS WHO HAVE BEEN CREDENTIALLED TO PERFORM RSI BY THE MEDICAL DIRECTOR IN THE LINCOLN EMS SYSTEM\*\***

#### 1. Indications

- a. Altered mental status with abnormal respirations (actual or potential airway compromise).
- b. Head injury with signs of increased intracranial pressure, combativeness or agitation which threatens the airway, spinal cord stability and/or patient and crew safety.
- c. Severe respiratory distress with hypoxia and/or cyanosis, impending respiratory failure.

#### 2. Initial Resuscitation:

- a. Apply simultaneous high flow oxygen by nasal cannula at  $\geq 15$  LPM and non-rebreather mask at  $\geq 15$  LPM.
- b. Ventilations with BVM prior to intubation should be avoided if possible. However, if patients have inadequate ventilations or O<sub>2</sub> saturations ventilate with BVM at  $\geq 15$  LPM and continue oxygenation via high flow nasal cannula @  $\geq 15$  LPM.
- c. Every attempt should be made to increase O<sub>2</sub> saturations to 94% -99% prior to intubation.
- d. Position patient to maximize oxygenation by placing patient in a head-up 15–30-degree angle if not contraindicated or by placing patient in a reverse Trendelenburg.
- e. Attempt to align external auditory meatus (ear canal) and sternal notch.
- f. Consider airway adjuncts. (NPA/OPA)
- g. Attempt to correct patient's hemodynamic instability by using fluids or vasopressors.
- h. Record baseline O<sub>2</sub> saturation prior to administering medications.
- i. Consider Atropine 0.02 mg/kg IV/IO (minimum of 0.1 mg-max dose of 0.5 mg) for the pediatric patient for potential bradycardia or hyperactive salivation because of Ketamine administration.

#### 3. Setup

- a. Heaven/RSI checklist
- b. Direct and video laryngoscopes
- c. ET tubes and syringe
- d. Bougie
- e. Stylette
- f. Suction
- g. French Suction catheters
- h. BVM with ETCO<sub>2</sub> circuit
- i. Stethoscope
- j. ET tube securing device
- k. Rescue airway/surgical airway kit

4. Assess Heaven Criteria:
  - a. Hypoxemia.
  - b. Extremes of size.
  - c. Anatomical disruption/obstruction.
  - d. Vomit/blood/fluid in airway.
  - e. Exsanguination.
  - f. Neck mobility.
5. Initial Sedation:
  - a. Use Medication Cross Check
  - b. Ketamine (Ketalar).
    - i. Adults: 2 mg/kg IV/IO maximum initial dose of 200 mg or 250 mg IM if combative.
    - ii. Pediatrics: 2 mg/kg IV/IO maximum initial dose of 100 mg
  - c. ***Consider using Ketamine 1mg/kg IV/IO/IM for patients with hypotension.***
  - d. ***Use with caution in patients with severe hypertension where worsening HTN is detrimental:***
  - e. If Ketamine contraindicated or unavailable, administer Midazolam:
    - i. Adults: 5 mg IV/IO or 10mg IM if combative
    - ii. Pediatrics: 0.3 mg/kg IV/IO maximum dose of 5 mg
  - f. ***Exercise caution using Midazolam in patients with a B/P of less than 100 mmHg systolic.***
6. Initial Paralysis:
  - a. Rocuronium (Zemuron).
    - i. Adults: 1 mg/kg IV/IO to a maximum dose of 100 mg
    - ii. Pediatrics: 1 mg/kg IV/IO to a maximum dose of 50 mg
7. Maintenance Sedation/Pain Management – following intubation of the patient:
  - a. Midazolam:
    - i. Adults: 2.5 mg slow IV/IO, may repeat every 3-5 minutes to a maximum total dose of 15 mg.
    - ii. Pediatrics: 0.1 mg/kg slow IV/IO to a max initial dose of 2 mg, may repeat every 3-5 minutes to a maximum total dose of 10 mg.
  - b. OR Ketamine:
    - a. Adults: 1 mg/kg IV/IO to a maximum initial dose of 100 mg. May repeat every 3-5 minutes to a maximum maintenance dose of 300 mg. (Maximum total dose for initial and maintenance sedation is 500 mg)
    - b. Pediatrics: 1 mg/kg IV/IO to a maximum initial dose of 50 mg. May repeat every 3-5 minutes to a maximum maintenance dose of 150 mg. (Maximum total dose for initial and maintenance sedation is 250 mg)

- c. Fentanyl:
  - i. Adults: 25-50 mcg IV/IO. May repeat to a max of 150 mcg.
  - ii. Pediatrics: 1 mcg/kg IV/IO to a max of 25 mcg.
- 8. Procedure:
  - a. **\*\*\*RSI CHECKLIST MUST BE USED ON EVERY RSI\*\*\***
  - b. Intubate patient.
  - c. Immediately use waveform ETCO2 to verify tube placement.
  - d. Record pre and post SPO2 and ETCO2 values.
  - e. Monitor cardiac rhythm, ETCO2 and SpO2 throughout transport.
  - f. Reconfirm ET placement following each patient movement.
- 9. Considerations:
  - a. **Two system certified paramedics, one of whom is RSI credentialed, must be present if RSI is performed.**
  - b. IF O2 saturations drop below 94%, consider re-oxygenating the patient before the next attempt.
  - c. If unable to successfully intubate after two attempts immediately consider rescue airway techniques.
  - d. If unable to ventilate adequately via I-gel Airway, or unable to manage the airway with BVM and BLS procedures, consider surgical cricothyrotomy.

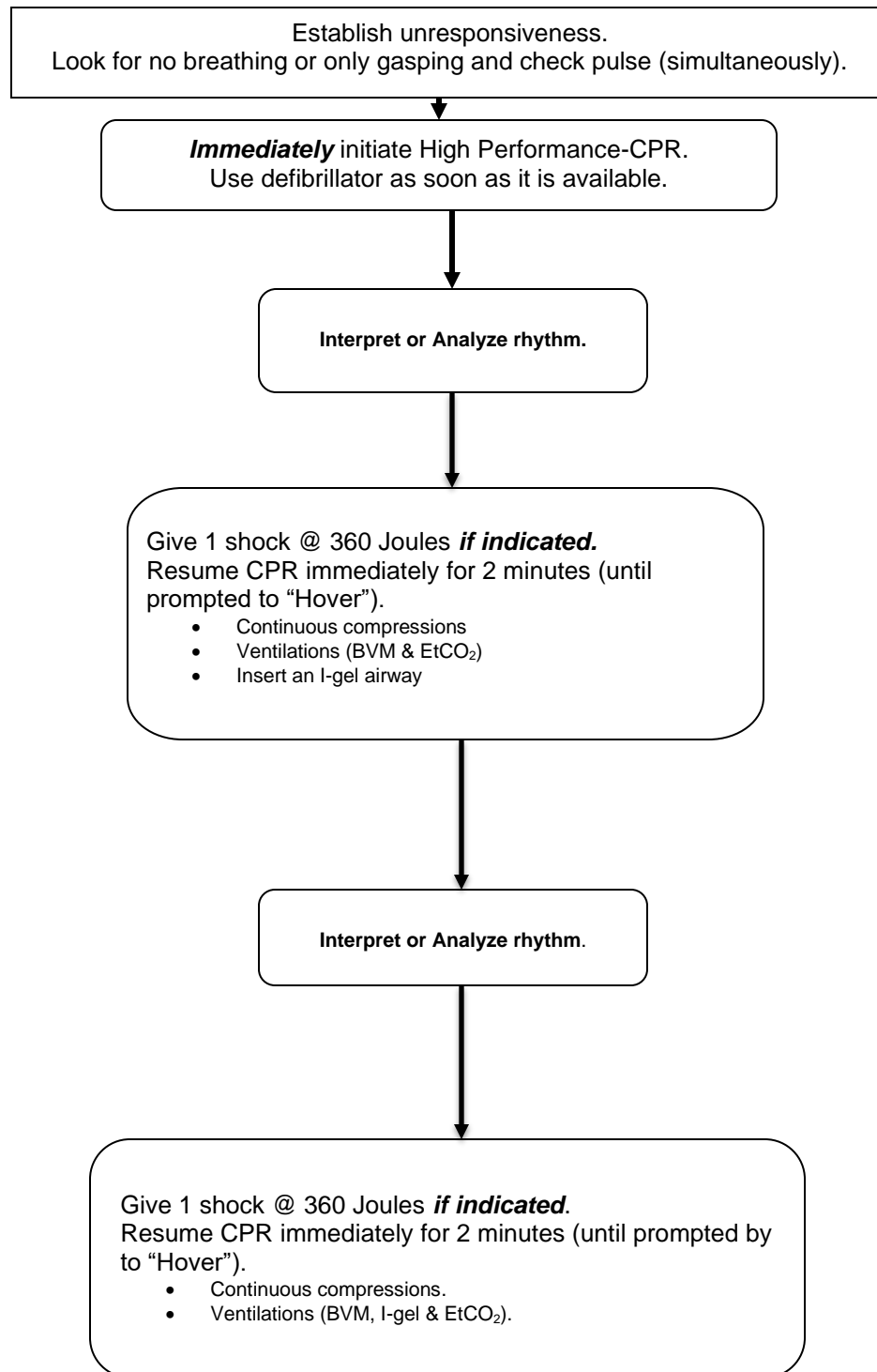
**D. Richmond Agitation Sedation Scale (RASS) \***

Score	Term	Description	Stimulation Type
+4	Combative	Overtly combative, violent, immediate danger to staff	
+3	Very agitated	Pulls or removes tube(s) or catheter(s); aggressive	
+2	Agitated	Frequent non-purposeful movement, fights ventilator	
+1	Restless	Anxious but movements not aggressive vigorous	
0	Alert and calm		
-1	Drowsy	Not fully alert, but has sustained awakening (eye-opening/eye contact) to <i>voice</i> ( <b><math>\geq 10</math> seconds</b> )	Verbal
-2	Light sedation	Briefly awakens with eye contact to voice ( <b><math>&lt; 10</math> seconds</b> )	Verbal
-3	Moderate sedation	Movement or eye opening to <i>voice</i> ( <b>but no eye contact</b> )	Verbal
-4	Deep sedation	No response to voice, but movement or eye opening to <i>physical</i> stimulation	Physical
-5	Unarousable	No response to <i>voice or physical</i> stimulation	Physical

**Procedure for RASS Assessment**

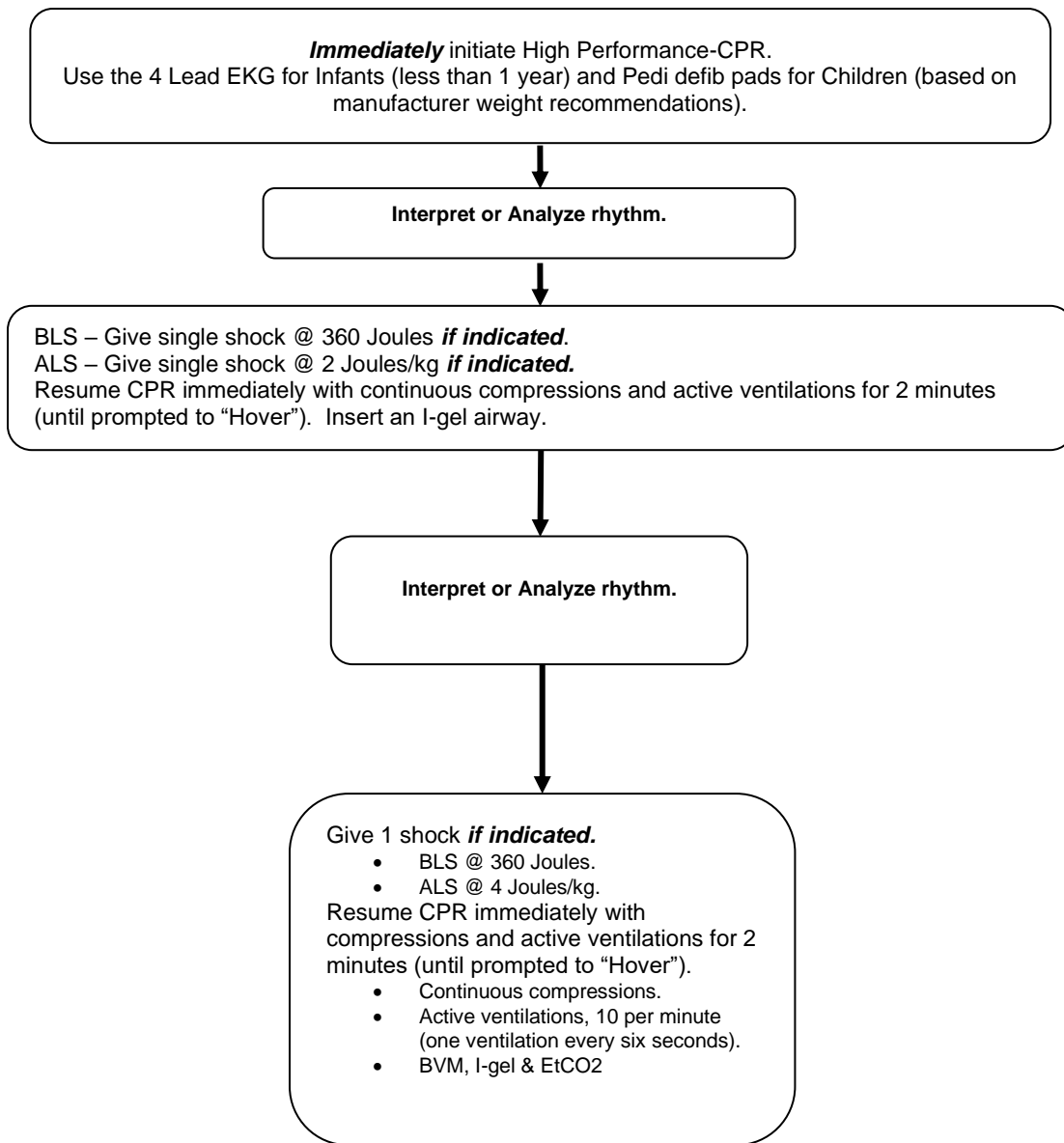
1. Observe patient
  - a. Patient is alert, restless, or agitated. **(score 0 to +4)**
2. If not alert, state patient's name and say to open eyes and look at speaker.
  - b. Patient awakens with sustained eye opening and eye contact. **(score -1)**
  - c. Patient awakens with eye opening and eye contact, but not sustained. **(score -2)**
  - d. Patient has any movement in response to voice but no eye contact. **(score -3)**
3. When no response to verbal stimulation, physically stimulate patient by shaking shoulder and/or rubbing sternum.
  - e. Patient has any movement to physical stimulation. **(score -4)**
  - f. Patient has no response to any stimulation. **(score -5)**

E. **Adult Cardiac Arrest Algorithm (Puberty and older):**





## F. Pediatric Cardiac Arrest Algorithm (Infant – Puberty):



## G. EMS Spinal Precautions and the Use of the Long Backboard:

Position Statement  
National Association of EMS Physician and American College  
Of Surgeons Committee on Trauma

### ABSTRACT

This is the official position of the National Association of EMS Physicians and the American College of Surgeons Committee on Trauma regarding emergency medical services spinal precautions and the use of the long backboard. Key words: spine; backboard; EMS; position statement; NAEMSP; ACS-COT.

PRE-HOSPITAL EMERGENCY CARE 2013: Early Online: 1–2

The National Association of EMS Physicians and the American College of Surgeons Committee on Trauma believe that:

1. Long backboards are commonly used to attempt to provide rigid spinal immobilization among emergency medical services (EMS) trauma patients. However, the benefit of long backboards is largely unproven.
2. The long backboard can induce pain, patient agitation, and respiratory compromise. Further, the backboard can decrease tissue perfusion at pressure points, leading to the development of pressure ulcers.
3. Utilization of backboards for spinal immobilization during transport should be judicious, so that the potential benefits outweigh the risks.
4. Appropriate patients to be immobilized with a backboard may include those with:
  - a. Blunt trauma and altered level of consciousness
  - b. Spinal pain or tenderness
  - c. Neurologic complaint (e.g., numbness or motor weakness)
  - d. Anatomic deformity of the spine
  - e. High-energy mechanism of injury and any of the following:
    - i. Drug or alcohol intoxication
    - ii. Inability to communicate
    - iii. Distracting injury
5. Patients for whom immobilization on a backboard is not necessary include those with all the following:
  - a. Normal level of consciousness (Glasgow Coma Score [GCS] 15)
  - b. No spine tenderness or anatomic abnormality
  - c. No neurologic findings or complaints
  - d. No distracting injury
  - e. No intoxication

6. Patients with penetrating trauma to the head, neck, or torso and no evidence of spinal injury should not be immobilized on a backboard.
7. Spinal precautions can be maintained by application of a rigid cervical collar and securing the patient firmly to the EMS stretcher, and may be most appropriate for:
  - a. Patients who are found to be ambulatory at the scene
  - b. Patients who must be transported for a protracted time, particularly prior to inter-facility transfer
  - c. Patients for whom a backboard is not otherwise indicated
8. Whether or not a backboard is used, attention to spinal precautions among at-risk patients is paramount. These include application of a cervical collar, adequate security to a stretcher, minimal movement/transfers, and maintenance of in-line stabilization during any necessary movement/ transfers.
  - a. Education of field EMS personnel should include evaluation of the risk of spinal injury in the context of options to provide spinal precautions.
  - b. Protocols or plans to promote judicious use of long backboards during pre-hospital care should engage as many stakeholders in the trauma/EMS system as possible.
  - c. Patients should be removed from backboards as soon as practical in an emergency department.

Approved by the National Association of EMS Physicians Board of Directors December 17, 2012.

Approved by the American College of Surgeons Committee on Trauma October 30, 2012. Received January 15, 2013; accepted for publication January 15, 2013.

doi: 10.3109/10903127.2013.773115

## H. Infectious Diseases:

### EBOLA:

The risk of contracting Ebola in the United States is very minimal.

The following are the suggested steps for providing care to a person suspected of having Ebola or any other extremely infectious disease.

1. Screen the patient for Ebola by asking the appropriate questions if: <sup>1 2</sup>
  - a. Do they have flu like symptoms, fever greater than 101.4° F, fatigue, headache, weakness, muscle pain, vomiting, diarrhea, abdominal pain, or unexplained hemorrhage, and
  - b. Has the patient lived in or traveled to a country with widespread Ebola Virus transmission or had contact with an individual with confirmed Ebola Virus Disease within the previous 21 days.
2. If the patient meets the above criteria, EVERYONE should retreat from the environment and: <sup>3</sup>
  - a. Someone from the original crew should don contents of the LF&R Infectious disease kit and return to the patient's side. This will more than likely be someone from the Engine or Truck Company since they will probably arrive on location before the medic unit. Provide patient comfort care only.
    - i. Place a mask on the patient or ask them to don a mask.
3. Contact 911 dispatch immediately and request an Infectious Disease transport ambulance.
4. Request that dispatch send the closest HazMat apparatus.
  - a. The closest HazMat apparatus will determine if they have enough people on their crew trained to deal with donning and doffing and request additional support if needed.
5. Request the appropriate Battalion Chief and EMS-1 to the scene.
  - a. EMS-1 will be responsible for immediately contacting the LLCHD and the Chief of EMS.
6. The receiving hospital should be notified as soon as possible that we are transporting a patient potentially infected with Ebola.

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<sup>1</sup> <http://emergency.cdc.gov/han/han00371.asp>

<sup>2</sup> <http://www.cdc.gov/vhf/ebola/pdf/ambulatory-care-evaluation-of-patients-with-possible-ebola.pdf>

<sup>3</sup> <http://www.cdc.gov/vhf/ebola/hcp/ed-management-patients-possible-ebola.html>

7. Once a transport ambulance arrives on scene, two members from the HazMat apparatus should don the appropriately sized brown Tyvek suits, SCBA's, and gowns from the Infectious disease kit, and double glove.
  - a. The required SCBA's can be removed from the medic unit on location.
8. A trained observer should be designated and should ensure that PPE is donned properly. <sup>4</sup>
9. The two providers wearing the Tyvek suits and SCBA's should contact the patient and place them on the ambulance cot. Cot should be covered by the appropriate absorbent drapes before the patient is placed on the cot.
  - a. The absorbent cot drape should be used to "cocoon" the patient and the "cocoon" should be secured with tape.
  - b. Only BLS care will be provided to the patient.**
10. Once the providers have properly donned their PPE the other members of the HazMat station apparatus should immediately proceed to the hospital and prepare for decontamination of the two providers in the Tyvek suits.
11. Members from the originally dispatched engine crew shall provide a driver for the Infectious Disease ambulance and accompany the ambulance to the hospital. Drivers should don the contents of the Infectious disease kit, being especially conscious of wearing clean gloves, eye protection and a face mask.
12. The two members of the transport team wearing Tyvek suits and SCBA's shall accompany the patient in the back of the ambulance to the hospital where they will move them to the designated areas as specified by hospital providers.
13. Someone will be assigned to drive the ambulance and should don the contents of the Infectious Disease kit.
14. The members of the transport team will be de-contaminated using the best judgment of the HazMat captain in conjunction with EMS-1. All personnel that provided patient care will doff their PPE under the auspices of a "trained observer". (EMS-1 can be used as a reference source but will not be donning PPE).
  - a. Providers should shower at the hospital and don hospital scrubs until they can return to their station. Clothing should be double bagged and can be laundered using hot water and regular laundry soap.
  - b. Contact the emergency room Charge Nurse for directions to the showers and surgical scrubs.
15. The providers will return to work and will be screened using the CDC recommendations for someone who has potentially been exposed to Ebola. The

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<sup>4</sup> <http://www.cdc.gov/vhf/ebola/hcp/ppe-training/index.html>

LLCHD will be involved in this screening process to ensure the safety of the providers;<sup>5</sup>

- a. Providers are not considered infectious until they develop symptoms 2-21 days later. Since they are considered asymptomatic, these individuals are in the low (but not zero) risk category.<sup>6</sup>
16. The transport ambulance will be parked until a determination has been made if the patient does have Ebola. This will usually take between four (4) and six (6) hours.
  - a. All PPE, SCBA's, and the cot should be placed in the back of the transport ambulance.
17. If the patient is found to have Ebola or another extremely infectious disease a private contractor suggested by LLCHD will be hired to decontaminate the interior of the ambulance.<sup>7</sup>
18. If the patient does not have Ebola or another extremely infectious disease the ambulance will be cleaned following the appropriate MP.
19. The vehicle can then be placed back into service.

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<sup>5</sup> <http://www.cdc.gov/hai/settings/outpatient/outpatient-care-guidelines.html>

<sup>6</sup> <http://www.cdc.gov/vhf/ebola/exposure/monitoring-and-movement-of-persons-with-exposure.html>

<sup>7</sup> <http://www.cdc.gov/vhf/ebola/hcp/medical-waste-management.html>

**I. Heaven Criteria:**

# Lincoln Fire and Rescue

## Heaven Criteria

**Hypoxemia**

**Extremes of size**

**Anatomical Disruption/Obstruction**

**Vomit/Blood/Fluid**

**Exsanguination**

**Neck Mobility/Neurologic Injury**

Credit: David Olvera

## PREPARATION/PLANNING

- ☐ Monitoring equipment in place
- ☐ **Consider fluid/vasopressor**
- ☐ **NC ( $\geq 15$  LPM) + NRB/BVM ( $\geq 15$  LPM) or CPAP (connect to 50 psi port)**
- ☐ **Tension Pneumothorax?**
- ☐ Consider OPA/NPA x 2 utilization
- ☐ HOB elevated 30 – 35 degrees
- ☐ **SpO2 > 93%?**
- ☐ BVM w/ ETCO2 & PEEP
- ☐ Any HEAVEN difficult intubation indications?
- ☐ Open C-collar

## EQUIPMENT

- ☐ Suction on and accessible + Fr. Suction Catheter
- ☐ Video laryngoscope turned on
- ☐ Induction agent and paralytics drawn with **doses confirmed**
- ☐ ETT(s) with syringe
- ☐ Bougie
- ☐ BVM with ETCO2 & PEEP
- ☐ I-Gel, surgical kit
- ☐ Tube securing device
- ☐ Stethoscope

## INDUCTION/INTUBATION

- ☐ Designate clinician to monitor SPO2 during attempt
- ☐ **Record pre-intubation O2, ETCO2 and BP**
- ☐ Administer induction agent
- ☐ Administer paralytic => Mark "Event"
- ☐ Suction prior to intubation attempt
- ☐ Intubate
- ☐ ETT confirmed via
  - ☐ ETCO2 Waveform => Mark "Event"
  - ☐ Breath sounds / no epigastric sounds
- ☐ **Record post intubation O2, ETCO2 & BP**
- ☐ Record tube depth (teeth or gums preferred)
- ☐ Tube secured

O2	ETCO2	BP

O2	ETCO2	BP

## POST INTUBATION

- ☐ Pain management
- ☐ Sedation
- ☐ Reassess



## **J. Hemophilia Factor Replacement:**

1. ALS providers may establish IV access and administer a patient's prescribed Factor VIII or Factor IX for Hemophilia A or B.
2. Follow the manufacturers guidelines for administration.

## **K. Adrenal Insufficiency:**

1. Patients with a medical history of adrenal insufficiency and prescribed hydrocortisone.
2. Assess for signs of acute adrenal crisis:
  - a. Pallor, weakness, lethargy
  - b. Vomiting, abdominal pain
  - c. Hypotension, shock-like symptoms
  - d. Fever/infection
  - e. Seizures or neurologic deficits
  - f. Hypoglycemia
  - g. Recent trauma (including minor injuries) or illness
3. Airway, oxygen, apply cardiac monitor, and continuously monitor the patient until transferred to hospital staff.
4. Check blood sugar level.
5. Start IV with NS, titrate to vital signs.
6. If blood sugar is less than 60 mg/dL and/or signs & symptoms are present which are consistent with hypoglycemia, treat hypoglycemia.
7. In any patient with a medical history of adrenal insufficiency/crisis, and prescribed hydrocortisone:
  - a. ALS providers may administer prescribed hydrocortisone:
    - i. Administer patient prescribed dose.  
OR
    - ii. Adult: 100 mg IV or IM
    - iii. Pediatric: 2mg/kg IV or IM

## **K. Emergency Interfacility Transport Considerations:**

1. Interfacility transfers are defined as emergent patient transport requiring Advanced Life Support care and continuous monitoring during their transport from one medical facility to another.
2. LF&R's primary mission is 911 service, not interfacility transfers but realize there may be times when it would be beneficial for the patient to be transported emergently from one hospital to another.
3. LF&R will only perform specialty team transfers to hospitalized patients requiring transportation to another hospital within the Lincoln, Nebraska city limits.
4. The specialty team members oversee patient care during specialty team transports. LF&R personnel oversee overall safety of all occupants being transported.
5. If LF&R is requested to emergently transport a patient from one hospital to another without a specialty team, the paramedic must assess the patient and determine if they are educated, certified, licensed, and credentialed to provide adequate medical care for the patient's acuity level. A significant risk to patient safety occurs when EMS personnel are placed into situations and roles for which they are not experientially or educationally prepared. It is the shared responsibility of medical oversight by a physician, clinical and administrative supervision, regulation, and quality assurance to ensure that EMS personnel are not placed in situations where they exceed the State's scope of practice. For the protection of the public, regulation must assure that EMS personnel are functioning within their scope of practice, level of education, certification, and credentialing process.
6. Prior to accepting the transfer, the paramedic must receive detailed information about any medication infusions and/or equipment being transferred with the patient. LF&R Paramedics may perform the transfer under the following criteria:
  - a. LF&R Paramedics can continue medications started at fixed rates prior to arrival. This may include but is not limited to antibiotics, blood, fluids, sedatives, etc. These medications are considered to have been properly ordered by the sending physician as a form of online medical direction.
  - b. LF&R Paramedics may titrate pressors that are currently in the LF&R Formulary as detailed in protocols to a MAP of 65.
  - c. If the patient requires non-formulary sedatives during the transfer, obtain orders from the sending facility regarding the need for additional titration. The paramedic may also contact the receiving facility for online medical direction.
  - d. An arterial line may be kept in place without active monitoring by LF&R paramedics. If it is required to be monitored, the sending facility must provide staff to accompany the patient and appropriate monitoring equipment.

- e. If specialized equipment such as balloon pump, impella, etc are required to be monitored during transport specialized staff from sending facility should accompany the patient.
  - f. If the patient has IV medication drips on pumps or any type of medical device such as an IABP, they should ask the facility the following questions.
    - i. Can the facility send personnel with the transport crew?
    - ii. Can the IV drip or device be stopped or disconnected for transport?
  - g. If the facility cannot or will not send someone with the transport crew and the IV drip medications or device cannot be discontinued for the transport, it is acceptable for the provider to transport IV medication pumps if they are comfortable doing so and are familiar with the medications.
7. If the paramedic is not comfortable transporting the patient after receiving the information the paramedic will express their concern to the sending physician and request a nurse to ride with them or request specialty team transport.
8. The provider may contact the EMS Supervisor, or the BC assigned to EMS for additional guidance.

Approved by:

\_\_\_\_\_ Medical Director (Print)

\_\_\_\_\_ Medical Director Signature

\_\_\_\_\_ Date

(A signed copy is available at the EMS Division)

Last Edited: December 21, 2023