

**PARAMEDIC
TREATMENT PROTOCOL**

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Most recent changes highlighted in yellow.

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Part I. GENERAL OPERATIONS

A. Introduction

The purpose of protocols in the Lincoln Fire & Rescue Emergency Medical Services 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, 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 assure standardized, quality medical care. 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 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 System Medical Director, the Quality Improvement staff and the licensed physicians and physician extenders 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 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 section 11-006.04 Emergency Medical Technician-Paramedic Practices and Procedures in accordance to 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 EMT-P
2. The use of an ophthalmoscope not approved for the EMT-P
3. The use of an otoscope not approved for the EMT-P
4. Insertion of nasogastric tubes is not approved for the EMT-P.

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, Division Chief of EMS/Training, and EMSOA.

Emergency Medical Technician-Paramedic, System Paramedic Intern:

An EMS Provider certified by the State of Nebraska as an Emergency Medical Technician-Paramedic and has received the Lincoln EMS protocols (and EMSOA policy manual), and has completed their hospital O.R. rotation with a minimum of one actual 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 certified by the State of Nebraska as an Emergency Medical Technician -Paramedic and 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 a Medical Director approved paramedic training program. The student will only be authorized to perform skills up to his or her level of training program while under the direct supervision of a system certified paramedic. For the complete list of ALS interventions not authorized for students, please read the (EMSOA policy manual).

C. Patient Management – Standards of ALS Care

1. Cardiac rhythms are properly identified.
2. All medications shall be administered by the appropriate dose and route of administration.
3. **Medication preparation and administration:** To assure 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. The label of the medication container should be read once more prior to administration. Asking someone else to read the label is also a good idea for confirmation.

4. **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. If a hand off is performed, an EMSOA quality assurance observation form must be completed with a detailed explanation justifying the hand off procedure.
5. 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 (naloxone), Epinephrine. Medications given via ETT for neonates should be diluted in 1-2 mL of NS.
6. 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.
7. All skills are accomplished quickly and efficiently utilizing proper technique:
8. All venipuncture for intravenous therapy are established using aseptic technique, in an expedient manner. Macro drip tubing attached to a Macrobore Extension Set should be utilized for routine adult I.V. administration. In general, Micro drip tubing should be used for piggy back medication infusions and/or pediatric patients.
9. All saline locks used for intravenous medication delivery are established using aseptic technique, in an expedient manner. IV extension tubing attached to a 10cc prefilled syringe should be utilized for routine adult saline lock administration. If at any time, the patient’s clinical presentation changes to require intravenous fluids or medication, an IV infusion can be established utilizing the already placed IV extension tubing.
10. All IV sites are patent and without signs of infiltration.

11. For purposes of these guidelines, IV administration shall include IO and saline locks when indicated.
12. All airway management techniques are performed effectively and correctly.
13. There will be a designated primary airway management provider for every case that requires advanced airway control.
14. All intubation tubes are correctly placed within 30 seconds of 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.
15. An endotracheal intubation attempt is defined as “Anytime the laryngoscope blade is inserted into the patient’s mouth”.
16. Tube placement must be verified and/or monitored using all of the following:
 - a. Direct auscultation
 - b. Waveform capnography
 - i. Intubated patients must be continuously monitored utilizing capnography to maintain ET_{CO}2 levels of 35-40 mmHg (30-35mmHg for head injury patients with signs of brain stem herniation) with a SPO₂ of 100%.
17. All skills are accomplished without unnecessarily delaying on-scene time
18. 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.
19. 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 en route to the hospital. IV/IO access and intubations for “trauma” patients should be performed en route. There must be a documented reason for ALS attempts performed on trauma patients while still on scene.
20. All radio communications are professional, pertinent and succinct.
21. Medical Direction is consulted prior to initiating those treatment modalities that can only be administered under **[Medical Direction]**.
22. In the event that 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.

23. When appropriate, a radio report is given from the scene in a timely manner.
24. Information is presented accurately.
25. 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:
 2. Inform the physician that if the physician directs the run, the physician must accompany the patient to the hospital.
 3. Inform the physician at the onset of the run that paramedic personnel have strict legal guidelines and established protocols and they may not exceed those guidelines or protocols.
 4. Inform the physician that any procedure outside of these legal guidelines must be carried out by the physician.
 5. 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.
 6. 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 that a patient should not be resuscitated or have CPR performed. A DNR must be signed by a physician, dated and have the patient's name on it. An EMS provider can honor a DNR. The EMS provider's name must be identified in the patient care report.
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), DNR orders documented in the patient's medical record are considered valid if signed by the physician or by the RN for 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. An EMS provider shall not honor a living will if there is no information or evidence that a physician has determined the patient is in a terminal condition or in a persistent vegetative state. If there is information or evidence that a physician has determined the patient is in a terminal condition or in a persistent vegetative state, this information should 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 consult 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
 - d. Any time the scene becomes unsafe for rescuers

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
 - e. 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 station. 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.
2. Criteria for Requesting Declaration of Death in the Field:
 - a. Medical patient
 - i. Patient found down for unknown period of time (or greater than 10 minutes)
 - ii. No CPR in progress when paramedics arrive on scene
 - iii. Patient assessed and found to have no signs of life
 - iv. 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. In patients in cardiac arrest, pre-hospital resuscitation is initiated with the goal of returning spontaneous circulation before permanent neurologic damage occurs. Unfortunately, most patients do not respond to an aggressive resuscitation attempt. In most situations ALS providers are capable of performing 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 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:
3. There is no response to approximately 25 minutes of ALS care including ventilations with advanced airway and several "rounds" of resuscitation drugs.
4. During resuscitation, new information related to a "Do Not Resuscitate" (DNR) order is obtained.
5. 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. 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.
3. 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.

4. 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.
5. 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.
6. 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.
7. The patient should be covered to the level of the chin. IV's / IO's should be left in place but the IV bag / bags should be removed from the tubing. All unsuccessful IV sites should be bandaged. ET tubes and King Airways should be left in place with securing device still in place.
8. 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 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 consents or refusals of consents for medical treatment and/or transportation must be documented in the patient care report. When possible, these 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 oral or nasal airway adjunct.
3. If ventilating adequately, 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. Anytime a patient is manually ventilated, including the use of BVM only, ETCO₂ shall be monitored.
7. Consider assisting ventilations in those patients whose respiratory status does not improve after receiving oxygen by non-rebreather mask.
8. 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.
9. Use the trauma ET intubation method with patients who have suspected compromised cervical spines.
10. Confirm endotracheal tube placement by observing for chest rise and fall and by verifying the presence of lung sounds and the absence of epigastric sounds by auscultation with a stethoscope. The use of ETCO₂ is required.
11. Consider immobilizing the head with a c-collar to prevent head movement during transport when a patient is intubated. Commercial securing devices are recommended over tape to secure the ET tube in place.
12. If unable to intubate after two attempts; consider alternate airway management methods as directed by Medical Director such as BVM ventilation, or the King Airway.

13. RSI (Rapid Sequence Intubation) is an advanced airway management technique that requires specialized training and authorization by the EMS Agency's Physician Medical Director. **** 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.**

B. 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, IV's should be started en route to the hospital, except when there is an unavoidable delay such as prolonged extrication time.
3. Large bore IV's 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 3 attempts per patient for IV insertion.
5. Pre-existing Venous Access Devices (PICC) may be used in emergency situations. Under no circumstances are pre-hospital providers allowed to use a fistula for access.
6. 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 SBP greater than 90-100 mmHg. If no improvement after one bolus, contact [Medical Direction] for direction.
 - b. CHILDREN: Give a 20 mL/kg bolus. If no improvement after a total of 40 mL/kg 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

C. 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.

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 containers.
5. The practice of not recapping needles is highly encouraged.
6. All personnel should HEPA masks when in contact with patients in which an airborne communicable disease is suspected or confirmed by history (e.g. tuberculosis, or influenza).

D. Restraints

1. Indications:
 - a. A patient who needs to be transported for medical care, who is refusing transport of care, and who is incompetent to refuse.
 - b. A person, who appears to be confused and who as a result of such confusion, appears to be an imminent danger to others or to himself or to be gravely disabled.
2. Precautions / 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 persuasion 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 his/her back and cannot protect their 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, 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 condition of limbs before applying restraints and recheck and record condition on 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.

E. Pain Management Non-Cardiac – Adult Criteria

1. Systolic BP > 90 mmHg
 - a. Consider Morphine Sulfate 2-4 mg SIVP. May repeat every 5 minutes if pain is not relieved (max dose 10 mg)
 - Or**
 - b. Consider Fentanyl 25-50 mcg SIVP
 - c. May repeat every 5 minutes if pain is not relieved (max dose 100 mcg)
 - d. If pain is not resolved after the max dose for Morphine Sulfate or Fentanyl, consult base physician for further pain treatment options
[Medical Direction]
2. If unable to establish vascular access consider administering intranasal Fentanyl with the mucosal atomization device. **(See appendix)**
 - a. Consider Fentanyl 50 mcg maximum dose. Divide between nostrils. Wait five (5) minutes before repeating, maximum dose 100 mcg.
3. Systolic BP = 80-90 mm Hg
 - a. First, consider Fentanyl 25-50 mcg SIVP
 - b. May repeat every 5 minutes if pain is not relieved (max dose 100 mcg)
 - c. If intolerant of Fentanyl consider Morphine Sulfate 1-2 mg SIVP
 - d. May repeat every 5 minutes if pain is not relieved (max dose 10 mg)
 - e. If pain is not resolved after the max dose for Morphine Sulfate or Fentanyl, consult base physician for further pain treatment options
[Medical Direction].
4. If respiratory depression occurs, begin BVM ventilations and administer Naloxone 0.4 mg IVP. Repeat every 2-3 minutes to desired effect, total max dose not to exceed 4.0 mg.

5. If hypotension develops, administer Naloxone 0.4 mg IVP, followed by a fluid bolus titrated to vital signs. Repeat every 2-3 minutes to desired effect, total max dose not to exceed 4.0 mg.

F. Pain Management - Pediatric Criteria



1. Systolic BP appropriate for age
 - a. Consider Morphine Sulfate 0.1 mg/kg to a maximum of 2 mg increments SIVP
 - b. May repeat every 5 minutes if pain is not relieved, max total dose 6 mg

OR

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

Part III. CARDIAC EMERGENCIES

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

1. If patient is in cardiac arrest begin chest compressions immediately.
2. Attach cardiac monitor and analyze the rhythm.
3. **If the patient presents in non-shockable rhythm initiate continuous chest compressions and active ventilations.**
4. **If the patient presents in a shockable rhythm (ventricular fibrillation or pulseless ventricular tachycardia) deliver a defibrillation at 360 J and initiate continuous chest compressions with passive ventilations.**
5. **LP 15 Metronome must be used on every cardiac arrest patient.**

B. Patients with non-shockable rhythm:

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. Rotate person performing compressions every 2 minutes.
3. If the patient regains a pulse, acquire and transmit a 12 lead EKG. Transport to the closest hospital with PCI capabilities.
4. If patient is hypothermic from exposure, follow Hypothermia Protocol for cardiac arrest guidelines.

C. Patients with an initial shockable rhythm:

1. Perform continuous chest compressions at a rate of 100-120 compressions per minute for patients found in cardiac arrest presenting with a shockable rhythm. (Ventricular fibrillation or pulseless ventricular tachycardia).
2. **Only use passive ventilations during the first three (3) cycles of chest compressions, no “active” or positive pressure ventilations.¹**
 - a. Passive ventilations are defined as:

¹ If patient has ROSC within the first six minutes begin ventilations per BVM instead of continuing with passive ventilation.

- i. Insertion of an oral or a nasal pharyngeal airway. (May also insert nasal airways in addition to the oral airway)
 - ii. Oxygen administration by non-rebreather mask at 15 L per minute
3. Rotate person performing compressions every 2 minutes.
4. If the patient regains a pulse, acquire and transmit a 12 lead EKG. Transport to the closest hospital with PCI capabilities.
5. If patient is hypothermic from exposure, follow Hypothermia Protocol for cardiac arrest guidelines.

D. 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 (< 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.

E. Analyze rhythm and pulse checks:

1. Utilize 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.

F. 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.
 - b. Epinephrine is the most important drug to be administered.
 - i. Epinephrine 1:10,000, 1 mg. Repeat every 3-5 minutes.

G. 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
4. Placement of an advanced airway:²
 - a. In patients with an initial shockable rhythm, do not attempt to place an advanced airway until three (3) cycles of chest compressions have been completed. In patients with a non-shockable rhythm an advanced airway may be placed at any time during the resuscitation.
 - b. Do not interrupt chest compression for placement of an advanced airway.

H. 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, CHI Health St. Elizabeth or CHI Health Nebraska Heart).
4. If the family or power of attorney has no preference on destination the patient will be transported to the closest PCI facility.
5. The provider will promptly declare a Cardiac Alert to the appropriate receiving E.D. base physician or the nursing house supervisor at CHI Health Nebraska Heart 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.

² ET Tube or King Airway

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. During resuscitation, administer anti-arrhythmic.
 - a. Amiodarone 300 mg IV bolus, may repeat once in 3-5 min at 150 mg IV bolus.
10. Consider Magnesium Sulfate (50%) 1gm diluted in 10mL of NS IVP. (For torsade's de pointes or refractory ventricular fibrillation/tachycardia) May repeat once.
11. 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.**
12. 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.**

I. **Return of Circulation from VF / 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 BP < 90 systolic:
 - a. Consider fluid bolus of 250 – 500 cc of NS
 - b. Consider Dopamine drip @ 5 mcg / kg / min. Titrate to BP of 90-100 (Dose should not exceed 20 mcg / kg / min)
6. **If a return of spontaneous circulation occurs, consider therapeutic hypothermia if not contraindicated. (See appendix for therapeutic hypothermia protocol)**

J. Asystole

1. Follow General Guidelines for Adult Cardiac Arrest or CCR if appropriate.
2. Verify / 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. Consider Calcium Chloride (10%) 0.5-1.0Gm IVP (For suspected hyperkalemia or known dialysis patient). **Do not use routinely in cardiac arrest; do not mix with sodium bicarbonate in same IV.**
7. 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.**
8. If return of circulation, maintain airway and cardiac output. Follow appropriate dysrhythmia protocol.
9. If BP < 90 systolic:
 - a. Consider fluid bolus of 250 – 500 cc of NS
 - b. Consider Dopamine drip @ 5 mcg / kg / min. Titrate to BP of 90-100 (Dose should not exceed 20 mcg)

K. Pulseless Electrical Activity (PEA)

1. Follow General Guidelines for Adult Cardiac Arrest or CCR if appropriate.
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 / hypokalemia	Thrombosis – coronary or pulmonary
Hypoglycemia	Trauma
Hypothermia	
3. For suspected hypovolemia - consider fluid bolus of 250 – 500 cc of NS (especially with narrow QRS and rapid rate)

4. 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.**
 5. For suspected TCA overdose, metabolic acidosis, hyperkalemia, or known pre-existing bicarbonate responsive acidosis)consider administering Sodium Bicarbonate 1 mEq/kg IVP
 6. For tension pneumothorax, perform needle decompression
 7. For hypothermia, provide warming measures
 8. For hypoglycemia, treat with D50W or D10W
- L. If return of circulation, maintain airway and cardiac output. Follow appropriate dysrhythmia protocol.**
1. If BP < 90 systolic:
 - a. Consider fluid bolus of 250 – 500 cc of NS
 - b. Consider Dopamine drip @ 5 mcg / kg / min. Titrate to BP of 90-100 (Dose should not exceed 20 mcg / kg / min)
- M. Bradycardias - For heart rates below 60 beats per minute**
1. Airway, oxygen, monitor, obtain 12 lead ECG
 2. Start IV with NS TKO
- STABLE patient / NO serious signs and symptoms:**
1. Transport and OBSERVE
- UNSTABLE - Verify serious signs / 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 0.5 mg IVP
 3. Repeat every 3 to 5 minutes as needed up to maximum dose of 3 mg (0.04mg/kg)
 4. If no response and pacer is available, begin transcutaneous pacing (TCP)
 5. 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.

6. 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:
 - a. Fentanyl 25 mcg SIVP. May repeat x 1 to a max total dose of 50 mcg.
7. Consider Dopamine drip @ 5 mcg / kg / min
 - b. Titrate to BP of 90-100 systolic. Dose should not exceed 20 mcg / kg / min.

NOTES: 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^o heart block and ventricular escape beats with Amiodarone, Lidocaine or any agent that suppresses ventricular escape rhythms. Atropine is not effective for denervated transplanted hearts.

N. Ventricular Tachycardia with a Pulse (QRS > 0.12 milliseconds)

STABLE patient / NO serious signs and symptoms

1. Airway, oxygen, monitor, obtain 12 lead ECG
2. Start IV with NS TKO
3. Consider
 - a. Amiodarone infusion - 150 mg in NS 100 cc over 10 min.
 - i. If no conversion, may repeat one time.
 - b. Adenosine 6 mg RIVP only if regular and monomorphic.
 - i. Second dose 12 mg RIVP in 1-2 min if required

UNSTABLE patient that displays serious signs and symptoms

1. Airway, oxygen, monitor
2. Start IV NS TKO
3. Consider pre-medicating with:
 - a. Fentanyl 25 mcg SIVP
 - i. May repeat x 1 to a max total dose of 50 mcg
4. Synchronized cardioversion at 100 J (biphasic)
5. **IF NO RESPONSE**, continue synchronized cardioversion with increasing joule settings.
6. After 3 synchronized cardioversions, contact medical control to repeat.
[Medical Control]
7. IF SUCCESSFUL (at any point), maintain status with:
 - a. Amiodarone infusion – 150 mg in NS 100 cc over 10 min.

8. If polymorphic or Torsade's de pointes, consider Magnesium Sulfate 1 G in 100cc of NS over 5 minutes. Use a macro drip set at 20cc/min.

O. Paroxysmal Supraventricular Tachycardia (QRS < .12 milliseconds)

STABLE patient / NO serious signs and symptoms

1. Airway, oxygen, monitor, obtain 12 lead ECG
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 / Displays serious signs and symptoms

1. Airway, oxygen, monitor
2. Start IV with NS TKO
3. Consider pre-medicating with:
 - a. Fentanyl 25 mcg SIVP
 - i. May repeat x 1 to a max total dose of 50 mcg
4. Synchronized cardioversion at 50 J (biphasic)
5. **IF NO RESPONSE**, continue synchronized cardioversion with increasing joule settings.
 - a. After 3 synchronized cardioversions, contact medical control to repeat. **[Medical Control]**

P. Ventricular Ectopy / Presence of runs of V-Tach (VT = 3 or more PVCs in a row)

1. Airway, oxygen, monitor, obtain 12 lead ECG
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:
 - a. Consider Amiodarone infusion - 150 mg in NS 100 cc over 10 min.
 - i. If no response, may repeat one time

Q. Chest Pain / 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 often have atypical pain or only generalized complaints.
2. Airway, oxygen, monitor
3. Obtain 12 lead ECG within 5 minutes of patient side
 - a. Determine if the patient is under the care of a physician with one of the following cardiology institutes.
 - i. Bryan Heart Institute patients.
 - 1) Patient should be informed their physician/partners will be able to provide in-hospital care at Bryan East campus.
 - i. Nebraska Heart Institute patients.
 - 2) Patient should be informed their physician/partners will be able to provide in-hospital care at St. Elizabeth or the Nebraska Heart Hospital.
 - b. Hospital destination is ultimately the patient's choice.
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 Nebraska Heart Hospital and include the name of the patient's cardiologist and / or cardiology group. [Medical Direction]

5. The provider will also use the 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.
6. Prophylactically apply defibrillation pads on **EVERY** declared cardiac alert patient.
7. Start IV with NS TKO, avoid right wrist IV access.
8. Consider ASA 324 mg PO
9. Consider Nitroglycerin 0.4 mg SL, every 5 minutes if systolic BP remains greater than 90mmHg
 - a. For suspected inferior MI, do not administer NTG (ST elevation noted in any one of the following leads - II, III and aVF)
10. Consider Morphine Sulfate 2-4 mg SIVP (if systolic BP remains greater than 90 mmHg). May repeat every 5 minutes if pain is not relieved (max dose 10 mg)
11. If BP is <90 or signs of an inferior MI are present, consider Fentanyl 25-50 mcg SIVP
 - a. May repeat every 5 minutes to a max dose of 100 mcg.
12. If pain persists following maximum total dose of Morphine Sulfate or Fentanyl, consult base physician for further pain treatment options **[Medical Direction]**
13. Consider starting a second IV in route

Notes: As early as possible, call Cardiac Alert to receiving hospital and transmit 12 Lead ECG (if capable). NTG is contraindicated for patients who have used any erectile dysfunction (ED) medication within the previous 48 hours.

- R. **Dyspnea in the presence of diminished lung sounds, wheezes, rales, or frothy sputum with a BP that is hypertensive or within normal limits (pulmonary edema)**
1. Airway, oxygen, monitor
 2. Upright position (45o - 90o) unless severely hypotensive
 3. Start IV with NS TKO

4. Give Nitroglycerin 0.4 mg SL, every 5 minutes if systolic BP remains greater than 90 mmHg.
5. Consider CPAP (see appendix)

S. Dyspnea in the presence of diminished lung sounds, wheezes, rales, or frothy sputum with a BP that is hypotensive (cardiogenic shock)

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, monitor
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 BP is < 90 systolic:
 - a. Consider Dopamine drip @ 5 mcg / kg / min
 - b. Titrate to BP of 90-100
 - i. Dose should not exceed 20 mcg / kg / min

T. Hypertensive Crisis – Symptomatic with a Diastolic pressure > 130 mmHg

1. Airway, oxygen, monitor
2. Start IV with NS TKO
3. Administer Nitroglycerin 0.4 mg SL q 3-5 minutes
4. Repeat Nitroglycerin administration until the diastolic BP is less than 110
5. Nitroglycerin must be withheld if the patient has taken any oral medication for the treatment of erectile dysfunction less than 48 hours prior. Contact base physician for options if necessary **[Medical Control]**

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 systolic BP less than 100 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)
6. Apply oxygen and ventilate if necessary
7. Shock position (feet elevated, head level). **Avoid Trendelenburg position.**
8. Start 1 or 2 large bore IV's with NS, fluid bolus and titrate to vital signs. Do not delay transport for IV starts.
9. Apply ECG monitor en route
10. Perform bilateral needle decompression in all trauma code patients

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 unstable pelvic fractures, tie a sheet snugly around pelvis. Start large bore IV with NS, titrate to vital signs.
3. For isolated extremity injuries, see Pain Management Protocol.
4. For uncontrollable hemorrhage consider application of tourniquet. (See appendix for application)

C. Head Injuries

1. Airway, oxygen, monitor
 - 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 CO₂ at 35-40 mmHg.
 - b. If signs of brain stem herniation are present maintain end-tidal CO₂ at 30-35 mmHg.
3. Start large bore IV with NS en route and titrate to vital signs
 - a. (Goal to maintain blood pressure > 90 systolic)

D. Chest Injuries

1. Airway, oxygen, monitor
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 en route and titrate to vital signs

E. Abdominal Injuries

1. Airway, oxygen, monitor
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 IV's with NS en route and titrate to vital signs

F. Burns

1. Airway, oxygen, monitor
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
 - a. Morphine Sulfate 2-4 mg SIVP
 - i. May repeat every 5 minutes if pain is not relieved (max dose 10 mg) or
 - b. Consider Fentanyl 25-50 mcg SIVP
 - i. May repeat every 5 minutes if pain is not relieved (max dose 100 mcg)
6. If unable to establish vascular access consider administering intranasal Fentanyl with the mucosal atomization device. **(See appendix)**
 - a. Consider Fentanyl 50 mcg divided between nostrils.
 - i. May repeat in five (5) minutes. 100 mcg maximum dose
7. If pain persists following maximum total dose of Morphine Sulfate or Fentanyl, consult base physician for further pain treatment options [Medical Direction]
8. Transport to St. Elizabeth Burn Center for suspected airway involvement and/or burns greater than 10% of total body surface area.
9. Patients who are burned but are also Category 1 or 2 trauma patients should be transported to the Trauma 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 and monitor – patients should have high flow oxygen applied, especially at time of release.
 - b. Start two (2) large bore IV's of NS at TKO. Use caution when administering fluid to pediatrics and individuals with cardiac or renal problems.
 - c. Control pain by following the pain management protocol
 - d. Adjust one of the IV's to wide open and infuse 1000 mL of NS
 - e. Administer Sodium Bicarbonate 50 mEq SIVP
 - f. 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
 - g. Continue running 1st IV of NS wide open

2. **After release of compression:**
 - a. Administer up to three (3) L of normal saline (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 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 2.5 mg / 3 mL by nebulizer, may repeat two times

H. Trauma Alert Categories

1. Category 1 Trauma Center Alert is indicated when injured patients are determined to meet the following criteria:
 - a. GCS < 12
 - b. Open or depressed skull fracture
 - c. Paralysis or neurological deficit (following injury)
 - d. Systolic BP<90 (for pediatric patients use age specific vital signs for hypotension)
 - e. Unstable transfer patients from outside facility or scene air transport
 - f. Respiratory rate < 10 or > 29 (< 20 in pediatric < 12 months old)
 - g. Flail Chest (multiple rib bony crepitus or subcutaneous emphysema)
 - h. Intubation or needing intubation
 - i. Pelvic Fractures (pain or instability)
 - j. Two or more proximal long bone fractures (femur, tibia, humerus)
 - k. Limb threatening injury (crush, de-gloving, mangled, or ischemic)
 - l. Amputation (other than digits)
 - m. Penetrating injuries (head, neck, torso, extremities proximal to elbow and knee)
 - n. Hanging
 - o. Drowning
 - p. Category 1 or 2 traumatic injury with burns or inhalation injury
2. Category 2 Trauma Center is indicated when injured patients are determined to meet the following criteria:
 - a. GCS = 12-14
 - b. Spinal pain or fracture (without neurologic deficit)
 - c. Fall from any height (with significant injury)
 - d. Ground level fall (age 50 or older on anticoagulation and positive LOC)
 - e. Isolated femur fracture (due to crash or fall)
 - f. MVC with death of occupant in same vehicle
 - g. High speed/risk MVC >45mph (or significant vehicle damage)
 - h. Ejection (partial or complete)
 - i. Vehicle telemetry data consistent with high risk of injury
 - j. Motorcycle/ATV crash > 20 mph or separation of rider
 - k. Auto versus pedestrian/bicycle (with significant impact, thrown or run-over)
3. All category 1 and category 2 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. The Trauma Center is the only hospital to contact if the above criteria are met. Trauma patients 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 THE TRAUMA CENTER IF IT IS FELT IT IS IN THE BEST INTEREST OF THE PATIENT.**

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. Altered Mental Status with History of Diabetes Mellitus (Hypoglycemia)

1. Airway, oxygen, monitor
2. Check blood sugar level
3. Start IV with NS, titrate to vital signs
4. If blood sugar is less than 60 and/or signs & symptoms are present which are consistent with hypoglycemia:
 - a. Administer 12.5 – 25 G (25-50 mL) of D50W SIVP
 - i. Consider repeating D50W if blood sugar remains less than 60 or signs and symptoms of hypoglycemia persist.
 - b. If D50W is not available, initiate an IV and establish patency.
 - i. Administer D10W with a macro drip IV set. Initially administer 100 mL (10 G) and recheck level of consciousness. If patient is able to eat and food available discontinue administering D10W. If patient is obtunded, administer D10W in 50 mL boluses until patient's level of consciousness improves.
 - c. If unable to start an IV or patient is uncooperative:
 - i. Administer Glucagon 1.0 mg IM (Response should be within 5-20 minutes)

C. Altered Mental Status, Excluding Exposure

1. Airway, oxygen, monitor
2. Check blood sugar level
3. Start IV with NS, titrate to vital signs
4. If blood sugar is less than 60 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 Naloxone with a mucosal atomization device. **(See appendix)**
 - a. Consider Naloxone 2mg. Divide between nostrils.
 - b. Wait five minutes before repeating. Maximum dose of 4 mg.

D. Seizure Disorder

1. Airway, oxygen, monitor
2. Protect patient from further injury, DO NOT restrain or force bite block
3. If patient is actively seizing on arrival
 - 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
 - i. Administer Midazolam 10 mg IM
 1. DO NOT wait to obtain IV access
 - c. Start IV with NS, titrate to vital signs
 - d. If seizures persist after 3-5 minutes:
 - i. Administer Midazolam 2.5 mg IV, IM, IN or IO
 1. May repeat every 3-5 minutes for continued seizures
 2. **Total maximum dose of Midazolam shall not exceed 20 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 level
 - i. If blood glucose level 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 2.5 mg IV, IM, IN or IO
 1. May repeat every 3-5 minutes for continued seizures
 2. **Total maximum dose of Midazolam shall not exceed 10 mg.**
 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 mg. Titrate Naloxone to stimulate respiratory effort rather than LOC.
 6. If unable to establish vascular access consider administering intranasal Naloxone with the mucosal atomization device. **(See appendix)**
 - a. Consider Naloxone 2 mg IN. Divide between nostrils.
 - i. Wait five minutes before repeating. Maximum does of 4 mg.
- E. Difficulty Breathing with urticaria, wheezing and contact with a known allergen (acute allergic reactions/anaphylaxis)**
1. BP <70 Systolic
 - a. Airway, oxygen, monitor
 - b. Start IV with NS, titrate to vital signs
 - c. Consider Epinephrine 1:1,000 0.3 mg IM prior to or while attempting IV/IO access
 - d. Epinephrine 1:10,000 0.3 mg IVP
 - i. Consider repeating Epi every 5-10 minutes depending on VS and respiratory status
 - e. Consider Albuterol 2.5 mg / 3 mL by nebulizer, may repeat two times
 - f. Benadryl 50 mg SIVP or deep IM
 - g. Consider Epinephrine drip @ 2-10 mcg / min **[Medical Control]**
 - i. Titrate to BP of 90-100 systolic
 2. BP >70 Systolic
 - a. Airway, oxygen, monitor,
 - b. Albuterol 2.5 mg / 3 mL by nebulizer, may repeat two times
 - c. Epinephrine 1:1,000 0.3 mg IM
 - i. Consider repeating Epi in 20 minutes
 - ii. **NOTE: Do NOT administer if the patient has cardiac chest pain or is being treated for angina or has a history of AMI within the last year.**
 - d. Start IV with NS TKO, titrate to vital signs
 - e. Consider Benadryl 50 mg SIVP or deep IM

F. Difficulty breathing in the presence of wheezing with history of asthma or irritant exposure (asthma)

1. Airway, oxygen, monitor
2. Administer Albuterol 2.5 mg / 3 mL by nebulizer
 - a. May repeat two times
3. Start IV with NS TKO, titrate to vital signs
4. Consider CPAP (see appendix)
5. For patients in severe respiratory distress that are non-responsive to nebulizer treatments:
 - a. Consider Epinephrine 0.3 mg (1:1000) IM
 - i. **NOTE: Do NOT administer Epinephrine if the patient has cardiac chest pain, is being treated for angina, has a history of coronary artery disease or AMI.**

G. Difficulty breathing with wheezing and/or rhonchi and history of COPD (emphysema or chronic bronchitis)

1. Airway, oxygen, monitor
2. Administer Albuterol 2.5 mg / 3 mL by nebulizer, may repeat two times
3. Start IV with NS TKO, titrate to vital signs
4. Consider CPAP (see appendix)

H. 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. Monitor cardiac rhythm
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

I. Hypotension in the Absence of Trauma (Hypovolemic Shock)

Shock is present when pulse greater than 120 and systolic BP less than 100 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, monitor
- 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 SBP greater than 90 mmHg. If no improvement after one bolus, contact **[Medical Direction]**
 - b. Children: 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]**

J. Poisonings/Overdoses

- 1. Ingested Poisons with Altered Mental Status
 - a. Airway, oxygen, monitor
 - 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 dose not to exceed 4 mg.
 - ii. Titrate to improve respiratory effort rather than LOC.
 - e. Treat dysrhythmias according to protocol guidelines
 - f. If unable to establish vascular access consider administering intranasal Naloxone with the mucosal atomization device. **(See appendix)**
 - i. Consider Naloxone 2 mg. Divide between nostrils. Wait five minutes before repeating.
 - ii. Maximum does of 4 mg.
- 2. Ingested Poisons with Intact Mental Status

- a. Airway, oxygen, monitor
 - b. Check blood sugar level, if less than 60 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, monitor
 - 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. Prolonged or widening of QRS ($> .10$ 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, monitor
 - 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. SBP less than 90
 - v. Nausea/vomiting
 - vi. Slurred speech
 - 1) Consider calcium chloride 1 G of 10% solution mixed with 100 mL NS and infused IV over 5 minutes.
 - e. If patient presents with persistent bradycardia or hypotension, see appropriate protocol
5. Known/High Suspicion of Cholinergic Overdose
- a. Airway, oxygen, monitor
 - 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. Respiratory distress
 - ii. SLUDGEM syndrome
 - iii. Seizures
 - iv. HR less than 60 bpm
 - e. If treatment is intended for patient, contact base physician for treatment options **[Medical Direction]**

- f. If treatment is intended for emergency service responder/provider, administer DuoDote auto-injector.
 - g. Repeat to a total max of 3 DuoDote auto-injector administrations
 - h. For extremely severe cases, up to 3 DuoDote auto-injectors may be administered in rapid succession.
 - i. If seizure persists after 3 DuoDote auto-injector administrations, administer CANA (Convulsant Antidote for Nerve Agent) auto-injector.
6. Toxic Inhalation
- a. Remove from exposure
 - b. Airway, oxygen, monitor
 - c. For patients with wheezing and/or signs of bronchoconstriction;
 - i. Consider Albuterol 2.5 mg/3 ml by nebulizer, may repeat two times.
 - d. Start IV with NS, titrate to vital signs
 - e. If only CO poisoning suspected (absence of inhalation injury) 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
 - f. Administer 100% oxygen by NRM and transport.

K. Signs and Symptoms of Stroke

1. Airway, oxygen, monitor
2. Check blood sugar level, if less than 60 mg/dL follow hypoglycemia protocol
3. Start IV with NS, titrate to vital signs (do not delay transport for IV start)
4. Perform the Cincinnati Pre-hospital Stroke Scale
5. Obtain history, determine time of signs and symptoms onset, if less than 5 hours, declare a stroke alert. Report to receiving facility shall include:
 - a. Cincinnati Stroke Scale results
 - b. Time of onset
 - c. Last time patient was seen "normal"
 - d. Stated patient weight
 - e. Blood sugar
 - f. History of CVA/TIA, seizures and/or migraine headaches

L. Behavioral Emergencies

1. A patient with a behavioral emergency should be transported to BLGH-W 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.

M. 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

N. Combative Patient

1. Follow appropriate protocol for patient's condition
2. Administer:
 - a. Midazolam 2.5mg IV, IO or IM
 - i. May repeat to a maximum dose of 5 mg.
3. If unable to establish vascular access consider administering intranasal Midazolam with the mucosal atomization device. **(See appendix)**

- b. Consider Midazolam 5 mg intranasal with mucosal atomization device.
 - i. Administer 2.5 mg per nostril.

O. 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. 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 in order to maintain a positive relationship if possible.
 - b. Remove patient from stressful environment.
3. 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 > 102, implement cooling.
 - c. Continuously monitor EKG, pulse oximetry and ETCO₂.
 - d. Manage airway and oxygen therapy as indicated.
 - e. Establish vascular access if possible
 - i. Consider fluid bolus of 1 L maximum
4. Pharmacological restraint.
 - a. Consider Ketamine 2 mg/kg IV or IO.
 - i. If unable to establish vascular access, consider administering Ketamine 250 mg IM.
 - b. Consider Midazolam 2.5 mg IV or IM
 - i. If unable to establish vascular access consider administering Midazolam 5 mg IN. (2.5 mg per nare)
5. 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.
6. **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.**

P. Hyperglycemia – BS greater than 200

1. Follow appropriate protocol for patient's condition
2. Start IV of NS, initiate fluid bolus of 250-500 cc NS

Q. SEPSIS (SIRS)

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:

- Systolic blood pressure < 90 mmHg
- Heart Rate > 90 beats/min
- Respiratory Rate > 20 breaths/min
- GCS < 15
- Temperature > 38° C (100.4° F) OR < 36° C (96.8° F)

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 ETCO₂ levels of < 26mmHg on at least two consecutive capnography measurements at least 5 minutes apart.

1. Sepsis treatment will be instituted for patients 18 years old or older with obvious or suspected infection and any of these criteria:

- a. Systolic blood pressure < 90 mmHg
- b. Heart Rate > 90 beats/min.
- c. Respiratory Rate > 20 breaths/min.
- d. GCS < 15.
- e. ETCO₂ ≤ 25 mmHg, and.
- f. Temperature > 38° C (100.4° F) OR < 36° C (96.8° F).

2. Airway, oxygen, monitor

3. Establish IV with NS and run wide open.

- a. Administer 500 mL fluid boluses until systolic BP > 90 mmHg.
- b. Total IV bolus volume should not exceed 2L.

- c. Repeatedly check for signs of pulmonary edema, especially for patients with CHF and end stage renal dialysis (ESRD) on dialysis.
 - d. If CPAP is used, PEEP airway pressures should be limited to 5 cmH₂O.
4. Notify the receiving facility that you are treating a patient that may meet SIRS criteria.
5. Radio report and face-to-face report **MUST** 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, monitor
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. Broselow tape shall be used for resuscitation, to determine patient weight and equipment recommendations on all neonate and pediatric 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 to breathe by drying and apply oxygen as necessary.
4. Assess respirations, heart rate and color
5. If spontaneous respirations absent or inadequate or heart rate < 100, provide BVM ventilations at 40 to 60 per minute (this ventilation rate when compressions are not necessary)
6. Re-assess every 30 seconds, if heart rate remains < 100, consider endotracheal intubation
7. If after adequate BVM ventilations with oxygen and/or intubation, heart rate remains <100, start chest compressions.
 - a. Compression to ventilation ratio is 3:1 (pause compressions for ventilation) with goal to deliver 90 compressions and 30 ventilations per minute.

8. If heart rate remains < 60 despite adequate ventilation with 100 % oxygen and chest compressions:
 - a. Administer Epinephrine (1:10,000) 0.01 mg / kg IV or IO
 - i. Epinephrine should be given rapidly and repeated every 3 to 5 minutes.
 - b. For ET administration, dose is 0.1 mg / kg (1:1,000)
 - c. Consider fluid bolus at 10 cc / kg IV, may repeat one time.

C. Meconium Stained Fluid

1. Use a suction catheter or infant bulb syringe to clear mouth and nose
2. If meconium present, intubate with #3.0 ET tube, suction the tube as the tube is pulled out, re-intubate with a new tube each time until CLEAR (consider use of Meconium Aspirator)
3. Once clear, re-intubate if needed, continue to monitor and maintain the airway, provide oxygen

D. Hypertensive Disorders of Pregnancy - (Toxemia of Pregnancy/Eclampsia - Toxemia is characterized by hypertension and diffuse edema)

1. Airway, oxygen, monitor, position patient on her left side
2. Protect patient from further injury, DO NOT restrain.
3. Check blood sugar level
4. If blood sugar is less than 60 mg/dL follow the hypoglycemia protocol.
5. If patient is not hypoglycemic and is actively seizing upon EMS arrival, administer Midazolam 10 mg IM, DO NOT wait to obtain IV or IO access.
6. Start IV with NS, titrate to vital signs.
7. If patient begins seizing in the presence of EMS and treatment is indicated:
 - a. Administer Midazolam 2.5 mg IV, IO, IN or IM
 - i. May repeat every 3-5 minutes for continued seizures to a maximum of 10 mg.
8. If continued seizing, consider Magnesium Sulfate (50 %) 1 G in 100 cc NS with a macro drip infusion set. Infusion must be over a minimum of 5 minutes (20cc/min).
 - a. If still seizing after 5 minutes, consider repeating
9. Transport gently, sirens and flashing lights may precipitate seizures

E. Vaginal Bleeding

1. Airway, oxygen, monitor
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 his / her own judgment in making medical care decisions. EMS providers always have the option of contacting medical control for assistance in decision making.
2. Adult medication dosages shall be used for any patient greater than 40 kg.
3. See General Operations section (Refusal of Care) for patient consent and refusal guidelines.
4. Parents / caregivers should be allowed to stay with children during assessment and transport, if appropriate.
5. EMS providers shall use the current Broselow resuscitation tapes for resuscitation dosage guidelines and equipment recommendations for pediatric patients.
6. If specific protocol not found in Pediatric Section, EMS providers should follow appropriate Adult Protocol, adjusting all medications and interventions to pediatric dosages and guidelines.

B. Airway Management and Oxygen Therapy

- a. Administer high flow oxygen by mask as needed. If patient will not tolerate mask, use high flow blow-by oxygen.
- b. Do not hyperextend the neck in newborns and infants.
- c. Consider appropriately sized oral airway for all unconscious patients.
- d. When ventilation is needed, use appropriately sized bag valve mask device.
- e. Endotracheal intubation is allowed, but not necessary when ventilations are effectively maintained with BVM.

C. IV Therapy

- a. For pediatric trauma patients and for all types of shock, attempt IV starts en route. Do not delay transport to establish an IV with a code 3 pediatric patient.

- b. 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 or
 - b. Bradycardia (< 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

B. Pediatric V-Fib / Pulseless Ventricular Tachycardia

1. Initiate CPR and immediately defibrillate once at 2 joules per kilogram.
2. Continue performing CPR for 2 minutes after defibrillation
3. Defibrillate 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 with BVM (15 compressions to 2 ventilations) until ET tube established, then ventilate 8 to 10 times per minute with continuous compressions
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
9. Administer Epinephrine 0.01 mg / kg (1:10,000) IVP every 3 to 5 minutes
OR
 - a. Epinephrine 0.1 mg / kg (1:1,000) ET every 3 to 5 minutes
10. Consider Amiodarone 5 mg / kg IV bolus

11. For torsade's de pointes, consider Magnesium Sulfate 50 mg/kg mixed in 100 mL NS SIVP up to 1 G. (deliver over 5 minutes using a macro drip set at 20 mL/min)
 - a. May repeat one time for persistent torsade's de pointes

IF RETURN OF CIRCULATION FROM VF / 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.
4. If bradycardic and unstable: go to Bradycardia Protocol

C. Pediatric Asystole / PEA

1. Perform 5 cycles (2 minutes) of CPR
2. Confirm rhythm is asystole or PEA
3. Ventilate with BVM (15 compressions to 2 ventilations) until ET tube established, then ventilate 8 to 10 times per minute with continuous compressions
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 0.01 mg / kg (1:10,000) IV every 3 to 5 minutes OR Epinephrine 0.1 mg / kg (1:1,000) 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 cc / kg, may repeat one time.
2. Most pediatric cardiac arrest guidelines follow the adult protocols. EMS providers should refer to the Broselow tape if assistance is needed with resuscitation drug dosages for pediatric patients.
3. Stable Pediatric Patient without signs and symptoms
 - a. If tolerating the rhythm, monitor and provide supportive care without medications or electrical intervention
4. 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. Bradycardia with signs and symptoms of poor perfusion

1. Airway, oxygen and monitor
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 < 60 beats / minute in infant or child and poor perfusion
 - a. Consider Epinephrine 0.01 mg / kg (1:10,000) IV/IO every 3 to 5 minutes OR
 - i. Epinephrine 0.1 mg / kg (1:1,000) ET every 3 to 5 minutes
 - b. 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.
 - i. May repeat once.
 - c. Consider Transcutaneous Pacing (TCP), pre-medicate if possible:
 - i. Fentanyl 1 mcg/kg SIVP or IO to an initial maximum dose of 25 mcg, do not repeat

F. Ventricular Tachycardia with a Pulse

1. Airway, oxygen and monitor
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
4. Consider synchronized cardioversion at 1 joule / kg, pre-medicate if possible with:
 - a. Fentanyl 1 mcg/kg SIVP or IO to a maximum dose of 25 mcg
 - i. (Do not repeat)
5. Consider # 2 synchronized cardioversion at 2 joules / kg

G. PSVT with signs and symptoms of poor perfusion

1. Airway, oxygen and monitor
2. Establish an IV or IO of NS
3. Administer fluid bolus at 20 cc / kg, may repeat one time to increase perfusion
4. If PSVT still present, consider adenosine 0.1 mg / kg rapid IVP (max dose is 6 mg)
 - a. May double and repeat dose once (maximum second dose is 12 mg)
5. Consider synchronized cardioversion at 1 joule / kg, pre-medicate if possible with:
 - a. Fentanyl 1 mcg/kg SIVP to a maximum dose of 25 mcg
 - i. Do not repeat
6. Consider # 2 synchronized cardioversion at 2 joules / kg

Part IX – Pediatric Medical Emergencies

A. **Difficulty Breathing in the presence of wheezing (asthma, bronchiolitis)**

1. Airway, oxygen, monitor
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 x2
5. For patients in severe respiratory distress that are non-responsive to nebulizer treatments:
 - a. Consider Epinephrine 0.01 mg / kg (1:1,000) IM to a maximum dosage of 0.3 mg
 - i. May repeat Epinephrine in 20 minutes

B. **Difficulty Breathing in the presence of stridor and history of illness, (croup and epiglottitis)**

1. Airway, oxygen, monitor
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
 - i. Children less than 6 months old administer 0.25 mL in 3 mL NS by nebulizer
5. Consider Albuterol 2.5 mg / 3 mL by nebulizer, may repeat 2x
6. Consider IV of NS TKO

C. **Difficulty Breathing in the presence of urticaria, wheezing and/or contact with a known allergen (acute allergic reaction)**

1. Airway, oxygen, monitor
2. Administer Albuterol 2.5 mg / 3 mL by nebulizer
 - a. may repeat twice
3. Consider Epinephrine 0.01 mg / kg (1:1,000) IM to a maximum dosage of 0.3 mg
 - a. May repeat epinephrine dose in 20 minutes

4. Consider IV of NS and titrate to vital signs
5. Consider Benadryl 1mg / kg deep IM or SIVP, maximum dose of 50 mg
6. In the event of hypotension
 - a. Consider Epinephrine drip @ 2-10 mcg / min.
 - b. Titrate to BP of 90-100 systolic or age appropriate systolic blood pressure. **[Medical Control]**

D. 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 above maneuvers unsuccessful, attempt to visualize obstruction with laryngoscope and remove with Magill forceps
3. Administer oxygen, monitor
4. If all of the above fail, consider needle cricothyrotomy
5. Consider IV with NS TKO en route

E. Seizures

1. Airway, oxygen, monitor
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
 1. **Maximum dose of 5 mg.**
 - ii. DO NOT wait to obtain IV access
 - 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, IN, 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, IN 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 narcotic overdose suspected, administer Naloxone 0.1 mg / kg IV up to 0.4 mg.
 - a. Repeat every 2-3 minutes to desired effect. Max total dose is 2 mg.
6. Titrate Naloxone to stimulate respiratory effort rather than LOC.
7. 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.

F. Altered Mental Status

1. Airway, oxygen, monitor
2. Check blood sugar level
3. Start IV with NS and titrate to vital signs
4. If blood sugar is less than 60, administer 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)

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 patient < 20 kg and 1.0 mg for patient > 20 kg
6. If narcotic overdose suspected, administer Naloxone 0.1 mg / kg IV/IO up to 0.4 mg. Repeat every 2-3 minutes to desired effect. Max total dose is 2 mg.
7. Titrate naloxone to stimulate respiratory effort rather than LOC.
8. 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.

G. 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. Rapid Sequence Intubation (RSI)

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.

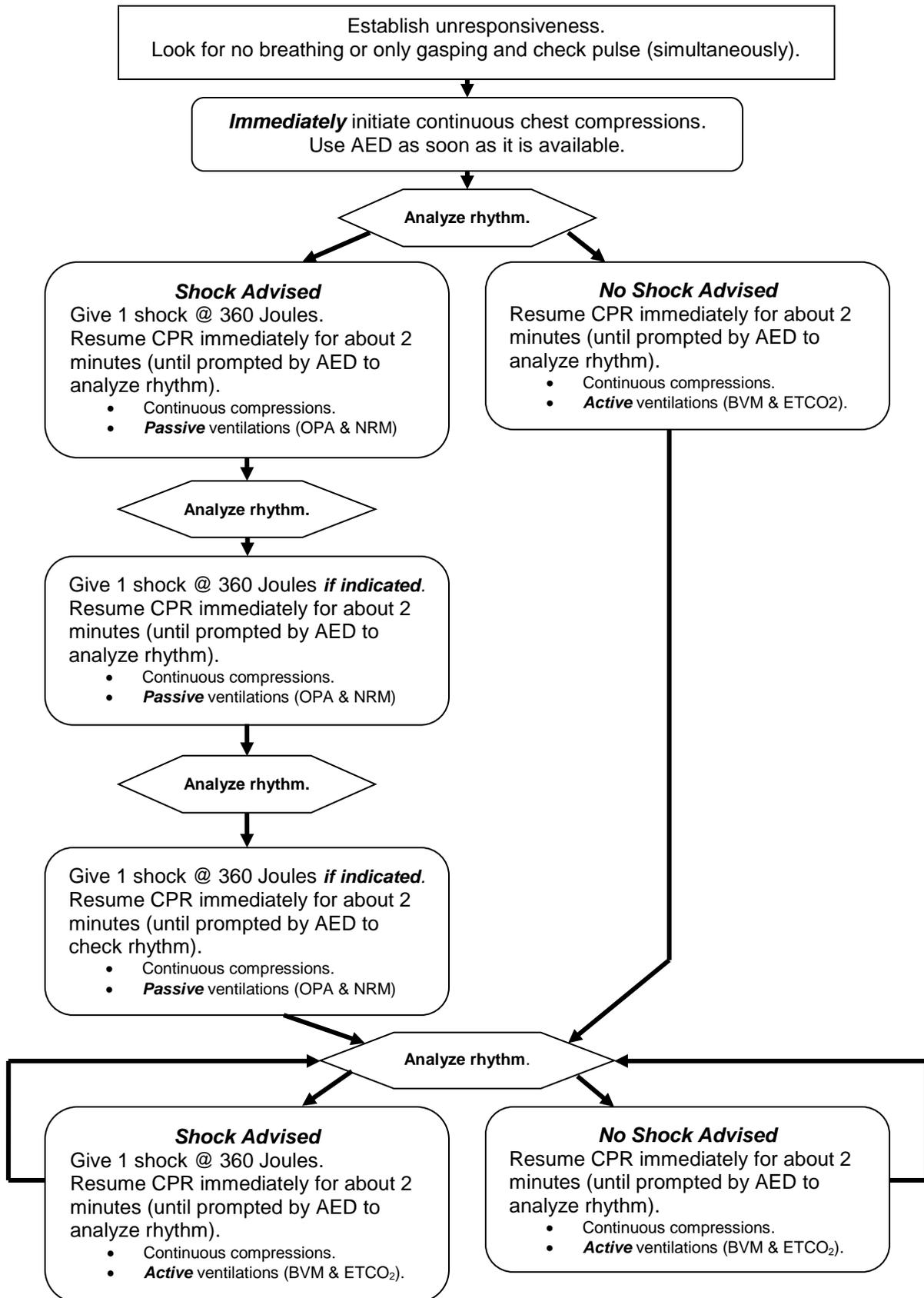
2. Pre-medication:

- a. Apply simultaneous high flow oxygen by nasal cannula and non-rebreather mask at 15 LPM.
- b. Ventilations with BVM prior to intubation should be avoided if possible. However, if patients have inadequate ventilations or O₂ saturations ventilate with BVM @ 15 LPM and continue oxygenation via high flow nasal cannula @ 15 LPM.
- c. Maintain cricoid pressure. Record baseline O₂ saturation prior to administering medications.
- d. Consider Lidocaine 1 mg / kg IV/IO for actual or potential head-injured patients.
- e. 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 hyper salivation as a result of Ketamine administration.

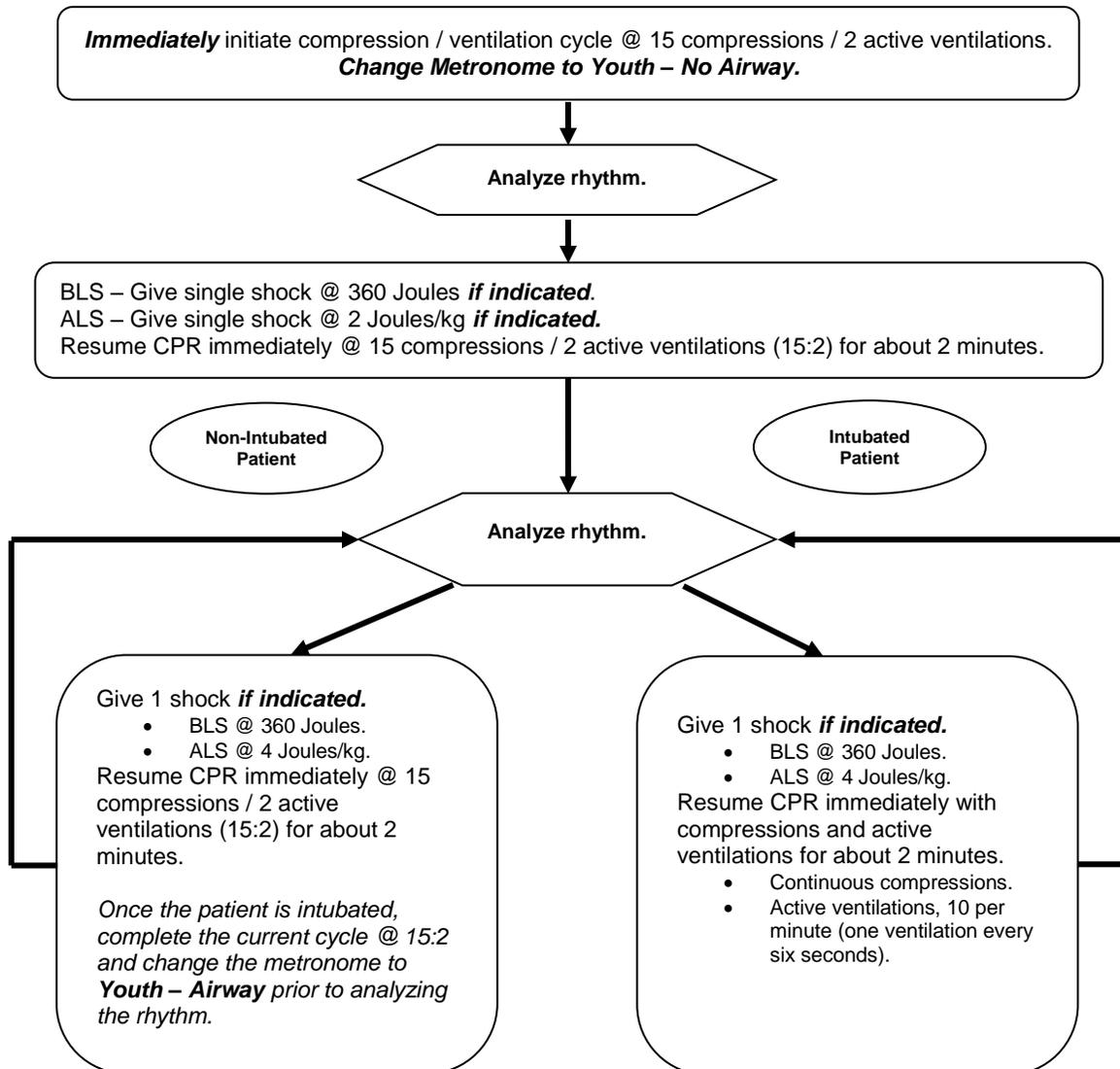
3. Initial Sedation:

- a. Ketamine (Ketalar). Use with caution in patients with severe hypertension where worsening HTN is detrimental:
 - i. Adults: 2 mg/kg IV/IO
 - ii. Pediatrics: 2 mg/kg IV/IO
- b. If Ketamine contraindicated or unavailable, administer Midazolam:
 - i. Adults: 5 mg IV/IO
 - ii. Pediatrics: 0.3 mg/kg IV/IO max of 5 mg

C. Adult Cardiac Arrest Algorithm (Puberty and older)



D. Pediatric Cardiac Arrest Algorithm (Infant – Puberty)



E. Continuous Positive Airway Pressure (CPAP) Protocol

Continuous Positive Airway Pressure has been shown to rapidly improve vital signs, gas exchange, reduce the work of breathing, decrease the sense of dyspnea, and decrease the need for endotracheal intubation in patients who suffer from shortness of breath from asthma, COPD, pulmonary edema and CHF. In patients with CHF, CPAP improves hemodynamics by reducing left ventricular preload and afterload.

1. INDICATIONS

- a. Any patient who is in respiratory distress with signs and symptoms consistent with asthma, COPD, pulmonary edema or CHF, and who is:
 - i. Awake and able to follow commands
 - ii. Is over 18 years old and is able to fit the CPAP mask
 - iii. Has the ability to maintain an open airway
 - iv. AND exhibits two or more of the following:
 - 1) A respiratory rate greater than 25 breaths per minute
 - 2) SPO₂ of less than 94% at any time
 - 3) Use of accessory muscles during respirations

2. CONTRAINDICATIONS

- a. Patient is in respiratory arrest/apneic
- b. Patient is suspected of having a pneumothorax or has suffered trauma to the chest
- c. Patient has a tracheostomy
- d. Patient is actively vomiting or has upper GI bleeding
- e. Patient systolic blood pressure less than 90 mmHg

3. PROCEDURE

- a. EXPLAIN THE PROCEDURE TO THE PATIENT
- b. Ensure adequate oxygen supply to ventilation device
- c. Initiate continuous SPO₂ and ETCO₂ monitoring
- d. Place the patient on cardiac monitor and record rhythm strips with vital signs
- e. Place the delivery device over the mouth and nose
- f. Secure the mask with provided straps
- g. Set PEEP valve to 5 cm of H₂O initially, may titrate to max of 10 cm H₂O
- h. Check for air leaks
- i. Monitor and document the patient's respiratory response to treatment
- j. Check and document vital signs every 5 minutes

- k. Administer appropriate medication as certified (continuous nebulized Albuterol for COPD/Asthma and repeated administration of nitroglycerin spray for CHF)
- l. Continue to coach patient to keep mask in place and readjust as needed
- m. Advise receiving facility that CPAP has been initiated
- n. If respiratory status deteriorates, remove device and consider positive pressure ventilation via BVM and/or placement of non-visualized airway or endotracheal intubation.

4. REMOVAL PROCEDURE

- a. CPAP therapy needs to be continuous and should not be removed unless the patient can't tolerate the mask or experiences respiratory arrest or begins to vomit.
- b. If the patient is removed from CPAP therapy consider positive pressure ventilation with a Bag-Valve-Mask, placement of a non-visualized airway and/or endotracheal intubation

5. SPECIAL NOTES

- a. Do not remove CPAP until directed by hospital staff or physician
- b. Watch patient for gastric distention, which can result in vomiting
- c. Procedure may be performed on patient with Do Not Resuscitate Order
- d. Due to changes in preload and afterload of the heart during CPAP therapy, a complete set of vital signs must be obtained every 5 minutes

F. Mucosal Atomization Device

1. Indications
 - a. Nasal administration of medications as specified in the specific treatment guidelines.
 - b. Lack of IV/IO access
2. Contraindications
 - a. Epistaxis
 - b. Nasal trauma
 - c. Nasal septal abnormalities
3. Procedure for nasal drug delivery using mucosal atomization device
 - a. Draw up medication into a syringe using appropriate transfer needle
 - b. Remove air from syringe
 - c. Remove needle and place atomization device onto syringe
 - d. Place device into nostril, stop when resistance is felt
 - e. Compress the syringe plunger to spray atomized solution into the nasal cavity
 - f. Administer $\frac{1}{2}$ dose into each nostril
 - g. Do not exceed 1 mL per nostril
4. Precautions
 - a. Evaluate the effectiveness of the medication administration and consider repeating and/or changing the route of administration if desired effect is not received
 - b. Nasal administration does not work for every patient
 - c. Nasal administration is less likely to be effective if the patient has been abusing inhaled vasoconstrictors such as cocaine
5. Medications that may be administered via Intranasal Route
 - a. Naloxone (Naloxone) only with 2 mg/2 mL concentration
 - b. Midazolam (Versed) only for combative patients and only with 10 mg/2 mL concentration!
 - c. Fentanyl (Sublimaze) for pain management

G. VividTrac Video laryngoscopy

1. INDICATION
 - a. For use during difficult or predicted difficult intubations
2. CONTRAINDICATION
 - a. Endotracheal tubes smaller than 6.0 mm or larger than 8.5 mm.
3. EQUIPMENT
 - a. Laptop computer with VividTrac Software enabled
 - b. VividTrac video intubation device
 - c. Bag Valve Mask
 - d. Oxygen
 - e. Suction
 - f. Endotracheal tube
 - g. ETCO₂ circuit
 - h. Tube securing device
4. PROCEDURE
 - a. Position and pre-oxygenate the patient using a NRB, high flow nasal oxygen (if RSI), and/or a bag valve mask if necessary. Maintain in-line stabilization in trauma patients.
 - b. Remove the VividTrac intubation device from packaging and plug distal end of USB cable into the appropriate port on the CF-19 using the USB extension cable. Ensure the CF-19 is turned on and the video feed is working.
 - c. Load the appropriate sized endotracheal tube into the VividTrac channel. Alternatively, the tube can be inserted into the blade's channel after the blade is inserted into the patient's mouth and the glottic opening is visualized.
 - d. Suction the patient's airway if necessary before inserting the VividTrac device.
 - e. Insert the VividTrac device into the mouth midline. Use the device to determine if there is blood, liquid or vomitus in the airway before inserting the VividTrac. Suction as necessary.
 - f. Gently insert the VividTrac sweeping it over the tongue.
 - g. The VividTrac device will self-align and you should be able to identify visual landmarks.
 - h. Begin advancing the endotracheal tube as soon as the glottic opening is visualized. Continue advancing the endotracheal tube until the tube is visualized passing through the glottic opening.
 - i. Inflate the cuff and confirm tube placement by using the ETCO₂ circuit and other standard techniques.
 - j. Remove the endotracheal tube from the VividTrac device and remove the VividTrac from the patient's mouth, and unplug the USB cable from the computer.

- k. Secure the ET tube using twill tape or a commercial tube securing device.
- l. Document and monitor the depth of the endotracheal tube.
- m. If unable to advance the endotracheal tube consider using a bougie or if unable to manage the airway with this device consider using the King Airway. Do not allow the patient to desaturate.
- n. If unable to successfully intubate with the VividTrac after two attempts immediately consider rescue airway techniques.

H. Therapeutic Hypothermia

1. Post-resuscitation management for non-traumatic cardiac arrest
 - a. Perform, record, and evaluate the patient's 12-lead EKG. If the 12-lead EKG meets STEMI criteria, contact base physician and declare a cardiac alert.
 - b. If the patient is intubated, ensure adequate ventilation to maintain oxygen saturations at or close to 100%. An ETCO₂ waveform capnography value between 35-45 mmHg is desirable but do not hyperventilate to obtain this reading.
 - c. If the patient is NOT awake and NOT able to follow commands:
 - i. If IV/IO access has not been established prior to ROSC, initiate IV access using at least an 18g catheter.
 - ii. Place cold saline ice packs in axilla and groin.
 - iii. Administer Midazolam 2.5 mg for active shivering and / or agitation ONLY if hemodynamic status will allow. Consider Fentanyl 50mcg if hemodynamically unstable.
 - d. If unable to maintain a systolic blood pressure of 90 mmHg after fluid administration, begin Dopamine 5 mcg/kg/min IV drip to maintain a systolic blood pressure >90mmHg, titrate to effect.
 - e. Initiate transport to: SERMC, Bryan Health East Campus, or NHH.
2. Therapeutic Hypothermia after Cardiac Arrest Inclusion Criteria:
 - a. Successful restoration of a perfusing rhythm with a pulse and,
 - b. Patient age 18 or greater and,
 - c. Patient is NOT awake and NOT able to follow commands
3. Exclusion Criteria:
 - a. Age less than 18 years
 - b. Traumatic arrest/major head trauma
 - c. Systemic infection/sepsis
 - d. Patient with clinically significant bleeding
 - e. Severe hypothermia pre-cardiac arrest occurrence

I. 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 of 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.

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J. Wound Care Tourniquet

1. Clinical Indications:
 - a. A life-threatening extremity hemorrhage that cannot be controlled by any other means.
 - b. Serious or life threatening extremity hemorrhage and tactical considerations prevent the use of standard hemorrhage control techniques.
2. Contraindications:
 - a. Non-extremity hemorrhage
 - b. Proximal extremity location where tourniquet application is not practical
3. Procedure:
 - a. Place tourniquet proximal to wound
 - b. Tighten per manufacturer instructions until hemorrhage stops and/or distal pulses in affected extremity disappear.
 - c. Secure tourniquet per manufacturer instructions
 - d. Note time of tourniquet application and communicate this to receiving care providers.
 - e. Dress wounds per standard wound care protocol.
 - f. If delayed or prolonged transport and tourniquet application time > 45 minutes: consider re-attempting standard hemorrhage control techniques and removing tourniquet.

If one tourniquet is not sufficient or not functional to control hemorrhage, consider the application of a second tourniquet more proximal to the first.

K. Infectious Disease

The risk of contracting Ebola in the United States is very minimal. The CDC and Health Department have limited the access of persons from West Africa, specifically Liberia, Sierra Leone and Guinea, to the US and are actively screening them at the airports. If the person is symptomatic they are quarantined at the airport and monitored. If they are asymptomatic they are given instructions on how to monitor themselves for Ebola. Their destination's State and Local Health Departments are notified they are in route their city and empowered to continue monitoring them until they have passed the incubation period of 21 days.

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:^{3 4}
 - 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. The patient has 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:⁵
 - 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. Consider placing a mask on the patient or asking them to don a mask.
 - b. Contact 911 dispatch and request the Infectious Disease transport ambulance,
 - i. Station 14 will be responsible for getting the vehicle to the scene.
 - c. Request that dispatch send the closest HazMat apparatus,
 - i. 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.
 - d. Request the OIC and EMS-1 to the scene,

³ <http://emergency.cdc.gov/han/han00371.asp>

⁴ <http://www.cdc.gov/vhf/ebola/pdf/ambulatory-care-evaluation-of-patients-with-possible-ebola.pdf>

⁵ <http://www.cdc.gov/vhf/ebola/hcp/ed-management-patients-possible-ebola.html>

- i. EMS-1 will be responsible for immediately contacting the LLCHD and the Division Chief of EMS.
 - e. The receiving hospital should be notified as soon as possible that we are transporting a patient potentially infected with Ebola.
3. Once the Infectious Disease transport ambulance arrives on scene, two members from the HazMat apparatus should don the appropriate sized brown Tyvek suits, SCBA's, gowns from the Infectious disease kit, and double glove,
 - a. The PPE equipment will be carried on the Infectious Disease Transport ambulance in the outside compartments;
 - b. The required SCBA's can be removed from the medic unit on location
4. A trained observer should be designated and should ensure that PPE is donned properly. ⁶
5. The two providers wearing the Tyvek suits and SCBA's should make contact with 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
6. 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.
7. 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;
 - a. The patient compartment HVAC system will not operate due to the plastic lining in the back of the ambulance.
8. 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;
 - a. Someone will be assigned to drive the ambulance and should don the contents of the Infectious Disease kit.

⁶ <http://www.cdc.gov/vhf/ebola/hcp/ppe-training/index.html>

9. 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.
10. The providers will return to work and will be screened using the CDC recommendations for someone who has potentially been exposed to Ebola. The LLCHD will be involved in this screening process to ensure the safety of the providers;⁷
 - 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.⁸
11. The Infectious disease response vehicle will be parked until a determination has been made if the patient actually 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 infectious disease response vehicle.
12. 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.⁹
13. If the patient does not have Ebola or another extremely infectious disease the ambulance will be cleaned following MP 303.04.
 - a. The vehicle should be returned to Logistics so another layer of plastic can be installed inside the patient compartment.
14. The vehicle can then be placed back into service and stored at the TRIDENT until needed again.
15. Decontamination of the Infectious Disease transport ambulance can be accomplished by following MP 303.04 unless it is determined the patient

⁷ <http://www.cdc.gov/hai/settings/outpatient/outpatient-care-guidelines.html>

⁸ <http://www.cdc.gov/vhf/ebola/exposure/monitoring-and-movement-of-persons-with-exposure.html>

⁹ <http://www.cdc.gov/vhf/ebola/hcp/medical-waste-management.html>

has tested positive for Ebola. IF the patient has tested positive for Ebola or other extremely infectious disease the department will work with LLCHD to have the ambulance professionally decontaminated.

L. LUCAS 2™ Device

1. INDICATIONS

The LUCAS 2™ may be used in patients 12 years of age and older who have suffered cardiac arrest, where manual CPR would otherwise be used.

2. CONTRAINDICATIONS

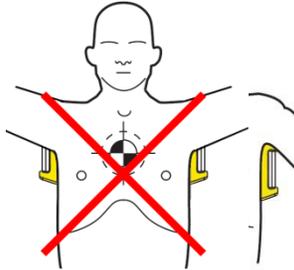
- a. Patients < 12 years of age.
- b. Patients who do not fit within the device.
 - i. If the unit snaps onto the backboard and the suction cup does not compress the patient's chest while in the start position, it will operate as intended.
 - ii. Patients who are too small that you cannot pull the pressure pad down to touch the sternum.

3. PROTOCOL FOR PLACEMENT

- a. All therapies related to the management of cardiopulmonary arrest should be continued as currently defined in protocol with an **ultimate goal of obtaining a return of spontaneous circulation (ROSC) before brain damage occurs.**
- b. Initiate resuscitative measures following current LF&R protocols.
 - i. Immediately begin performing high quality manual compressions while applying the defibrillation pads. Do not delay manual CPR for the LUCAS 2™.
 - ii. Rhythm analysis with early defibrillation should be provided if necessary based on clinical presentation.
 - iii. Obtain vascular access.
 - iv. Administer the appropriate medications.
 - v. Place an advanced airway.
 - vi. Turn the LUCAS 2™ device "on" when removing from the carrying case. This will allow the device to perform a "self-test".
 - vii. Apply the LUCAS 2™ device to the patient after the third cycle of manual compressions if needed. Continue manual CPR until the device can be placed. Limit interruptions in chest compressions to 10 seconds or less.
 - viii. Prepare **the patient for transportation if appropriate.**
 - ix. **Consider using the scoop stretcher for movement of the patient.**
- c. When resuscitative measures are initiated, the LUCAS 2™ device should be removed from its carrying device and placed on the patient in the following manner.

d. **Back Plate Placement**

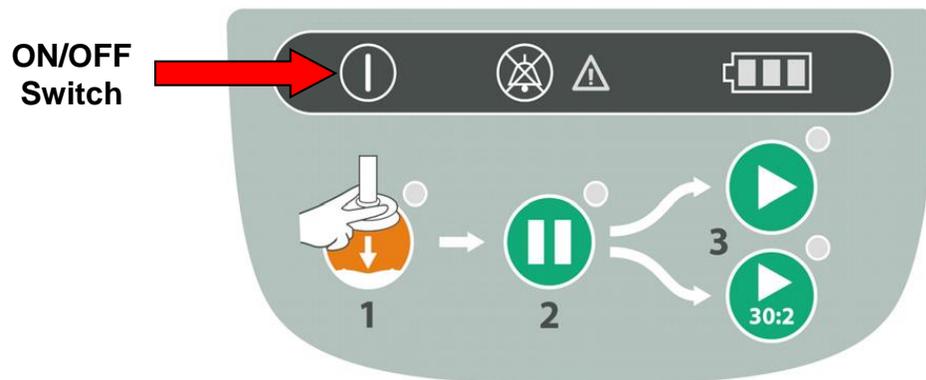
- i. The back plate should be centered on the nipple line and the top of the back plate should be located just below the patient's armpits.



- ii. In cases for which the patient is already on the stretcher, place the back plate underneath the thorax. This can be accomplished by log-rolling the patient or raising the torso (Placement should occur after two minutes of uninterrupted compressions]).

e. **Position the Compressor**

- i. Turn the LUCAS 2™ Device on (the device will perform a 3 second self test.)

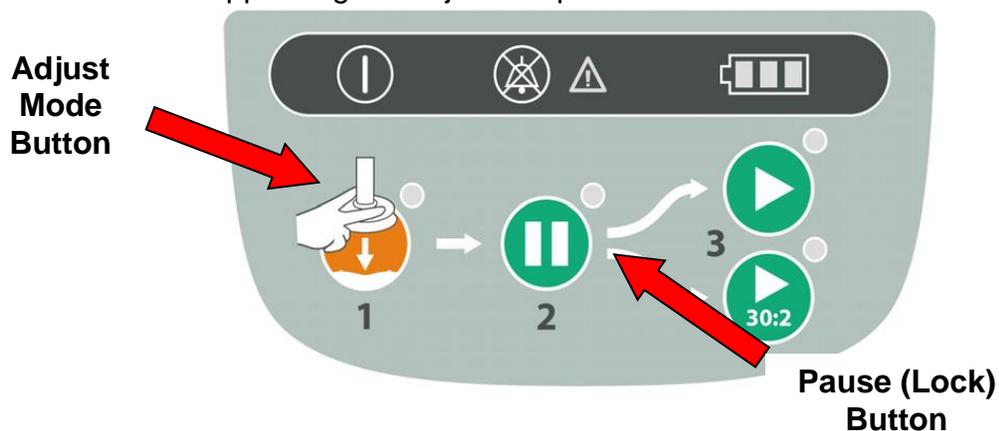


- ii. Remove the LUCAS 2™ device from its carrying case using the handles.
- iii. With the index finger of each hand, pull the trigger to ensure the device is set to engage the back plate. Once this is completed remove your index finger from the trigger loop.
- iv. Approach the patient from the side opposite the person performing manual chest compressions.
- v. Attach the claw hook to the back plate on the side opposite of the person providing compressions.
- vi. Place the LUCAS 2™ device across the patient, between the staff member's arms who is performing manual CPR.

- vii. At this point the staff member performing manual CPR stops and assists attaching the claw hook to the back plate on their side.
- viii. Pull up once to make sure that the parts are securely attached.

f. **Adjust the Height of the Compression Arm**

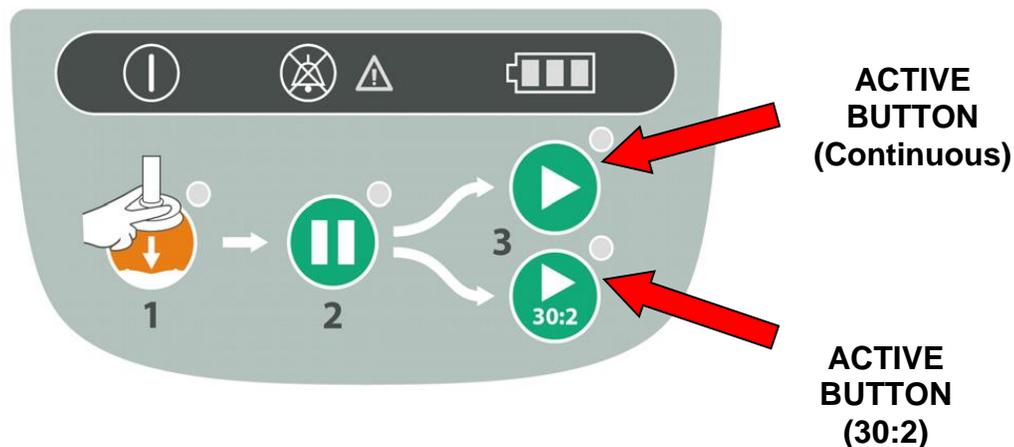
- i. Use two fingers (V pattern) to make sure that the lower edge of the Suction Cup is immediately above the end of the sternum. If necessary, move the device by pulling the support legs to adjust the position.



- ii. Press the Adjust Mode Button on the control pad labeled #1 (This will allow you to easily adjust the height of the compression arm).
- iii. To adjust the start position of the compression arm, manually push down the SUCTION CUP with two fingers onto the chest (without compressing the patient's chest).
- iv. Once the position of the compression arm is satisfactory, push the green PAUSE button labeled #2 (This will lock the arm in this position), then remove your fingers from the SUCTION CUP).
- v. If the position is incorrect, press the ADJUST MODE BUTTON and repeat the steps.

g. **Start Compressions**

- i. Begin delivering mechanical compressions by pushing the ACTIVE (continuous) button.



h. **Using Patient Adjuncts**

- i. Place the neck roll behind the patient's head and attach the straps to the LUCAS 2™ device.
- 1) This will prevent the LUCAS 2™ from migrating toward the patient's feet.
- ii. Place the patients arms in the straps provided.

4. **USING THE LUCAS 2™ DURING THE RESUSCITATION**

a. **Defibrillation**

- i. Defibrillation can and should be performed with the LUCAS 2™ device in place and in operation.
- ii. Defibrillation electrodes should be applied before the LUCAS 2™ device has been put in position.
 - 1) The defibrillation pads and wires should not be underneath the suction cup.
 - 2) If the electrodes are already in an incorrect position when the LUCAS 2™ is placed, you must apply new electrodes.
- iii. Defibrillation should be performed according to the LF&R protocols and following the instructions of the defibrillator manufacturer.
- iv. Rhythm analysis cannot be assessed during compressions. The device should be stopped for analysis by pushing the PAUSE BUTTON (The duration of interruption of compressions should be kept as short as possible and should not be > 10 seconds. There is no need to interrupt chest compressions other than to analyze the rhythm).
- v. Once the rhythm is determined to require defibrillation, the appropriate ACTIVE BUTTON should be pushed to resume

compressions while the defibrillator is charging and then the defibrillator should be discharged.

- b. **Pulse Checks/Return of Spontaneous Circulation (ROSC)**
 - i. Pulse checks should occur intermittently while compressions are occurring.
 - ii. If the patient moves or is obviously responsive, the LUCAS 2™ Device should be paused and the patient evaluated.
 - iii. If there is a change in rhythm, but no obvious indication of responsiveness or ROSC, a pulse check while compressions are occurring should be undertaken. If the palpated pulse is asynchronous, consider pushing the pause button on the LUCAS 2™ Device. If the pulse is palpable, reassess the patient. If the pulse is impalpable, immediately restart the LUCAS 2™ Device.
- c. **Malfunction or Disruption of LUCAS 2™ Device**
 - i. **If malfunction or disruption of the LUCAS 2™ device occurs, immediately begin manual chest compressions.**

5. **Device Management**

- a. **Power Supply**
 - i. **Battery Operation**
 - 1) When fully charged, the Lithium Polymer battery should allow 45 minutes of uninterrupted operation.
 - 2) Only leave the LUCAS 2™ device plugged in long enough to charge the battery. Once the battery is fully charged, unplug the LUCAS 2™ and store in the cabinet.
 - 3) Make sure that the cord is always with the LUCAS 2™ device.
 - 4) During use when the orange Battery LED shows an intermittent light, the battery should be replaced or the device should be connected to a wall outlet.
 - ii. The LUCAS 2™ Device can be connected to wall power in all operational modes (The battery must be installed in order for the LUCAS 2™ Device to remain operational).



**Power Supply
Cord Slot (for
charging and
AC operation)**

**6. Care of the LUCAS 2™ Device
after use:**

- a. Remove the Suction cup and the Stabilization Strap (if used, remove the Patient Straps).
 - i. Clean all surfaces and straps with a cloth and warm water with an appropriate cleaning agent.
 - ii. Let the device and parts dry.
 - iii. Replace the used battery with a fully-charged battery.
 - iv. Remount (or replace) the Suction Cup and straps.
 - v. Repack the device into the carrying bag.
 - vi. Recharge the battery after every use.

7. Wednesday checks of the LUCAS 2™

- a. The LUCAS 2™ device should be removed from the storage case and inspected for damage.
- b. Working with the crew the LUCAS 2™ device should be placed on the provided CPR mannequin (only use the mannequin provided with the LUCAS 2™ device to prevent damage to the device) and allow to run for ten (10) minutes.
- c. Recharge the battery after every use.
- d. Place the device back in the storage case.
- e. The captain or acting captain should submit a training roster to the training division indicating they performed the training.

Approved by:

_____ Medical Director (Print)

_____ Medical Director Signature

_____ Date

(A signed copy is available at the Training Division)

Edited 10/11/2016