

PARAMEDIC TREATMENT PROTOCOL

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PARAMEDIC TREATMENT PROTOCOL
Developed By:
Midlands EMS Advisory Council

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Part I. GENERAL OPERATIONS

A. Introduction

The Midlands EMS Advisory Council publishes this document as a guideline to assist medical directors of EMS service programs in development of treatment protocols. The Physician Medical Director (PMD) has the responsibility to accept or modify this document to fit their service program as well as educating EMS personnel in the use, content and rationale of each protocol.

The PMD is responsible for assuring the accuracy of the medical information in any protocol used in their service program as well as maintaining a quality assurance program to monitor protocol compliance.

In the development of this protocol, consideration was given to the current Nebraska Emergency Medical Services Model Protocols developed by the State of Nebraska EMS Board. Protocols should be approved, signed and dated by the individual service's physician medical director prior to implementation.

All treatments and procedures performed by the EMS provider must be authorized by their service's PMD. It is highly suggested that the PMD review the medications included in this protocol and the section titled "***Special Considerations***" before adopting these protocols as presented. PMD's and EMS services have the option of revising this document, while ensuring all treatments and procedures are within the scope of practice of the service and provider.

B. Physician Orders & Communications

This entire protocol is a standing order. Direct communication to an ER or Medical Direction is not required prior to performing any protocol action. EMS providers may contact the receiving facility or Medical Direction for further direction or confirmation of orders whenever the situation warrants.

C. Use of this Document

This document is designed to be used by ALS level service programs, as a guide when field treatment is directed by a physician, and by physician designated surrogates when directing field treatment.

1. This document utilizes current American Heart Association BLS, ACLS and PALS guidelines. In addition, current PHTLS guidelines are used when referring to trauma situations. Any updates or changes to these guidelines will be adopted and implemented as they occur, with the review and signoff of the PMD for the service.
2. At least one Paramedic, or ALS provider as approved by the Medical Director, must be present on all runs governed by these protocols.
3. The following medications are included in this protocol:

Adenosine Albuterol Amiodarone Aspirin (chewable baby aspirin) Ativan Atropine Benadryl Calicum Chloride Cardizem Cyano Kit Dilaudid DuoDote D ₁₀ W D ₅₀ W Dopamine Epinephrine Fentanyl	Glucagon Ipratropium Bromide Ketamine Lidocaine Magnesium Sulfate Morphine Sulfate Narcan Nitroglycerine SL or spray Racemic Epinephrine Sodium Bicarbonate Solu-Medrol Toradol Valium Versed Zofran RSI Meds
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Note: For all pediatric medication dosages, the maximum not to exceed the adult dose.

D. Physician on Scene

When a physician is present on the scene and desires to direct patient care, paramedic personnel should:

1. Inform the physician that if the physician directs the run, the physician must accompany the patient to the hospital.
2. 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.
3. Inform the physician that any procedure outside of these legal guidelines must be carried out by the physician.
4. 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.
5. 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) and Advanced Directives (Adopted from Nebraska EMS Model Protocols)

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 and have the patient's name.

When confronted with a patient with a DNR and the patient has no pulse, agonal breathing or no respirations the Provider may honor the DNR and not initiate resuscitation efforts.

When confronted with a patient with a DNR and the patient is nearing death the Provider may provide comfort care including supplemental oxygen and pain management. The patient may be transported at the request of the patient, patient's family, patient's physician or medical control.

When confronted with a patient with a DNR and the patient is NOT nearing death the Provider may provide the care as directed within these protocols.

Advanced directives are documents that state the patient's wishes should certain events occur. These documents may be in the form of a "Living Will". Some of these documents may be of such a length and complexity that the OOHECP may not be able to determine the wishes of the patient for the situation encountered. In these cases, resuscitation efforts should be initiated unless the sign(s) of obvious death are present. If possible, the document should be transported with the patient to the hospital.

FAMILY OBJECTIONS TO DNR – ADVANCED DIRECTIVES

In a situation where the family objects to a DNR order or an Advanced Directive the Provider should initiate resuscitation efforts unless sign(s) of obvious death are present.

Provider ETHICAL OBJECTION

Any Provider with an ethical objection to following a DNR or Advanced Directive must inform his/her service prior to responding to these types of situations. These individuals should avoid response to these types of calls whenever possible.

F. Code 4 Patients

Situations may occur where CPR has been initiated on an obviously deceased patient prior to the arrival of EMS. If the patient meets code 4 criteria, the EMS provider may discontinue CPR or may choose not to initiate CPR.

A Code 4 patient is identified if he/she is described by one of the following categories:

1. No pulse AND
2. No spontaneous respirations AND
3. Pupils fixed and dilated AND
4. One of more of the following:
 - Patient with obvious lethal injury – trauma cardiac arrest with injuries incompatible with life (i.e. massive blood loss, displacement of brain tissue, decapitation)
 - Wrinkled cornea
 - Rigor mortis
 - Postmortem lividity
 - Decomposition
 - Valid DNR form
 - Physician authorization

Paramedic shall obtain and document a 10 second ECG rhythm strip demonstrating asystole.

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

In certain circumstances due to family situation, scene safety (due to crowds etc.) patients who are otherwise Code 99 may be removed from the scene and transported for the safety of the paramedics and concerns of the family.

G. 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 healthcare 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).

H. Concealed Handgun

The Nebraska Concealed Handgun Permit Act allows certain individuals to obtain a permit to carry a concealed handgun. The rules and regulations necessary to carry out the act are listed in Title 272 Chapter 21.

The Service/Provider's best action when confronted with a situation in which a patient has a concealed weapon is to have law enforcement take possession of the weapon. When this is not possible the weapon should be secured until it can be turned over to law enforcement. If transporting to a hospital, security at the facility should be notified and may take over possession of the weapon.

I. Transport Codes and Transport Guidelines

Code 1	Minimal or no apparent disease or injury. Patient transported for examination
Code 2	Obvious illness or injury, not a serious injury or illness but needs medical attention
Code 2 TCC	Trauma patient with an obvious injury but doesn't clearly meet the criteria for a Code 3. Enough questionable signs, symptoms or MOI exist to warrant the expertise of the Trauma Center
Code 3	Apparent serious injury or illness needing immediate medical attention
Code 3 STEMI	Patient has been identified as having ST segment elevation myocardial infarction (STEMI Alert). All STEMI patients are to be transported Code 3 to the closest hospital with available PCI.
Code 3 STROKE	Patient has been identified as having a stroke (STROKE Alert). Stroke patients are to be transported directly to an appropriate certified Comprehensive Stroke Center, within acceptable transport time. If no CSC meets criteria, transport to nearest Endovascular therapy center, or closest appropriate Stroke center (acute Stroke ready hospital or primary Stroke center)
Code 3 TCC	Trauma patient with an actual or potential life or limb threatening injury
Code 99	Life threatening situation, CPR in progress
Code 4	Dead patient
Code 5	For suspected SIDS patients, (patient meets criteria for Code 4, transport is for the family/bystanders). CPR only (basic life support).

TCC (Trauma Center Candidate) - The patient will be transported directly to a Trauma Center. See Trauma Center Candidate Criteria Protocol.

Pediatric Transport Considerations

A pediatric patient is a patient up to and including 15 years of age

Code 3 **medical** pediatric patients should be transported to the closest hospital for stabilization.

If the receiving hospital diverts a Code 3 medical (non-trauma) pediatric patient, the patient should be transported to Children's Hospital or Nebraska Medical Center Omaha.

Pediatric Trauma Patients

Leaders at Nebraska Medicine, CHI Health and Children's Hospital and Medical Center recently met and re-signed an agreement established in 2014, specifying guidelines for pediatric trauma patients (defined as individuals younger than 15 years of age).

Under the agreement:

Nebraska Medical Center is open at all times to accept traumatically injured children meeting the following criteria:

Traumatically injured children who require major, immediate resuscitation

- Code 99 (Traumatic Cardiac Arrest)
- Hemodynamic instability or poor perfusion
- Respiratory compromise, including the need to maintain airway and intubation
- Neurologic compromise GSC < or = 13 or deteriorating status
- Traumatic amputations
- Significant vascular injuries
- High risk mechanisms: example: ejection or gunshot wounds
- Unstable pelvic fractures
- Spinal cord injuries or paralysis

Both Nebraska Medical Center and Children's Hospital would be open at all times to accept pediatric trauma patients meeting the following criteria:

Traumatically injured children who do not require major immediate resuscitation

- Hemodynamically stable
- GCS greater than 13
- Low mechanisms of injury
- Victims of asphyxiation: example drowning

Adult trauma patients will continue to be treated at both Nebraska Medical Center and CHI Creighton Medical Center Bergan Mercy. When a pediatric patient and an adult relative both need trauma care, both patients would be brought to Nebraska Medical Center to avoid separating the family.

Behavioral Emergencies Transport Considerations

- A patient with a behavioral emergency should be transported to the closest hospital.
- Patients who are rational and present no risk to the EMS providers or to themselves may be transported to hospital of choice.
- ALWAYS consider a medical etiology for a behavioral emergency.

Part II. GENERAL PRINCIPLES

A. Airway/Oxygen/Monitor (AOM)

The following guidelines for airway, oxygen and monitor are common and can be applied to all patients.

1. A patent airway with adequate oxygenation and ventilation are essential for all patients with medical or traumatic conditions. Paramedics are expected to maintain a patent airway and provide appropriate supplemental oxygenation based on patient assessment.
2. If ventilations are adequate, consider a nasal cannula at 2-6 L/min or non-rebreather mask at 10-15 L/min.
3. If pulse oximetry is used, adjust oxygen delivery devices and flow to maintain oxygen saturation 94% to 99% and $ETCO_2$ at 35-40 mmHg.
4. If ventilations are inadequate, assist ventilations with BVM and 100% oxygen – advanced airway management may be required.
5. Consider assisting ventilations in those patients whose respiratory status does not improve after receiving oxygen by a non-rebreather mask.
6. Use the trauma intubation method with patients who have suspected compromised cervical spines.
7. 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 $ETCO_2$ (capnography) is highly recommended.
8. Consider immobilizing the head with a c-collar to prevent head movement during transport when a patient has an advanced airway, commercial securing devices are recommended.
9. If unable to intubate after two attempts, consider alternate airway management methods as directed by the Medical Director such as BVM ventilation or a supraglottic advanced airway (iGel, King Airway).
10. RSI (Rapid Sequence Induction) is an advanced airway management technique that requires specialized training and authorization by the EMS Agency's PMD. (See RSI Appendix for general guidelines)

B. IV Therapy

1. All IV insertions refer to peripheral IV's (extremities and external jugular vein), including saline locks and intraosseous (IO) lines.
2. For trauma patients, IVs should be started enroute to the hospital, except when there is an unavoidable delay such as prolonged extrication time. Use warmed IV fluids (if available) and trauma patient is not hyperthermic.
3. Large bore IVs refer to #14 or #16 IV catheters - infuse at rate as indicated by pulse and blood pressure.
4. This protocol permits 2 attempts per patient for IV insertion.
5. Pre-existing Venous Access Devices (VAD) may be used in emergency situations.
6. Titrate IV fluid resuscitation to a BP of 80-90 systolic.
7. Blood and blood products may be administered by a paramedic with the service's Physician Medical Director's approval.

C. Continuous Positive Airway Pressure - CPAP

Indications:

Any adult patient presenting in respiratory distress, able to follow commands, with the ability to maintain a patent airway and adequate mask seal displaying findings in the medical history or assessment suggestive of any of the following conditions:

1. COPD
2. CHF
3. Asthma
4. Pulmonary edema
5. Pneumonia
6. Near drowning

If systolic blood pressure greater than 100 mmHg and patient is not tolerating CPAP mask, confirm intolerance/agitation is not a result of hypoxia or that the patient needs to be intubated and then, consider sedation with any of the following:

Versed	1 – 2 mg IV / IN or 5-10 mg MAD
Valium	2 – 5 mg IV, or
Ativan	1 – 2 mg IV or 2 – 4 mg IM

D. Body Substance Isolation

Personal Protective Equipment (PPE) items used to provide protection for the EMS providers should be readily available.

In many incidences, the EMS provider will not have enough information about the patient and therefore is to follow a universal precautions standard with the use of body substance isolation (BSI) for all patient contact in which exposure to blood and/or body fluids may occur. Where an airborne pathogen (disease) is suspected the EMS Provider should don a N95 mask or higher form of respiratory protection and consider placing a surgical mask on the patient.

Protective eyewear is strongly encouraged.

E. Combative Patients / Physical & Chemical Restraints / Excited Delirium Syndrome

- Give clear explanations and directions.
- Contact Law Enforcement
- Consider physical or chemical restraint

Physical Restraining:

- Supine only to transport or stabilization device
Use Self Adhering Bandage or Commercial Restraint Device
- Restrain One Arm Above Head
If injury or limited range of motion, restrain at patient's side
- Restrain Second Arm at Side
- Restrain with a Minimum of 3 Straps
- One Across Upper Chest
One Across Waist
One Across Lower Thigh Just Above Knees

Consider Use of Commercially Available Spit Hood

Handcuffs Are Only to be Applied by Law Enforcement and Generally Should Be Avoided

DO NOT:

Restrain patient prone or "Hog Tie" Patient and Place Prone

Place Gauze or Tape Over or In Mouth

"Sandwich" Patient between Stabilization Devices

Chemical Restraint / Excited Delirium Syndrome

SEVERE ANXIETY OR AGITATION PATIENT ACTIONS CAUSE THREAT TO SELF OR OTHERS AND / OR patient is truly out of control and has a potential life-threatening medical emergency they will have some or all the following symptoms: paranoia, disorientation, hyper-aggression, hallucination, tachycardia, increased strength, hyperthermia.

If suspected excited delirium syndrome of severe anxiety or agitation causes threat to self or others, consider the following choices:

- Ketamine 2-4 mg/kg IM (max of 500 mg)
- Versed 2.5mg - 5mg IV push slow titrated to response (maximum dose 15mg), or 2.5mg -5mg IM or 10mg IN
- Valium 0.5 mg to 1 mg IV/IO/MAD
- Ativan 1 – 2 mg IV or 2 – 4 mg IM (may repeat)

F. Adult Pain Management Non-Cardiac - (Severe Pain Ranked as ≥ 7 on 0 - 10 Scale)

Systolic BP > 90 mmHg

Fentanyl 25-100 mcg IV/IO/IM/MAD
Morphine Sulfate 2-5 mg IV/IO/IM/MAD
Toradol 15-30 mg IV or IM

For severe pain not controlled by narcotics consider:

Ketamine 0.25 mg/kg IV / IO / IM

Approximate doses based on patient weight/size:

Small – 15 mg / Medium – 20 mg / Large – 25 mg

- Reassess pain scale and vital signs, repeat every 5 minutes as necessary if no response or pain remains severe.
- If respiratory depression occurs, begin BVM ventilations and administer Narcan 2.0 mg IV push
- If hypotension develops, administer Narcan 2.0 mg IV push, followed by a fluid bolus, titrate to vital signs. Narcan may be repeated.

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

1. Systolic BP appropriate for age

Fentanyl 1-2 mcg/kg IV/IO/IM/MAD
Ketamine 0.25 mg/kg IV / IO / IM
Toradol 0.5 mg / kg IV or IM

Consider Morphine Sulfate 0.1 mg/kg to a maximum of 2 mg increments
IV/IO/IM/MAD

Reassess pain scale and vital signs, repeat every 5 minutes as necessary if no response or pain remains severe

2. If respiratory depression occurs, begin BVM ventilations and administer Narcan 0.4 – 2.0 mg IV push
3. If hypotension develops, administer Narcan 0.4 – 2.0 mg IV push, followed by a fluid bolus – titrate to vital signs

Part III. CARDIAC EMERGENCIES – Adult

Start High Quality CPR (100-120 compressions/minute at least 2 inches but not more than 2.4 inches & allow complete chest recoil) – attach monitor/defibrillator and may apply oxygen

Follow manufacturer recommendation (biphasic 120-120J depending on brand, monophasic 360J)

A. Ventricular Fibrillation (VF) and Pulseless Ventricular Tachycardia (pVT)

Shock

1. Perform 2 minutes of CPR and obtain IV / IO access
2. Administer Epinephrine 1 mg (1:10,000) IV / IO continue to administer during CPR, every 3 to 5 mins
3. Shock and perform 2 minutes of CPR
4. Consider supraglottic advanced airway or endotracheal intubation with capnography. Once advanced airway in place, ventilate 1 breath every 6 seconds with continuous chest compressions
5. Shock and perform 2 minutes of CPR
6. Administer Amiodarone 300 mg IV / IO, may repeat once in 3–5 minutes at 150 mg IV / IO push

OR

Lidocaine 1 – 1.5 mg / kg IV / IO, may repeat in 3-5 minutes at 0.5 mg to 0.75 mg / kg IV / IO push (max dose of 3 mg / kg)

7. Continue the shock, 2 minutes of CPR and medication administration cycle if patient still in VF of pVT
8. Treat reversible causes
9. Consider Mag Sulfate (50%) 1 – 2 gm IV / IO (For torsades de pointes or suspected hypomagnesemia)
10. Consider Sodium Bicarb 1 mEq / kg IV / IO (For suspected hyperkalemia, TCA overdose or metabolic acidosis)
11. If pulse restored, see Return of Spontaneous Circulation (ROSC) protocol

B. Asystole / PEA

1. Perform 2 minutes of CPR and obtain IV / IO access
2. Administer Epinephrine 1 mg (1:10,000) IV / IO continue to administer during CPR, every 3 to 5 mins
3. Consider supraglottic advanced airway or endotracheal intubation with capnography. Once advanced airway in place, ventilate 1 breath every 6 seconds with continuous chest compressions
4. Continue to deliver the 2-minute cycle of CPR and medication administration if patient remains in Asystole/PEA
5. Treat reversible causes
6. Consider Sodium Bicarb 1 mEq / kg IV / IO (For suspected hyperkalemia, TCA overdose or metabolic acidosis)
7. If pulse restored, see Return of Spontaneous Circulation (ROSC) protocol

C. Return of Spontaneous Circulation (ROSC)

1. If the patient regains a pulse (ROSC), reassess airway and breathing and support as needed.
2. Maintain ventilation rate at 10 breaths per minute.
3. Do not hyperventilate.
4. Goal – maintain ETCO₂ at 35-40 mmHg.
5. Titrate oxygen saturation to 92% to 98%.
 - If BP < 90 systolic, consider fluid bolus of 1 L to 2 L of NS
6. Consider Dopamine drip @ 5-20 mcg / kg / min
or Epinephrine drip @ 2 to 10 mcg / min – titrate to BP of 100 systolic
7. Acquire and transmit 12-lead ECG. If STEMI present or unstable cardiogenic shock, transport to PCI capable hospital

D. Bradycardias - For heart rates below 60 beats per minute

STABLE

Transport and OBSERVE

UNSTABLE (Verify serious signs / symptoms are due to the slow rate): go directly to transcutaneous pacing (TCP) or infusions.

- Give Atropine 1.0 mg IV push
- Repeat every 3 to 5 minutes as needed up to maximum dose of 3 mg (0.04mg/kg)

If no response and pacer is available, may begin transcutaneous pacing (TCP)

- Initiate pacing in demand mode. Start at a rate of 60-70 beats per minute. Adjust milliamps upward as needed to achieve capture. May consider increasing the rate to a maximum of 100 beats per minute to obtain a BP of 100 mmHg systolic.
- Consider patient comfort as milliamps are increased. If pacing is successful (capture is established and BP improves), consider mild sedation for discomfort related to pacing with one of the following (depending on availability):

Valium 5 mg slow IV push to a maximum of 10 mg
Versed 1 – 2 mg slow IV / IN or 5 mg IM or 5-10 mg MAD
Ativan 1 – 2 mg IV may repeat

- Consider Dopamine drip @ 5-20 mcg / kg / min
or Epinephrine drip @ 2 to 10 mcg / min – titrate to BP of 100 systolic

E. Ventricular Tachycardia with a Pulse (For wide complex (> 0.12 millisecond) tachydysrhythmias)

STABLE patient / NO serious signs and symptoms

- Start IV NS TKO
- If regular and monomorphic wide complex tachycardia, consider Adenosine 6 mg rapid IV push
- Second dose of Adenosine 12 mg rapid IV push if required
- Consider medications – choose one of the following:
 - Amiodarone infusion - 150 mg in D₅W 100 cc over 10 mins (If converts, continue Amiodarone infusion at 1 mg / minute)

OR

- Lidocaine 0.5 to .75 mg / kg IV push (If converts, start Lidocaine infusion at 1 to 4 mg / minute)

UNSTABLE patient / Displays serious signs and symptoms

- Start IV NS TKO
- Consider pre-medicating with **one** of the following (depending on availability):
 - Valium 5 - 10 mg IV push
 - Versed 1 – 2 mg slow IV push / IN or 5 mg IM or 5-10 mg MAD
 - Ativan 1 – 2 mg IV may repeat
- Synchronized cardioversion at specific device's recommended energy level to maximize first shock success, usually this is 100 J (biphasic or monophasic)

IF NO RESPONSE, continue synchronized cardioversion with increasing joule settings

IF SUCCESSFUL (at any point), maintain status with anti-arrhythmic (Amiodarone or Lidocaine infusion)

F. Paroxysmal Supraventricular Tachycardia (PSVT)

- For regular narrow complex QRS < 0.12 milliseconds

STABLE patient / NO serious signs and symptoms

- Start IV NS TKO
- Consider vagal maneuvers and fluid challenge
- Give Adenosine 6 mg rapid IVP (over 1 second) and flush the line

IF NO RESPONSE in 2 minutes

- Give Adenosine 12 mg rapid IVP (over 1-2 seconds) and flush the line

IF NO RESPONSE in 2 minutes

- If available, consider Cardizem 0.25 mg / kg IV over 5 – 10 minutes, max of 20 mg

Transport

UNSTABLE patient / Displays serious signs and symptoms

- Start IV NS TKO
- Consider pre-medicating with **one** of the following (depending on availability):
 - Valium 5 - 10 mg IV push
 - Versed 1 – 2 mg slow IV push or 5 mg IM or 5-10 mg MAD
 - Ativan 1 – 2 mg IV may repeat
- Synchronized cardioversion at specific device's recommended energy level to maximize first shock success, usually this is 50J (biphasic or monophasic)

IF NO RESPONSE, continue synchronized cardioversion with increasing joule settings

**G. Atrial Fibrillation and Atrial Flutter with Rapid Ventricular Rate
(greater than 150 beats per minute)**

- Start IV NS TKO

STABLE patient / NO serious signs and symptoms

- If available, consider Cardizem 0.25 mg / kg IV over 5 – 10 minutes, max of 20 mg

Transport

UNSTABLE patient / Displays serious signs and symptoms

- Consider fluid challenge
- Prepare for immediate cardioversion - Consider premedication with one of the following (depending on availability):
 - Valium 5 - 10 mg IV push
 - Versed 1 – 2 mg slow IV push or 5 mg IM or 5-10 mg MAD
 - Ativan 1 – 2 mg IV may repeat
- Synchronized cardioversion at specific device's recommended energy level to maximize first shock success
 - Atrial Fibrillation - usually this is 120J (biphasic)
 - Atrial Flutter – usually this is 50J (biphasic)

IF NO RESPONSE, continue synchronized cardioversion with increasing joule settings

H. Chest Pain / Suspected Cardiac Event / ACS

1. Signs & symptoms include chest discomfort suggestive of ischemia which includes pain, pressure, ache, tightness, etc.
2. Consider location / radiation as well (substernal, epigastric, arm, jaw, neck, back and shoulder)
3. Acquire and transmit 12-lead ECG
4. Start IV with NS TKO
5. ASA (4 baby) 324 mg PO
6. Consider Nitroglycerin 0.4 mg SL/Spray, every 5 minutes if systolic BP remains greater than 100 mmHg to a maximum of 3 doses
7. Consider Morphine Sulfate 2-5 mg slow IV push or MAD (if systolic BP remains greater than 100 mmHg) or Fentanyl 25-100 mcg, with goal to reduce pain or discomfort to a 0 on pain scale
8. As early as possible, call STEMI Alert to receiving hospital
9. STEMI patients are to be transported Code 3 to closest hospital with available PCI
10. Consider starting second IV enroute

I. 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. Consider CPAP
2. Upright position (45° - 90°) unless severely hypotensive
3. Give Nitroglycerin 0.4 mg (1/150 gr.) SL/Spray, every 5 minutes if systolic BP remains greater than 100 mmHg to a maximum of 3 doses
4. Consider Morphine Sulfate, 2-5 mg slow IV (to a maximum dose of 10 mg) or MAD
5. Consider Zofran (ondansetron) 4-8 mg slow IV, no less than 30 seconds, recommended to administer over 2 – 5 minutes
 - If ODT form available, may administer 4 mg ODT route

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

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

1. Correct perfusion altering dysrhythmias according to protocol guidelines
2. Consider fluid bolus 250-500 cc NS
3. Consider Dopamine drip @ 5-20 mcg / kg / min
or Epinephrine drip @ 2 to 10 mcg / min - Titrate to BP of 100 systolic
4. Consider RSI

Part IV. ACUTE TRAUMATIC EMERGENCIES

A. General Trauma Management

1. Provide airway management.
2. Consider spinal stabilization.

Appropriate patients to be stabilized with a backboard may include those with:

- Blunt trauma and altered level of consciousness
- Spinal pain or tenderness
- Neurologic complain (e.g., numbness or motor weakness)
- Anatomic deformity of the spine
- High-energy mechanism of injury and any of the following:
 - Suspected drug or alcohol intoxication
 - Inability to communicate
 - Distracting injury

Patients for whom stabilization on a backboard is not necessary include those with all of the following:

- Normal level of consciousness (Glasgow Coma Score [GCS] 15)
- No spine tenderness or anatomic abnormality
- No neurologic findings or complaints
- No distracting injury
- No suspected drug or alcohol intoxication

Patients with penetrating trauma to the head, neck, or torso and no evidence of spinal injury should not be stabilized on a backboard.

If extrication is required from a vehicle:

- After placing a cervical collar, if indicated, children in a booster seat and adults should be allowed to self-extricate.
- For infants already strapped in a car seat with a built-in harness, extricate the child while strapped in his/her car seat.

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:

- Patients who are found to be ambulatory at the scene
- Patients who must be transported for a protracted time, particularly prior to inter-facility transfer
- Patients for whom a backboard is not otherwise indicated

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.

In situations when utilization of a backboard is indicated:

- Assess circulation, sensation and movement distal in extremities
- Select appropriately sized cervical collar and place on patient
- Select and apply spinal stabilization device
- Reassess circulation sensation and movement distal in extremities
- Consider extremity stabilization

3. Helmet Removal:

Remove all helmets to avoid airway management problems according to ACS and PHTLS guidelines. The exception may be football helmets with shoulder pads in place. In situations where removal of the helmet is NOT an option, consider removing the face guard. Cervical immobilization is without the c-collar, utilizing other resources, i.e. towel rolls, commercial head immobilization devices.

4. Hemorrhage Control

Control external hemorrhage with direct pressure or tourniquet or wound packing. The use of hemostatic dressings is acceptable.

5. Hypovolemic shock

1. Apply oxygen and ventilate if necessary
2. Keep the patient warm.
3. Start 1 or 2 large bore IVs with NS (warmed if available), fluid bolus and titrate to vital signs.

6. Extremity Injuries

1. Check and record peripheral pulses and neurological status before and after manipulating or splinting fractures
2. Apply gentle in-line traction to fractures with the exception of dislocations or fractures involving joints (especially the elbow)

3. May straighten severely angulated fractures of extremities with the exception of those involving knee or elbow. For knee or elbow with neurovascular deficit

One attempt to re-align extremity to restore neurovascular status may be attempted.
4. Immobilize fractures, including joints above and below.
5. For suspected femur fracture (open or closed), consider traction splint.
6. For suspected unstable pelvic fractures, use a sheet or commercially available device to stabilize.
7. See Pain Management Protocol (page 16).

B. Head Injuries

1. Ventilate with adequate tidal volume at normal respiratory rate for patient age

If capnography available, maintain end-tidal CO₂ at 30 – 32.
2. Start large bore IV with NS enroute and titrate to vital signs

(Goal to maintain blood pressure > 90 systolic)

C. Chest Injuries

1. For tension pneumothorax **WITH EVIDENCE OF SHOCK**, provide needle decompression to the affected side
2. Perform bilateral needle decompression in all Code 99 patients with penetrating or blunt chest trauma
3. Cover all possible sucking chest wounds with occlusive dressing, remove if patient's condition deteriorates

D. Abdominal Injuries

1. Dress any penetrating wound with a dry sterile dressing
2. For evisceration: **DO NOT REPLACE** eviscerated tissue. Cover with a moist sterile dressing. Place a dry sterile dressing over moist dressing to maintain warmth.

E. Burns

1. Assess for inhalation burns, consider ET intubation
2. Protect from hypothermia
3. Remove all jewelry, especially rings, bracelets and any other constricting items
4. Thermal burns
 - Remove any clothing near area of burn wound
 - Apply clean, dry dressings or sheets
 - If an isolated burn of less than 10% BSA, consider moistening with saline - (Prevent hypothermia)
5. Chemical burns (wet)
 - Flush with large volumes of water
 - Apply clean, dry dressings or sheets
6. Chemical burns (dry)
 - Safely brush off as much of the chemical as possible
 - Flush with large volumes of water
 - Apply clean, dry dressings or sheets
7. Electrical burns
 - Apply clean, dry dressings to entrance and exit wounds
 - Apply ECG monitor and follow appropriate dysrhythmia protocol if indicated
8. Consider large bore IV with NS. Titrate to vital signs.
9. See Pain Management Protocol (Page 16).

F. Eye Injuries

1. If present, contacts should be removed before any flushing of the eyes.
2. Chemicals - Flush with Normal Saline or water continuously enroute to the receiving hospital
3. Foreign body or punctured eye:

Leave foreign body in place. Apply loose protective covering over the impaled eye. Patch the other eye. **DO NOT** apply pressure dressing.

4. Loss of eye tissue:

If possible, transport tissue with the patient. Keep eyes moist with NS
5. Keep patient from rubbing eye(s) enroute

G. Snakebite

1. Confirm the responsible snake or snakes have been appropriately and safely contained and there is no danger of additional bites to patient or EMS providers.
2. Keep patient calm and minimize patient movement. DO NOT allow the patient to walk around.
3. Splint any bitten extremity and maintain the site of bite below the level of the heart.
4. Remove any rings or jewelry on the involved extremity.
5. Apply a blood pressure (BP) cuff, as a tourniquet, one inch above the site of the bite if on an extremity. Inflate the cuff to 60 – 70 mm HG and maintain this pressure. If no BP cuff available, may use other resources as constricting bands (tourniquet, cling, Coban, etc.). Goal is to apply just enough pressure to occlude only superficial veins and lymphatics. Providers should confirm a pulse is still palpable below the bite site after application.
6. Do not delay transport to apply constricting bands, especially with transport times less than 20 minutes.
7. Do not rinse the bite site.
8. Do not cut or incise the bite site or apply ice or cold packs.

H. Crush Syndrome

This protocol should be applied to adult patients who are being rescued from being trapped by 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. Start two (2) large bore IVs of NS at TKO rate prior to extrication and releasing compression
2. Adjust one of the IVs to wide open at the time muscle compression is released
3. After the first 1000 cc of NS has been infused, mix 50 cc of Sodium Bicarbonate into the second IV bag and adjust the second IV to 500 cc per hour
4. Continue running 1st IV of NS wide open
5. 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

I. Taser Probe Removal

1. Remove one barb at a time. Stabilize the skin surrounding the Taser barb. Firmly grasp the barb and with one smooth hard jerk, pull (remove) the barb from the patient's skin.
2. Visually examine the barb tip to ensure it is fully intact. If any part of the barb remains in the patient, transport the patient to a medical facility for removal.
3. The Taser barb is considered a sharp and EMS personnel should take all precautions to avoid accidental needle sticks when removing barbs.
4. Ensure the barb is returned to the law enforcement officer.
5. Provide wound care by covering the affected area with an adhesive bandage or gauze.
6. Inform the patient of basic wound care and the need to seek additional care if signs of infection occur (redness, pain, drainage, swelling, fever).

TRAUMA CENTER CANDIDATES

The Provider should transport to the closest Trauma center with a TCC patient.

Vital Signs and Level of Consciousness

- Glasgow Coma Scale \leq 13
- Systolic BP 90 mmHg or less
- Respiratory Rate $<$ 10 or $>$ 29 Or need for ventilatory support ($<$ 20 in infant less than one year old)

Injuries

- All penetrating injuries to head, neck, torso and extremities proximal to elbow and knee
- Chest wall instability or deformity (flail chest)
- Two or more proximal long bone fractures
- Crushed, degloved, mangled or pulseless extremity
- Amputation proximal to wrist or ankle
- Suspected pelvic fracture
- Open or depressed skull fracture
- Paralysis
- Combination trauma and burns
- Suspected airway involvement and/or burns greater than 10% of total body surface

Mechanism of Injury and/or Evidence of High Energy Impact

- **Falls**
Adults: $>$ 20 ft. (one story is equal to 10 ft.)
Children: $>$ 10 ft. or 2 – 3 times the height of the child
- **High Risk Auto Crash**
Intrusion (including roof) $>$ 12-inch occupant site and/or 18 inch any site
Ejection (partial or complete) from automobile
Death in same passenger compartment
Vehicle telemetry data consistent with high risk injury
- **Auto versus Pedestrian/Bicyclist Thrown, Run Over, or with Significant ($>$ 20 mph) Impact**
- **Motorcycle Crash $>$ 20 mph**

Consider transport to the Trauma Center for the following conditions/situations:

- Patient age of 55 years old or greater
- Systolic BP $<$ 100 in patients 65 years old or older
- Anticoagulation and Bleeding Disorders
- Time Sensitive Extremity Injury
- End Stage Renal Disease Requiring Dialysis
- Pregnancy $>$ 20 weeks
- EMS Provider Judgment

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.

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

J. Mass Casualty Incidents

EMS Providers should follow established Department MCI Protocols and Procedures for a Mass Casualty Incident.

1. The Incident Commander (or designee) at the scene will notify the Trauma Centers of an MCI event with the estimated number of victims. This may be accomplished through communication to dispatch and dispatch to the Trauma Center.
2. In general, attempts should be made to transport 4 RED patients to the closest trauma center and then the next 4 RED patients to the other trauma center. Follow this pattern until a trauma center would no longer be able to accept RED patients.
3. Trauma Centers should advise IC of the number of patients they can handle.
4. GREEN patients should be transported to the other local hospitals, For a large scale incident with more than 20 critically injured / RED patients, consider transferring all Code YELLOW patients to the other hospitals.
5. Each Trauma Center will be responsible to inform the Dispatch Center when they are no longer able to accept additional patients.
6. If Trauma Centers are overwhelmed, critically injured / RED patients should then be transported to the other local hospitals.

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 forceps
3. If all the above fail, consider cricothyrotomy

B. Altered Mental Status

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

- a. Check blood sugar level
- b. Start IV with NS, titrate to vital signs
- c. If blood sugar is less than 70 and/or signs & symptoms are present which are consistent with hypoglycemia:

Administer D₁₀ solution (Dextrose 10% in 250 mL) IV or IO, titrated to effect and infused over 5-15 minutes. Consider repeating if still symptomatic.

OR

Administer 12.5 – 25 gms (25-50 ml) of D₅₀W IV push

Consider repeating D₅₀W if blood sugar remains less than 70 and patient is still symptomatic.

- d. If unable to start an IV or patient is uncooperative:

Administer Glucagon 1.0 mg IM or MAD (Response should be within 5-20 minutes)

2. Hyperglycemia with signs of dehydration

- a. Check blood sugar level
- b. If blood sugar is greater than 300 and suspected dehydration, consider fluid bolus of 250-500 NS

C. Seizure Disorder

1. Protect the patient from further injury, **DO NOT** restrain or force a bite block.
2. Check blood sugar level

If blood sugar is less than 70 and/or signs & symptoms are present which are consistent with hypoglycemia:

Administer D₁₀ solution (Dextrose 10% in 250 mL) IV or IO, titrated to effect and infused over 5-15 minutes. Consider repeating if still symptomatic.

OR

Administer 12.5 – 25 gms (25-50 ml) of D₅₀W IV push

Consider repeating D₅₀W if blood sugar remains less than 70 and the patient is still symptomatic.

If unable to start an IV or patient is uncooperative:

Administer Glucagon 1.0 mg IM or MAD (response should be within 5-20 minutes)

3. For continued seizures, consider one of the following (depending on availability):
 - Ativan 1 – 2 mg IV or 2 – 4 mg IM
 - Valium 5-10 mg IV over 2-5 minutes
 - Versed 2.5 mg slow IV push (may repeat once) or 5 mg IM or 5-10 mg MAD
4. If narcotic overdose is suspected, administer Narcan 0.4 mg to 2.0 mg IV push or other route as accessible. If the patient has a suspected opioid overdose, Narcan in larger doses is acceptable.

D. Difficulty Breathing

1. Difficulty Breathing in the presence of urticaria, wheezing and/or contact with a known allergen (acute allergic reactions/anaphylaxis)

BP <70 Systolic

- a. Start IV with NS, titrate to vital signs
- b. Epinephrine 0.1 – 0.3 mg (1:10,000) IV Push
- c. Albuterol 2.5 mg / 3 ml by nebulizer, may repeat as necessary

OR

Albuterol / Ipratropium (3.0 mg Albuterol & 0.5 mg Ipratropium) in 3 ml by nebulizer, may repeat as necessary

- d. Benadryl 25-50 mg slow IV push over 1-3 minutes
- e. Consider repeating Epi every 5-10 minutes depending on VS and respiratory status
- f. Consider Solu-Medrol 125-250 mg IV

BP >70 Systolic

- a. Consider CPAP if BP > 100 systolic
- b. Albuterol 2.5 mg / 3 ml by nebulizer, may repeat as necessary

OR

Albuterol / Ipratropium (3.0 mg Albuterol & 0.5 mg Ipratropium) in 3 ml by nebulizer, may repeat as necessary

- c. Consider Epinephrine 0.3 mg (1:1,000) IM
- d. Start IV with NS TKO, titrate to vital signs
- e. Consider Benadryl 25-50 mg slow IVP over 1-3 minutes or IM
- f. Consider Solu-Medrol 125-250 mg IV
- g. Consider repeating Epi in 5 minutes

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

- a. Consider CPAP
- b. Administer Albuterol 2.5 mg / 3 ml by nebulizer, may repeat as necessary

OR

Albuterol / Ipratropium (3.0 mg Albuterol & 0.5 mg Ipratropium) in 3 ml by nebulizer, may repeat as necessary

- c. Start IV with NS TKO, titrate to vital signs
- d. For patients in severe respiratory distress that are non-responsive to nebulizer treatments:

Consider Epinephrine 0.3-0.5 mg (1:1000) IM or SQ

Do NOT administer Epinephrine if the patient has chest pain, is being treated for angina, has a history of coronary artery disease or AMI

- e. Consider Solu-Medrol 125-250 mg IV

3. Difficulty Breathing in the presence of wheezing and/or rhonchi and history of COPD (emphysema or chronic bronchitis)

- a. Consider CPAP

If breathing adequately administer oxygen as necessary –

DO NOT WITHHOLD OXYGEN FROM ANY PATIENT

If breathing inadequately, assist ventilation with bag-valve-mask and 100% oxygen

- b. Administer Albuterol 2.5 mg / 3 ml by nebulizer, may repeat as necessary

OR

Albuterol / Ipratropium (3.0 mg Albuterol & 0.5 mg Ipratropium) in 3 ml by nebulizer, may repeat as necessary

- c. Start IV with NS TKO, titrate to vital signs
- d. Consider Solu-Medrol 125-250 mg IV

E. 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 temperature
- d. Monitor cardiac rhythm
- e. Start IV with NS TKO (use warm IV fluid if available)

2. Elevated Skin Temperature with Altered Mental Status (Hyperthermia)

- a. Remove from hot environment

For patients experiencing exertional hyperthermia or heatstroke, cold-water, whole-body immersion is the most effective technique for rapidly reducing core temperature and should be initiated as soon as possible and continued until a temperature of less than 39°C (102.2°F) is reached or resolution of signs and symptoms of heatstroke occurs.

If cold-water, whole-body immersion is not available, other forms of cooling, such as commercially prepared ice packs (to body trunk), cold showers, and fanning, should be used.

- b. Start IV with NS, titrate to vital signs

F. Poisonings / Overdoses – Consider calling Poison Control Center

Omaha area: 402-955-5555

Outside of Omaha area: 1-800-222-1222

1. Ingested Poisons

Check blood sugar level

If blood sugar is less than 70 and/or signs & symptoms are present which are consistent with hypoglycemia:

Administer D₁₀ solution (Dextrose 10% in 250 mL) IV or IO, titrated to effect and infused over 5-15 minutes. Consider repeating if still symptomatic.

OR

Administer 12.5 – 25 gms (25-50 ml) of D₅₀W IV push

Consider repeating D₅₀W if blood sugar remains less than 70 and patient is still symptomatic.

If unable to start an IV or patient is uncooperative:

Administer Glucagon 1.0 mg IM or MAD (Response should be within 5-20 minutes)

If narcotic overdose suspected, administer Narcan 0.4 mg to 2.0 mg IV push or another route as accessible. If the patient has a suspected opioid overdose, Narcan in larger doses is acceptable.

2. Known/High Suspicion of Cyclic or Tricyclic-Antidepressant Overdose – Adult and Pediatric Patients

If patient demonstrates one of the following:

- Prolonged or widening of QRS (> .10 ms)
- Ventricular dysrhythmias
- Hypotension unresponsive to fluid challenge of 500 ml NS
- Seizure with no previous history of seizures

Administer 1mEq/Kg Sodium Bicarbonate slow IV push

G. Toxic Inhalation

1. Remove from exposure

For fire related inhalation,

Consider Cyanokit 5 g in 200 mL NS over 15 mins IV or IO

2. For patients with wheezing and/or signs or signs of bronchoconstriction:

Consider Albuterol 2.5 mg / 3 ml by nebulizer, repeat as necessary

OR

Albuterol / Ipratropium (3.0 mg Albuterol & 0.5 mg Ipratropium) in 3 ml by nebulizer, may repeat as necessary

3. If only CO poisoning suspected (absence of inhalation injury) in the presence of any of the following symptoms:

- Chest pain
- Headache in pregnant patient
- Altered LOC or history of unconsciousness
- Dizziness or seizures
- Unsteady gait or difficulty speaking

Administer 100% oxygen by NRM and transport directly to Nebraska Medical Center Omaha – contact receiving hospital early and notify that patient potential candidate for hyperbaric chamber treatment

I. Signs and Symptoms of Stroke, With or Without Altered Mental Status

1. Start IV NS titrate to vital signs and acquire & transmit 12-lead ECG
2. Check blood sugar level. If blood sugar is less than 70 and/or signs & symptoms are present which are consistent with hypoglycemia:

Administer D₁₀ solution (Dextrose 10% in 250 mL) IV or IO, titrated to effect and infused over 5-15 minutes. Consider repeating if still symptomatic.

OR

Administer 12.5 – 25 gms (25-50 ml) of D₅₀W IV push

Consider repeating D₅₀W if blood sugar remains less than 70 and patient is still symptomatic.

3. If unable to start an IV or patient is uncooperative, administer Glucagon 1.0 mg IM or MAD (response should be within 5-20 minutes)
4. Perform Cincinnati Prehospital Stroke Scale and RACE scale
5. Identify and document last known well time and time of symptom onset
6. If patient has been identified as having a stroke, give early call to receiving facility of a Code 3 Stroke Alert.
 - Stroke patients are to be transported directly to an appropriate certified Comprehensive Stroke Center (CSC), within acceptable transport time.
 - If no CSC meets criteria, transport to nearest Endovascular Therapy center, or closest appropriate Stroke Center (Acute Stroke Ready Hospital or Primary Stroke Center)
 - Consider goal of < 15 minute on scene time, do not delay time in field to start an IV or obtain 12-lead ECG

Cincinnati Pre-hospital Stroke Scale

1. FACIAL DROOP: Have patient show teeth or smile.



Normal:
both sides
of the face
move equally



Abnormal:
one side of
face does not
move as well
as the other
side

2. ARM DRIFT: Patient closes eyes & holds both arms out for 10 sec.



Normal:
both arms
move the
same or both
arms do not
move at all



Abnormal:
one arm does
not move or
drifts down
compared to
the other

3. ABNORMAL SPEECH: Have the patient say "you can't teach an old dog new tricks."

Normal: patient uses correct words with no slurring **Abnormal:** patient slurs words, uses the wrong words, or is unable to speak

INTERPRETATION: If any 1 of these 3 signs is abnormal, the probability of a stroke is 72%.

Rapid Arterial Occlusion Evaluation (RACE) Scale

An EMS Assessment Tool for Acute Ischemic Stroke

(Sensitivity 85%, Specificity 68%)

Test Item	Score = 0	Score = 1	Score = 2	Patient Score
Facial Palsy	Absent	Mild	Moderate/Severe	
Arm Motor	Normal/Mild	Moderate	Severe	
Leg Motor	Normal/Mild	Moderate	Severe	
Head/Gaze Deviation	Absent	Present	N/A	
Aphasia* (if righthemiparesis)	Performs Both Tasks	Performs 1 Task	Performs Neither Tasks	
Agnosia* (if lefthemiparesis)	Patient Recognizes Arm and Impairment	Unable to Recognize Arm or Impairment	Unable to Recognize BOTH Arm and Impairment	
			TOTAL SCORE = (0-9)	

*Aphasia: Ask the patient to: 1. "Close your Eyes" AND 2. "Make a Fist"

+ Agnosia: Ask the patient and evaluate recognition of deficit:

1. While showing paretic arm: "Whose arm is this?"
2. Ask patient: "Can you lift both arms and clap?"

If RACE Score = 5 or greater, patient may have an ischemic stroke with a large vessel occlusion

Reference:

Natalia Pérez de la Ossa, et al. (2014). Design and Validation of a Prehospital Stroke Scale to Predict Large Arterial Occlusion: The Rapid Arterial Occlusion Evaluation Scale. *Stroke*, 45, 87-91. Retrieved from <http://stroke.ahajournals.org/content/45/1/87.full>

J. Nausea and/or Vomiting

1. Follow appropriate protocol for patient's condition
2. Consider Zofran (ondansetron)

Adults

4-8 mg slow IV, no less than 30 seconds, recommended to administer over 2-5 mins

If ODT form available, may administer 4 mg by ODT

Pediatrics

Under 40 kg: administer 0.1 mg/kg slow IV

Over 40 kg: administer 4 mg slow IV or 4 mg ODT

Slow IV = no less than 30 seconds, recommended to administer over 2 – 5 minutes
(do not exceed adult dose – 4 mg)

Part VI. OBSTETRICS - GYNECOLOGY

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

1. Consider IV with NS, titrate vital signs
2. If no signs & symptoms of imminent delivery and not crowning, transport patient in position of comfort, usually on left side
3. If crowning present, prepare mother for delivery
4. Allow placenta to deliver naturally. **DO NOT** forcibly extract. If the mother allows, put the baby to breast. Massage fundus. Transport all tissue passed with the patient to the receiving facility.

B. Neonatal Care (General Care Given Newborn)

1. Most newborns do not require immediate cord clamping or resuscitation and can be assessed and monitored during skin-to-skin contact with their mother after delivery.
2. Ventilation of the lungs is the priority in newborns who need support after delivery.
3. A rise in heart rate is the most important indicator of effective ventilation and response to resuscitation efforts.
4. For normal deliveries, it is reasonable to delay cord clamping until after the baby is placed on the mother, dried and assessed for breathing, tone and activity.
5. In other situations, including preterm birth, clamping and cutting of the cord may also be delayed to assessing and treating respiratory, cardiovascular and thermal management issues.

C. If uncomplicated term or late preterm birth, good tone, and breathing or crying, infant should stay with mother for routine care

1. Warm and maintain normal temperature, position the airway, clear secretions if needed, and dry the newborn. Provide ongoing assessment.
2. Assess respirations, heart rate and skin color
3. If breathing, heart rate > 100 and pink skin, assess and record APGAR score

APGAR Scale – Score Newborn at 1 Minute and 5 Minutes After Birth			
	0 Points	1 Point	2 Points
Heart Rate	Absent	<100	>100
Respiratory Effort	Absent	Slow Irregular	Strong Cry
Muscle Tone	Flaccid	Some Flexion	Active Motion
Irritability	No Response	Some	Vigorous
Color	Blue/Pale Centrally	Body Pink – Extremity Blue/Pale	Fully Pink

Continue supportive care and transport to receiving hospital

- D. If apneic, gasping or HR below 110/min**, deliver BVM ventilations at 40 / min, monitor pulse oximetry and consider ECG monitor
1. Reassess every 30 seconds, if HR remains below 100, consider endotracheal Intubation
 2. If HR below 60/min, intubate if not already done and start chest compressions with BVM ventilations and 100% oxygen.
 3. Compressions to ventilation ratio is 3:1 (pause compressions for ventilation) with goal to deliver 90 compressions and 30 ventilations per minute
 4. If heart rate remains < 60 despite adequate ventilation with 100 % oxygen and chest compressions, administer Epinephrine (1:10,000) 0.01 – 0.03 mg / kg IV or IO
 5. Epinephrine should be given rapidly and repeated every 3 to 5 minutes
 6. Consider fluid bolus at 10-20 mL / kg IV or IO

E. Childbirth Complications

1. If a prolapsed cord, position the patient with hips elevated as much as possible. Attempt to relieve pressure on the cord by using a gloved hand to raise the presenting part of the infant off the cord, continue during transport. If possible, apply moist sterile dressings to the exposed cord to maintain temperature.
2. If breech delivery and unable to deliver head, place gloved hand in the vagina with palm towards the infant's face. Form a "V" with the index and middle fingers on either side of infant's mouth and nose and push the vaginal wall away from the infant's face. If necessary, continue during transport.
3. If arm or leg presentation, position patient with hips elevated and transport immediately
4. If significant hemorrhage, place dressings to monitor bleeding and elevate hips
5. Start 1 or 2 IVs with NS and titrate to vital signs

F. Postpartum Hemorrhage

1. Massage the fundus of the uterus and put baby to breast

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

1. Position patient on her left side
2. If seizing, consider Magnesium Sulfate (50 %) 5 gms in 50 cc D₅W with a minidrip infusion set. **Infusion must be over a minimum of 5 minutes.**

If still seizing after 5 minutes, consider repeating at half dose:

Mag Sulfate (50%) 2.5 gms in 50 cc D₅W with a minidrip setting. Infuse over a minimum of 5 minutes.

3. For continued seizures, consider one of the following (depending on availability):
 - Ativan 1 – 2 mg IV or 2 – 4 mg IM
 - Valium 5-10 mg IV over 2-5 minutes
 - Versed 2.5 mg slow IV push (may repeat once) or 5 mg IM or 5-10 mg MAD

Part VII. PEDIATRICS

A. General Guidelines

- This protocol acknowledges that age limits for pediatric patients should be flexible and that the exact age of a patient is not always known. A Pediatric patient is defined as age up to 15 years. 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.
- See General Operations section (Refusal of Care) for patient consent and refusal guidelines
- Parents / caregivers should be allowed to stay with children during assessment and transport, if appropriate.
- EMS providers are strongly encouraged to use current length-based resuscitation tapes or equivalent system for dosage guidelines and equipment recommendations for pediatric patients.
- If specific protocol is not found in the Pediatric Section, EMS providers should follow appropriate Adult Protocol, adjusting all medications and interventions to pediatric dosages and guidelines.
- For all medications, the pediatric maximum dose is NOT TO EXCEED the adult dose.

B. Airway Management and Oxygen Therapy

- EMS providers should administer high flow oxygen by mask as needed.
- Do not hyperextend the neck in newborns and infants
- Consider appropriately sized oral airway for unconscious patients
- When ventilation is needed, use appropriately sized bag valve mask device
- Ventilation rate for all pediatric patients is 1 breath every 2 to 3 seconds (20-30 breaths per minute)
- May consider appropriately sized supraglottic airway or endotracheal intubation (may not be necessary when ventilations are effectively maintained with BVM)
- Cuffed endotracheal tubes are preferred

C. IV Therapy / IO Therapy

- For pediatric trauma patients and for all types of shock, attempt IV starts enroute. Do not delay transport to establish an IV with a code 3 pediatric patient.
- If available, warmed IV fluids are preferred for pediatric trauma patients.
- For pediatric patients that are in critical or unstable condition, permissible to defer IV attempts and go straight to establishing an IO.

D. General Guidelines (Pediatric Cardiac Arrest) reference AHA Guidelines

1. High quality pediatric CPR is rate of 100-120/min, compression depth is 1.5 inches for infant and 2.0 inches for children and allow for complete chest recoil
2. Minimize interruptions in compressions and change compressor every 2 mins
3. If no advanced airway, 15:2 compression to ventilation ratio, if advanced airway, continuous high-quality compressions and ventilate every 2-3 seconds
4. If respirations are absent or inadequate, begin assisted ventilations using a bag-valve-mask with 100% oxygen
5. Begin chest compressions if no pulse or bradycardia (< 60 beats/min) is causing severe cardiorespiratory compromise as evidenced by poor perfusion, hypotension, respiratory difficulty or altered mental status
6. Apply ECG monitor and follow standing orders as indicated using protocol guidelines.
7. Treat reversible causes. Consider drug overdose and/or hypoglycemia as precipitating factors in cardiopulmonary arrest. Treat confirmed hypoglycemia.
8. If BVM ventilation is effective, do not delay transport to establish supraglottic airway or endotracheal intubation

E. Pediatric Cardiac Arrest: V-Fib / Pulseless Ventricular Tachycardia

1. Start High Quality CPR, BVM and apply oxygen
2. Shock # 1 at 2J / kg
3. Immediately perform CPR for 2 minutes after defibrillation
4. Establish IV or IO at any time without interrupting CPR
5. Administer Epinephrine 0.01 mg / kg (1:10,000) max dose 1mg IV or IO every 3 to 5 minutes
6. Shock # 2 at 4J / kg
7. Immediately perform CPR for 2 minutes after defibrillation
8. Repeat shocks at 4J / kg, continue with 2 minutes of CPR between each shock
9. Consider **ONE** of the following:
Amiodarone 5 mg / kg bolus IV or IO, may repeat up to 3 total doses
OR
Lidocaine 1 mg / kg IV or IO

F. Pediatric Cardiac Arrest: Asystole / PEA

1. Start High Quality CPR, BVM and apply oxygen
2. Confirm rhythm is asystole or PEA
3. Establish IV or IO at any time without interrupting CPR
4. Administer Epinephrine 0.01 mg / kg (1:10,000) max dose 1mg IV or IO every 3 to 5 minutes
5. Continue 2-minute CPR cycle, pulse and rhythm check less than 10 seconds
6. Consider treatable causes in the field:
 - a. Hypovolemia, administer fluid boluses at 20 cc / kg
 - b. Tension Pneumothorax, consider needle decompression
 - c. Hypothermia, provide warming measures

G. Pediatric General Cardiac Dysrhythmia

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) as needed.

Stable Pediatric Patient

If tolerating the rhythm, monitor and provide supportive care without medications or electrical intervention

Unstable Pediatric Patient

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

H. BRADYCARDIA with signs and symptoms of poor perfusion

1. Begin chest compressions if bradycardia (< 60 beats/min) is causing severe cardiorespiratory compromise as evidenced by poor perfusion, hypotension, respiratory difficulty or altered mental status
2. Maintain patent airway and assist breathing with BVM and oxygen as necessary
3. Cardiac monitor to identify rhythm, monitor pulse, BP and pulse oximetry
4. Establish IV or IO at any time without interrupting CPR
5. Administer Epinephrine 0.01 mg / kg (1:10,000) max dose 1mg IV or IO every 3 to 5 minutes
6. Consider Atropine 0.02 mg / kg IV or IO, may repeat once (minimum Atropine dose is 0.1 mg) - Maximum single dose 0.5 mg
7. Consider Transcutaneous Pacing (TCP), premedicate if possible, with one of the following medications:
 - a. Diazepam/Valium 0.04 to 0.2 mg/kg IV, IO or rectal, may repeat ½ initial dose to maintain sedation
 - b. Midazolam/Versed 0.1 mg / kg IV, IO or MAD to a maximum dose of 2.5 mg
 - c. Lorazepam/Ativan 0.05 mg / kg IV or IO, may repeat
8. Identify and treat causes - pediatric bradycardia is often the result of hypoxia, hypothermia or medications

I. VENTRICULAR TACHYCARDIA WITH A PULSE

1. Evaluate QRS duration, if WIDE (>0.09 sec) and **Stable Patient:**
 - a. Establish an IV or IO of NS
 - b. For regular monomorphic wide complex tachycardia:
 - c. Consider Adenosine 0.1 mg / kg rapid IV or IO push (max dose is 6 mg)
 - d. Consider second dose of Adenosine 0.2 mg / kg rapid IV or IO push (max 2nd dose is 12 mg)
2. Evaluate QRS duration, if WIDE (>0.09 sec) and **Unstable Patient:**
 - a. Establish an IV or IO of NS
 - b. Consider synchronized cardioversion at 0.5 – 1 joule / kg, sedate if needed but don't delay cardioversion.
 - c. Pre-medicate if possible, with one of the following medications:
 - Diazepam/Valium 0.04 to 0.2 mg/kg IV, IO or rectal, may repeat ½ initial dose to maintain sedation
 - Midazolam/Versed 0.1 mg / kg IV, IO or MAD to a maximum dose of 2.5 mg
 - Lorazepam/Ativan 0.05 mg / kg IV or IO, may repeat
 - d. If not effective, increase to 2J / kg synchronized cardioversion

J. PSVT with signs and symptoms of poor perfusion

1. Probable SVT:
 - a. P waves absent/abnormal
 - b. RR interval regular
 - c. Infant rate usually ≥ 220 /min
 - d. Child rate usually ≥ 180 /min
2. Evaluate QRS duration, if NARROW (<0.09 sec) and **Stable Patient**:
 - a. Establish an IV or IO of NS
 - b. Consider fluid bolus at 20 cc / kg, repeat as needed to increase perfusion
 - c. Consider vagal maneuvers
 - d. Administer Adenosine 0.1 mg / kg rapid IV or IO push (max dose is 6 mg)
 - e. May repeat with 0.2 mg / kg rapid IV or IO push (max dose is 12 mg)
3. **If IV/IO access is not available, Unstable Patient or Adenosine is ineffective:**
 - a. Perform synchronized cardioversion at 0.5 – 1 joule / kg, sedate if needed but don't delay cardioversion.
 - b. Premedicate if possible, with one of the following medications:
 - Diazepam/Valium 0.04 to 0.2 mg/kg IV, IO or rectal, may repeat $\frac{1}{2}$ initial dose to maintain sedation
 - Midazolam/Versed 0.1 mg / kg IV, IO or MAD to a maximum dose of 2.5 mg
 - Lorazepam/Ativan 0.05 mg / kg IV or IO, may repeat
 - c. If not effective, increase to 2J / kg synchronized cardioversion

K. Difficulty Breathing:

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

- a. Maintain patient in position of comfort
- b. If patient in respiratory arrest, begin ventilations with a BVM, consider advanced airway
- c. Administer Albuterol 2.5 mg / 3 ml by nebulizer, repeat as needed

OR

Albuterol / Ipratropium (3.0 mg Albuterol & 0.5 mg Ipratropium) in 3 ml by nebulizer, may repeat as necessary

- d. For patients in severe respiratory distress that are non-responsive to nebulizer treatments:

Consider Epinephrine 0.01 mg / kg (1:1,000) IM to a maximum dosage of 0.3 mg

May repeat Epinephrine in 20 minutes if necessary

- e. Solu-Medrol 2 mg / kg to a max of 125 mg IV/IO

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

- a. Maintain patient in position of comfort, try to keep patient calm
- b. Administer oxygen as needed
- c. If unconscious, position supine and ventilate with BVM
- d. May consider racemic epinephrine or epinephrine 1mg/ml (1:1000) nebulized as a first line therapy
- e. Consider 0.5 to 0.75 ml of a 2.5% racemic epinephrine nebulizer treatment **OR**

Consider 1mg/ml (1:1000) epinephrine nebulizer treatment

-Age 4 and under 0.5ml/kg to max of 2.5ml in 3ml ns nebulized

-Age 5 and older 0.5ml/kg to max of 5ml in 3 ml ns nebulized

- 3. Difficulty Breathing in the presence of urticaria, wheezing and/or contact with a known allergen (acute allergic reaction)**
 - a. Administer Albuterol 2.5 mg / 3 ml by nebulizer, may repeat as necessary
 - b. Consider IV of NS
 - c. For moderate and severe reactions:
 - d. Consider Diphenhydramine 1 – 2 mg/kg IV/IO/IM
 - e. Maximum dose of 50 mg
 - f. Consider Solu-Medrol 2 mg / kg to a max of 125 mg IV/IO
 - g. Consider RSI

- 4. Difficulty Breathing in the presence of Upper Airway Obstruction**
 - a. Attempt to relieve obstruction according to the AHA Foreign Body Airway Obstruction (FBAO) guidelines
 - b. If above maneuvers unsuccessful, attempt to visualize obstruction with laryngoscope and remove with Magill forceps
 - c. Administer oxygen, monitor
 - d. If all the above fail, consider cricothyrotomy
 - e. Consider IV with NS TKO enroute

L. Seizures - recurrent or prolonged

1. Check blood sugar level.
2. Protect patient from further injury, **DO NOT** restrain or force bite block
3. Start IV with NS and titrate to vital signs
4. If blood sugar is <70 and patient is four (4) years or older:
Administer D₅₀W (1 gm / kg) up to 25 grams
OR
D₁₀ in 250 ml NS titrate to effect
5. If blood sugar is <70 and patient is three (3) years or younger:
Administer D₂₅W (Dilute 1:1 D₅₀W with NS or sterile water) which is a corresponding volume of 2 – 4 ml / kg
OR
D₁₀ in 250 ml NS titrate to effect
6. If unable to start IV, administer Glucagon:
Patient under 25 kg (55 lbs): 0.5 mg IM or MAD
Patient over 25 kg (55 lbs): 1 mg IM or MAD
7. For recurrent, prolonged or continued seizures, consider one of the following medications:
 - Diazepam/Valium 0.04 to 0.2 mg/kg IV, IO or rectal, may repeat ½ initial dose to maintain sedation
 - Midazolam/Versed 0.1 mg / kg IV, IO or MAD to a max dose of 2.5 mg
 - Lorazepam/Ativan 0.05 mg / kg IV or IO, may repeat
8. If narcotic overdose suspected, Narcan 0.1 mg/kg IV/IO/MAD to max 4 mg
9. Consider advanced airway if Narcan fails to improve respiratory status

M. Altered Mental Status

1. Check blood sugar level.
2. Start IV with NS and titrate to vital signs
3. If blood sugar is <70 and patient is four (4) years or older:
Administer D₅₀W (1 gm / kg) up to 25 grams
OR
D₁₀ in 250 ml NS titrate to effect
4. If blood sugar is <70 and patient is three (3) years or younger:
Administer D₂₅W (Dilute 1:1 D₅₀W with NS or sterile water) which is a corresponding volume of 2 – 4 ml / kg
OR
D₁₀ in 250 ml NS titrate to effect
5. If unable to start IV, administer Glucagon:
Patient under 25 kg (55 lbs): 0.5 mg IM or MAD
Patient over 25 kg (55 lbs): 1 mg IM or MAD
6. If narcotic overdose suspected, Narcan 0.1 mg/kg IV/IO/MAD to maximum 4 mg
7. Consider advanced airway if Narcan fails to improve respiratory status
8. If blood sugar greater than 300 and signs & symptoms of dehydration are present, treat with IV fluid bolus of NS at 10-15 cc/kg

Appendix A - SPECIAL CONSIDERATIONS

The Special Considerations Section consists of protocols that require extensive review, modification, planning and training by the Medical Director prior to implementation. Extensive education of EMS personnel will be required to institute these protocols. The protocols in this section **should not** be applied in an EMS system without Medical Director involvement.

A. RSI

Patient Meets At Least One Indication Criteria

1. Patient unable to protect airway
2. Respiratory failure or rapidly decreasing respiratory status
3. Impending airway compromise
4. Head injuries, major Stroke with decreased LOC & inability to protect airway
5. GCS \leq 8 or rapid decreasing GCS

Risk Versus Benefit

Assessment Considerations

1. Delay of RSI will lead to aspiration, respiratory collapse and/or hypoxia
2. Distance or time to receiving hospital is extended

Difficult Intubation Considerations (these factors all increase the risk of an unsuccessful procedure)

1. Pediatric patients
2. Bariatric patients
3. Entrapped patients
4. Mouth opening under 3 finger widths
5. Decreased visualization of uvula
6. Tip of chin to neck w/o displacing tissue under 3 finger widths
7. Base of mandible to hyoid w/o displacing tissue under 3 finger widths

Backup advanced airway options available?

An advanced non-visualized airway of the appropriate size for the patient is immediately available.

BENEFIT > Risks and patient do meet criteria, continue with RSI procedure.

RISK > Benefit and patient does not meet criteria, do NOT perform RSI procedure.

Rapid Sequence Intubation Procedure
<p>Criteria for Procedure</p> <ul style="list-style-type: none">• GCS \leq 8• Patient unable to protect airway• Respiratory failure/ rapidly decreasing respiratory status• Head injuries, major Stroke with decreased LOC and inability to protect airway• Impending airway compromise – such as airway burns, edema, trauma to larynx•
<p>Assess and Monitor</p> <ul style="list-style-type: none">• For difficult airway – intubation• Risk vs. Benefit of procedure• Monitor patient's vital signs<ul style="list-style-type: none">○ Pulse, BP, Respiratory Rate○ Pulse Oximetry, ETCO₂ & EKG
<p>Prepare</p> <ul style="list-style-type: none">• Intubation equipment and select tube size• Backup advanced non-visualized airway in the correct size is available If alternate advanced airway is not available – DO NOT attempt procedure• Surgical or needle cricothyrotomy equipment available• Suction available• Establish IV or IO access• Consider anti-emetic
<p>Oxygenation</p> <ul style="list-style-type: none">• Pre-oxygenate with 100% FiO₂ for 2-3 minutes with BVM OR Pre-oxygenate with 100% FiO₂ for 5 minutes by NRM
<p>Pre-sedation/induction medication considerations</p> <ul style="list-style-type: none">• For signs and symptoms/ high index of suspicion of increased ICP<ul style="list-style-type: none">○ Consider lidocaine 1.0-1.5mg/kg• For pediatric patients<ul style="list-style-type: none">○ Consider atropine 0.01 to 0.02mg/kg to a max of 0.5mg (minimum dose 0.1mg)• When using ketamine as sedative/induction agent<ul style="list-style-type: none">○ Consider atropine 0.01 to 0.02mg/kg to a maximum of 0.5mg for pediatric patients○ Consider atropine 0.5 mg for adult patients

Administer paralytic agent

- Administer succinylcholine
 - 1.0 to 1.5 mg/kg IV/IO – adult
 - 2.0 mg/kg IV/IO – small children
- May consider Rocuronium 0.6 – 1.2mg/kg when
 - Succinylcholine is contraindicated
 - Succinylcholine is unavailable
 - Or PMD has authorized Rocuronium as primary agent

Assess for jaw relaxation and apnea and decreased resistance to BVM ventilation

Intubation

- Perform oral intubation
- If not successful in 15 seconds perform BVM ventilation and reattempt
- If unsuccessful after 3 attempts use alternate advanced airway

Confirm placement

- Visualized tube pass through vocal cords
- Observe chest rise and fall
- Auscultate for lung sounds – no epigastric sounds
- Positive ETCO₂

Ventilate and secure tube

- Ventilate patient at appropriate rate and depth
 - Goals – O₂ Sat 94 to 99% and EtCO₂ 35 to 45
 - Consider use of PEEP and PIP if available
- Secure tube with commercial device or other method
- Place rigid c-collar even if no trauma to assist in maintaining neutral position
- Consider soft restraints to patient's arms to prevent unplanned extubation

Reassess

- Vital Signs
- Adjust Rate and Depth of Ventilations as Needed
 - Goals – O₂ Sat 94 to 99% and EtCO₂ 35 to 45
 - Consider Use of PEEP and PIP If Available
- Confirm tube placement after each patient move

Considerations

a. Succinylcholine (Anectine) **contraindications:**

- Known Hyperkalemia
- Pseudocholinesterase Deficiencies
- Known history of Malignant Hyperthermia
- History of myasthenias (muscular dystrophy, multiple sclerosis or myasthenia gravis)
- History of chronic paralysis, renal failure, digitalis toxicity
- Burns > 8 hours old

b. If unable to ventilate adequately with BVM, consider alternative airway device

c. If patient goes into cardiac arrest after administration of Succinylcholine, defibrillate if v-fib or pulseless v-tach, then:

Consider Sodium Bicarbonate

Adults: 1-2 mEq / kg IV push

Peds: 1 mEq / kg IV push

Consider Mag Sulfate (50%)

Adults: 2 gm slow IV push

d. Follow Midlands Protocol for cardiac arrest and dysrhythmia management

Medication Name Generic (Brand Name)	Adult Dose **DOSE FOR RSI	Pediatric Dose *Maximum Dose Not To Exceed Adult Dose	Special Information
<i>Benzodiazepine Class</i>			
Midazolam (Versed) *Most Preferred of this Class	2.0mg – 6mg IV/IO/IM May repeat 2mg to maintain sedation	0.2 to 0.3mg/kg (6 Mo and older) May repeat ½ initial dose to maintain sedation	
Diazepam (Valium)	5 to 10mg IV/IO May repeat 2 to 4mg IV/IO to maintain sedation	0.04 – 0.2 mg/kg IV./IO (6 Mo to 12 years) May repeat to maintain sedation	
Lorazepam (Ativan)	2.0 – 4.0 mg IV/IO May repeat 1 to 2mg to maintain sedation	0.1 mg/kg to max of 4 mg May repeat ½ initial dose to maintain sedation	
<i>Carboxylated Imidazole Derivative Class – Most Preferred Alternative to Benzodiazepine Class for Adult Sedative/Induction Acceptable Alternative to Benzodiazepine Class for Pediatric Sedative/ Induction</i>			
Etomidate	0.3 mg/kg IV/IO May Repeat 0.1 -0.15 mg/kg to maintain sedation	Avoid if patients 10 years old or younger	
<i>NMDA Receptor Antagonist Class – Acceptable Alternative to Benzodiazepine Class for Adult and Pediatric Sedative/Induction</i>			
Ketamine	1.5 – 2 mg/kg IV/IO 0.25 – 0.5 mg/kg every 5 to 10 minutes to maintain sedation	For Patient's Over 6 Months Old 2.0 – 4.0 mg/kg IV/IO 0.25 – 0.5 mg/kg every 5 to 10 minutes to maintain sedation	To prevent hypersalivation, consider administration of Atropine 0.02 mg/kg with a minimal dose of 0.1 mg and a maximum of 0.5 mg for Pediatric 0.5mg Single Dose for Adults

Nerve Agent / Organophosphate Poisoning – Mark 1 Kits (Adult), DuoDote Auto-injectors (Adult) Valium (diazepam) Auto-injectors (Adult) and AtroPen auto-injector (Pediatric)

Purpose: To establish guidelines concerning the local EMS response to a WMD (Weapons of Mass Destruction) event and to provide local EMS providers with access to pharmaceutical resources and guidance on the use of auto-injectors (Mark I Kits, DuoDote, Diazepam and pediatric AtroPens).

EMS providers are reminded to:

1. Consider scene safety and first responder safety as primary goal.
2. Consider implementing local protocol for mass casualty incidents and/or requesting the opening of the county EOC (Emergency Operations Center) in the event of a mass casualty incident to assist in assembling treatment resources and facilitating the transportation of large numbers of patients.
3. Contact the Nebraska Regional Poison Center for immediate assistance at **1-800-222-1222**.

Until the Douglas County EOC Medical Table is activated and opened, the Poison Center will serve as the point of contact for local first responders and hospitals to access the stockpiles distributed throughout the community. DuoDotes and Mark 1 Kits are available on most area rescue squads for self administration, in small cache supplies at several local fire departments, in other local stockpiles and in federally supplied assets in the Omaha Metropolitan Medical Response System (OMMRS) area for treatment of victims of nerve agent exposures.

The requesting agency will be responsible for providing the transportation of the product to the scene locally. This may often be delegated to the 911 Center by pre-established protocol. The Nebraska State Patrol may serve as the medium for movement across jurisdictions that do not already have established plans or when movement of product must come from other assets across the state.

Mark I Kit: For adult patients and pediatrics over 84 lbs. (38 kg)

1. Atropine auto-injector (2 mg total dose per injection)
2. Pralidoxime chloride auto-injector (600 mg total dose per injection)

DuoDote: For adult patients and pediatrics over 84 lbs. (38 kg)

1. *Atropine (2.1 mg total dose per injection)
*Pralidoxime chloride (600 mg total dose per injection)

* **DuoDote is a newer version of the Mark 1 Kit and contains the same medications and doses as the Mark 1 Kit. The only difference is the DuoDote contains both atropine and pralidoxime chloride in a single auto-injector for IM injection.**

AtroPen: For pediatric patients up to 84 lbs. (38 kg)
(1) Atropine auto-injector (0.5 mg total dose per injection)

Diazepam (Valium): For adult patients
(1) Diazepam auto-injector (10 mg total dose for injection)

Nerve Agents: A classification of potential WMD chemical agents that might be used in a terrorist attack. Examples include Tabun, Sarin, Soman and VX.

Organophosphates: Insecticides such as Malathion, Diazinon and Parathion

Nerve Agent or Organophosphate Poisoning Signs/Symptoms by Severity:

Mild Constricted (pinpoint) pupils, excessive sweating, tearing, drooling, runny nose/nasal secretions, mild chest tightness, mild shortness of breath, chest tightness

Moderate Severe chest tightness, wheezing, profuse airway secretions, respiratory distress, muscle weakness, vomiting, abdominal cramps and diarrhea

Severe Unconsciousness, coma, seizures, no muscle tone (flaccid paralysis), cyanosis, respiratory failure, apnea

Authorization for Use

The auto-injectors are authorized for use by the local Physician Medical Directors for the departments that have received them and for use by personnel who have received adequate training (by the Physician Medical Director or designee) on the recognition and treatment of nerve and/or organophosphate agent exposure in the event of a chemical release. In the case of a nerve agent incident, it would be specific to the disaster setting. Organophosphate exposure may be treated as an isolated case with the Mark 1 kits or DuoDotes.

Pediatric strength atropine (AtroPen 0.5 mg) and diazepam auto-injectors are to be distributed only to paramedic staffed rescue squads.

Guidelines for Use

The decision to use the Mark I kit or DuoDote is based on signs and symptoms of the patient, regardless if the patient is an EMS provider, firefighter or a civilian. The goal of using the auto-injectors is directed at relieving respiratory distress and alleviating seizures. The suspicion or identified presence of a nerve agent is not sufficient reason on its own to warrant the administration of the medication.

EMS providers/firefighters may self-administer the Mark 1 kit or DuoDote. The pre-measured doses in the auto-injectors are generally safe for most adults suffering from a nerve agent or organophosphate exposure.

Paramedics are reminded to review the indications for use and to only treat victims with an auto-injector that are exhibiting signs and symptoms from a nerve agent or organophosphate exposure.

Mark 1 Kit / DuoDote Dosage Guidelines for Adults

Each Mark 1 Kit contains two auto-injectors: Atropine 2 mg and Pralidoxime Chloride 600 mg. Each DuoDote contains the same medications in a single auto-injector. Dosing is based on signs & symptoms.

For **MILD** signs & symptoms, administer **one** Mark 1 Kit **OR** **one** DuoDote.

For **MODERATE** signs & symptoms, administer **two** Mark 1 Kits **OR** **two** DuoDotes.

For **SEVERE** signs & symptoms, administer **three** Mark 1 Kits **OR** **three** DuoDotes.

Diazepam (Valium) Dosage Guidelines for Adults

Each Valium auto-injector contains Diazepam 10 mg

For SEIZURES and/or SEVERE signs & symptoms, administer one Valium auto-injector
May repeat every 5 – 10 minutes as needed

AtroPen Dosage Guidelines for Children

Each AtroPen auto-injector contains Atropine 0.5 mg

Dosing is weight based:

- 13 to 40 lbs. (6-18 kg), administer one AtroPen, repeat every 5-10 mins as needed
- 41 to 62 lbs. (19-28 kg), administer two AtroPens, repeat every 5-10 mins as needed
- 63 to 84 lbs. (29-38 kg), administer three AtroPens, repeat every 5-10 mins as needed
- Greater than 84 lbs. (>38 kg), administer one Mark 1 Kit **OR** one DuoDote, repeat every 5-10 mins as needed

Mark 1 Kit Injection Procedure

1. Remove the Mark I kit from the protective foam case.
2. With the non-dominant hand, hold the kit so that the larger injector is on top and position the kit at eye level.
3. With the other hand, check the injection site (outer thigh or buttocks) for buttons or objects in the pocket, which may interfere with the injections.
4. Grasp the small (green tipped) injector (atropine) with your thumb and first two fingers.
5. Pull the injector out of the clip with a smooth motion.
6. Hold the injector like a pen, between your thumb and first two fingers.
7. Position the green tip of the auto injector against the injection site (thigh or buttocks).
8. Apply firm even pressure (not a jabbing motion) to the injector until it pushes the needle into the site. Hold the injector firmly in place for at least 10 seconds.
9. Carefully remove the auto injector and place it into a sharps container. In an emergency, and no sharps container available, bend the used needle over, or blunt the end to avoid any accidental needle sticks.
10. Pull the 2-PAM auto injector (larger, black tipped one) out of the clip and inject using the same procedure outlined above.
11. Document the number of auto injectors administered on the patient care report, on the triage tag or attached the used injector(s) to the patient.

DuoDote Injection Procedure

1. Remove the DuoDote from the plastic pouch.

2. Place the DuoDote in your dominant hand. Firmly grasp the center of the DuoDote with the green tip pointing down. Do not touch the green tip.
3. With your other hand, pull off the gray safety release. The DuoDote is now ready to be administered.
4. Make sure pockets at the injection site are empty.
5. Firmly push the green tip straight down against the outer thigh. Continue to firmly push until you feel the auto-injector trigger.
6. Hold the DuoDote in place for 10 seconds.
7. Remove the auto-injector from the thigh and look at the green tip. If the needle is visible, the drug has been administered.
8. If the needle is not visible, check to be sure that the gray safety release has been removed and repeat the procedure.
9. Place the auto-injector in a sharps container.
10. Document the number of auto injectors administered on the patient care report, on the triage tag or attached the used injector(s) to the patient.