Paramedic Treatment Protocols

WEST VIRGINIA
Department of
Health & Human Resources
BUREAU FOR PUBLIC HEALTH
Office of Emergency Medical Services

West Virginia Office of Emergency Medical Services EMS Protocols

2018 EDITION

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Preface

The first set of West Virginia EMS Statewide ALS protocols was a monumental event in the history of EMS in West Virginia. These protocols are the product of many years of discussion, collaboration, debate, revisions, and hard work on the part of a legion of dedicated professionals. They are evidence of the ongoing effort to continually improve emergency medical care in West Virginia.

Unified statewide protocols had been a dream of countless EMS providers, administrators, and medical directors for many years. The development of statewide protocols began in the mid-1990s with the early development of Statewide EMT-B and First Responder protocols. The experience and lessons learned from that project led to the realization that the same could be accomplished with ALS protocols as well.

Over the last thirty years, Emergency Medicine has matured as a specialty. This has led to fewer and fewer localized variations in standards of emergency care. From a patient care prospective, these more uniform standards should be applicable to EMS on a statewide basis. To be sure, many individual providers who work in different regions of the state have faced the challenge of learning several different protocols for the treatment of a patient with the same condition.

In the spring of 2000, building on the success of the Statewide EMT-B and First Responder Protocols, the State Critical Care Committee unanimously approved the concept to begin development of Statewide ALS protocols. Realizing the magnitude of this endeavor, the Regional Program Directors developed the early framework documents which combined the regional protocols into common state protocols. A list was developed and refined by the Medical Directors outlining the title to be used for each needed protocol.

In February 2001, a protocol work group composed of EMS representatives from every region of the state convened at Flatwoods for an intense two day session. During this session, participants were instructed to use all available resources to construct a set of draft Statewide ALS Protocols. They were mandated to put old regional differences aside and cooperatively write the best patient care protocol possible. This effort produced the first draft of 54 ALS Protocols. This first draft was circulated across the state and reviewed by numerous personnel. Over 1,000 corrections and comments were received and reviewed. These comments were condensed into 13 pages of specific issues requiring discussion, debate, and action by the State Critical Care Committee. With input from the Medical Directors and providers in their region, the Regional Medical Directors discussed and debated these issues. The ultimate goal was consistent quality patient care and consensus was reached and the second draft was completed. Further refinement led to approval of the final version by the State Critical Care Committee in October and December of 2001. The West Virginia EMS Statewide EMS Protocols went into effect on February 15, 2002.

This was the beginning of unified protocols for EMS care in West Virginia and has led to additional protocols and modifications. The most recent revision began in December 2013. Forty-six representatives from the EMS community met in Flatwoods, WV. Five subcommittees were formed to review and update Trauma, Medical, Pediatric, Cardiac and Children with Special Needs protocols. The members were instructed to review and make changes, remove outdated material, or review and approve. Several meetings occurred during the first seven months of 2014. Protocols were developed and compiled into a new format. These revisions were submitted to the Regional Medical Directors and Medical Policy and Care Committee in July 2014. Multiple minor corrections were made over the following six months.

EMS personnel who use these protocols on a daily basis are encouraged to provide suggestions for improvement and feedback through their Agency Medical Director to their Regional Medical Director.

These protocols are a critical part of our quest to provide the citizens and visitors of the State of West Virginia the finest emergency medical care in the country.

Michael Mills, D.O., FACEP
West Virginia State EMS Medical Director
December 2014

Acknowledgments

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Document Support:

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Special thanks to all the EMS personnel who contributed their comments during the development of these protocols.

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WVOEMS Treatment Protocols

Using the Protocols

The West Virginia EMS Statewide Protocols are designed to enable EMS personnel to provide a wide variety of treatments to many types of patients. Understanding the organization and terminology of the protocols is important and will vastly improve the usability by the EMS provider.

Protocol Layout:

The following information is found at the top each protocol page contained in boxes:

- WVOEMS logo
- Type of Protocol
- Protocol Number
- Title of Protocol

Example:

The following information is found at the bottom each protocol page contained in boxes:

- Edition Date
- West Virginia Office of Emergency Medical Services - Statewide Protocols
- Number of pages within protocol

Example:

Protocol Numbering System:

Each Protocol is assigned a four (4) digit number. The first digit represents the level of care of the provider using the protocol. The second digit specifies the category of care. The last two digits indicate the specific protocol number.

Using the Protocols

Example:

Chest Pain Protocol 4202

4 - Level of Care = Paramedic
2 - Category of Care = Cardiac
02 - Specific Protocol Number = Chest Pain

Classifications of Levels of Care: *(first digit)*

1000 - CCT-RN
2000 - CCT-Paramedic
3000 - C3-IFT (Interfacility Transport Paramedic)
4000 - Paramedic
5000 - Open
6000 - EMT

Note: 7, 8 and 9 thousand series are used as follows:
7000 - BLS Procedural Protocols
8000 - ALS Procedural Protocols
9000 - Special Operational Policies and Protocols

Category of Care: *(second digit)*

4**1**00 - Trauma
4**2**00 - Cardiac
4**3**00 - Respiratory
4**4**00 - Pediatrics
4**5**00 - Environmental
4**6**00 - Medical
4**7**00 - Special Healthcare Needs
4**8**00 - Open
4**9**00 - Special Treatment Protocols

Initial Treatment / Universal Patient Care:

The Initial Treatment / Universal Patient Care protocol is the first protocol within these guidelines. It is to be used universally on all patients as a starting point for assessment and treatment prior to moving on to a specific protocol. This protocol is designed to establish support at the beginning of patient care while identifying specific signs and symptoms that will direct the EMS provider to a more complaint specific protocol.

Using the Protocols

Special Shading and Icons:

The following shaded boxes with icons indicate that specific contact is required with **Medical Command** (red telephone) or the **Medical Command Physician** (physician) in order to perform specific treatments.

Examples:

Treatment requires consultation with medical command

Treatment requires consultation or direct contact with Medical Command Physician

Special Pediatric Notes:

For the purposes of these protocols, any patient under the age of 12 years will be considered a pediatric patient. Certain patients who are larger or smaller than the norms for their age may require modification of treatment. Providers should consult with Medical Command as needed in making this determination.

INITIAL TREATMENT / UNIVERSAL PATIENT CARE

- Initial Treatment / Universal Patient Care protocol is designed to guide the EMS provider in the initial and ongoing approach to assessment and management of medical and trauma patients.
- The patient examination should focus on rapid assessment and interventions. On-scene management of high priority patients should be limited to stabilization of life-threatening problems. Other procedures should always be performed while en route to the hospital or a landing zone.
- The goal for on-scene time should not exceed ten minutes for high priority trauma and medical patients. Shorter scene times are desirable for high priority patients. Rescue efforts for patients that are entrapped or have access/egress problems should be coordinated to minimize scene time.
- Medical Command should be notified as soon as possible when applicable to prepare the receiving hospital for the patient.
- At any time a provider is uncertain of how to best manage a patient, on-line Medical Command must be contacted for instruction.
- Rarely are emergent transports (red lights and sirens) required once the patient has been evaluated and treated. It is important that the attendant in charge (AIC) carefully evaluate the risks and benefits of an emergency transport to the hospital. The time saved transporting in an emergent mode is frequently very short. Furthermore, the time saved is unlikely to affect patient outcome. Ultimately, the mode of transportation decision is the responsibility of the AIC.

A. SCENE SIZE-UP

1. Take appropriate standard precautions. Put on personal protective equipment as appropriate, including gloves, eye protection mask and gown.
2. Assess scene safety.
3. Assess mechanism of injury and/or nature of illness.
   a. Medical – determine nature of the illness from the patient, family, or bystanders. Why EMS was activated?
   b. Trauma – determine the mechanism of injury from the patient, family, or bystanders, and inspection of the scene.
4. Determine total number of patients. Initiate a mass casualty plan if necessary and initiate triage.
5. Summon additional resources as necessary to manage the incident. Additional resources include, but are not limited to: fire, rescue, advanced life support, law enforcement, utilities.

B. PRIMARY SURVEY

1. Form a general impression of the patient. Consider appearance, work of breathing, and circulation to skin. If a life-threatening condition is found, treat immediately.
2. Pediatric Patients may experience respiratory distress as a result of many different causes. A general impression should be established utilizing the **Pediatric Assessment Triangle (PAT).** Appearance, work of breathing, and circulation. (Appendix C)
3. Determine the Mechanism of Injury (MOI) or Nature of Illness (NOI)
4. Assess patient's **mental status** (maintain spinal immobilization if required)
   a. Assess using **GLASGOW COMA SCALE**. (Appendix E)
   b. If the victim is unresponsive with no breathing or abnormal breathing (ie only gasping), see **Cardiac Arrest Protocol 4205 / 5202 / 6205** as applicable.
   c. Perform a Blood Glucose Reading on all patients exhibiting altered mental status
5. Assess the patient's **airway** status. Provide manual in-line stabilization of the head and neck for suspected spinal injury.
   a. For a complete airway obstruction, see **AIRWAY MANAGEMENT protocol 4901 / 5901 / 6901** as applicable.
6. Assess the patient's **breathing**.
   a. If respirations are inadequate, ventilate with 100% oxygen.
      i. If optional EtCO2 is available, maintain CO2 level at 35 - 45 mm/hg for patients without head trauma.
      ii. If signs of impending Central Nervous System herniation (increasing BP, bradycardia, decreasing GCS, dilation of one pupil, paralysis, and decerebrate or decorticate posturing) are present, then ventilate 12 - 20 breaths per minute to maintain EtCO2 at 30 - 35 mm/hg.
   b. If spontaneous respirations are adequate:
      i. Severe Distress – Administer Oxygen with a non-rebreather mask at 15 L/minute.
      ii. Mild to Moderate Distress – Administer Oxygen with a nasal cannula at 2

to 6 L/minute to maintain SpO2 at 94 - 99 %.

iii. Do not use nasal cannula in infants and small children. Blow-by oxygen or mask to keep SpO2 at 94 - 99 %.

7. Assess the patient's **circulation**.
   a. Assess pulses at appropriate pulse points.
   b. Control major bleeding.
   c. Check perfusion by evaluating skin color, temperature, and moisture.
   d. Acquire 12 lead ECG and transmit if applicable.
   e. ALS providers – Establish IV/IO access and apply cardiac monitor if applicable.
8. **Expose** patient.
9. Identify the priority of the patient based on assessment findings.
10. Expedite transport for high priority patients

C. SECONDARY SURVEY

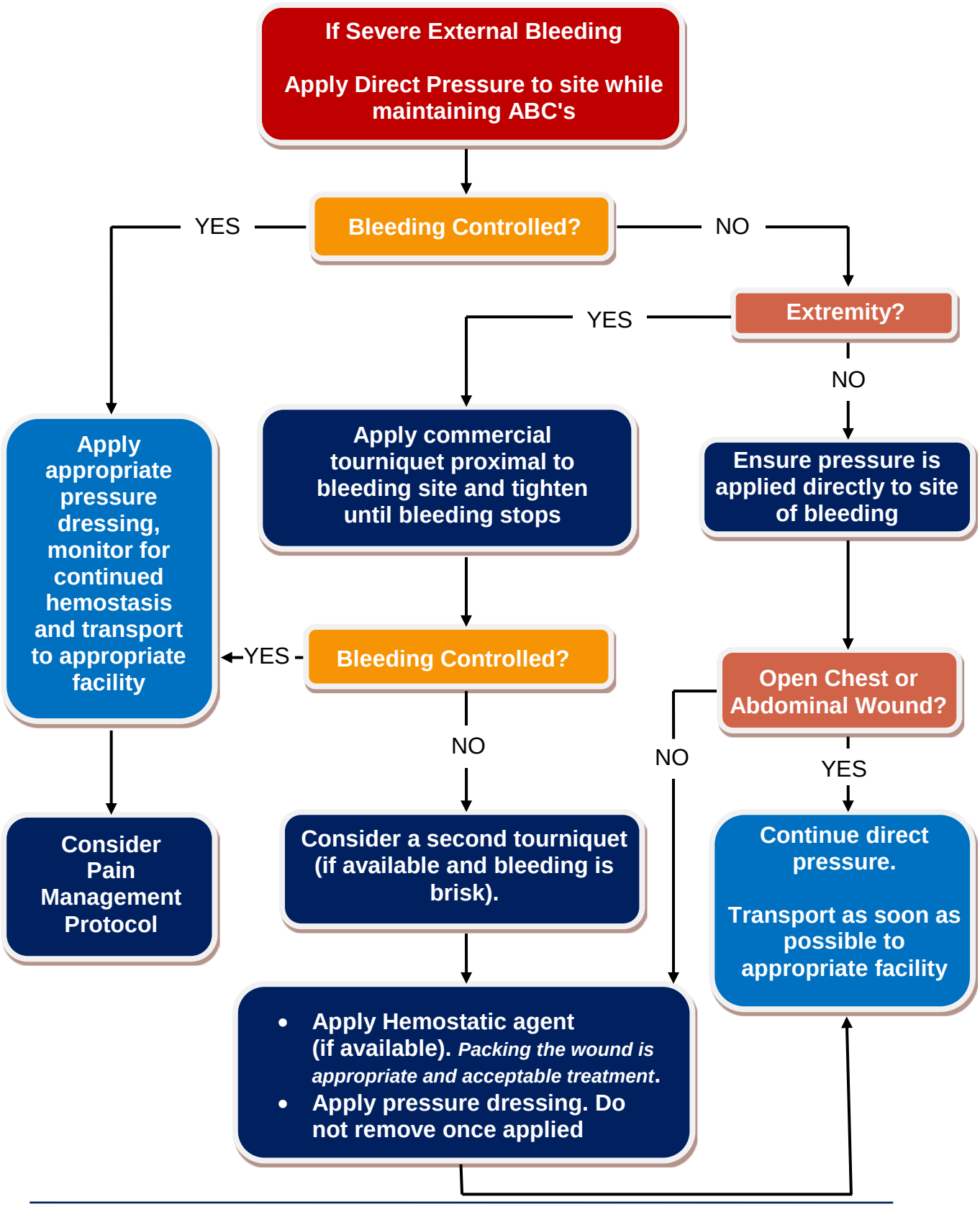
1. Obtain vital signs, including:
   a. Respirations
   b. Pulse
   c. Blood pressure
   d. Skin color, temperature, and condition
2. Obtain chief complaint.
3. Obtain history of present illness and past medical history
4. Conduct a physical examination (head-to-toe assessment) or focused exam

D. Perform Ongoing Exam and assess interventions.

E. Consider Patient Comfort Protocol **5902 / 4902** as applicable for ALS providers.

NOTE: Assessment Mnemonics can be found in Appendix D.

SEVERE EXTERNAL BLEEDING



SELECTIVE SPINAL IMMOBILIZATION

Backboards are not the standard of care in most cases of potential spinal injury and have not been shown to provide any benefit for spinal injuries. Backboards may be appropriately utilized as an extrication device and/or tool to carry non-ambulatory patients. Neurological exam is mandatory in patients with potential spinal trauma.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Identify risk of spinal column and spinal cord injury/injuries.

C. Prevent and/or reduce further spinal column or spinal cord injury through application of appropriate evidenced-based immobilization.

D. Use Long Spine Board (or any of the multiple equipment devices) to TRANSFER patient to stretcher with minimal spinal movement, remove the device, and then secure patient to stretcher. Backboards used only to transport the patient to the ambulance gurney should be gently removed except in the following instances:

1. The backboard is being utilized as an element of the splinting strategy such as multiple long bone fractures.

2. The patient is at risk of vomiting but unable to protect their own airway and may need to be turned to provide airway protection.

3. Cases in which the patient is agitated or unresponsive.

4. Removal of the backboard would otherwise delay transport in a critical patient.

E. Extrication of a patient to a stretcher:

1. If patient does not meet criteria for c-spine immobilization and has no other injury, including thoracic or lumbar injury that would preclude standing or ambulating, patient may self-extricate with assistance to a waiting stretcher.

2. Patients who are on the ground with c-collar applied who have altered mental status with GCS < 15, neurological signs of injury, and are unable to stand from a sitting position should be positioned and immobilized to a long spine board or scoop stretcher for extrication to the stretcher.

SELECTIVE SPINAL IMMOBILIZATION

F. Treatment and Interventions:

1. Apply cervical restriction if a patient is assessed and there is suspicion of cervical injury. If it does not cause increased agitation or pain, apply a properly fitted cervical collar. Suspicion of cervical injury includes:

   a. Patient complains of neck pain
   b. Tenderness upon palpation of the neck
   c. Abnormal mental status including agitation or neurological deficit
   d. Evidence of drug or alcohol ingestion

2. Apply full immobilization if the patient is assessed and exhibits with any of the following:

   a. Abnormal sensory/motor exam – abnormal findings such as paresthesia, loss of sensation in extremities, weakness or paralysis in extremities, or loss of urethral or sphincter control.
   b. Distracting injuries that produce pain that may distract the patient from the pain of a spine injury.
   c. Complaints of pain or tenderness on examination of the spine including palpation of the entire spine and range of motion (if appropriate).
   d. Patient reliability is questioned such as the following examples: intoxicated, elderly, young, altered mental status, chemically altered, or those patients that you cannot adequately perceive or communicate with.

G. Exclusion Criteria

1. No history of injury consistent with spinal injury

2. Patients with penetrating trauma to the chest, abdomen, head, neck, or back. These patients may be harmed by immobilization on a spine board.

3. Patients with non-traumatic back or neck pain related to movement, position, or heavy lifting.

H. Precautions and Considerations:

1. Caution should be exercised in high risk patients >65 years of age and patients <3 years of age as spinal assessments may be less sensitive in these age groups. This criteria in and of itself is not a factor in the providers decision making process to immobilize or not.

2. Consider airway adjuncts if needed to maintain an adequate airway.

3. There is no evidence that the “standing backboard” technique is beneficial or appropriate. Ambulatory patients should simply be eased to a sitting position on the stretcher without the use of a backboard.

4. Use care with patients that have spinal abnormalities such as kyphosis. Padding or other alternatives may be required for patient comfort.

CHEST TRAUMA

Twenty-five percent of all motor vehicle deaths are due to thoracic trauma. Rapid recognition and immediate treatment of chest injuries can prove to be life-saving.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Perform the following, if indicated:

1. Stabilize flail segment of chest.

2. Seal any open chest wounds by taping three (3) sides with an occlusive dressing or use an optional commercial chest seal.

3. Stabilize any impaled objects.

4. If signs of a tension pneumothorax are present, (absent breath sounds and SBP < 90 mm Hg in adults or SBP < 80 mm Hg in children) and patient has altered mental status, then perform **Chest Decompression Protocol 8302** on affected side. Contact **Medical Command** immediately. Remember that tracheal deviation is a late sign.

C. Transport immediately.

D. Notify **Medical Command**.

E. Treat cardiac dysrhythmias per appropriate cardiac protocol.

Note:

1. Chest pain after trauma could be a sign of significant injury and not cardiac chest pain. Nitroglycerin **should not be used** without **MCP order**.

2. If tension pneumothorax develops in a patient with a sealed sucking chest wound, attempt to resolve by releasing air from the seal prior to decompressing chest.

3. Chest decompression is only indicated for a true tension pneumothorax with the signs listed above. It is not appropriate to needle decompress a simple pneumothorax. If the patient is awake and talking; do not perform a chest decompression unless by direct **MCP order**.

ABDOMINAL TRAUMA

Pre-hospital care is directed toward rapid stabilization and transport to an appropriate medical facility for definitive surgical intervention and treatment.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Treatment:

1. Rapid transport. Consider aeromedical transport.

C. Penetrating trauma:

1. Stabilize impaled objects with bulky dressings.
2. Control external bleeding.
3. Search and locate exit wounds, when applicable.

D. Eviscerating trauma:

1. Cover eviscerations with moist, sterile dressings.
2. Apply occlusive bandage over dressings.

E. Blunt trauma:

1. Recognize and reassess.
2. Rapid transport.
3. If patient is in shock, perform **Shock Protocol 4108**.
4. Contact **Medical Command**.

MUSCULOSKELETAL TRAUMA

Isolated musculoskeletal and extremity injuries are rarely a first priority. Pelvic injuries are high risk for serious internal bleeding. Total or partial amputations require special treatment procedures.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Treatment:

1. Treat all painful, swollen, or deformed areas as fractures.

2. Determine patient priority status:

   a. Stable patients - splint before transporting.

   b. Unstable patients - immobilize completely on long spine board - load and go.

3. Use bandaging, dressing, and splinting device(s) appropriate to the injury.

4. If isolated injury **only**, perform **Patient Comfort / Pain Management Protocol 4902**.

5. If pelvic injury: stabilize, monitor closely, and perform **Shock Protocol 4108,** if indicated.

6. Total or partial amputations:

   a. Wrap severed part in sterile gauze slightly dampened with normal saline and place in sealed container (waterproof bag) immersed in ice water.

   b. In **consultation with Medical Command**, determine best mode of transport and most appropriate destination. 

7. Contact **Medical Command** and transport to closest appropriate facility.

HEAD TRAUMA

The goal of pre-hospital treatment of head injuries is to prevent further neurological deterioration until definitive care can be provided. This is best done by maintaining an adequate airway, oxygenation, and prevention and treatment of hypotension combined with smooth, rapid transport to an appropriate facility with minimal on-scene time.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Maintain airway as indicated by **Airway Management Protocol 4901** with the following special considerations in patients requiring assisted ventilation:

1. If signs of impending Central Nervous System herniation (increasing BP, bradycardia, decreasing GCS, dilation of one pupil, paralysis, and decerebrate or decorticate posturing) are present, then ventilate 12 - 20 breaths per minute to maintain end tidal CO_2 at 30 mm/Hg.

2. If no signs of CNS herniation, ventilate 10 - 12 breaths per minute to maintain end tidal CO_2 at 35 - 40 mm/Hg.

C. If no signs of shock or hypotension, maintain IV normal saline at KVO.

D. Elevate head of bed 30 degrees above horizontal.

E. Perform and document neurological status checks every five (5) minutes.

F. If patient is confused or unconscious, consider checking serum glucose and treat as indicated in **Diabetic Protocol 4604**. Do not delay treatment or transport to check serum glucose but should be done as soon as possible.

G. If patient develops seizure activity, refer to **Seizure Protocol 4603.**

H. Monitor airway, vital signs, and level of consciousness repeatedly at scene and during transport; **status changes are important**.

Note:

1. When head injury patients deteriorate, first check for proper airway, adequate oxygenation, and adequate blood pressure.

2. Avoid hypoxemia and hypotension.

HYPOPERFUSION / SHOCK

Shock, or hypoperfusion, is decreased effective circulation causing inadequate delivery of oxygen to tissues. Signs of early (compensated) shock include tachycardia, poor skin color, cool/dry skin, and delayed capillary refill. Systolic blood pressure is normal in early shock. In late (decompensated) shock, perfusion is profoundly affected. Signs include low blood pressure, tachypnea, cool/clammy skin, agitation, and altered mental status.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Categories of Shock:

1. Hypovolemic
2. Distributive
3. Cardiogenic

C. Determine most likely cause of shock:

1. Hypovolemic (loss of fluid) is **most common**. Usually from bleeding or vomiting and diarrhea.
2. Distributive (loss of vascular tone) is usually from sepsis (infection). Other causes include anaphylaxis, toxic chemicals, or spinal cord injury.
3. Cardiogenic (heart pump failure) - most common cause in adults is acute MI or CHF. Is rare in children.

D. If hypovolemic shock is suspected (most common):

1. Monitor vital signs, ECG, and pulse oximeter.
2. Expedite transport.
3. As soon as possible, and without delaying transport, establish two (2) IV lines of normal saline with as large a catheter as possible up to a 14 gauge.
4. If systolic blood pressure < 90 or patient has other signs and symptoms of shock such as tachycardia, delayed capillary refill, cool/clammy skin, or altered mental status, then administer 20 ml/kg normal saline IV up to a maximum of 2 liters and reassess.

5. If on reassessment blood pressure is still < 90 or other signs and symptoms of shock are still present, then contact **Medical Command** and reconsider causes.

E. If still felt to be hypovolemic shock:

1. Repeat 20 ml/kg normal saline IV **per order of Medical Command**.

2. Continue treatment **per MCP orders**.

F. If blood pressure is > 90 systolic and patient has no other signs or symptoms of shock, administer 100 ml/hour normal saline IV and continue to monitor patient.

G. If distributive shock is suspected:

1. If anaphylaxis or allergic reaction, refer to **Allergic Reaction / Anaphylaxis Protocol 4501.**

2. Initial treatment same as hypovolemic shock above.

3. If hypotension (BP < 90 systolic) and other signs and symptoms of shock persist after administration of second 20 ml/kg normal saline bolus, then:

   a. Reassess that shock is distributive and not from untreated hypovolemia.

   b. **Contact Medical Command** and consider **Dopamine** IV drip infusion at 5 micrograms/kg/minute **per MCP order**.

   c. Titrate **Dopamine** drip at 5 - 20 micrograms/kg per minute in an effort to improve perfusion **per MCP order**.

H. If cardiogenic shock is suspected:

1. Immediate transport.

2. Establish IV normal saline and administer fluid bolus of 250 ml assessing for signs of fluid overload.

3. Reassess appearance, vital signs, and signs and symptoms of shock.

4. If there is no rhythm disturbance and patient remains poorly perfused after the initial fluid bolus:

HYPOPERFUSION / SHOCK

a. Contact Medical Command and consider repeat 250 ml fluid bolus or **Dopamine** IV drip infusion at 5 micrograms/kg/minute **per MCP order**.

b. Titrate **Dopamine** drip at 5 - 20 micrograms/kg per minute in an effort to improve perfusion **per MCP order**.

Note: Patients with distributive shock from infection may also have hypovolemia from vomiting, diarrhea, and poor fluid intake.

TRAUMATIC ARREST

Patients who are found in full cardiac arrest as a result of trauma have an essentially zero chance of survival. If on the arrival of EMS personnel the patient has any signs of life (pulse or respirations), rapid transportation and treatment offer the only hope for survival. Trauma patients who have a witnessed cardiac arrest require rapid treatment and transportation. Early recognition of tension pneumothorax and immediate treatment can prove life-saving.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. If patient is found pulseless and apneic, **contact MCP directly** for consultation on not beginning resuscitation. Follow **Death in the Field Protocol 9101.**

C. If patient has any pulse or respirations or has arrest witnessed by EMS personnel, begin CPR with C-spine protection.

D. Establish and secure airway according to **Airway Management Protocol 4901.**

E. If intubated and unable to ventilate due to increased airway pressures, reconfirm proper ET placement and perform bilateral chest decompression.

F. As soon as possible and without delaying transport, establish two (2) IV lines of normal saline with as large a catheter as possible up to a 14 gauge and administer 20 ml/kg normal saline IV up to 2 liters and reassess.

G. Full immobilization.

H. On scene time should be < 5 minutes, if possible.

I. If patient is entrapped, consider **Cease-Efforts Protocol 9102 per direct MCP order.**

J. **Consult MCP** for further treatment orders.

BURNS

Burns can be caused by direct thermal injury, exposure to caustic chemicals, or contact with electrical sources. Factors to be considered when treating burn patients include the nature of the burn, whether the patient was in an enclosed space, the source of the burn, the patient's history, the duration of the contact, and the temperature of the thermal agent. Always protect providers from exposures to hazardous materials. **NEVER ATTEMPT TO REMOVE PATIENT FROM AN IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH) ENVIRONMENT UNLESS TRAINED, CERTIFIED, AND PROPERLY EQUIPPED. NEVER PLACE YOURSELF OR YOUR CREW IN DANGER.** Decontamination, if necessary, should be done by appropriate certified personnel.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Stop the burning process:

1. **Thermal burns:** Flush the burned area with tepid water (sterile, if possible) to cool the skin. Do not attempt to wipe off semisolids (grease, tar, wax, etc.). Do not apply ice. Dry the body when the burn area is ≥ 10% BSA to prevent hypothermia.

2. **Dry chemical burns:** Brush off dry powder, then flush with copious amounts of tepid water (sterile, if possible) for 20 minutes. Continue en route to the hospital.

3. **Liquid chemical burns:** Flush the burned area with copious amounts of tepid water (sterile, if possible) for 20 minutes. Continue en route to the hospital.

C. If signs of respiratory involvement are present such as facial burns, singed face or nasal hairs, swollen, sooty, or reddened mucous membranes, or patient was in a confined space and/or unconscious, assume inhalation injury and treat per **Inhalation Injury Protocol 4304.**

D. Remove clothing from around burned area, but do not remove/peel off skin or tissue. Remove and secure all jewelry and tight fitting clothing.

E. Assess the extent of the burn using the **Rule of Nines** and the degree of burn severity.

F. **Minor Burns**:

1. Cover with clean dressing.

2. Consider application of cool/moist compress.

3. Consider **Patient Comfort/Pain Management Protocol 4902**

G. **Major Burns:**

1. Cover with clean dry dressing.

2. Fluid management per **Shock / Hypoperfusion Protocol 4108.**

3. Consider **Patient Comfort / Pain Management Protocol 4902**

4. **In consult with Medical Command**, establish transport mode (ground vs. air) considering transport to burn center.

H**. Thermal Burns:**

1. Cool water immersion of minor localized burns may be effective if accomplished in the first few minutes after a burn.

2. Cover extensive partial and full thickness burns with a dry, sterile dressing. Keep the patient warm and infuse fluid **per Shock / Hypoperfusion Protocol 4108.**

3. Use soft, non-adherent dressings between areas of full thickness burns, as between the fingers and toes, to prevent adhesion.

4. Be cautious and conservative when administering fluids to the burn patient with inhalation injury.

I. **Electrical Injuries:**

1. Commonly occurring with electrical injuries are long bone fractures, cardiac dysrhythmias, and neurological deficits. Victims of lightning strikes may be in cardiac arrest, but frequently can be resuscitated quickly after intubation and assisted ventilations.

2. Assess for multiple entrance and exit wounds.

3. Perform 12 lead ECG and continual monitoring for possible cardiac disturbances. Electrical current may induce dysrhythmia's such as bradycardia's, tachycardia's, ventricular fibrillation, and asystole.

BURNS

J. **Chemical Burns:**

1. Attempt to identify substance from labels, data sheets, or other personnel on-scene, but do not delay treatment or transport during this process.

2. Request additional resources as needed. (ERG, Haz Mat Team, etc.)

3. Contact **Medical Command** with the nature of the substance. Medical Command shall notify WV Poison Control for further information as required.

4. Avoid self-contamination by using protective clothing and gloves.

5. Decontaminate grossly by removal of excess chemical.

6. Common chemicals that cause burns:

   a. **Phenol** is a gelatinous caustic used as an industrial cleaner. It is difficult to remove because it is insoluble in water. Use alcohol, which may be found in areas where Phenol is regularly used, to dissolve the product. Follow removal with irrigation using large volumes of cool water.

   b. **Dry Lime** is a strong corrosive that reacts with water. It produces heat and subsequent chemical and thermal injuries. Brush dry lime off the patient gently, but as completely as possible. Then rinse the contaminated area with large volumes of cool to cold water.

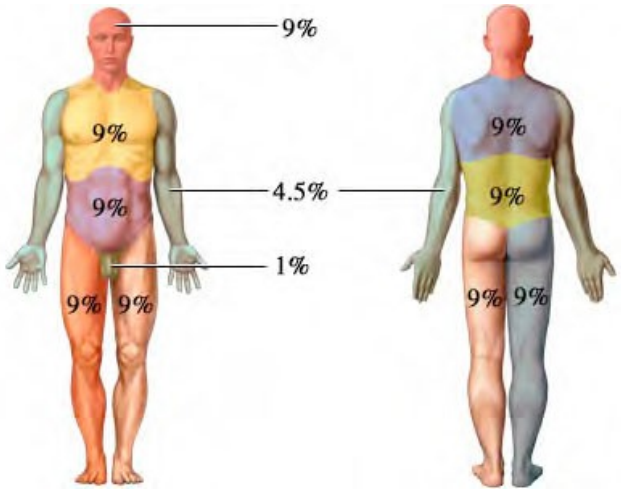
   c. **Sodium** is an unstable metal that reacts destructively with many substances, including human tissue and water. Decontaminate the patient quickly with gentle brushing. Then, cover the wound with oil used to store the substance.

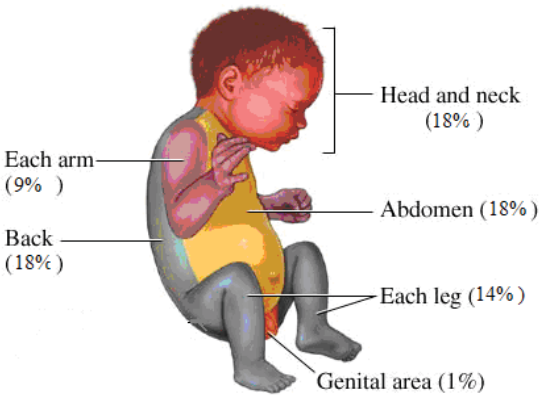
   d. **Riot Control Agents** (Mace, Pepper Spray, etc.) cause intense irritation of the eyes, mucous membranes, and respiratory tract. Treatment is supportive and most patients recover in 10 - 20 minutes of exposure to fresh air. If necessary, irrigate the patient's eyes with Normal Saline if you suspect the agent remains in the eyes.

   e. **Hydrofluoric Acid** is a common corrosive that reacts with water. It produces heat and subsequent chemical and thermal injuries resulting in extreme pain to the affected areas. Cover the wound and avoid contact with water.

BURNS

Minor Burns Criteria	Major Burns Criteria
1. Superficial and partial thickness: Adult <18%, Child <9% 2. Full thickness <2%. 3. Does not meet major burn criteria 3 thru 6.	1. Superficial and partial thickness: Adult >18%, Child >9% 2. Full thickness >2%. 3. Partial or full thickness of: face, neck, hands, feet, genitalia 4. Suspected or positive airway involvement. 5. Electrical burns 6. Circumferential burns or associated injuries.





EYE INJURIES

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Penetrating trauma to globe:

1. Observe for bleeding and leakage of iris material or clear fluid.
2. Do not palpate globe or apply any pressure to the eye.
3. Shield injured eye and patch the non-injured eye.
4. Stabilize impaled objects in place.
5. Avoid unnecessary movement. Advise patient not to cough, sneeze or move.

C. Ultraviolet light exposure (i.e., arc welder or sun lamp burns):

1. Symptoms may be delayed 3 - 10 hours after exposure.
2. Place cool compresses lightly over both eye lids.

D. Sudden, painless loss of vision:

1. May be due to central retinal artery occlusion, stroke or other embolic event.
2. Administer oxygen 2 – 6 LPM via nasal cannula.
3. Transport supine.

E. Transport and continue treatment en route.

F. Contact **Medical Command** 

TRANEXAMIC ACID - OPTIONAL

Tranexamic Acid (TXA) is an anti-fibrinolytic that inhibits the activation of plasminogen to plasmin, thereby preventing fibrinolysis and the breakdown of clots. Early administration of tranexamic acid (TXA) has been shown to reduce mortality and death secondary to trauma.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Indications:

1. Known or suspected hemorrhage after crush, blunt or penetrating trauma
2. Age ≥ 18 years
3. Sustained hypotension (systolic blood pressure (SBP) < 90mmHg) and sustained tachycardia (>110 beats per minute)
4. Time of injury is less than 3 hours from initiation of TXA

C. Initiate transport to a definitive trauma center that has the capability to administer/continue TXA.

D. Contraindications:

1. Time since injury >3 hours
2. Known Pregnancy
3. Known allergy to TXA

E. Dosage and Administration: Consult MCP for destination determination

Loading Dose:	IV infusion of 1 gram Tranexamic Acid (TXA) diluted in 100ml or 250 ml NS infused over 10 minutes.
Maintenance Dose:	IV infusion of 1 gram Tranexamic Acid (TXA) diluted in 100ml or 250 ml NS infused over 8 hours.

NOTE: If patient is taking beta-blocker medications, reflex tachycardia may not be present. These patients, while in traumatic hemorrhagic shock, may present with hypotension and a normal heart rate.

Chest Pain Discomfort / Acute Coronary Syndrome

A. Indications for this protocol include one or more of the following:

1. The classic symptom associated with an Acute Coronary Syndrome (ACS) is chest discomfort, but symptoms may also include discomfort in other areas of the upper body, shortness of breath, sweating (diaphoresis), nausea, vomiting, and dizziness. Many patients complain of substernal chest pain, pressure, or discomfort unrelated to an injury or other readily identifiable cause.

2. Most patients complaining of substernal chest pain, pressure, or discomfort unrelated to an injury or other readily identifiable cause.

3. History of previous ACS / AMI with recurrence of similar symptoms.

4. Any patient with a history of cardiac problems who experiences lightheadedness or syncope.

5. Patients of any age with suspected cocaine abuse and chest pain.

6. Diabetic, female, and/or elderly patients with atypical chest discomfort or other symptoms associated with ACS / AMI in the absence of pain.

B. Perform **Initial Treatment / Universal Patient Care Protocol.** Assessment should be directed toward identifying ACS / AMI vs. identifying a non-cardiac cause of the symptom(s).

C. If patient has no history of a **true** allergy to aspirin **and** has no signs of active bleeding (i.e., bleeding gums, bloody or tarry stools, etc.), administer 4 (four) 81 mg chewable **Aspirin** orally (324 mg total). Note: May be administered prior to obtaining 12 lead ECG and/or establishment of IV access.

D. Obtain 12 lead ECG, unless it **significantly** delays treatment or transport. Transmission of 12 lead ECG or interpretation should be sent to the receiving facility or **Medical Command**. Pre-treatment 12 lead ECG preferred.

1. If 12 lead ECG indicates STEMI or presumably new LBBB, transport patient to nearest facility capable of emergency PCI if this transport can be accomplished in < 30 minutes. If transport time to a facility with these capabilities will be > 30 minutes, consider transport options in the following order. All transport destinations should be directed by consultation with **Medical Command.**

   a. Aeromedical transport to PCI capable facility, if available.

b. Transport to closest facility with fibrinolytic capability.

c. Transport to closest facility capable of providing stabilizing care and expeditious transfer to facility with PCI.

2. If 12 lead ECG indicates signs of ischemia, possible NSTEMI, or is normal/non-diagnostic, transport to closest facility capable of providing stabilizing care and transfer to facility with PCI, if indicated.

3. If patient has a BP < 90 **DO NOT** administer nitroglycerin.

a. If 12 lead ECG indicates Inferior Wall AMI as indicated by ST Segment elevation in two or more of leads II, III or aVF, a 12 lead ECG should be obtained using right chest leads (V4R at a minimum). If right chest leads show ST Segment elevation, **DO NOT** administer sublingual **Nitroglycerin**. Follow **Right Ventricular Infarct Protocol 4213**.

4. If 12 lead ECG indicates PVC's evaluate for underlying causes. Consult **Medical Command Physician** for treatment options.

5. If blood pressure is > 90 mm/hg systolic and patient has **not** taken Sildenafil (*Viagra®)* or Vardenafil (*Levitra®)* within last 24 hours or Tadalafil (*Cialis®)* within the last 72 hours:

a. Administer **Nitroglycerin** 0.4 mg SL. Note: May be administered prior to establishment of IV access.

b. Repeat **Nitroglycerin** 0.4 mg SL every 3 - 5 minutes to a maximum of three (3) doses unless pain is relieved.

c. If blood pressure falls below 90 systolic or decreases more than 30 mm/Hg below patient's normal baseline blood pressure, then discontinue dosing and **consult Medical Command Physician** to discuss further treatment.

d. If blood pressure < 90 systolic and/or patient is experiencing severe bradycardia or tachycardia, treat according to appropriate protocol. Further treatment **per MCP orders.** If patient has taken Sildenafil (*Viagra®)* or Vardenafil (*Levitra®)* within last 24 hours, or Tadalafil (*Cialis®)* within the last 72 hours, nitroglycerin should only be given **by Medical Command Physician order**.

E. If chest pain persists:

1. Administer **Morphine Sulfate** 2 mg slow IV; may repeat every five (5) minutes up to 10 mg unless pain is relieved.

- Use caution if hypotensive and/or bradycardic. Consider use of **Fentanyl (Sublimaze®)**.
- If systolic BP drops below 90 mm/Hg during administration of **Morphine Sulfate**, discontinue analgesic administration and administer IV fluid bolus 250 mL Normal Saline and contact Medical Command.

-OR-

Administer **Fentanyl** (*Sublimaze*®) 1 microgram/kilogram – up to 100 micrograms max single dose, slow IV. Additional doses require **MCP order.**

NOTE: Administration of pain medications may not be tolerated well in patients over 55 years of age. Doses should be initiated low and repeated as needed. Administration of these medications in patients > 55 years of age shall be as follows:

Administer **Morphine Sulfate** 1 mg slow IV; may repeat every five (5) minutes up to 10 mg unless pain is relieved.

- Use caution if hypotensive and/or bradycardic. Consider use of **Fentanyl (Sublimaze®)**.
- If systolic BP drops below 90 mm/Hg during administration of **Morphine Sulfate**, discontinue analgesic administration and administer IV fluid bolus 250 mL Normal Saline and contact Medical Command.

-OR-

Administer **Fentanyl** (*Sublimaze*®) 0.5 microgram/kilogram– up to a max initial dose of 100 micrograms. Additional doses require **MCP order.**

2. If discomfort persists, **consult Medical Command Physician** to discuss further treatment with nitroglycerin, additional Morphine Sulfate, or Fentanyl. Monitor blood pressure and respiratory effort.

F. Treat dysrhythmias according to specific protocols.

G. If transport time permits, complete AHA Fibrinolytic Checklist. (Appendix A)

SEVERE HYPERTENSION

An elevated blood pressure reading in emergency patients is not uncommon and usually is not by itself an emergency. The goals of pre-hospital treatment should be focused on the following: prevent a neurologic or cardiovascular catastrophe, rapidly identify those patients who are in a hypertensive crisis and the body system(s) affected or potentially affected, and control symptomatic elevated blood pressure in certain situations.
This protocol is only applicable to patients with hypertensive crisis without signs and symptoms of stroke.

Specific problems such as chest pain, pulmonary edema, and preeclampsia/eclampsia should be treated per appropriate protocols. Drug therapy shall be considered in careful consultation **with the Medical Command Physician**.

A. Perform **Initial Treatment / Universal Patient Care Protocol**

B. Systolic BP > 240 mm/Hg and/or Diastolic BP > 120 mm/Hg taken manually and repeated in opposing arms.

Patient may exhibit one or more of the following symptoms:

1. Chest pain
2. Seizures
3. Focal motor deficits
4. Changes in mental status
5. Decreased or blurred vision
6. Shortness of breath
7. Headache

C. Cardiovascular problems such as angina, acute CHF, and aortic dissection may also be the presenting symptoms. Patients with suspected cocaine overdose or alcohol withdrawal may exhibit similar symptoms.

Note: *HYPERTENSION IS ALSO A NEUROPROTECTIVE REFLEX IN THE SETTING OF TRAUMATIC BRAIN INJURY OR INCREASED INTRACRANIAL PRESSURE. GREAT CAUTION MUST BE EXERCISED IN ADMINISTERING ANTI-HYPERTENSIVE AGENTS.*

SEVERE HYPERTENSION

D. Specific symptoms such as chest pain, CHF, etc. should be treated per appropriate protocol.

E. Treatment goal: reduce MAP by 10 - 15% of initial value. **DO NOT** reduce BP to normal range (i.e. 120 / 80) as it may lead to a decrease in cerebral perfusion.

Measure blood pressure manually every five (5) minutes. If two (2) successive readings have a systolic > 240 or a diastolic >120 mmHg, consider intervention if symptomatic **per MCP order**.

Labetalol (Trandate®) *(first line medication)*

Initial: 10 mg slow IV push over 2 minutes.
Repeat in 10 minutes at 20 mg if BP remains > 180/120 and symptoms remain.

ALERT: CAUTION IN PATIENTS WITH ASTHMA AND COPD DUE TO BETA BLOCKING ACTIVITY

-OR-

Nitroglycerin *(second line medication)*

0.4 mg SL every 3 - 5 minutes.
Repeat if BP remains > 200/120 mm/Hg and symptoms remain (max. dose 1.2 mg).

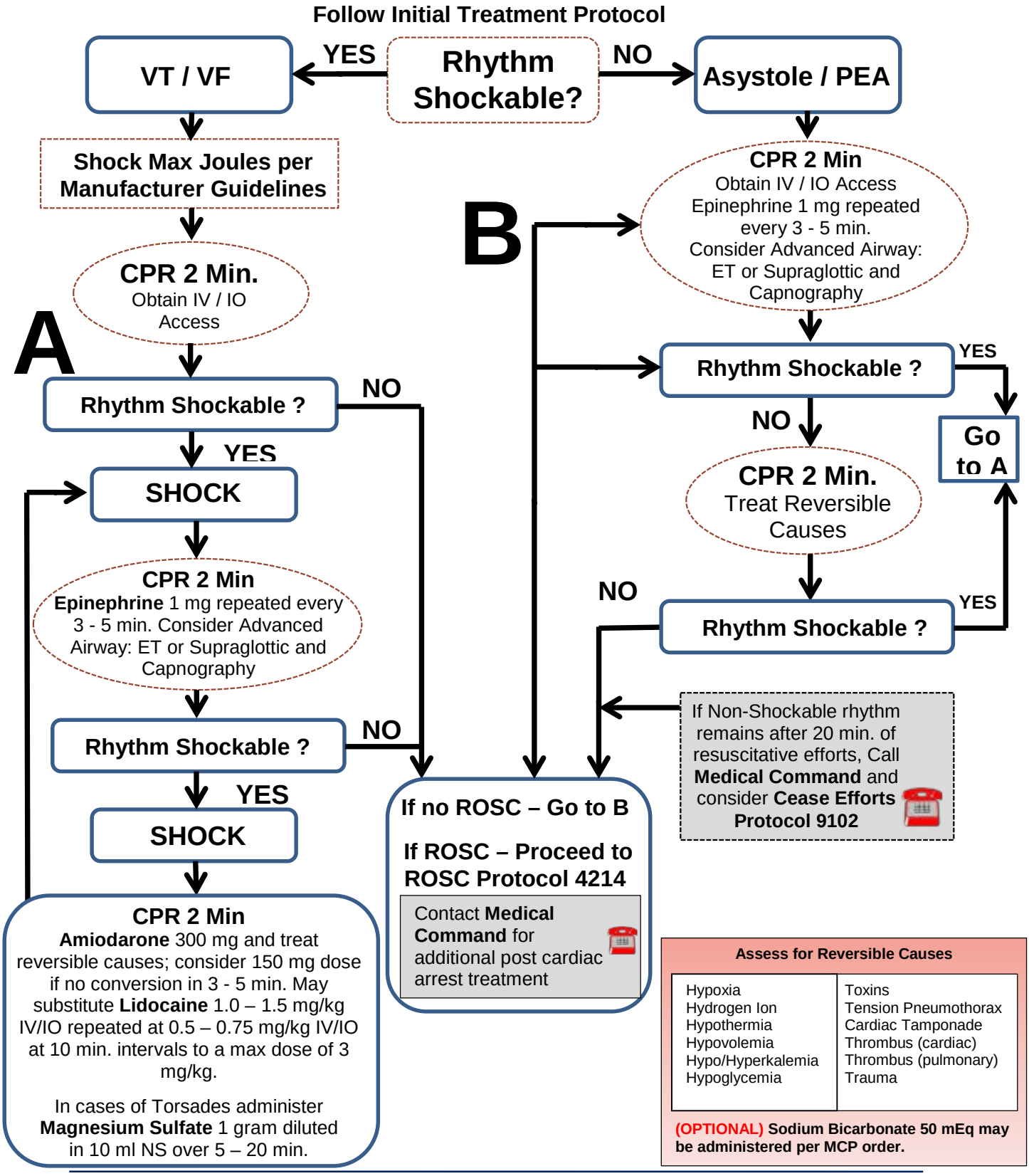
CONSIDER NITROGLYCERIN AS A FIRST LINE ANTIHYPERTENSIVE IN THE SETTING OF HYPERTENSIVE CRISIS WITH CHEST PAIN OR ISCHEMIC EKG CHANGES.

-OR-

Morphine Sulfate *(third line medication)*

2 - 10 mg IVP or IM

ADULT CARDIAC ARREST



ADULT TACHYCARDIA

Heart Rate Typically > 150 bpm and one of the following: BP < 90 mm/Hg or Altered Level of Consciousness

If Symptomatic Atrial Fibrillation or Atrial Flutter consider **Diltiazem (Cardizem®)** 0.25 mg/kg slow IVP repeated in 15 minutes at 0.35 mg/kg slow IVP **Per MCP Order**.

YES

NO

Immediate Synchronized Cardioversion

100 J or equivalent biphasic.
If no conversion then repeat with 200 J, 300 J, 360 J

Check for conversion after each shock

If no conversion then prepare for expedited transport

Perform Initial Treatment Protocol

Contact Medical Command Physician

Consider other treatment:

- Consider **Adenosine** only if ECG QRS is regular and monomorphic.
- Consider antiarrhythmic infusion per **Medical Command Physician**

NARROW

Is QRS Narrow (< 0.12 sec) or Wide (≥ 0.12 sec)

WIDE

Supraventricular Tachycardia

Valsalva/Vagal maneuvers

Adenosine 6 mg IV push

- If no conversion in 1 - 2 min then Adenosine 12 mg IVP
- If conversion then support and transport

If no conversion consider **Diltiazem (Cardizem®)** 0.25 mg/kg slow IVP repeated in 15 minutes at 0.35 mg/kg slow IVP **Per MCP Order**.

Wide Complex Tachycardia

If 12 lead ECG shows waveform Monomorphic and Regular then consider:
Adenosine 6 mg rapid IV push; follow with NS flush. Second dose 12 mg if required.

Consider antiarrhythmic:
Amiodarone -150 mg IV over 10 minutes. Repeat 150 mg if Ventricular Tachycardia recurs
-OR-
Lidocaine - 0.5 to 0.75 mg/kg every 5 - 10 minutes with maximum total dose of 3 mg/kg

If patient loses pulse then go to **Adult Cardiac Arrest Protocol 4205 Consult Medical Command**

If rhythm changes to wide QRS, then follow **Wide Complex Tachycardia** algorithm

Consider Amiodarone or Lidocaine Drip Per Medical Command. Use the same drug that was initially given.

SYMPTOMATIC BRADYCARDIA

Adult Bradycardia (with pulse)

Heart Rate < 50

YES

- Perform **Initial Treatment Protocol**
- Oxygen (if Hypoxic)
- ECG Monitor
- Monitor BP and Sp02
- Obtain IV / IO Access
- Perform 12 lead ECG

NO

Closely monitor and observe for possible deterioration during transport

Is Bradycardia associated with signs of poor perfusion:

- Hypotension
- Acutely Altered Mental Status
- Signs of Shock
- Chest Discomfort
- Acute Heart Failure
- Ischemic or abnormal ECG findings

Identify and Treat Underlying causes for all patients

Increase Heart Rate With:

Atropine 0.5 mg IV. May repeat every 3 - 5 minutes up to a maximum dose 3 mg; Atropine administration should not delay implementation of external pacing for patients.

Transcutaneous Pacer: If Atropine is ineffective, patient with poor perfusion, or high degree AV Block. (*consider pre-medication with **Midazolam (Versed®)** 2 mg for TCP)*

Fentanyl (Sublimaze®) 1 microgram/kilogram– up to 100 micrograms max single dose, slow IV.

If no pain relief after two (2) minutes, may repeat Fentanyl **PER MCP order** at 1 microgram/kilogram up to 100 micrograms max per dose.

Consider:

Apply transcutaneous pacer pads to patients presenting in AV Block

If pacing ineffective **contact Medical Command Physician** for <u>possible</u>

Dopamine IV infusion
5 - 10 micrograms/kg/min

RIGHT VENTRICULAR AMI

A. Perform **Initial Treatment / Universal Patient Care Protocol**

B. Indication for this protocol is any patient with signs of an Inferior Wall ST Elevation Myocardial Infarction (STEMI) with concurrent ST elevation in right chest lead V4R.

Note: Administration of sublingual nitroglycerin is CONTRAINDICATED in this situation.

C. Administer oxygen by appropriate route to maintain SpO2 at 94 - 99%.

D. If patient has no history of a true allergy to aspirin and has no signs of active bleeding (i.e., bleeding gums, bloody or tarry stools, etc.), then administer 4 (four) 81 mg chewable Aspirin orally (324 mg total). Aspirin may be administered prior to establishing IV.

E. Establish two (2) IV lines, preferably 18 gauge or larger, of normal saline.

F. If chest pain persists:

1. Administer **Morphine Sulfate** 2 mg slow IV may repeat every five (5) minutes up to 10 mg unless pain is relieved.

   - Use caution if hypotensive and/or bradycardic. Consider use of **Fentanyl (Sublimaze®)**.
   - If systolic BP drops below 90 mm/Hg during administration of **Morphine Sulfate**, discontinue analgesic administration and administer IV fluid bolus 250 mL Normal Saline and contact Medical Command.

-OR-

Administer **Fentanyl (Sublimaze®)** 1 microgram/kilogram – up to 100 micrograms max single dose, slow IV. Additional doses require **MCP order.**

If no pain relief after two (2) minutes, may repeat Fentanyl **PER MCP order** at 1 microgram/kilogram – up to 100 micrograms max per dose.

2. If discomfort persists, **Contact Medical Command Physician** to discuss further treatment. Monitor blood pressure and respiratory effort.

RIGHT VENTRICULAR AMI

NOTE: Administration of pain medications may not be tolerated well in patients over 55 years of age. Doses should be initiated low and repeated as needed. Administration of these medications in patients > 55 years of age shall be as follows:
Administer **Fentanyl** (*Sublimaze*®) 0.5 microgram/kilogram– up to a max initial dose of 100 micrograms. Additional doses require **MCP order.**

-OR-

Administer **Morphine Sulfate** 1 mg slow IV; may repeat every five (5) minutes up to 10 mg unless pain is relieved.

- Use caution if hypotensive and/or bradycardic. Consider use of **Fentanyl (Sublimaze®)**.
- If systolic BP drops below 90 mm/Hg during administration of **Morphine Sulfate**, discontinue analgesic administration and administer IV fluid bolus 250 mL Normal Saline and contact Medical Command.

G. Monitor blood pressure carefully. If systolic BP falls below 90 mm/Hg, discontinue pain medications and treat hypotension per **Shock Protocol 4108**

H. Treat dysrhythmias according to specific protocols.

I. If transport time permits, complete AHA Fibrinolytic Checklist (Appendix A).

RETURN OF SPONTANEOUS CIRCULATION (ROSC)

This protocol should be followed for all **adult** cardiac arrests with ROSC. If it is unknown whether the arrest is traumatic or medical, continue with this protocol.

A. Follow **Initial Treatment / Universal Patient Care Protocol**

B. If ventilation assistance is required, ventilate at 10 - 12 breaths per minute. Do not hyperventilate.

1. Avoid excessive ventilation. Start at 10 - 12 breaths/minute. *If capnography available*: Titrate to target ETCO2 of 35 - 40 mm/Hg.

a. Titrate oxygen to minimum necessary to achieve SpO2 at 94 - 99%.

b. Start with 100% oxygen during the CPR phase.

C. Consider Advance Airway: ET or Supraglottic

D. Reassess patient. If patient becomes pulseless, begin CPR and follow **Cardiac Arrest Protocol 4205.**

E. Continue to monitor ABC's.

F. Follow Initial Treatment / Universal Patient Care Protocol

G. Start an IV / IO NS KVO if not already performed**.**

H. Treat hypotension (SBP < 90 mm/Hg) with an IV/IO fluid bolus consistent with **Hypoperfusion / Shock Protocol 4108**.

I. Perform 12 lead ECG. If STEMI, follow STEMI guidelines.

J. Consider treatable causes. (H's and T's)

Assess for Reversible Causes

Hypoxia Hydrogen Ion Hypothermia Hypovolemia Hypo/Hyperkalemia Hypoglycemia	Toxins Tension Pneumothorax Cardiac Tamponade Thrombus (cardiac) Thrombus (pulmonary) Trauma

(OPTIONAL) Sodium Bicarbonate 50 mEq may be administered per MCP order

K. If ventilation assistance is required with an advanced airway in place and quantitative

waveform capnography *(if available)*; target ETCO2 is 35 - 40 mm/Hg.

L. Transport to a facility capable of Percutaneous Coronary Intervention (PCI) and/or therapeutic hypothermia in consultation with **Medical Command**.

M. If patient remains unresponsive after ROSC, consider cooling the patient with 250 ml Normal Saline 4 degrees Centigrade (*optional equipment if available*); cold packs to axilla, groin, neck, etc.

N. Consider the administration of **Amiodarone** Infusion or **Lidocaine** infusion if the patient was resuscitated following an episode of VF/VT and is without profound bradycardia or high-grade heart block (2nd degree Type II or 3rd degree or idioventricular rhythm) **per MCP Order**.
Note: *Continue using the anti-arrhythmic medication that was administered during resuscitation.*

O. If hypotension persists after 250 ml IV / IO fluid bolus, administer Dopamine 5 – 20 micrograms/kg/min **per MCP Order**.

BRONCHOSPASM

Bronchospasm may be the manifestation of several disease processes, most commonly asthma, chronic bronchitis, and emphysema (COPD). Physical examination reveals wheezing and prolonged expiratory phase of breathing. Respiratory Distress is categorized as follows:

- **Minimal Distress:** A slight increase in work of breathing with no wheezing or stridor evident.
- **Moderate Distress:** A considerable increase in work of breathing with wheezing and/or abnormal breath sounds evident.
- **Severe Distress:** Extreme work of breathing (retractions) with a decreased LOC.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. If heart rate < 130 for adults or < 150 pediatrics:

1. Administer **Albuterol** 2.5 mg combined with **Ipratropium Bromide (Atrovent®)** 0.5 mg (Combi-Vent / Duo-Neb) with oxygen 8 - 10 LPM. If **Ipratropium Bromide (Atrovent®)** is contraindicated or the patient is a pediatric, administer **Albuterol** only.

2. Reassess vital signs and lung sounds.

3. If distress is unrelieved and patient appears severe:

   a. Expedite transport.

   b. Administer a second dose of **Albuterol** 2.5 mg combined with **Ipratropium Bromide (Atrovent®)** 0.5 mg (Combi-Vent / Duo-Neb) with oxygen 8 - 10 LPM per **Medical Command.** If **Ipratropium Bromide (Atrovent®)** is contraindicated or the patient is a pediatric, administer **Albuterol** only.

   c. If distress continues and patient is < 35 years of age and has no history of cardiac disease or hypertension, consider administration of **Epinephrine** 0.3 mg IM **per MCP order.**

4. If distress is relieved:

   a. Monitor vital signs and transport.

   b. Notify **Medical Command**.

BRONCHOSPASM

C. If heart rate > 130 for adults and > 150 pediatrics:

1. Confirm that patient's tachycardia appears to be from respiratory distress and not from other causes.

2. If patient is < 35 and has no cardiac history:

   a. Proceed with treatment as in "B" above.

   b. Monitor patient's symptoms and vital signs very closely.

   c. If any signs of increasing chest pain or cardiac symptoms develop, stop nebulizer, and treat per appropriate protocol.

   d. **Contact Medical Command** for further treatment options. 

3. If patient shows no improvement, consider use of CPAP or aggressive airway management.

PULMONARY EDEMA

Patients experiencing pulmonary edema will have rales or crackles on lung exam and may exhibit with JVD and/or peripheral edema and/or frothy sputum. Rales can also be heard in patients with lung infections who are not in pulmonary edema and furosemide is not appropriate treatment for these patients. Patients in severe pulmonary edema may benefit from assistance with positive pressure ventilation.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. If patient is in severe respiratory distress, consider CPAP if available per **CPAP Protocol 8301**. CPAP should be initiated for a minimum of five (5) minutes prior to administration of nitroglycerine.

C. If patient has rales and an initial blood pressure is > 110 **systolic**; administer **Nitroglycerine** 0.4 mg every 3 – 5 minutes up to a total of three (3) doses or 1.2 mg. Obtain a manual BP between doses of Nitroglycerine and assess the patient's response prior to administering subsequent doses.

NOTE: If patient has taken Sildenafil (*Viagra®)* or Vardenafil (*Levitra®)* within last 24 hours, or Tadalafil (*Cialis®)* within the last 72 hours, treat per D - K of this protocol.

D. If patient **DOES NOT** take **Furosemide (Lasix®)** and **systolic** BP remains > 100; administer **Furosemide** 40 mg IV/IO.

E. If patient **DOES** take **Furosemide (Lasix®)** and **systolic** BP remains > 100; administer **Furosemide** 80 mg IV/IO.

F. If patient is in severe respiratory distress, consider CPAP if available per **CPAP Protocol 8301**.

G. **If wheezing is present,** administer **Albuterol** 2.5 mg combined with **Ipratropium Bromide (Atrovent®)** 0.5 mg (Combi-Vent / Duo-Neb) with oxygen 8 - 10 LPM. If **Ipratropium Bromide (Atrovent®)** is contraindicated or the patient is a pediatric, administer **Albuterol** only.

H. May repeat **Albuterol** 2.5 mg combined with **Ipratropium Bromide (Atrovent®)** 0.5 mg (Combi-Vent / Duo-Neb) per order of **Medical Command**. If **Ipratropium Bromide (Atrovent®)** is contraindicated or the patient is a pediatric, administer **Albuterol** only.

I. Transport with **further orders per MCP.**

PULMONARY EDEMA

J. If blood pressure < 90 systolic and patient has rales and JVD:

1. Expedite transport and monitor vital signs closely.
2. Contact **Medical Command** for **further orders per MCP**. 

K. If blood pressure is < 90 systolic, refer to **Shock Protocol 4108.**

INHALATION INJURY

Inhalation injury may be caused by toxins or thermal burns. In either case, the patient should be removed from the environment. **NEVER ATTEMPT TO REMOVE PATIENT FROM AN IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH) ENVIRONMENT UNLESS TRAINED, CERTIFIED, AND PROPERLY EQUIPPED. NEVER PLACE YOURSELF OR YOUR CREW IN DANGER.** Decontamination, if necessary, should be done by appropriate certified personnel.

Note: Obtain ***Data Sheets*** for inhalant and/or refer to ***DOT Emergency Response Guide*** for direction. Contact **Medical Command** which may consult with WV Poison Control Center.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Specific history and physical exam:

1. Type and amount of toxin, if known.
2. Duration of exposure.
3. History of loss of consciousness.
4. If thermal injury, assess nares and oropharynx for singeing and soot.
5. Assess lung sounds; if wheezing, refer to **Bronchospasm Protocol 4302.**
6. If burns are present, treat per **Burn Protocol 4110**.

C. Transport.

D. Notify **Medical Command**.

AIRWAY OBSTRUCTION

A. Conscious Patient:

1. Able to talk or cough:

   a. Reassure victim and encourage coughing.

   b. Oxygen 15 LPM non-rebreather mask.

2. Unable to talk or cough, or weak ineffective cough:

   a. Deliver repeated abdominal thrusts until obstruction relieved or victim becomes unconscious. For patients < 1 year of age, do alternating 5 back blows and 5 chest thrusts.

   b. Chest thrusts are preferred on advanced pregnancy and marked obesity.

   c. Transport immediately and notify **Medical Command.**

B. Unconscious:

1. Open airway and attempt ventilation.

2. Reposition airway, if necessary, and attempt ventilation.

3. Begin CPR starting with compressions.

4. Finger sweep for foreign body if visible. **DO NOT perform finger sweep on patients < 8 years of age.**

5. Repeat steps 1 - 5 above.

6. If still obstructed, visualize with laryngoscope, remove obstruction with Magill forceps.

7. If unsuccessful, transport immediately. Repeat steps 1 - 5 en route.

8. **Contact Medical Command.**

9. Consider *optional* **Percutaneous Cricothyrotomy Protocol 8401.** Refer to **Airway Management Protocol 4901.**

PEDIATRIC MEDICAL ASSESSMENT

The initial procedures needed to assess and manage pediatric medical patients are similar. Primary cardiac problems are rare in children. Pediatric patients may experience respiratory distress as a result of many different causes.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

1. General impression using **Pediatric Assessment Triangle (PAT)**. Appearance, Work of Breathing, and Circulation of Skin. (Appendix C)

2. Hands on physical assessment using **Pediatric ABCDE's**. Airway, breathing, circulation, disability, and exposure.

3. **Do Not** use nasal cannula in infants and small children. Use blow-by oxygen or mask to keep SpO2 at 94 - 99%.

4. Perform focused history, more detailed physical exam, and ongoing assessment at the appropriate time before or during transport.

B. Provide immediate resuscitation, as needed, and immediately make transport decision.

C. **Do Not** use a combitube in patients < 70 lbs. or < 5 feet tall.

PEDIATRIC HYPOPERFUSION (SHOCK)

Shock, or hypoperfusion, is decreased effective circulation causing inadequate delivery of oxygen to tissues. Signs of early (compensated) shock include tachycardia, poor skin color, cool/dry skin, and delayed capillary refill. Systolic blood pressure is normal in early shock. In late (decompensated) shock, perfusion is profoundly affected. Signs include low blood pressure, tachypnea, cool/clammy skin, agitation, and altered mental status.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Shock is categorized as:

1. Hypovolemic
2. Distributive
3. Cardiogenic

C. Determine the most likely cause of shock.

1. Hypovolemic (loss of fluid) is most common. Usually from bleeding or vomiting and diarrhea.
2. Distributive (loss of vascular tone) is usually from sepsis (infection). Other causes include anaphylaxis, toxic chemicals, or spinal cord injury.
3. Cardiogenic (heart pump failure) is **rare** in children. Most common cause is congenital heart disease.

D. If hypovolemic shock is suspected:

1. If associated with trauma, refer to **Pediatric Trauma Assessment Protocol 4408.**
2. If history of vomiting and/or diarrhea and normal vital signs and minimal evidence of dehydration, such as decreased tearing and dry mucous membranes, then transport and monitor vital signs.
3. If dehydrated with signs of early shock such as tachycardia and cool/dry skin and delayed capillary refill:

   a. Begin transport.

b. Establish IV normal saline and administer 20 ml/kg bolus.

c. Continue fluids **per order of Medical Command.** 

4. If signs of late (decompensated) shock such as low blood pressure, tachypnea, cool/clammy skin, agitation, and altered mental status:

   a. Make one (1) attempt on-scene to establish IV/IO normal saline and administer 20 ml/kg bolus.

   b. Transport.

   c. If still evidence of shock, repeat 20 ml/kg normal saline bolus up to two (2) times for a maximum total of 60 ml/kg.

   d. **Contact Medical Command** for further fluid management orders. 

E. If distributive shock is suspected:

1. If anaphylaxis or allergic reaction, refer to **Allergic Reaction/Anaphylaxis Protocol 4501.**

2. Initial treatment same as hypovolemic shock above.

3. If hypotension, markedly increased heart rate, and mental status changes persist after administration of three 20 ml/kg normal saline boluses:

   a. Reassess that shock is distributive and not from untreated hypovolemia.

   b. **Contact Medical Command** and consider **Dopamine** IV drip infusion at 5 micrograms/kg per minute **per MCP order**.

   c. Titrate **Dopamine** drip at 5 - 20 micrograms/kg per minute in an effort to improve perfusion **per MCP order**.

F. If cardiogenic shock is suspected:

1. Immediate transport.

2. Establish IV normal saline and administer fluid bolus of 10 ml/kg assessing for signs of fluid overload.

3. Reassess appearance, vital signs, and work of breathing.

4. If there is no rhythm disturbance and patient remains poorly perfused after the initial fluid bolus:

   a. Contact **Medical Command** and consider **Dopamine** IV drip infusion at 5 micrograms/kg per minute **per MCP order**.

   b. Titrate **Dopamine** drip at 5 - 20 micrograms/kg per minute in an effort to improve perfusion **per MCP order**.

Note: Patients with distributive shock from infection may also have hypovolemia from vomiting, diarrhea, and poor fluid intake.

PEDIATRIC SEIZURES

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Protect patient from injury and place on left side.

C. Obtain history to help determine origin of seizure:

1. Refer to appropriate protocol

2. History of seizures in the past and is patient taking anti-seizure medications.

D. If child is actively seizing:

1. Protect airway, **DO NOT** attempt intubation during convulsion.

2. Calm caregiver's fears.

3. Obtain key information and prepare for transport.

4. If patient has been provided a prescription for **Diastat** and is still seizing, administer **Diastat** rectally at prescribed dose and contact **Medical Command.**

5. Quickly assess serum glucose and attempt to establish IV normal saline KVO or saline lock.

6. If glucose level is < 60 mg/dl refer to the pediatric diabetic emergencies protocol 4411.

7. Expedite transport and contact **Medical Command**.

8. If seizure lasts longer than five (5) minutes **or** two (2) or more episodes of seizure activity occur between which the patient does not regain consciousness:

   a. Administer **Midazolam (Versed®)** IV/IO/IM 0.1 mg/kg up to a max initial dose of 5 mg **per MCP order.**

   b. If no IV access is available, administer **Midazolam (Versed®)** 0.2 mg/kg intranasal (IN) via atomizer up to a max initial dose of 5 mg **per MCP order.**

9. If seizure continues, further treatment as **ordered by Medical Command.**

E. If child is **Not** actively seizing:

1. Monitor vital signs closely and be alert for recurrence of seizure.
2. Transport.
3. Perform remaining assessment, as indicated.
4. Notify **Medical Command.**

Note: If child is administered their personal prescription of *Diastat* by EMS, the child must be transported to the hospital for further evaluation.

PEDIATRIC SUSPECTED CHILD ABUSE / NEGLECT

Pediatric patients require the same skills and techniques as adult patients; however, unless you are calm and professional, the emotional reaction of the patient and others on the scene may become more intense. **Use extreme tact and professionalism. Do not let emotions or prejudices interfere with appropriate patient care**.

A. Assure that scene is safe for both rescuers and patient.

B. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

C. Provide appropriate emergency medical treatment for all injuries found (refer to appropriate trauma protocols).

D. Obtain history from all available sources including child, parent/caregiver, and other witnesses.

E. Alleged sexual abuse:

1. Discourage patient from going to bathroom.

2. Don't allow patient to change clothes or wash.

3. Give nothing by mouth.

F. Transport.

G. Contact **Medical Command**.

H. Upon arrival at the hospital, inform the receiving medical personnel of your findings and/or suspicions. Document the call carefully and thoroughly. Use the telephone to relay pertinent information to **Medical Command**.

Note: Current WV law sets forth that as mandated reporters of child abuse and neglect, EMS providers are required to report the circumstances of child abuse/neglect or cause a report to be made to the WV Department of Health and Human Resources (WVDHHR) within 48 hours after suspecting abuse. Additionally, they are required to report the circumstances to the person in charge of the receiving institution or a designated person thereof. That person is then required to make the report or cause a report to be made. While EMS providers may report the circumstances to WVDHHR themselves, they must always make a report to the person in charge of the receiving institution, or a designated person thereof, who then has a statutory duty to report.

PEDIATRIC SUDDEN INFANT DEATH SYNDROME

Sudden Infant Death Syndrome (SIDS) is the unexpected, sudden death of a seemingly normal, healthy infant that occurs during sleep with no physical evidence of disease or injury.

A. Begin resuscitation immediately unless rigor mortis, severe lividity, or tissue breakdown is evident. If any doubt, resuscitate. Refer to Pediatric Emergencies **Cardiac Arrest Protocol 6406**.

B. Note the position and condition of the victim and the surroundings.

C. Use extreme tact and professionalism. Do not let emotions or prejudices interfere with carrying out appropriate patient care or family support.

1. Do not make judgments concerning the situation.

2. Do not add to the parent's sense of guilt or helplessness.

3. Remember, people react differently to stressful situations.

D. If resuscitation is begun:

1. Transport immediately.

2. Continue treatment en route per appropriate protocol.

3. Contact **Medical Command** for further orders.

E. If resuscitation has **not begun**:

1. **Contact Medical Command** immediately for confirmation of decision not to begin efforts **by direct MCP order** and follow **Death in the Field Protocol 9101**.

PEDIATRIC CARDIAC ARREST

Cardiac arrest in infants and children is rarely a primary event. It is usually a result of deterioration of respiratory function resulting in decreased cardiac function. Cardiac arrest can be prevented if the symptoms of respiratory failure and/or shock are recognized and quickly treated.

A. **Ventricular Fibrillation/Pulseless V-tach:**

1. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

   a. Immediate defibrillation in witnessed arrest.

   b. Administer **Epinephrine** 1:10,000, 0.01 mg/kg IV/IO every 3 - 5 minutes (tracheal tube 0.1 mg/kg, 1:1000).

   c. Confirm effectiveness of CPR during resuscitative effort.

2. Defibrillate at 2 joules/kg.

3. If no conversion after two (2) minutes of CPR:

   a. Defibrillate at 4 joules/kg and repeat two (2) minutes of CPR.

   b. If no conversion, defibrillate again at 4 joules/kg.

   c. If no conversion, establish airway and IV/IO access and administer **Epinephrine** (1:10,000) 0.01 mg/kg IV/IO, or **Epinephrine** (1:1000) 0.1 mg/kg down ET tube.

   d. If no conversion, within 30 - 60 seconds defibrillate at 4 joules/kg.

   e. If no conversion, continue **Epinephrine** every 3 - 5 minutes and administer **Lidocaine** 1 mg/kg IV/IO or **Amiodarone** 5 mg/kg IV/IO.

   f. If no conversion, defibrillate again at 4 joules/kg.

   g. If no conversion, repeat **Lidocaine** 1 mg/kg IV/IO or **Amiodarone** 5 mg/kg IV/IO.

   h. If no conversion, defibrillate at 4 joules/kg.

   i. If no conversion, continue to alternate drug therapy with defibrillation and

contact **Medical Command**.

j. Transport.

4. If conversion occurs:

a. Follow **ROSC Protocol 4214.**

b. Notify **Medical Command** and transport.

B. **Asystole:**

1. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

2. Confirm true asystole:

a. Check lead and cable connections.

b. Check monitor power is “on” and gain is “up.”

c. Verify asystole in at least two (2) leads.

3. Administer **Epinephrine** (1:10,000) 0.01 mg/kg IV/IO, or **Epinephrine** (1:1000) 0.1 mg/kg down ET tube. Repeat every 3 - 5 minutes.

4. Notify **Medical Command** and transport.

5. Search for and treat reversible causes.

6. Further treatment as **ordered by MCP**. 

7. If conversion occurs:

a. Follow **ROSC Protocol 4214.**

b. Notify **Medical Command** and transport.

C. **PEA (Pulseless Electrical Activity):**

1. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

2. Review potentially reversible causes.

3. Administer **Epinephrine** (1:10,000) 0.01 mg/kg IV/IO, or **Epinephrine** (1:1000) 0.1 mg/kg down ET tube. Repeat every 3 to 5 minutes.

4. Notify **Medical Command** and transport.

5. If conversion occurs:

   a. Follow ROSC Protocol 4214.

   b. Further treatment as **ordered by MCP**. 

PEDIATRIC CARDIAC DYSRHYTHMIAS

Cardiac dysrhythmias are rare in children. Bradycardia is almost always caused by hypoxia and is frequently a pre-arrest situation. Tachycardia may be SVT, VT, or sinus tachycardia. Tachycardia may be from hypoxia or pain, however, children may tolerate heart rates >200 without immediate serious consequences. Carefully assess the patient, and if they are essentially asymptomatic, then expedite transport and monitor closely.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Bradycardia (Heart Rate < 60): usually due to hypoxia. Always look for potentially reversible causes. Aggressively manage the airway.

1. If no pulse, treat per **Cardiac Arrest Protocol 4406.**

2. If pulse present but patient is hemodynamically unstable with low blood pressure, poor perfusion, and decreased level of consciousness:

   a. Reassess airway and assist ventilations.

   b. **Contact Medical Command** and administer **Epinephrine** (1:10,000) 0.01 mg/kg IV/IO, or **Epinephrine** (1:1000) 0.1 mg/kg down ET tube **per MCP order**. Repeat every 3 to 5 minutes **per MCP order**.

   c. **If ordered by MCP**, administer **Atropine** 0.02 mg/kg IV/IO, or ET. Minimum dose: 0.1 mg. Maximum single dose: 0.5 mg for child; 1.0 mg for adolescent.

3. If child is essentially asymptomatic, monitor closely and expedite transport. Continually reassess airway and oxygenation.

C. Narrow Complex with rate > 220 (probably SVT), with a pulse and no evidence of hemodynamic instability, shock, or decreased level of consciousness.

1. Vagal maneuvers.

2. If no conversion, administer **Adenosine** 0.1 mg/kg IV/IO followed by immediate 20 ml flush of normal saline **per order of MCP**. Maximum first dose of 6 mg.

3. If no conversion, may double and repeat dose once **per order of MCP.** Maximum second dose of 12 mg.

PEDIATRIC CARDIAC DYSRHYTHMIAS

D. Narrow complex with rate > 220 (probably SVT), with low blood pressure and other signs and symptoms of shock including decreased level of consciousness.

1. If vascular access is in place and **Adenosine** can be given within 90 seconds, then treat as in “C2 and C3" above **per order of MCP**.
2. If no conversion and still in shock, then synchronized cardioversion at 0.5 - 1.0 joules/kg **per order of MCP**.
3. If no conversion and still in shock, then synchronized cardioversion at 2.0 joules/kg **per order of MCP.**

E. Wide complex with rate > 150 (probably VT).

1. If conscious, administer **Lidocaine** 1mg/kg IV/IO or **Amiodarone** 5 mg/kg over 20 – 60 minutes, **per order of MCP.**
2. If unconscious with signs of shock, deliver synchronized cardioversion as outlined in “D2 and D3" above **per order of MCP.**

PEDIATRIC TRAUMA ASSESSMENT

In the trauma patient, time is critical. Only initial assessment and treatment of life-threatening injuries should be performed on scene. For severely injured patients, after appropriate airway management, “load and go” is more appropriate.

If dispatch information gives the responding ambulance reason to suspect the possibility of a significant accident situation (multiple vehicles, etc.), alert **Medical Command** prior to arrival at scene and consider aeromedical standby.

A. Scene evaluation:

1. Note potential hazard to rescuers and patient.
2. Identify number of patients and organize triage operations, if needed.
3. Observe patient position and surroundings.
4. Consider need for aeromedical evacuation.

B. Consider mechanism of injury:

1. Cause, precipitating factors, and weapons used.
2. Trajectories and forces involved to patient.
3. For vehicular trauma: condition of vehicle, windshield, steering wheel, compartment intrusion, car seat, type and use of seatbelts. Specific description of mechanism (i.e. auto vs pole, rollover, auto vs pedestrian, etc.).
4. Helmet use?

C. Patient assessment:

1. Determine responsiveness.
   a. Establish and maintain airway.
   b. Maintain C-spine.
   c. Perform **Airway Management Protocol 4901,** as indicated.
2. Breathing:
   a. If adequate, oxygen 15 LPM non-rebreather mask to maintain SpO2 at 94 - 99%.

b. If inadequate, ventilate with 100% oxygen and perform **Airway Management Protocol 4901,** as indicated.

3. Circulation:

   a. Control bleeding.

   b. Assess perfusion status.

4. Neurological status:

   a. Determine level of consciousness using AVPU or GCS.

   b. Check pupils.

5. Limit on-scene time. Unless unusual circumstances, the goal should be:

   a. Not trapped: 10 minutes or less.

   b. Entrapped: within 5 minutes of extrication.

6. In **consultation with Medical Command**, establish mode (ground vs. air) and destination of transport. 

D. Treatment:

1. Immobilize patient on long spine board or as indicated in **Spinal Trauma Protocol 4103**.

Note: *All multiple trauma patients are considered to have a significantly distracting, painful injury. Infants and toddlers with minor injuries or no apparent injury may be left in child safety seats and immobilized, provided the seat is undamaged. Pediatric patients 10 – 40 lbs, not in a viable car seat, shall be transported utilizing an approved method of securing the child.*

2. Transport.

3. Monitor vital signs, obtain ECG, and monitor pulse oximeter.

4. If child has significant injuries or mechanism for significant injury, establish at least one IV line of normal saline with as large a catheter as possible up to a 14 gauge.

a. If any signs of shock such as tachycardia, tachypnea, cool/clammy skin, or low blood pressure, or high suspicion of major blood loss, administer 20 ml/kg normal saline IV bolus and refer to **Pediatric Shock Protocol 4402**.

b. If patient has no signs or symptoms of shock, maintain normal saline IV at KVO.

5. Prevent heat loss.

6. Consider nasogastric tube placement if patient is intubated and has no facial trauma.

7. Refer to **Pain Management Protocol 4902,** if indicated.

8. Notify **Medical Command**.

PEDIATRIC FEVER

Fever is defined as a measured temperature of 100.4° F (38° C) or greater. Fever is a sign of infection rather than a problem itself. Body temperature < 105° F is not harmful in and of itself. Emergency management of the febrile child involves an assessment to determine if any associated problems are present which require emergent treatment.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. If child appears acutely ill, do not delay transport to check temperature. Transport and treat associated problems per appropriate protocol.

C. Check temperature. If temperature is > 102° F:

   1. Facilitate passive cooling by removing excess clothing and blankets.

   2. If child has not been given **Acetaminophen** in the last four (4) hours, administer **Acetaminophen** at 15 mg/kg with the assistance of the parent or legal guardian to calm child.

D. If child has temperature > 105° F:

   3. Treat as in "C" above and also facilitate active cooling by applying wet towels with tepid water to trunk and head.

   4. **Do not** submerge in water or use ice or rubbing alcohol.

E. Notify **Medical Command**.

F. Transport.

NEWBORN INFANT CARE

A. Temperature Control: Whether infant is full term or premature, avoid "cold stress".

1. Dry quickly.
2. Keep the infant as warm as possible.
3. Turn ambulance heater on high to reduce radiant heat loss.
4. Cover head and body with dry blankets.
5. Maintain axillary temperature at 97° F. Check temperature every 15 minutes.

B. Airway and Breathing:

1. Position, supine with head in sniffing position, gently suction mouth, then nose with bulb syringe. If copious secretions are noted, place infant on his/her side with neck slightly extended, continue intermittent suctioning.
2. Assess breathing rate (normal 30 - 60 per minute):
   a. If adequate respirations, proceed to circulation.
   b. If inadequate respirations, cyanosis, or gasping/grunting respirations, apply 100% oxygen via non-rebreather mask at 15 LPM held firmly on infant's face. If no response/improvement after 5 - 10 seconds, begin positive pressure ventilations by bag valve mask with supplemental oxygen at rate of 40 - 60 per minute.
   c. If prolonged ventilation by bag valve mask is needed, consider intubation.

C. Circulation:

1. If heart rate within normal ranges (normal heart rate > 100 bpm at apical or umbilical sites), assess skin color, continue treatment, and transport as in "D" below.
2. If heart rate is < 100 per minute, apply 100% oxygen by positive pressure ventilation with bag valve mask and ventilate at 40 - 60 per minute.
3. Reassess after 30 seconds.

4. If no improvement and heart rate remains 80 - 100 per minute, continue ventilation.

NOTE: Neonates with heart rates < 80 bpm are in eminent danger of cardiac arrest.

5. CPR should be started if the heart rate drops below 60 or persists between 60 and 80 beats per minute despite adequate ventilation with 100% oxygen ventilation by bag valve mask.

6. Treat per **Pediatric Dysrhythmias Protocol 4407** or **Pediatric Cardiac Arrest Protocol 4406** as required.

7. Notify **Medical Command.**

D. Transportation:

1. Ensure infant remains warm.

2. Maintain airway and oxygenation.

3. Transport.

E. APGAR Score

THE APGAR SCORE			
Element	0	1	2
Appearance (Skin color)	Body and extremities blue, pale	Body pink, extremities blue	Completely pink
Pulse rate	Absent	Below 100/minute	100/minute or above
Grimace (Irritability)	No response	Grimace	Cough, sneeze, cry
Activity (Muscle tone)	Limp	Some flexion of extremities	Active motion
Respiratory effort	Absent	Slow and irregular	Strong cry
			TOTAL SCORE =

PEDIATRIC DIABETIC EMERGENCIES

Diabetic patients may have various complaints and are at risk for a multitude of medical problems. Diabetic patients may also become ill from hyperglycemia which may lead to diabetic ketoacidosis.

A. Perform **Initial Treatment / Universal Patient Care Protocol.**

B. Assess level of consciousness and blood glucose level by glucometer.

C. Draw blood sample (*if available*).

D. Treatment:

1. If patient is awake and oriented with no signs of altered mental status or confusion and simply has a blood glucose reading <60 mg/dl which is abnormal for the patient: Administer 15 gm of oral glucose and recheck blood glucose level. This treatment is based on the patient's ability to maintain a patent airway.

2. **Patient 1 month of age or younger** – If blood glucose is < 60 mg/dl, administer 5 ml/kg **Dextrose 10%** IV/IO ***(D10** is prepared by mixing 40 ml of NS with 10 ml of D50W).*

3. **Patient older than 1 month but younger than 2 years old** – If blood glucose is < 60 mg/dl, administer 2 ml/kg of **D25** IV/IO; ***(D25** Is prepared by mixing 25 ml NS with 25 ml D50W).*

4. **Patient 2 years of age or older** – If blood glucose is < 60 mg/dl, administer **D50W** 1 ml/kg IV/IO. Maximum dose is 25 grams.

5. If no IV available, administer **Glucagon** as follows:

   a. Patient < 20 kg, administer 0.5 mg IM.

   b. Patient > 20 kg, administer 1 mg IM.

E. Hyperglycemia:

   a. If blood glucose is > 300 mg/dl and patient has signs and symptoms of diabetic ketoacidosis such as Kussmal respirations, acetone smell on breath, and /or history of not taking insulin administer 20 mg/kg bolus of **Normal Saline**; may repeat once if glucose remains > 300 mg/dl.

   b. After each bolus reassess patient for signs of fluid overload.

F. Reassess mental status and blood glucose level.

G. If blood glucose level remains < 60 mg/dl or > 300 mg/dl with associated signs and symptoms, contact **Medical Command** for additional treatment. 

PEDIATRIC ALLERGIC REACTION / ANAPHYLAXIS

Anaphylaxis is an acute allergic reaction characterized by varying degrees of respiratory distress, hypotension, wheezing, hives, non-traumatic edema, and tachycardia. It may be precipitated by a bite or sting or from exposure to certain drugs or allergens. Respiratory Distress is categorized as follows:

- **Minimal Distress:** A slight increase in work of breathing with no wheezing or stridor evident.
- **Moderate Distress:** A considerable increase in work of breathing with wheezing and/or abnormal breath sounds evident.
- **Severe Distress:** Extreme work of breathing (retractions) with a decreased LOC.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. If reaction is secondary to a sting, remove injection mechanism, if present.

C. If patient is in mild distress with hives or itching but no or minimal respiratory distress (i.e. no wheezing or stridor):

1. Consider **Diphenhydramine (Benadryl®)**.

   a. Pediatric: 1 mg/kg, IM or slow IV - Maximum 25 mg.

2. Reassess for improvement or worsening of reaction.

3. Transport and notify **Medical Command**.

D. If patient is in moderate distress with severe hives and/or moderate respiratory distress (i.e. wheezing):

1. Immediately administer **Epinephrine**, 1:1000:

   a. 0.3 mg IM for patients > 30 kg

   b. 0.15 mg IM for patients < 30 kg

2. Administer **Diphenhydramine (Benadryl®)**:

   a. Pediatric: 1 mg/kg, IM or slow IV - Maximum 25 mg.

3. Expedite transport if not already in transport.

4. If patient still wheezing, administer **Albuterol** 2.5 mg with oxygen 8 - 10 LPM.

5. If patient is still in moderate distress, consider repeating **Epinephrine** one time **per MCP order**. 

E. If patient is in severe distress with signs of shock such as low blood pressure and/or decreased level of consciousness, treat as in "D" above, and if no response, then as follows:

1. Administer normal saline IV bolus of 20 ml/kg.

2. **Contact Medical Command** for further treatment options. 

3. Reassess and expedite transport.

ALLERGIC REACTION / ANAPHYLAXIS

Anaphylaxis is an acute allergic reaction characterized by varying degrees of respiratory distress, hypotension, wheezing, hives, non-traumatic edema, and tachycardia. It may be precipitated by a bite or sting or from exposure to certain drugs or allergens. Respiratory Distress is categorized as follows:

- **Minimal Distress:** A slight increase in work of breathing with no wheezing or stridor evident.
- **Moderate Distress:** A considerable increase in work of breathing with wheezing and/or abnormal breath sounds evident.
- **Severe Distress:** Extreme work of breathing (retractions) with a decreased LOC.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. If reaction is secondary to a sting, remove injection mechanism, if present.

C. If patient is in mild distress with hives or itching but no or minimal respiratory distress (i.e. no wheezing or stridor):

1. Consider **Diphenhydramine (Benadryl®)**.

   a. Adult: 25 mg IM or slow IV/IO repeated in 30 minutes if symptoms persist.

2. Reassess for improvement or worsening of reaction.

3. Transport and notify **Medical Command**.

D. If patient is in moderate distress with severe hives and/or moderate respiratory distress (i.e. wheezing):

1. Immediately administer **Epinephrine**, 1:1000 0.3 mg IM.

2. Administer **Diphenhydramine (Benadryl®)**:

   a. Adult: 25 mg IM or slow IV/IO repeated in 30 minutes if symptoms persist.

3. Expedite transport if not already in transport.

4. If patient still wheezing, administer **Albuterol** 2.5 mg combined with **Ipratropium Bromide (Atrovent®)** 0.5 mg (Combi-Vent / Duo-Neb) with oxygen 8 - 10 LPM. If **Ipratropium Bromide (Atrovent®)** is contraindicated or the patient is a pediatric, administer **Albuterol** only.

5. If patient is still in moderate distress, consider repeating **Epinephrine** one time **per MCP order**.

E. If patient is in severe distress with signs of shock such as low blood pressure and/or decreased level of consciousness, treat as in "D" above and, if no response, then as follows:

1. Administer normal saline IV bolus of 20 ml/kg.

2. **Contact Medical Command** and consider **Epinephrine** 1:10,000, 0.5 - 1.0 mg, slow IV **per order of MCP**.

3. Reassess and expedite transport.

ENVIRONMENTAL EMERGENCIES - HEAT EXPOSURE

Heat exposure can cause various types of heat illness. Heat cramps, heat exhaustion, and heat stroke are the most often encountered. Heat cramps are often associated with heat exhaustion. Initial treatment for all heat illness is similar. Secondary treatment may differ after the signs and symptoms are specifically identified. Heat stroke is a serious life-threatening condition requiring rapid treatment and transport.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

1. Remove patient from hot environment and place in cool environment.

2. Loosen or remove clothing.

B. If patient has warm, moist skin, with general weakness, dizziness, nausea, or occasionally syncope (heat exhaustion):

1. If patient has normal level of consciousness and is not nauseated, encourage patient to drink oral fluids (cool water or an electrolyte replenisher).

2. If patient has decreased level of consciousness or is vomiting, administer normal saline IV 250 ml bolus, then run at 250 ml/hour.

3. Cool by fanning without chilling the patient. Watch for shivering.

4. If patient experiences muscle cramps, apply moist towels over cramped muscles.

5. Transport and notify **Medical Command**.

C. If patient has very hot, dry skin with rapid pulse, rapid shallow breathing, and/or altered mental status or unconsciousness (heat stroke):

1. Expedite transport.

2. Administer normal saline IV at 250 ml/hr initially.

3. If signs and symptoms of shock continue, treat **per Shock Protocol 4108.**

Note: Shock associated with heat stroke may be hypovolemic, distributive, or cardiogenic shock.

4. Cover patient with moist sheet.

ENVIRONMENTAL EMERGENCIES - HEAT EXPOSURE

5. Apply ice packs to axilla, neck, ankles, and wrists. Do not overcool and watch for shivering.

6. Monitor vital signs and temperature closely.

7. Notify **Medical Command**.

8. If no change in patient condition seek further treatment options **per order of Medical Command.** 

ENVIRONMENTAL EMERGENCIES – COLD EXPOSURE

When cold exposure affects the entire body: hypothermia or general cooling develops.
When cold exposure affects a particular body part: local cooling, or frostbite occurs.
Frostbite most commonly affects the ears, nose, face, hands, feet, and toes.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

1. Place patient in warm environment.
2. Treat with warm, humidified oxygen and warmed IV fluids.
3. Remove all wet clothing.
4. Insulate core (head, neck, and trunk) with warm blankets.
5. Rapid smooth transport.

B. If patient is hypothermic, alert, and responding appropriately:

1. Keep the patient still and handle very gently.
2. Actively rewarm the patient by applying heat packs, hot water bottles, or electric heating pads to neck, chest, and abdomen.
3. Allow patient to slowly drink warm fluids, but do not allow patient to drink stimulants.
4. In **consultation with Medical Command**, establish mode (ground vs. air) and destination of transport. 
5. Monitor vital signs closely during transport.

C. If patient is hypothermic, unconscious or not responding appropriately:

1. Handle patient as gently as possible and expedite transport.
2. Wrap patient in insulated blankets for passive rewarming only.
3. Give nothing by mouth.
4. Continue IV normal saline at KVO.
5. If patient has no pulse, perform CPR with the following cautions:

a. Check pulse for at least 60 seconds.

b. Defibrillate VF/VT at **max joules**.

c. Withhold IV medications until patient is rewarmed to core temperature of > 86° F.

6. Expedite transport.

7. In **consultation with Medical Command**, establish mode (ground vs. air) and destination of transport.

8. Further treatment per **order of Medical Command.**

D. Frostbite:

1. Remove constrictive clothing and jewelry and cover with dry dressing.

2. **Do not** rub, massage area or break blisters. Do not apply direct heat, allow patient to use affected area, or re-expose to cold.

3. Transport and notify **Medical Command**.

SNAKE BITE / ENVENOMATION

West Virginia has two native venomous snakes. These are the timber rattlesnake and copperhead. Both are hemotoxic. Not all venomous snakebites involve envenomation. Envenomed patients will have one or more fang marks with ecchymosis, progressive edema, severe burning pain, and/or non-clotted oozing blood.

A. Upon arrival, make sure the patient and snake are not in close proximity. Retreat well beyond striking range. Persons are often bitten again while trying to capture or kill the snake.

B. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

C. Keep patient calm. Movement can increase venom absorption.

D. Remove all jewelry and constrictive clothing on affected extremity.

E. Do not place IV in bitten extremity.

F. Locate fang puncture(s) and mark progression of erythema (redness around bite mark) and swelling at the initial assessment and every five (5) minutes thereafter.

G. Immobilize the extremity at the level of the heart. **Do not** apply ice.

H. Transport and notify **Medical Command**.

I. **Contact Medical Command** for further treatment orders and consider use of **Pain Management Protocol 4902** per **MCP order**.

Note:

1. Do not bring a live snake to ER. If experienced personnel are available to properly kill and transport snake, then do so.

2. Patients previously envenomated are at risk of anaphylactic reaction. Be prepared to treat per **Anaphylaxis Protocol 4501.**

NEAR DROWNING / DROWNING

With near-drowning or drowning, always look for associated problems such as airway obstruction, cardiac arrest, heart attack, hypothermia, or substance abuse. Also be alert to associated injuries especially to the head and neck. **Do not** attempt a rescue in which you must enter deep water or swim unless trained to do so.

A. Remove patient from water as rapidly as possible while protecting C-spine.

B. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

C. If cold water drowning (< 70° F at recovery depth), refer to **Cold Exposure Protocol 4503.**

D. Expedite transport and notify **Medical Command**.

Note:

1. If patient is unconscious, assume spinal injury and fully immobilize patient on long backboard.

2. If confirmed cold water drowning, **Cease-Efforts Protocol 9102** should not be instituted unless patient has been rewarmed as **per MCP order**.

HYPOPERFUSION / SHOCK

Shock, or hypoperfusion, is decreased effective circulation causing inadequate delivery of oxygen to tissues. Signs of early (compensated) shock include tachycardia, poor skin color, cool/dry skin, and delayed capillary refill. Systolic blood pressure is normal in early shock. In late (decompensated) shock, perfusion is profoundly affected. Signs include low blood pressure, tachypnea, cool/clammy skin, agitation, and altered mental status.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Categories of Shock:

1. Hypovolemic
2. Distributive
3. Cardiogenic

C. Determine most likely cause of shock:

1. Hypovolemic (loss of fluid) is **most common**. Usually from bleeding or vomiting and diarrhea.
2. Distributive (loss of vascular tone) is usually from sepsis (infection). Other causes include anaphylaxis, toxic chemicals, or spinal cord injury.
3. Cardiogenic (heart pump failure) - most common cause in adults is acute MI or CHF. Is rare in children.

D. If hypovolemic shock is suspected (most common):

1. Monitor vital signs, ECG, and pulse oximeter.
2. Expedite transport.
3. As soon as possible, and without delaying transport, establish two (2) IV lines of normal saline with as large a catheter as possible up to a 14 gauge.
4. If systolic blood pressure < 90 or patient has other signs and symptoms of shock such as tachycardia, delayed capillary refill, cool/clammy skin, or altered mental status, then administer 20 ml/kg normal saline IV up to a maximum of 2 liters and reassess.

5. If on reassessment blood pressure is still < 90 or other signs and symptoms of shock are still present, then contact **Medical Command** and reconsider causes.

E. If still felt to be hypovolemic shock:

1. Repeat 20 ml/kg normal saline IV **per order of Medical Command**.

2. Continue treatment **per MCP orders**.

F. If blood pressure is > 90 systolic and patient has no other signs or symptoms of shock, administer 100 ml/hour normal saline IV and continue to monitor patient.

G. If distributive shock is suspected:

1. If anaphylaxis or allergic reaction, refer to **Allergic Reaction / Anaphylaxis Protocol 4501.**

2. Initial treatment same as hypovolemic shock above.

3. If hypotension (BP < 90 systolic) and other signs and symptoms of shock persist after administration of second 20 ml/kg normal saline bolus, then:

   a. Reassess that shock is distributive and not from untreated hypovolemia.

   b. **Contact Medical Command** and consider **Dopamine** IV drip infusion at 5 micrograms/kg/minute **per MCP order**.

   c. Titrate **Dopamine** drip at 5 - 20 micrograms/kg per minute in an effort to improve perfusion **per MCP order**.

H. If cardiogenic shock is suspected:

1. Immediate transport.

2. Establish IV normal saline and administer fluid bolus of 250 ml assessing for signs of fluid overload.

3. Reassess appearance, vital signs, and signs and symptoms of shock.

4. If there is no rhythm disturbance and patient remains poorly perfused after the initial fluid bolus:

HYPOPERFUSION / SHOCK

a. Contact Medical Command and consider repeat 250 ml fluid bolus or **Dopamine** IV drip infusion at 5 micrograms/kg/minute **per MCP order**.

b. Titrate **Dopamine** drip at 5 - 20 micrograms/kg per minute in an effort to improve perfusion **per MCP order**.

Note: Patients with distributive shock from infection may also have hypovolemia from vomiting, diarrhea, and poor fluid intake.

STROKE / TIA

A patient experiencing a Cerebrovascular Accident (CVA or stroke) may have a variety of presentations. Most commonly, the patient will experience a new onset of unilateral weakness (hemiparesis), paralysis (hemiplegia), difficulty speaking (aphasia), or a combination of these. The pre-hospital goal is to maintain stable vital signs, increase oxygen delivery, protect the patient's airway, and provide psychological support. Early recognition of stroke symptoms and early hospital notification is important.

A. Perform **Initial Treatment / Universal Patient Care Protocol**.

B. Determine exact time of symptom onset (last time patient seen normal).

C. Assess patient for the following neurological deficits, **including time of onset of each of the symptoms** (determine *Cincinnati Pre-hospital Stroke Score*)**:**

1. Speech disturbances (abnormal speech).

2. Facial weakness or paralysis (facial droop).

3. Extremity weakness or paralysis (arm drift).

D. Immediate transport with head elevated and on left side if decreased level of consciousness.

E. Notify **Medical Command**.

F. If decreased level of consciousness:

1. Check serum glucose level with glucometer.

2. If glucose level is < 60 mg/dl, administer D50W slow IV push titrated to a level > 90 or the patient's level of consciousness increases. (Avoid a rapid change in serum glucose levels.)

G. Obtain 12 lead ECG, if available, and causes no delay in treatment or transport.

H. Initiate a second IV 0.9% NS KVO or lock, if time permits.

I. Establish Transport Mode (ground vs air) and destination in consultation with **Medical Command** if transport time is > 30 minutes. 

STROKE / TIA

Notes:

1. If possible, transport a witness, family member, or caregiver with the patient to verify the time of onset of stroke symptoms.

2. It is preferred that you bring the patient's medications to the receiving ER but if unable to do so then at a minimum a medication list will suffice.

3. Make every attempt to bring the person who saw the patient as "Last Known Normal" to the ER with the patient.

a. If unable to do so then obtain a contact name and number and ask that person to be available for the ER physician to contact them if necessary.

SEIZURES

A. Perform **Initial Treatment / Universal Patient Care Protocol.**

B. Protect patient from injury. Place on left side if decreased level of consciousness.

C. Obtain history to help determine origin of seizure:

1. Trauma
2. Suspected overdose - refer to **Ingestion/Poisoning/Overdose Protocol 4606.**
3. History of seizures and patient is taking anti-seizure medications.

D. If patient is actively seizing:

1. Protect airway. **Do Not** attempt intubation during convulsions.
2. Calm bystanders and family.
3. Obtain key information and prepare for transport.
4. Quickly assess serum glucose with a glucometer and attempt to establish IV normal saline KVO or saline lock.
5. If glucose level is < 60 mg/dl:
   a. Administer D50W, 25 gm IV.
   b. If no IV available, administer **Glucagon** 1 mg IM.
6. Expedite transport and contact **Medical Command**:
7. If seizure lasts longer than five (5) minutes or two (2) or more episodes of seizure activity occur between which the patient does not regain consciousness, administer:
   a. **Midazolam (Versed®)** 2 mg IV/IO/IM or 5 mg (IN) via atomizer.

NOTE: Midazolam may not be tolerated well in patients over 55 years of age. Doses should be initiated low and repeated as needed. Administration of these medications in patients > 55 years of age shall be as follows:

Midazolam (Versed®) 1 mg IV/IO/IM or 5 mg (IN) via atomizer.

8. If seizure continues, further treatment as **ordered by MCP.** 

E. If patient is not actively seizing:

a. Monitor vital signs closely and be alert for recurrence of seizure.

a. Transport.

b. Perform remaining assessment as indicated.

c. Notify **Medical Command.**

DIABETIC EMERGENCIES

Diabetic patients may have various complaints and are at risk for a multitude of medical problems. Diabetic patients may also become ill from hyperglycemia which may lead to diabetic ketoacidosis.

A. Perform **Initial Treatment / Universal Patient Care Protocol.**

B. Assess level of consciousness and blood glucose level by glucometer.

C. Draw labs if time permits.

D. Hypoglycemia Treatment:

1. If patient is awake and oriented with no signs of altered mental status or confusion and simply has a blood glucose reading <60 mg/dl which is abnormal for the patient: Administer 15 gm of oral glucose and recheck blood glucose level.

2. If patient is malnourished, has HIV/AIDS, receives dialysis, is a known alcoholic, or has other grossly impaired nutritional status, administer: **Thiamine** 100 mg slow IVP over one (1) minute, prior to **Oral Glucose**, **Dextrose,** or **Glucagon** administration

3. If blood glucose is < 60 mg/dl, **Dextrose 50%** in water **($D_{50}W$)** - 25 grams IVP may be repeated once after five (5) minutes if patient remains hypoglycemic.

4. If unable to initiate an IV, and blood glucose is < 60 mg/dl, administer **Glucagon** 1mg IM (if over 25 kg) or 0.5 mg IM (if < 25 kg).

E. Hyperglycemia:

1. If blood glucose is > 300 mg/dl and patient has signs and symptoms of diabetic ketoacidosis such as Kussmal respirations, acetone smell on breath, and /or history of not taking insulin administer 1 Liter bolus of **Normal Saline**; may repeat once if glucose remains > 300 mg/dl.

   a. Bolus gently with 250 ml at a time if patient has a history of end stage renal disease, is a dialysis patient, or has a history of congestive heart failure.

   b. After each bolus reassess patient for signs of fluid overload.

F. Reassess mental status and blood glucose level.

G. Consider cardiac monitoring looking for peaked “T” waves if time permits.

H. If blood glucose level remains < 60 mg/dl or > 300 mg/dl with associated signs and symptoms contact **Medical Command** for additional treatment. 

UNCONSCIOUS / ALTERED MENTAL STATUS (NON-TRAUMA)

To use this protocol, a patient must have a current Glasgow coma scale total < 12. This protocol is intended to guide the management of patients with a decreased level of consciousness who have no history of trauma.

A. Perform **Initial Treatment / Universal Patient Care Protocol.**

B. Maintain airway with the following special considerations in patients with decreased level of consciousness.

1. Reassess that there is no history of even remote trauma which could have resulted in a cervical spine injury. If in doubt, protect spine by performing **Spinal Trauma Protocol 4103.**

2. If a readily treatable cause is suspected such as hypoglycemia or narcotic overdose, and ventilation can be maintained without intubation, consider assisting ventilation without intubation until treatment is administered and condition reassessed.

3. Possible causes of unconsciousness or altered mental status (AEIOU-TIPS):

A Acidosis, alcohol
E Epilepsy
I Infection
O Overdose
U Uremia (kidney failure)
T Trauma, tumor
I Insulin
P Psychosis
S Stroke

C. Assess blood glucose level by glucometer and draw labs if available.

D. If blood glucose level is ≤ 60 mg/dl, then:

1. Treat per **Diabetic Emergencies Protocol 4604.**

E. If blood glucose level is > 60, administer **Naloxone (Narcan®)** 0.4 mg/minute up to 2 mg IV titrated to restore the respiratory drive. If IV cannot be established, administer 2 mg intranasal (IN) via atomizer, or intramuscular (IM).

F. Expedite transport and notify **Medical Command**.

OVERDOSE / TOXIC INGESTION / POISONING

There are numerous agents and drugs which produce toxic effects in patients. This protocol is designed to provide the general guidelines for treatment. Specific treatments or antidote therapy may be appropriate as directed by the Medical Command Physician in consultation with the WV Poison Control Center. Providing as much information as possible to Medical Command will allow more accurate evaluation, treatment, and coordination of medical care.

A. Perform **Initial Treatment / Universal Patient Care Protocol**.

B. Routes:

1. **Ingested Poisons:**
   a. Protect airway.
   b. Do not induce vomiting.
   c. Transport the patient with all containers, bottles, and labels from the substance, if safe to do so.
2. **Inhaled Poisons:**
   a. Immediate removal from hazardous environment.
   b. Maintain airway and support respirations.
   c. Transport the patient with all containers, bottles, and labels from the substance, if safe to do so.
3. **Absorbed Poisons:**
   a. Remove the poison using procedures described in **Burn Protocol 4506**.
   b. Transport the patient with all containers, bottles, and labels from the substance, if safe to do so.
4. **Injected Poisons:**
   a. See treatment guidelines for specific substance.

C. After decontamination procedures have been completed, do not delay transport.

Note: *Remember that a toxic exposure poses a significant risk to both the rescuer and patient; appropriate scene management and decontamination are critical.*

D. Determine the following:

a. What?

b. When?

c. How much?

d. Over what period of time?

e. Were any actions taken by bystanders, family members, and/or patient prior to EMS arrival?

E. Overdose / Toxic Ingestion / Poisoning Emergencies

1. **Alcohol:**

a. Emergencies involving alcohol can range from acute intoxication to alcohol withdrawal and delirium tremens (DTs).

b. Assess the patient and follow the proper protocol for medical management based on clinical presentation.

i. Consider hypoglycemia. Perform rapid glucose determination. If glucose < 60 mg/dL or clinical signs and symptoms indicate hypoglycemia, refer to the **Diabetic Emergencies Protocol 4604**.

ii. For signs and symptoms of hypovolemic shock or dehydration, follow the **Hypoperfusion Shock Protocol 4108.**

iii. For seizures due to alcohol withdrawal, refer to the **Seizure Protocol 4603.**

c. For alcohol withdrawal with severe agitation, tachycardia, hypertension, or hallucinations:

i. **Midazolam** (Versed®) 2 mg IV/IO/IM or 5 mg (IN) via atomizer.

NOTE: Midazolam may not be tolerated well in patients over 55 years of age. Doses should be initiated low and repeated as needed. Administration of these medications in patients > 55 years of age shall be as follows:

Midazolam (Versed®) 1 mg IV/IO/IM or 5 mg (IN) via atomizer.

2. **Narcotics / Opiates:**

a. Support respirations, as necessary, with a BVM and supplemental O2. Defer consideration of advanced airway management until after administration of Naloxone, if BVM ventilation is adequate based on SpO2 at 94 - 99%.

b. Consider hypoglycemia. Perform rapid glucose determination. If glucose is < 60 mg/dL or clinical signs and symptoms indicate hypoglycemia, refer to the **Diabetic Emergencies Protocol 4604**.

c. For a suspected narcotic overdose complicated by respiratory depression:

i. Administer **Naloxone (Narcan®)** up to 2 mg IV titrated slowly at 0.4 mg/minute to restore the respiratory drive. If patient does not show signs of improvement (adequate respiratory response/increased LOC) administer up to an additional 2 mg IV titrated slowly at 0.4 mg/minute.

ii. If unable to obtain IV access, give **Naloxone (Narcan®)** 2 mg IN. Medication should be administered equally in each nostril. If patient does not show signs of improvement (adequate respiratory response/increased LOC) administer an additional 2 mg IN,

3. **Tricyclic Antidepressants:**

a. Support respirations, as necessary, with a BVM and supplemental O2.

b. For serious signs and symptoms (altered mental status, sustained tachycardia < 120 bpm, widened QRS complex or hypotension):

i. Infuse a 20 mL/kg bolus NS. If no improvement after two 20 mL/kg boluses NS, assess for fluid overload during administration, then:

ii. Contact **Medical Command** for further treatment options. ☎

Tricyclic Antidepressants include: Amitriptyline (Elavil®), Doxepin (Sinequan®, Adepin®), Imipramine (Tofranil®).

4. **Cholinergics:**

a. Support respirations, as necessary, with a BVM and supplemental O2.

b. For serious signs and symptoms (respiratory distress, SLUDGE syndrome,

seizures, or HR < 60 bpm): Administer **Atropine** 2 mg IV. Repeat every five (5) minutes, if needed.

Pesticides (Organophosphates, Carbamates) and nerve gas agents (Sarin, Soman) are the most common exposures.	**S** – Salivation **L** – Lacrimation **U** – Urination **D** – Defecation **G** – Gastrointestinal cramping **E** – Emesis

5. **Calcium Channel Blockers:**

   a. Support respirations, as necessary, with a BVM and supplemental O2.

   b. For serious signs and symptoms (altered mental status, HR < 60 bpm, conduction delays, SBP < 90 mm Hg, slurred speech, nausea/vomiting):

      i. Administer **Atropine** 1 mg IV.

      ii. If no response to the initial **Atropine** dose contact **Medical Command** for further treatment. 

6. **Beta Blockers:**

   a. Support respirations, as necessary, with a BVM and supplemental O2.

   b. For serious signs and symptoms (altered mental status, HR < 60 bpm, conduction delays, SBP < 90 mm Hg, slurred speech, nausea/vomiting):

      i. Infuse a 20 mL/kg bolus NS. If no improvement after two (2) 20 mL/kg boluses NS, contact **Medical Command** for direction. If the patient develops signs and symptoms of fluid overload respiratory distress (dyspnea, crackles, rhonchi, decreasing SpO_2), slow the IV to KVO.

      ii. Administer **Glucagon** 1 mg IV. If additional **Glucagon** is available, administer 2 mg IV as the initial dose repeated at 2 mg IV in 10 minutes.

      iii. If no response, consider transcutaneous pacing and contact **MCP**. 

7. **Stimulants:**

   a. Assess the patient and follow the proper protocol for medical management

based on clinical presentation.

b. Support respirations, as necessary, with a BVM and supplemental O2.

c. Serious signs and symptoms (seizures, tachydysrhythmias, etc.):

i. For tachydysrhythmias with HR > 120 bpm, **Midazolam** (Versed®) 2 mg slow IV push, titrated to effect.

ii. For patients that are severely agitated or combative, follow the **Behavioral Emergencies / Patient Restraint Protocol 4607**.

8. **Cyanide Exposure (Optional):**

a. Support respirations, as necessary, with a BVM and supplemental O2.

b. Serious signs and symptoms [altered mental status, confusion, disorientation, mydriasis (excessive pupil dilation), seizures, coma and cardiovascular collapse; see drug reference for additional signs and symptoms]

i. Administer Cyanokit® 5 g of Hydroxocobalamin, infused over 15 minutes. Note: Pediatric dose is 70 mg/kg.

ii. If signs and symptoms persist, contact **MCP** for additional treatment. 

c. Signs and symptoms of Cyanide poisoning include headache, confusion, dyspnea, chest tightness, nausea, altered mental status, seizures, coma, mydriasis, hypertension (early), hypotension (late), tachypnea (early), cardiovascular collapse, and vomiting.

d. Reconstitute **Hydroxocobalamin** with Normal Saline per manufacturer's directions.

e. Comprehensive treatment of acute Cyanide intoxication requires support of vital functions.

BEHAVIORAL EMERGENCIES / PATIENT RESTRAINT

A. Assure scene safety. Do not engage patient unless risk of harm is minimized by law enforcement.

B. Implement **SAFER** mnemonic:

- **S**tabilize the situation by containing and lowering the stimuli.
- **A**ssess and acknowledge the crisis.
- **F**acilitate the identification and activation of resources.
- **E**ncourage patient to use resources and take actions in his/her best interest.
- **R**ecovery or referral – leave patient in care of responsible person or professional.

C. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

D. For altered mental status, perform rapid glucose determination.

E. Control environmental factors; attempt to move patient to a private area free of family and bystanders. **MAINTAIN ESCAPE ROUTE**.

F. Attempt de-escalation, utilize an empathetic approach. Ensure patient safety and comfort. **AVOID CONFRONTATION**.

G. **Physical Restraint:** (Commercially available soft restraints are acceptable.)

1. Consider restraining patient, as needed, to protect life or prevent injury **per MCP order** with the following considerations:

   a. Restrain patient in the supine position or left lateral recumbent position only.

   b. Ensure method of restraint does not affect breathing or circulation.

   c. Use the least restrictive or invasive method of restraint which will protect the patient and others. In many instances, full restraints will be appropriate to ensure patient and provider safety during transport.

2. Continually monitor the restrained patient's airway, circulatory, respiratory, and mental status frequently.

BEHAVIORAL EMERGENCIES / PATIENT RESTRAINT

H. **Chemical Restraint - Behavioral:**

1. If psychotic/behavioral agitation is suspected, administer **Midazolam (Versed®)** 5 mg IV, IM or IN.

NOTE: Midazolam may not be tolerated well in patients over 55 years of age. Doses should be initiated low and repeated as needed. Administration of these medications in patients > 55 years of age shall be as follows:

Midazolam (Versed®) 2 mg IV/IM or 5 mg (IN) via atomizer.

2. If patient remains agitated or aggressive in five (5) minutes, administer **Haloperidol (Haldol®)** 5 mg IM.

3. If dystonic reaction (dyskinesia) is noted secondary to **Haloperidol (Haldol®)** administer **Diphenhydramine (Benedryl®)** 25 mg IV or IM

I. **Chemical Restraint – Excited Delirium:**

1. **(OPTIONAL):** If psychotic/behavioral extreme excited delirium is suspected, administer **Ketamine 5 mg/kg IM to a max single dose of 320 mg -OR- If IV/IO already in place, 2 mg/kg IV/IO to a max single dose of 200 mg**.

NOTE: If suspected or known presence of benzodiazepines in patient, consider half dose to minimize respiratory depression

II. Transport as soon as possible.

K. If patient is medically stable, in **consultation with Medical Command**, consider transporting to a facility with advanced psychiatric care capability.

OBSTETRICAL / GYNECOLOGIC EMERGENCIES

Obtaining a detailed history can be very important in treating the pregnant or potentially pregnant patient. The following questions should be asked to the obstetric patient:

- Length of gestation?
- Number of prior pregnancies (gravida)?
- Number of prior pregnancies carried to term (para)?
- Previous cesarean sections?
- History of gynecologic or obstetric complications?
- Is there pain or contractions?
- Does patient feel the urge to push or have a bowel movement?
- Is there vaginal bleeding or discharge?
- Prenatal care?
- Multiple births anticipated?

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Transport pregnant patients on left side unless in active labor.

C. If vaginal bleeding is present, attempt to determine amount.

D. If patient is in late stages of pregnancy and shows signs of preeclampsia and/or eclampsia (toxemia) such as edema, hypertension, and hyper-reflexes:

1. Transport, as smoothly and quietly as possible, and monitor closely for signs of seizure activity.

2. If seizures occur, treat per **Seizure Protocol 4603.**

E. **Normal delivery:**

1. Determine timing and duration of contractions, and observe for crowning.

2. Transport on left side, if time permits.

3. If delivery is imminent, proceed with delivery:

   a. Prevent explosive delivery by supporting head and perineum.

   b. Suction baby's mouth, then nose as soon as head is delivered.

   c. If cord is around neck and is loose, slip over head out of way. If cord is tight, place two clamps and cut in between and unwind.

d. Hold and support infant during delivery. Refer to **Newborn Infant Care Protocol 4410.**

4. APGAR score at one (1) and five (5) minutes (see chart in "I").

5. When cord ceases pulsating, clamp at 6 and 8 inches from navel, cut cord between clamps.

6. Resume transport and continue treatment en route.

7. Notify Medical Command and prepare to deliver placenta.

8. Massage the fundus after placenta is delivered.

F. **Breech Delivery:**

1. Expedite transport and notify **Medical Command**.

2. Allow spontaneous delivery with support of presenting part at the perineum.

3. If head is not delivered within four (4) minutes, insert a gloved hand into the vagina to form a "V" airway around infant's nose and mouth.

G. **Prolapsed cord:**

1. Place mother in knee-chest position or on hands and knees with knees to chest.

2. Ask mother to pant during contractions and **Not** bear down.

3. Insert gloved hand into vagina to push presenting part of baby off the cord to ensure continued circulation through the cord. Continue until relieved at hospital.

4. Expedite transport and notify **Medical Command**.

H. **Limb presentation:**

1. Rapid transport.

2. Notify **Medical Command**.

OBSTETRICAL / GYNECOLOGIC EMERGENCIES

I. APGAR Scoring Chart:

THE APGAR SCORE			
Element	0	1	2
Appearance (Skin color)	Body and extremities blue, pale	Body pink, extremities blue	Completely pink
Pulse rate	Absent	Below 100/minute	100/minute or above
Grimace (Irritability)	No response	Grimace	Cough, sneeze, cry
Activity (Muscle tone)	Limp	Some flexion of extremities	Active motion
Respiratory effort	Absent	Slow and irregular	Strong cry
			TOTAL SCORE =

NAUSEA / VOMITING

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Presentation:

1. Gastrointestinal symptoms
2. Respiratory infection
3. Heat-related illness
4. Diabetes
5. Cardiac-related signs and symptoms

C. Place patient in position of comfort.

D. Assess and treat for shock, if indicated.

E. Administer 20 ml/kg fluid bolus, as needed.

F. Cardiac monitor (12 lead EKG as indicated.)

G. Administer **Ondansetron Hydrochloride** (Zofran®) 4 mg ODT Tablet PO dissolved in mouth or 4 mg undiluted IVP over four (4) minutes or IM.

H. Administration of **Ondansetron Hydrochloride** (Zofran®) is contraindicated in pre-existing prolonged QT interval.

I. The administration of **Ondansetron Hydrochloride** (Zofran®) is contraindicated in the first trimester of pregnancy and requires MCP Order.

CSHCN – GENERAL ASSESSMENT

Children with Special Health Care Needs (CSHCN) can present unique challenges for providers. **Listen to the caregiver and respect their guidance regarding the child's treatment.** The caregiver is your best source of information as they care for the child on a daily basis.

Before leaving the scene, ask the caregiver if they have a "go bag" and carry it with you. "Go Bags" or diaper bags contain supplies to use with the child's medical technologies and additional equipment such as extra tracheostomy tubes, adapters for feeding tubes, suction catheters, etc. are often maintained by the caregivers of special needs children.
Treat a CSHCN as you would any other patient – ABC's first.

A. Perform **Initial Assessment / Universal Patient Care Protocol** as you would any patient.

1. General impression using **Pediatric Assessment Triangle (PAT).** Appearance, work of breathing, and circulation of skin. (Appendix C)

2. Hands on physical assessment using **Pediatric ABCDE's**. Airway, breathing, circulation, disability, and exposure.

3. Suction through the nose, mouth, or tracheostomy tube, as needed.

4. Obtain a complete medical history for the patient, including history of the present illnesses and past medical history.

B. Bring all of the child's medical charts or medical forms that the caregiver may have, the child's "**go bag"** or other similar bag, and any supplies that the caregiver may have.

C. Transport to the nearest appropriate facility as soon as possible.

D. Perform additional assessment and treatments, as required, following general guidelines as outlined in the **Initial Treatment / Universal Patient Care Protocol** with the following special notes for the pediatric patient.

1. Do not use nasal cannula in infants and small children. Use blow-by oxygen or mask to keep SpO2 at 94 - 99 %.

2. Perform focused history, more detailed physical exam, and ongoing assessment at the appropriate time before and during transport.

3. Advanced Life Support (ALS) personnel treating a critically ill child who is unconscious, if unable to establish IV, then establish intraosseous route.

E. Reassess the child at least every 3 - 5 minutes, more frequently as necessary and possible.

CSHCN – CENTRAL VENOUS LINE ACCESS

Central venous lines and implanted vascular access ports are frequently utilized in children with complex or complicated medical issues. The devices allow for continuous or intermittent vascular access in order to administer intravenous fluids or medications. Central venous catheter tips generally terminate in the Superior/Inferior Vena Cava or within the Right Atrium. Common types are the traditional Central Venous Line (CVL), Peripherally Inserted Central Catheter (PICC), and Vascular Access Port (VAP).

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Determine the need for vascular access in the pre-hospital environment.

1. Assess the insertion site and inspect the central venous device for damage, signs of local infection, or edema.

C. **ALL EMS PROVIDERS**

1. If breathing is adequate, place the child in a position of comfort and administer high flow oxygen to maintain a SPO2 of at 94 to 99%.

2. Monitor and maintain adequate airway and breathing during transport.

3. Bring all of the child's medical charts or medical forms that the caregiver may have, the child's "**go bag"** or other similar bag, and any supplies that the caregiver may have.

4. Transport to the nearest appropriate facility as soon as possible.

5. Reassess the child at least every 3 - 5 minutes or more frequently as necessary and possible.

CSHCN – CSF SHUNT

CSF (Cerebrospinal fluid) shunt is a special catheter to drain cerebrospinal fluid from the brain. It runs under the skin from the skull to the chest or abdomen or any tissue with enough epithelial cells to absorb the incoming CSF.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Provide immediate resuscitation, as needed, and make immediate transport decision.

C. Assess for signs and symptoms of shunt obstruction or shunt infection.

1. Fever
2. Bulging Fontanel
3. Altered Glasgow Coma Scale

D. Initiate cardiac monitoring. Treat dysrhythmias with the appropriate algorithm.

E. Elevate the child's head keeping it in the midline position.

F. Bring all of the child's medical charts or medical forms that the caregiver may have, the child's "**go bag"** or other similar bag, and any supplies that the caregiver may have.

G. Transport to the nearest appropriate facility, as soon as possible.

H. Reassess the child at least every 3 - 5 minutes, more frequently as necessary and possible.

CSHCN – FEEDING TUBES

Feeding tubes are used in the home care setting to provide feedings for children usually due to impaired or insufficient oral intake. They can be placed in the stomach or jejunum (upper part of the small intestine) through the nose, mouth, or abdomen. These tubes may be positioned through the nasal orifice, mouth, or percutaneously.

Note: Caregivers are the best resource for tube care and troubleshooting malfunctions. Some percutaneous tubes continue on into the **jejunum**, therefore, **DO NOT TRY TO REPLACE OR REMOVE TUBE.**

There can be many reasons for leaking catheters such as balloon deflation, coughing, constipation, bowel obstruction, and seizures. Treat any medical problem according to the appropriate protocol.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Stabilize the tube in place.

C. If there are fluids infusing through the feeding tube:

1. Stop all infusing fluids.

2. Have family members flush the tube with water.

3. Clamp the tube.

D. Initiate cardiac monitoring:

1. Treat any arrhythmias with appropriate protocol.

E. If signs and symptoms of shock, obtain IV access as age-appropriate and infuse a fluid bolus of 20 ml/kg of NS. If IV access cannot be readily accessed within 90 seconds or two (2) peripheral attempts an IO may be established per order of **Medical Command**.

1. 20 ml/kg fluid bolus NS may be repeated per order of **MCP** as necessary.

2. If peripheral perfusion is maintained, IV should be infused at a KVO rate.

F. Transport child in semi-fowlers sitting position with head of cot in 30 - 45 degree elevated position unless contraindicated, i.e., trauma, etc.

G. Bring all of the child's medical charts or medical forms that the caregiver may have, the child's "**go bag"** or other similar bag, and any supplies that the caregiver may have.

CSHCN – APNEA MONITORS

A. Perform **Initial Treatment / Universal Patient Care Protocol**

1. Suction through the nose, mouth, or tracheostomy tube, as needed.

B. Provide immediate resuscitation, as needed, and immediately make transport decision.

C. Leave Apnea monitor on.

D. Apnea monitors should be transported with the child to the hospital. Most monitors contain a computer chip that records information that can be downloaded into a computer at the home hospital to determine the origin of the monitor alarms (high or low heart rate, apnea, or artifact).

E. Bring all of the child's medical charts or medical forms that the caregiver may have, the child's "**go bag"** or other similar bag, and any supplies that the caregiver may have.

F. Transport to the nearest appropriate facility as soon as possible.

G. Perform additional assessment and treatments as required following **Initial Treatment / Universal Patient Care Protocol.**

CSHCN – INTERNAL PACEMAKER / DEFIBRILLATOR

An **internal pacemaker** is a medical device placed under the skin connected with wires to the heart to regulate the heart rate. An **internal defibrillator** is an electronic device implanted under the skin to monitor the heart rhythm and deliver shocks, as necessary, to treat extremely fast heart rates that originate in the ventricles.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Assess and maintain airway patency.

C. Check pulse:

1. If no pulse is present, begin chest compressions and follow the appropriate algorithm.

2. Determine if the child has a pacemaker or defibrillator:

   a. The internal pacemaker can easily be felt near the clavicle or in the abdomen in younger children.

3. If defibrillation or pacing is needed, DO NOT place the treatment pads directly over the internal pacemaker or defibrillator generator.

D. Establish IV/IO access:

1. Treat shock, as indicated.

E. Initiate cardiac monitoring.

F. Try to determine if the cause of the emergency is related to a malfunction of the pacemaker or defibrillator.

G. Contact **Medical Command** for additional instructions. 

H. Bring all of the child's medical charts or medical forms that the caregiver may have, the child's "**go bag"** or other similar bag, and any supplies that the caregiver may have.

CSHCN – VENTILATOR SUPPORT

Ventilators and BiPAP are medical devices designed to assist with ventilation of the special needs patient. Symptoms of failure of the ventilator or BiPAP machine may include: apnea and/or cyanosis, medication or environmental reactions, nasal flaring, and altered levels of consciousness. BiPAP machines are used to augment patient breathing and do not ventilate them.

Patients with home medical devices have caregivers that are well-educated as to their usage. If they are calling EMS, it is usually because they are in trouble and have tried everything to get things back to normal, or they are having a problem with the equipment but the child is sick and they need help transporting the equipment and the child to the hospital.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. If not breathing:

1. Disconnect the ventilator tubing from the patient.

2. Attach the bag-valve device to the patient and begin manual ventilation.

   a. If chest rise is shallow, adjust the patient's airway position and check to see that the bag valve device is securely connected to the tracheostomy.

   b. Assess the airway for obstruction. Follow tracheostomy protocol to open the airway.

   c. Assess for equal chest rise and breath sounds bilaterally.

   d. Assist caregiver in trouble-shooting the equipment to check for problems.

C. Obtain a complete history of the present illness, past medical history, and interventions taken to correct the emergency before EMS arrival.

AIRWAY MANAGEMENT

Airway management is an essential part of the care of all patients. It is an ongoing process which requires assessment of many different signs and symptoms. Evaluating and recognizing respiratory distress, respiratory failure, and respiratory arrest are critical in determining what level of intervention is required to properly treat the patient. The key areas to be assessed include: general impression, patency of airway, presence or absence of protective reflexes, and adequacy of breathing.

A. Assess airway for patency and protective reflexes.

B. Determine adequacy of breathing by assessing the rate, depth, effort, and adequacy of ventilation by inspection and auscultation.

C. If airway is patent and spontaneous breathing is adequate, and:

1. No or mild to moderate distress: administer oxygen at 2 - 6 LPM nasal cannula to maintain SpO2 at 94 - 99 %.

2. Severe distress: administer oxygen at 15 LPM non-rebreather mask to maintain SpO2 at 94 - 99 %.

D. If airway is not patent, then:

1. Attempt to open airway by using head tilt/chin lift if no spinal trauma is suspected, or modified jaw thrust if spinal trauma is suspected.

2. If foreign body obstruction of airway is suspected, then refer to **Airway Obstruction Protocol 4305.**

3. If anatomical obstruction is occurring and airway cannot be maintained with positioning and the patient is unconscious, consider placing an oropharyngeal or nasopharyngeal airway adjunct.

E. If breathing is inadequate, ventilate with 100% oxygen.

F. If airway cannot be maintained by the above means, including attempts at assisted ventilations, prolonged assisted ventilation is anticipated:

1. Perform endotracheal intubation.

2. Confirm endotracheal tube placement using clinical assessment and end-tidal CO2 monitoring.

AIRWAY MANAGEMENT

G. If endotracheal intubation is not possible, insert supra-glottic airway and confirm placement or consider **Rapid Sequence Intubation Protocol 4903,** if approved to do so.

H. Continue ventilation with 100% oxygen.

I. If unable to secure airway by any of the above methods and patient is in impending danger of cardio/respiratory arrest, consider *optional* **Percutaneous Cricothyrotomy - Protocol 8401 per MCP Order.**

J. Post Intubation Management:

1. If patient is intubated and shows evidence of need for sedation/pain management to facilitate tolerating the endotracheal tube, administer:

   a. **Midazolam** (Versed®) 2 mg IV/IO every five (5) minutes to a maximum dose of 10 mg. Hold for systolic BP < 90 mmHg.

   AND/OR

   b. **Fentanyl** (*Sublimaze*®) 1microgram/kilogram – up to 100 micrograms max single dose, slow IV. Additional doses require **MCP order.**

Note: These medications may be given IM if IV/IO not available or becomes dislodged.

K. If patient is still restless and/or combative, contact **Medical Command** for further treatment considerations.

Note:

1. Do not use nasal route for airway if maxillofacial trauma is present.

2. Any patient with suspected spinal trauma needs in-line stabilization with any airway procedure.

3. Consider gastric tube placement if patient is intubated.

PATIENT COMFORT / PAIN MANAGEMENT

Pain management in the field may be indicated when a patient is experiencing severe pain. Except in rare circumstances, pain medication should not be administered to multi-system trauma patients with possible head, abdomen, or chest injuries. Nausea and/or vomiting can be a side-effect of narcotic pain medications or associated with many conditions including motion sickness while being transported.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocol for medical management based on clinical presentation.

B. Review patient's allergies, current medications, and past medical history.

C. If severe pain:

1. Administer **Fentanyl** (*Sublimaze*®) 1 microgram/kilogram – up to 100 micrograms max single dose, slow IV.

If no pain relief after two (2) minutes, may repeat Fentanyl **PER MEDICAL COMMAND PHYSICIAN** at 1 microgram/kilogram up to 100 Micrograms max per dose.

DO NOT administer **Fentanyl** (*Sublimaze*®) to children less than 12 years old without **MCP order**. Pediatric dose is 1 microgram/kg max dose of 50 micrograms **per MCP order.**

-OR-

Administer **Morphine Sulfate** 2 mg slow IV may repeat every five (5) minutes up to 10 mg unless pain is relieved.

- If systolic BP drops below 90 mm/Hg discontinue analgesic administration and administer IV fluid bolus 250 mL Normal Saline and contact **Medical Command**.

DO NOT administer **Morphine Sulfate** to children less than 12 years old without **MCP order**. Pediatric dose of **Morphine Sulfate** is 0.05 mg/kg **per MCP order.**

NOTE: Administration of pain medications may not be tolerated well in patients over 55 years of age. Doses should be initiated low and repeated as needed. Administration of these medications in patients > 55 years of age shall be as follows:

PATIENT COMFORT / PAIN MANAGEMENT

Administer **Fentanyl** (*Sublimaze*®) 0.5 microgram/kilogram– up to a max initial dose of 100 micrograms. Additional doses require **MCP order.**

-OR-

Administer **Morphine Sulfate** 1 mg slow IV; may repeat every five (5) minutes up to 10 mg unless pain is relieved.

- Use caution if hypotensive and/or bradycardic. Consider use of **Fentanyl (Sublimaze®)**.
- If systolic BP drops below 90 mm/Hg during administration of **Morphine Sulfate**, discontinue analgesic administration and administer IV fluid bolus 250 mL Normal Saline and contact Medical Command.

D. **(OPTIONAL)**: Non-Cardiac related pain that is not relieved post administration of Morphine or Fentanyl may be treated as follows:

Administer **Ketamine (Ketelar)** 0.2 mg/kg to a max single dose of 20 mg Slow IVP over 1 minute or 0.5 mg/kg IM. Subsequent doses require **MCP order.**

E. If discomfort persists, **Contact Medical Command Physician** to discuss further treatment and/or to request additional medication. Monitor blood pressure and respiratory effort.

F. To prevent or treat nausea and vomiting, consider administration of:

1. **Ondansetron** (*Zofran*®) 4 mg IV or IM slowly over 4 minutes (pediatric dose 0.15 mg/kg IV up to 4 mg max dose)

G. Expedite transport and monitor vital signs and mental status closely.

RAPID SEQUENCE INTUBATION (RSI)

This protocol is ONLY for paramedics who have been specifically trained to perform this skill and have approval from the WVOEMS State Medical Director and corresponding Squad Medical Director.

Rapid Sequence Intubation (RSI) should only be performed if a rapid airway is indicated, and benefits outweigh potential risks. This guideline is for patients that require intubation but are awake, continue to have respiratory effort, and intact cough/gag reflex. Whenever possible, **RSI should be performed prior to transport**. This guideline is not intended for patients in cardiac arrest because they should be intubated without drugs per **Airway Management Protocol 4901**.

The EMS provider must have a backup/rescue airway plan (Supraglottic device *or OPITIONAL* Percutaneous Cricothyrotomy, etc.) in mind and immediately accessible for all patients under consideration for RSI prior to proceeding:

A. General Information:

1. Two (2) paramedics must be present, one (1) of which is an "RSI trained Paramedic."

2. Patient must be on a cardiac monitor and pulse oximeter. Maintain patient on high flow supplemental oxygen either by mask or bag-valve-mask. Confirm or initiate two (2) IVs, if possible, preferably large bore. Have suction hooked up, turned on, and within reach. Have bag-valve-mask attached to oxygen regulator and immediately available.

3. Pre-oxygenate the patient using 100% oxygen. Assure that you can assist ventilations with a bag-valve-mask prior to proceeding. **DO NOT** BAG VENTILATE the patient unless necessary—this only causes increased gastric distention and the increased risk of aspiration.

B. **Indications:** Patients ≥ 12 years old whose airway cannot be controlled by any other means as outlined in the **Airway Management Protocol 4901** and one (1) of the following:

1. Inability to maintain airway patency.

2. Inability to protect the airway against aspiration.

3. Ventilatory compromise.

4. Failure to adequately oxygenate pulmonary capillary blood.

5. Anticipation of a deteriorating course that will eventually lead to the inability to maintain airway patency or protection.

RAPID SEQUENCE INTUBATION (RSI)

C. **RSI Procedure:**

1. If suspected closed head injury or other reason for high ICP, administer, **Lidocaine** - 1.0 mg/kg IV/IO at least three (3) minutes prior to intubation.

2. **Fentanyl (Sublimaze®)**: 1 microgram/kg IV/IO. Withhold if hypotensive.

3. Apply cricoid pressure (Sellick's Maneuver).

4. Sedative agent:

   a. **Etomidate* (Amidate®)**: 0.3 mg/kg IV/IO ***OR***

   b. **Midazolam (Versed®)**: 0.1 mg/kg IV/IO (max. dose 10 mg)
   Do not use Midazolam in hypotensive patients.

Note: ***Etomidate** is the preferred sedative, especially in patients with possible hemodynamic compromise. If Etomidate is used, Succinylcholine should already be drawn up and **immediately** follow Etomidate administration.

5. If not contraindicated, administer **Succinylcholine (Anectine®)**: 1.5 mg/kg IV push. When paralysis is achieved and muscle fasciculation have stopped (in about 30 - 45 seconds), orally intubate, inflate cuff, and confirm tube placement with bilateral breath sounds, appropriate end-tidal carbon dioxide waveform, etc.

Note: Contraindications include high intraocular pressure, high potassium (K > 5.5), burns and spinal cord injuries > 24 hours old, pseudocholinesterase deficiency.

6. If there is no jaw relaxation or decreased resistance to ventilation within two (2) minutes, or if the patient begins to resist, repeat **Succinylcholine (Anectine®)** 1.5 mg/kg IVP

7. If unable to intubate, consider suctioning, jaw thrust, changing operators, using a different blade, etc.; monitor oxygen saturations and use BVM to ventilate between attempts, if needed.

8. Use rescue airway plan (Supraglottic device, video laryngoscopy (required),

needle cricothyrotomy or OPTIONAL percutaneous cricothyrotomy, etc.) and/or bag-valve-mask if unable to intubate after three (3) attempts.

9. Once intubation is confirmed, if patient requires continued sedation, long term paralytics, or analgesics, consider the following drugs and repeat, as necessary, based upon patient response and drug duration of action:

   a. Sedation:

      i. **Midazolam (Versed®)**: 0.1 mg/kg IV/IO (if not hypotensive)

   b. Analgesia:

      i. **Fentanyl (Sublimaze®)**: 1 microgram/kg slow IV/IO push, ***OR***

      ii. **Morphine**: 0.1 mg/kg slow IV/IO push.

   c. Long-term paralytic:

      i. **Vecuronium (Norcuron®)**: 0.1 mg/kg IV/IO

Note: *An agent for long term paralysis MUST never be given until endotracheal tube placement is fully confirmed.*

10. All patients given a long-term paralytic agent ***must*** also periodically be given sedation while they remain paralyzed.

D. **Contact Medical Command** once en route to hospital with patient update for all patients requiring intubation.

RAPID SEQUENCE INTUBATION (RSI) - GUIDELINES

- A Squad Medical Director (SMD) must apply in writing to the WVOEMS State Medical Director for a particular squad to be considered for the RSI program. A Memorandum of Understanding (MOU) shall be established between the Squad Director, Squad Medical Director, and WVOEMS State Medical Director.

- Each individual Squad Medical Director will choose candidates for the program.

- The Squad Medical Director will be responsible for establishing initial and continuing education, performance improvement, etc.

- Continuing education by the SMD will be held monthly for the first year. The Squad Medical Director should directly observe the RSI paramedic perform an intubation and RSI sequence once a quarter (this can be in a clinical or classroom setting).

- The RSI protocol is for adults only at this time (12 years old and up).

- The Squad must agree to purchase, store, and replace the necessary medications.

- Squads entering the program shall be required to have video assisted laryngoscopy equipment.

- Squads participating in this program shall be required to have wave form capnography available.

- Every RSI intubation is to be enrolled in the squad's quality assurance program.

- A minimum of two (2) Paramedics is required throughout transport on any RSI call.

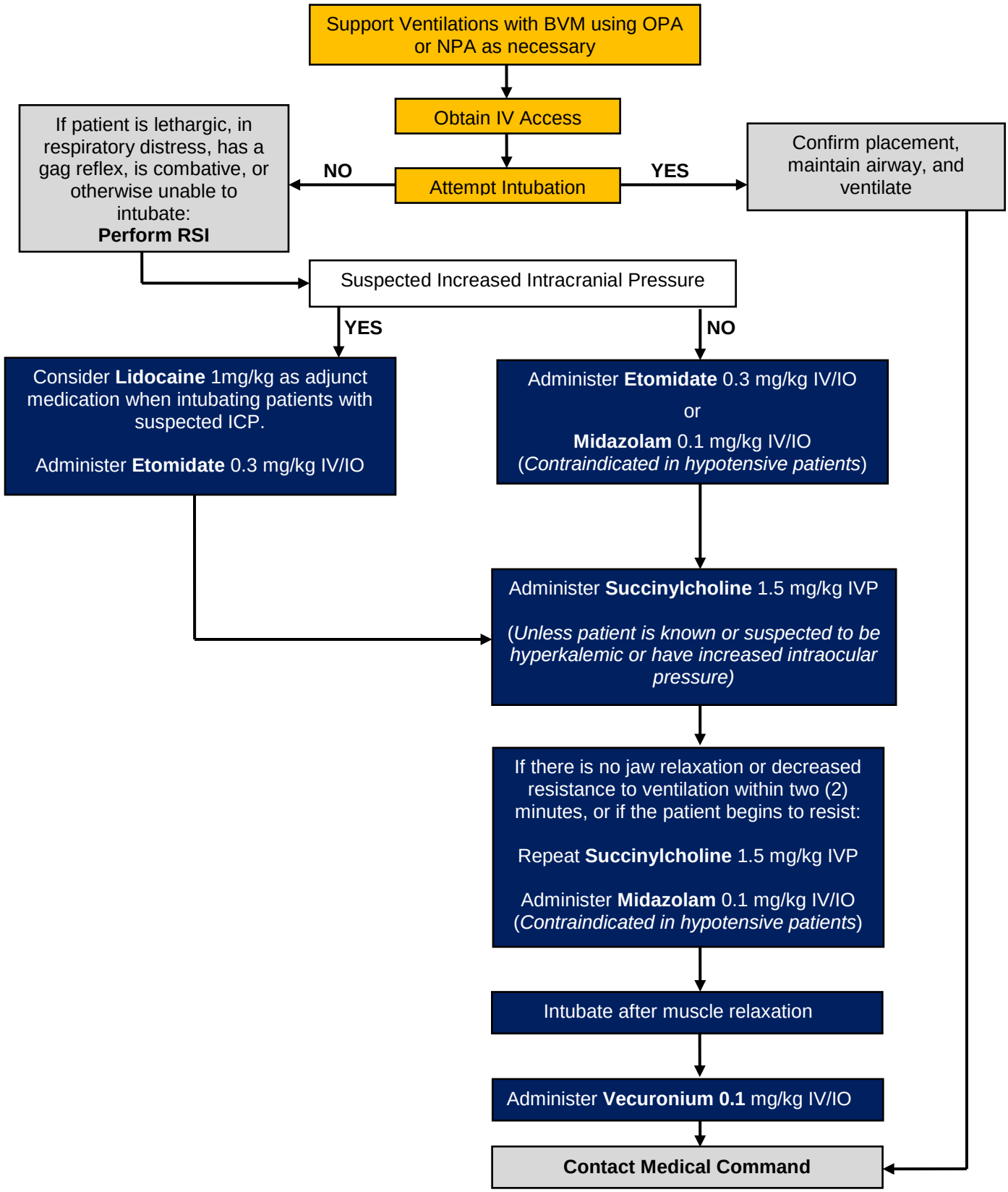
- At the 12 month point in the program, the SMD must reapply with the WVOEMS State Medical Director to continue the program.

RAPID SEQUENCE INTUBATION (RSI) - GUIDELINES

- Candidates shall have at least three (3) years experience as an active and certified WVOEMS ALS EMS provider.

- All candidates shall be required to perform a minimum of ten (10) intubations at a WVOEMS accredited training facility utilizing simulation. These intubations must be directly observed by a WVOEMS approved instructor and/or the Squad Medical Director. These intubations may also be obtained in an operating room setting, if available.

RAPID SEQUENCE INTUBATION (RSI) - ALGORITHM



MORGAN LENS - OPTIONAL

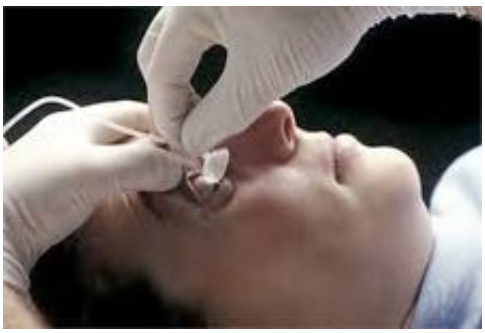
A. Purpose:

1. Provide irrigation to one eye.

B. Application:

1. Administer **Tetracaine**, 2 drops per eye being irrigated.

2. Attach mixed saline bag to IV tubing.
3. Attach Morgan Lens to IV tubing.
4. Run fluid to check that attachments are working properly, then pause fluid.
5. Instruct patient to look towards patient's feet.
6. Retract upper eyelid and insert Morgan lens under upper lid.



7. Release upper lid and instruct patient to look up.
8. Retract lower lid and insert Morgan lens under lower lid.
9. Release lower lid.

10. Tape tubing to patient's forehead to prevent accidental removal.

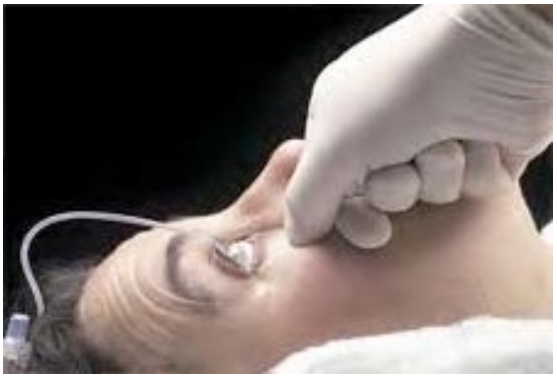
11. Irrigate eye(s).

Note: DO NOT RUN DRY; FLUIDS MUST ALWAYS BE RUNNING

C. Removal

1. Continue flow of fluids.

2. Instruct patient to look up and retract lower lid.



3. Slide Morgan lens out.

4. Terminate flow.

NOTE: Tetracaine is a single use medication. Repeated doses will predispose the cornea to ulceration and destruction of the superficial layer of the cornea.

INTRAOSSEOUS PLACEMENT

Intraosseous placement is intended ***only*** for those patients needing immediate vascular access in those that peripheral access cannot be established. In rare cases, it may be considered ***prior*** to peripheral attempts, but only as outlined below. This procedure may only be used by personnel specifically trained and signed off by their agency's Squad Medical Director.

A. Indications:

1. Immediate vascular access in life-threatening emergencies.

Note: IO insertion shall *NOT* be performed just for prophylactic access.

2. Intravenous fluids or medications are urgently needed and peripheral intravenous access cannot by established in a timely manner AND the patient exhibits one or more of the following:

   a. Altered mental status (GCS ≤ 8).

   b. Respiratory compromise (pulse oximeter ≤ 90% after appropriate O_2 therapy, or respiratory rate < 10 or > 40).

   c. Hemodynamic instability (systolic BP < 90).

3. Intraosseous may be considered ***prior*** to peripheral IV attempts where successful rapid peripheral IV placement is doubtful, as in the following situations:

   a. Cardiac arrest (medical or trauma).

   b. Profound hypovolemia with altered mental status.

   c. Patient in extremis with immediate need for medication or intravenous fluids (patient in status epilepticus, impending arrest, etc.).

B. Contraindications:

1. Fracture of the bone selected for IO infusion (*consider alternate side*).

2. Absence of anatomic landmarks at selected site.

3. Previous significant orthopedic procedure (prosthesis, recent surgery).

4. Infection at the selected site.

INTRAOSSEOUS PLACEMENT

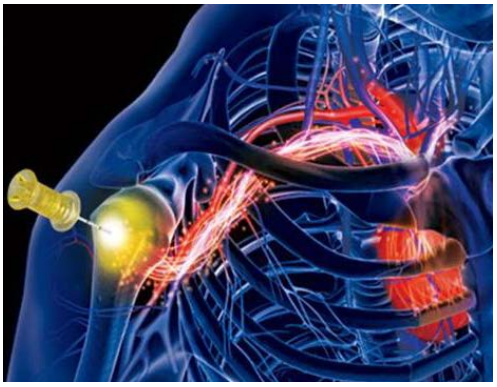
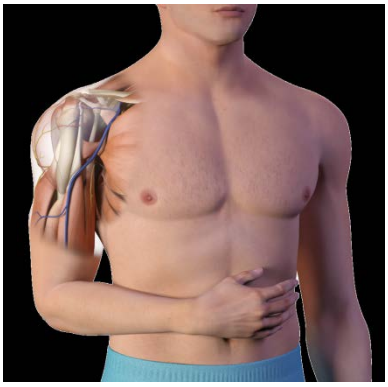
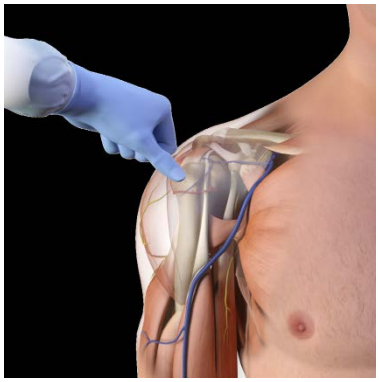
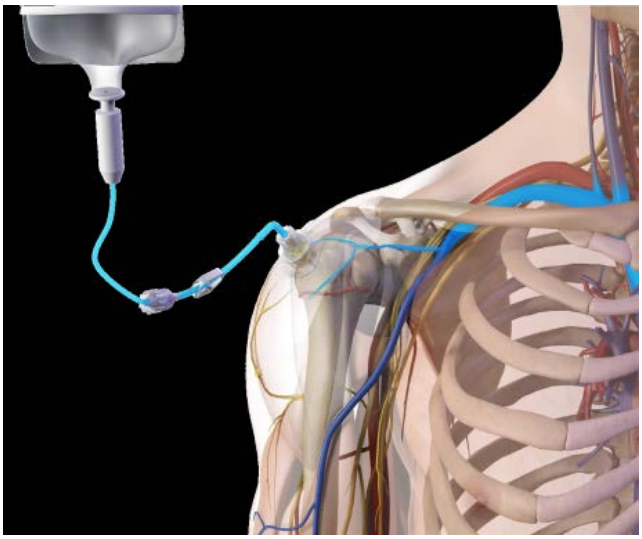
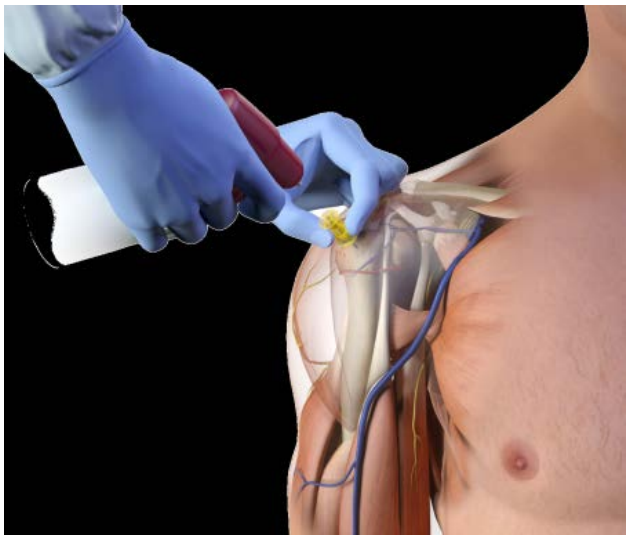
C. Procedure:

1. **ADULT:** Select insertion site in the following order, unless contraindicated: proximal humerus, proximal tibia, then distal tibia.

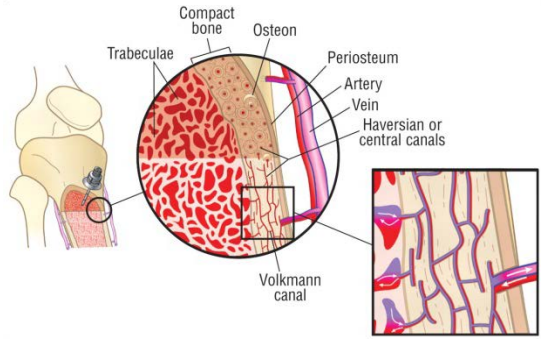
2. **PEDIATRIC:** Select insertion site in the following order, unless contraindicated: proximal tibia, distal tibia, then proximal humerus.

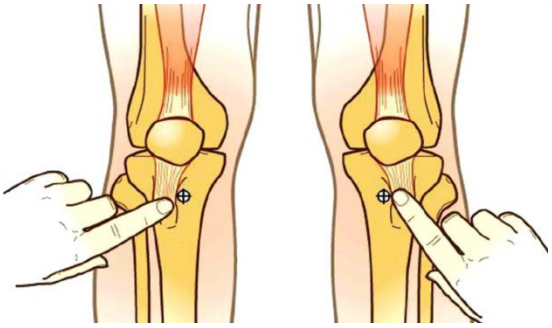
Note: Red arrows point to targeted insertion sites.

a. Adult and Pediatric proximal humerus: greater tubercle just anterior to midline.

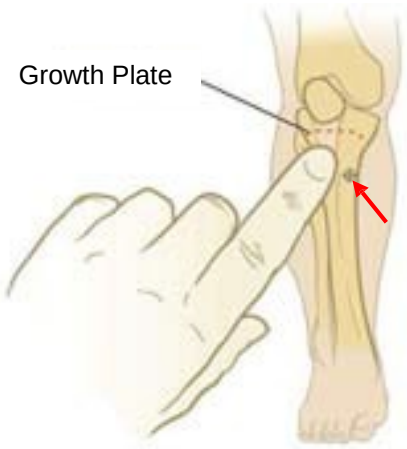






b. Adult proximal tibia: Measure one (1) fingerbreadth *medial* to the tibial tuberosity, along the flat aspect of the medial tibia as shown below.

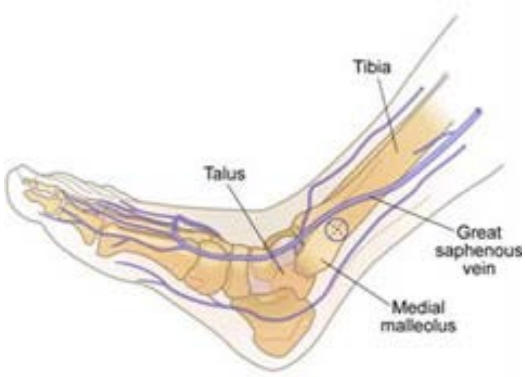


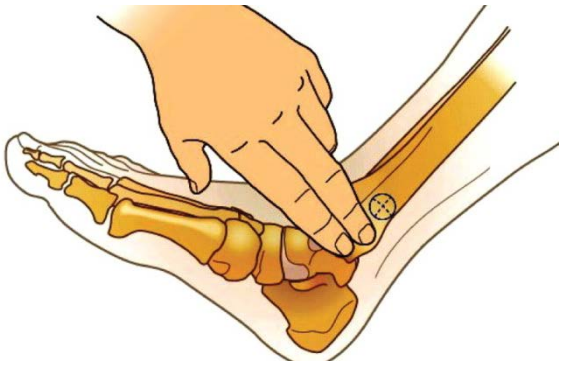


c. Pediatric proximal tibia: one (1) finger width distal to tibial tuberosity OR if unable to palpate tibial tuberosity, two finger widths below the patella along the flat aspect of the medial tibia. Avoid growth plates.

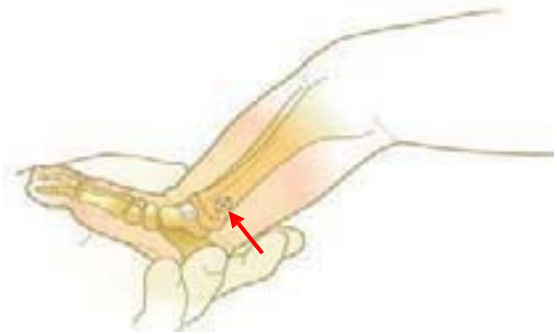


d. Adult distal tibia: two (2) finger widths proximal to the medial malleolus and midline on the medial shaft.





e. Pediatric distal tibia: one (1) finger width proximal to the medial malleolus along the flat aspect of the medial distal tibia.



3. Prepare the skin site with antiseptic.

4. Prepare IO drill and needle set, then load the appropriate sized needle onto the driver.

5. Hold the IO drill in one hand and stabilize the extremity near the insertion site with the opposite hand.

6. Position the drill at the insertion site with the needle at a 90 degree angle to the surface of the bone. Insert IO. Stabilize needle.

7. Analgesia. In the conscious/awake patient, slowly administer lidocaine 2% (**cardiac lidocaine 100mg/5ml [20mg/ml] - preservative free**) through the IO hub as follows. *Ensure that the patient has no allergy to lidocaine*.

   a. Adults: Lidocaine 40 mg (2 ml) ***slow*** IO.

   b. Pediatric: Lidocaine 0.5 mg/kg ***slow*** IO.

Allow the lidocaine to work from 30 – 60 seconds before giving the flush.

8. Flush: To ensure proper infusion, administer a ***rapid syringe bolus flush*** as follows and repeat if necessary:

   a. Adults and Pediatric: 10 ml normal saline rapid IO bolus.

   b. Include any pediatric flushes into totals for IV fluids given and record the amounts.

8. If no soft tissue infiltration is seen, attach IV line and infuse fluids and /or medications as usual; for adults, the IV bag will need to be under pressure. If the flow through the intraosseous line decreases after initial success, consider repeating the flush.

9. Monitor the area for signs of soft tissue infiltration and stop all infusions if infiltration is suspected.

10. Notify the receiving facility of the presence of the IO device prior to moving to the hospital stretcher.

** Permission to use the anatomic photos in this protocol was provided by Vidacare Corporation.*

PERIPHERALLY INSERTED CENTRAL CATHETER (PICC LINE) ACCESS

A Peripherally Inserted Central Line (PICC) is a common method of maintaining long-term venous access in select patients. PICC lines are typically inserted into the antecubital fossa, and then threaded into central circulation. PICC lines are frequently flushed with heparin to maintain patency and therefore it is imperative to aspirate 5 ml of blood from the line prior to use.

Note: PICC line access shall *NOT* be performed simply for prophylactic access.

A. INDICATIONS:

1. Immediate vascular access in life-threatening emergencies.

2. Intravenous fluids or medications are urgently needed and peripheral intravenous access cannot by established in a timely manner ***AND*** the patient exhibits **one (1) or more** of the following:

   a. Altered mental status (GCS ≤ 8).

   b. Respiratory compromise (pulse oximeter ≤ 90% after appropriate O2 therapy, or respiratory rate <10 or >40).

   c. Hemodynamic instability (systolic BP <90).

3. PICC line access may be considered ***prior*** to peripheral IV attempts where successful rapid peripheral IV placement is doubtful, as in the following situations:

   a. Cardiac arrest (medical or trauma).

   b. Profound hypovolemia with altered mental status.

   c. Patient in extremis with immediate need for medication or intravenous fluids (i.e. patient in status epilepticus, impending arrest, etc.).

4. Patient or patient's caregiver requests use of PICC line and accepted risks of complications including infection, catheter damage and embolus.

B. CONTRAINDICATIONS:

1. Inability to aspirate or infuse through the catheter.

2. Catheter located in any place other than the patient's upper arm.

3. Need for rapid fluid resuscitation.

C. PROCEDURE:

1. Use clean gloves and maintain sterility as much as possible.

2. If there is a needleless type port on the distal end of the catheter, perform the following:

   a. Scrub the port with an alcohol pad for at least 15 seconds and allow drying for at least 5 seconds.

   b. Attach a 10 ml syringe (without saline) to the port.

   c. Unclamp if necessary (needleless ports may not have a clamp)

   d. Attempt to aspirate at least 5 ml of blood. Blood should draw freely. If it does not, remove the syringe and **DO NOT use the catheter** for access.

   e. If blood aspirates freely, remove the 10 ml syringe with blood and discard.

   f. Attach a 10 ml syringe with NS and gently flush the line. **Never** use a smaller syringe. If line does not flush, remove the syringe and **DO NOT** use the catheter for access.

   g. If line flushes, remove the syringe and attach the catheter to the end of the IV tubing and begin infusion of NS. Adjust the rate appropriate to the needs of the patient within the limits of the catheter.

   h. Administer medications though IV tubing port if indicated.

   i. IV maintenance fluids must be administered to keep line open during transport

3. If there is a capped needle-type port on the distal end of the catheter, perform the following:

   a. Scrub the cap with an alcohol pad for at least 15 seconds and allow drying for at least 5 seconds.

   b. Clamp the catheter tubing using ONLY the existing clamp on the catheter and then remove the cap. **Never allow a central line to be open to air.**

c. Attach a 10 ml syringe on the catheter end.

d. Unclamp the catheter.

e. Attempt to aspirate at least 5 ml of blood. Blood should draw freely. If it does not, re-clamp the line and remove the syringe. **DO NOT** use the catheter for access.

f. If blood aspirates freely, clamp the catheter again.

g. Remove the 10 ml syringe with blood and discard.

h. Attach a 10 ml syringe with NS.

i. Unclamp and gently flush the line. Never use a smaller syringe. If line does not flush, re-clamp the line and remove the syringe. **DO NOT** use the catheter for access.

j. If line flushes, re-clamp and remove the syringe.

k. Attach the catheter to the end of the IV tubing.

l. Unclamp the catheter and begin infusion of NS. Adjust the rate according to the needs of the patient within the limits of the catheter.

m. Administer medications though IV tubing port if indicated.

n. IV maintenance fluids must be administered to keep line open during transport.

D. **NOTES & PRECAUTIONS:**

1. **Do not** administer medications, flush or aspirate with less than a 10 ml syringe. Smaller size syringes generate too much pressure and can damage the catheter.

2. **Do not** attempt to re-inject aspirated blood as it may contain clots.

3. The maximum flow rate for a PICC line is 125 ml/hr for less than a size 2.0 French and 250 ml/hr for catheters over a size 2.0 French.

PERIPHERALLY INSERTED CENTRAL CATHETER (PICC LINE) ACCESS

4. Keep patient's arm straight to avoiding kinking the PICC line and obstructing flow.

5. Ensure all line connections are secure.

6. PICC lines access the patient's central circulation and the risk of infection is high. Avoid contamination to ports and connections while accessing.

7. **Cautions administering the following medications through a PICC line:**

   a. **Adenosine** - The line may rupture during rapid infusion due to over pressurization.

   b. **Dextrose 50%** – The catheter can be damaged by due to the viscosity of the fluid and pressurization.

Potential Complications of Peripherally Inserted Central Catheters	
Complication	**Signs and Symptoms**
Air embolus	Hypotension, lightheadedness, confusion, tachycardia, anxiety, chest pain, shortness of breath
Catheter embolus	Shortness of breath, confusion, pallor, lightheadedness, tachypnea, hypotension, anxiety, unresponsiveness, shorter catheter measurement on removal than inserted length
Arterial puncture (during insertion)	Bright red blood, pulsatile bleeding at insertion site, retrograde flow in IV tubing, can be verified by arterial blood gas test on sample aspirated from PICC
Cardiac arrhythmia	Irregular pulse, palpitations, atrial or ventricular arrhythmia on cardiac monitor
Nerve injury or irritation	Shooting "electric shock sensation" of pain down arm during insertion, numbness, tingling, weakness of extremity, paralysis
Inability to advance catheter to desired tip termination	Catheter will not advance
Catheter malposition (can occur during insertion, or after insertion)	Patient hears gurgling sound during flushing of catheter (internal jugular tip malposition), arm or shoulder pain, headache, swelling in neck, dyspnea, discomfort during infusion, absence of blood return, leaking at insertion site, arm swelling, back discomfort, chest pain or tenderness, arrhythmia symptoms
Infection	Fever, chills, tachycardia, fatigue, muscle aches, weakness, hypotension, erythema, swelling at site, induration, purulent drainage at site, elevated white blood cell count
Phlebitis	Erythema, pain at access site, streak formation, palpable venous cord, purulent drainage
Difficult removal of PICC	Resistance met at any point during removal of catheter

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

FOR USE ONLY IF SPECIFICALLY INCLUDED WITHIN THE APPROVED SCOPE OF PRACTICE OF THE PROVIDER

Continuous Positive Airway Pressure (CPAP) has been shown to rapidly improve vital signs, gas exchange, work of breathing, decrease the sense of dyspnea, and decrease the need for endotracheal intubation in certain patients who suffer respiratory distress from CHF, pulmonary edema, asthma, COPD, or pneumonia. In patients with CHF, CPAP can improve hemodynamics by reducing preload and afterload, however it may cause hypotension.

A. INDICATIONS: Any patient who is in respiratory distress and who has signs and symptoms consistent **with at least one of the following**: CHF, pulmonary edema, asthma, COPD, or pneumonia **AND must meet all five (5) of the following criteria:**

1. Is awake and oriented.

    a. Exception to this would be if you had the optional ability to continuously monitor and trend ETCO2 values and waveform and MUST remain with the patient at all times.

    b. If the patient has an altered LOC caused from hypercapnia then CPAP may be applied and patient continually reassessed for a decrease in the ETCO2 and improvement in oxygenation as evidenced by an increase in the SPO2, level of consciousness and decrease in the ETCO2.

    c. If after 3 to 5 minutes the patient does not respond or their condition worsens then the CPAP will be disconnected and patient will receive PPV or BVM and consider intubation to protect the airway. Refer to protocol 4901 (Airway Management)

2. Is over 12 years old and is able to fit the CPAP mask.

3. Has the ability to maintain an open airway (GCS >10).

4. Has a systolic blood pressure > 90 mm Hg.

5. Has **at least two (2)** or more of the following:

    a. Retractions or accessory muscle use.

    b. Respiratory > 24 per minute.

    c. Inability to speak in full sentences due to dyspnea.

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

B. CONTRAINDICATIONS **(Do not use if any are present):**

1. Respiratory arrest.
2. Hypotension (Blood pressure < 90 systolic).
3. Suspected pneumothorax.
4. Patient has a tracheostomy.
5. Foreign body airway obstruction.
6. Facial deformity or trauma causing inability to achieve mask seal.
7. Actively vomiting.
8. Recent facial, neurological, or gastric surgery.
9. Chest, head, or face trauma.

C. COMPLICATIONS:

1. Tension pneumothorax
2. Hypotension
3. Aspiration
4. Gastric distention
5. Severe anxiety / combativeness due to mask intolerance.

D. PROCEDURE:

1. Explain the procedure to the patient.
2. Continuously monitor patient.
   a. Check and document vital signs every five (5) minutes.
   b. Observe for decrease in level of consciousness.
   c. Observe for gastric distention.

3. Continuously monitor pulse oximeter.

4. Ensure adequate oxygen supply to the CPAP device.

5. Turn CPAP device on.

6. Have the patient sit up as much as possible.

7. Apply the device as per manufacturer's directions.

8. Initially assist the patient in holding the mask tightly to their face and evaluate their tolerance of the mask.

9. Reevaluate patient's condition and tolerance of the mask:

   a. Coach the patient to keep mask in place and readjust, as needed.

   b. If respiratory status or level of consciousness deteriorates, remove device, assist ventilations, and utilize appropriate airway management modality as per protocol.

   c. If patient tolerates mask and condition does not deteriorate, secure the mask with straps.

10. Check for air leaks.

11. Continue to monitor the patient during transport.

12. Contact **Medical Command,** as early as possible, so the receiving hospital can be prepared for the patient.

E. REMOVAL: CPAP should be continuous and should not be removed in the prehospital setting unless:

1. Patient cannot tolerate the mask.

2. Patient begins to vomit.

3. Patient's mental or respiratory status deteriorates.

4. Patient becomes hypotensive (Systolic blood pressure < 90 or drops 20 mm/Hg).

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

Notes:

1. CPAP should continue upon arrival at the emergency department until patient care is transferred to the emergency department staff. Do not remove CPAP until hospital emergency therapy is ready to be placed on the patient.

2. This procedure may be performed on a patient with a *Do Not Resuscitate order*.

3. CPAP pressure should be started at 3 - 5 cm of H20. Most patients will only require 5 cm H20. Pressure may be slowly titrated upward depending on patient response, BUT NEVER ABOVE 10 cm H2O without MCP order.

4. CPAP should be used with caution with portable oxygen systems due to limited amounts of oxygen available to operate the device (If CPAP device is oxygen powered).

5. **DO NOT** delay other emergency interventions to establish CPAP. CPAP should be delivered as an adjunct to treatments indicated by the primary protocol.

6. Most patients will improve in 5 - 10 minutes. If no improvement within this time, consider additional treatment options per primary protocol.

7. **DO NOT** force CPAP use on patients who have failed at past attempts to utilize noninvasive ventilation techniques and request that it not be applied.

CHEST DECOMPRESSION

A. INDICATION:

1. Patient with a suspected tension pneumothorax.

   a. Closed or penetrating chest trauma with respiratory distress.

   b. Absent breath sounds on the side of the injury.

   c. SBP < 90 mm Hg in adults or SBP < 80 mm Hg in children, with signs of shock.

B. PROCEDURE:

1. Midclavicular

   a. Identify the second intercostal space on the side of the pneumothorax.

   b. Place a finger on the clavicle at its midpoint.

   c. Run this finger straight down the chest wall to locate the first palpable rib below the clavicle.

   d. The second intercostal space lies just below this rib, midway between the clavicle and the nipple line.

   e. Cleanse the area with an alcohol or Povidone-Iodine swab.

3. Select a 14 or 16 gauge, 3 ¼ inch IV catheter (Pediatric:16 gauge, 1 ¼ inch). Remove the flash chamber cap. Do not use needle-safe IV catheters.

4. Advance the needle into the second intercostal space above the third rib. Assure you enter the thoracic cavity by passing the needle just over the top of the rib to avoid interference with the blood vessels and nerves that run along the underside of the rib.

5. As you enter the pleural space, you will feel a pop and note a rush of air expelling.

6. Advance the catheter into the chest and then withdraw the needle. Be careful not to kink the catheter.

7. Attach a one-way flutter valve to the catheter:

   a. Asherman Chest Seal, or similar device, over the barrel of the catheter.

b. Finger cut off of a latex or similar examination glove (secure to catheter hub prior to performing the chest decompression).

8. Secure the catheter in place with tape, being careful not to block the port or kink the catheter.

9. Monitor the patient's vital signs and breath sounds for a recurring tension pneumothorax.

10. If signs and symptoms are not relieved by the initial chest decompression, or signs and symptoms recur, decompress the chest again by placing additional catheters adjacent to the original catheter.

C. CONSIDERATIONS:

1. For an open pneumothorax, immediately cover the open area with a gloved hand. Once materials are available, cover the area with an occlusive dressing.

2. An open pneumothorax that has been sealed with an occlusive dressing may result in a tension pneumothorax. In that instance, the increase in pleural pressure may be relieved by briefly removing the dressing. If that air release does not occur or the patient's condition remains unchanged, gently spread the chest wound open with a gloved hand, allowing the trapped air to escape.

PERCUTANEOUS CRICOTHYROTOMY - OPTIONAL

A. **INDICATIONS:**

1. Any clinical situation in which a definitive airway is necessary, and all other methods have failed or are otherwise not indicated:
   a. Complete airway obstruction.
   b. Foreign Body Airway Obstruction (FBAO) refractory to removal attempts.
   c. Complete airway occlusion (i.e. mass lesion).
2. Severe upper airway edema:
   a. Anaphylaxis
   b. Thermal/Inhalation injuries
   c. Caustic ingestions
   d. Angioedema
3. Epiglottitis complicated by severe respiratory compromise and/or respiratory arrest.
4. Inability to intubate:
   a. Hemorrhage
   b. Anatomic variants
   c. Massive regurgitation and/or aspiration
   d. Severe maxillofacial trauma

B. **CONTRAINDICATIONS:**

1 Absolute contraindications:
   a. Child < 12 years of age.
   b. Inability to locate landmarks required for procedure.
   c. Lack of training in surgical airway interventions.

d. Tracheal transection.

2. Relative contraindications:

a. Direct laryngeal injury.

b. Known laryngeal pathology: Stricture or tumor

C. **PREPARATION:**

1. Prepare skin using aseptic solution.

2. Position the patient in a supine position, with in-line spinal immobilization, if indicated. If cervical spine injury not suspected, neck extension will improve anatomic view.

3. Perform cricothyrotomy according to manufacturer's instructions for selected device (example: Quick Trach I®, Quick Trach II®).

4. Confirm and document tube placement by:

a. ETCO2

b. Breath sounds

c. Rising pulse oximetry

d. Other means, as needed

5. Ventilate with BVM assessing adequacy of ventilation.

6. Observe for subcutaneous air, which may indicate tracheal injury or extra-tracheal tube position.

7. Secure tube with tube ties or device.

8. Continually reassess ventilation, oxygenation, tube placement, and waveform EtCO2.

PERCUTANEOUS CRICOTHYROTOMY - OPTIONAL

D. **PRECAUTIONS:**

1. Success of procedure is dependent on correct identification of cricothyroid membrane.

2. Bleeding will occur, even with correct technique. Straying from the midline is dangerous and likely to cause hemorrhage.

E. **POST PROCEDURE MANAGEMENT:**

1. Assess the patient for increases in heart rate, BP, and restlessness as indicators for additional sedation and analgesia.

2. If procedure is successful and patient shows evidence of need for sedation and/or pain management to facilitate tolerating the procedure, administer:

   a. **Midazolam -** 2 mg IV/IO every five (5) minutes to a maximum dose of 10 mg. Hold for systolic BP < 90 mm/Hg.

   AND/OR

   b. **Fentanyl** - (*Sublimaze*®) 1 microgram/kilogram – up to 100 micrograms max single dose, slow IV. May repeat Fentanyl **PER MCP**.

   ***Note**: These medications may be given IM if IV/IO not available or becomes dislodged.*

3. If patient is still restless and/or combative, contact **Medical Command Physician** for further treatment considerations.

STOMA / TRACHEOSTOMY SUCTION MANAGEMENT

The majority of adults and children with tracheostomies are dependent on the tube as their primary airway. Cardio-respiratory arrest most commonly results from tracheostomy obstructions. Obstruction may be due to thick secretions, mucous plug, blood clot, foreign body, or kinking or dislodgement of the tube. Work expeditiously and deliberately to reestablish airway patency and support oxygenation/ventilation.

Early warning signs of obstruction include tachypnea, tachycardia, and desaturation. Cyanosis, bradycardia, and apnea are late signs. **DO NOT** wait for these to develop before intervening.

A. Complications:

- Airway obstruction
- Aspiration
- Blocked tube
- Bleeding
- Tracheal trauma
- Pneumothorax
- Subcutaneous and mediastinal emphysema
- Respiratory and cardiovascular collapse
- Dislodged tube
- Tracheo-esophageal fistula
- Infection

B. Endotracheal Suctioning:

1. Endotracheal suctioning is necessary to remove mucus, maintain a patent airway, and avoid tracheostomy tube blockages. Indications for suctioning include:

   a. Audible or visual signs of secretions in the tube.

   b. Signs of respiratory distress.

   c. Suspicion of blocked or partially blocked tube.

   d. Inability to clear the tube by coughing out the secretions.

   e. Increases in required ventilation pressures (in ventilated patients).

   f. Request by patient.

2. Tracheal suctioning should be carried out regularly for patients with a tracheostomy. The frequency varies between patients and is based on

individual assessment.

3. Tracheal damage may be caused by suctioning. This can be minimized by using the appropriate sized suction catheter and only suctioning within the tracheostomy tube.

Table 1: Recommended Suction Catheter Sizes

Tracheostomy tube size (in mm)	3.0 mm	3.5 mm	4.0 mm	4.5 mm	5.0 mm	6.0mm	7.0mm	7.5mm	8.0mm	9.0mm – 10mm
Recommended suction catheter size (Fr)	7	8	8	10	10	10-12	14	14-16	14-16	16

4. The suction depth is determined by the estimated length of the tracheostomy tube.

5. The depth of insertion of the suction catheter needs to be determined prior to suctioning to avoid trauma.

6. Using the patient's spare tracheostomy tube of the same size (if available) to estimate needed depth of suctioning.

7. The pressure setting for tracheal suctioning (suction machine pressure for small children 50-100 mm/Hg; for older children/adults 100-120 mm/Hg) to avoid tracheal damage.

8. In most circumstances, it is best to limit the duration of suctioning (including passing the catheter and suctioning the tracheostomy tube) to 5 - 10 seconds.

9. Routine use of normal saline is not necessary although there is anecdotal evidence it may thin secretions. In situations where this may be of benefit, only 1 - 2 mL is usually needed.

C. Tracheal Suctioning Procedure:

1. Inform patient of intended action.

2. Maintain appropriate PPE throughout procedure.

3. Assemble needed suction equipment and power on suction device.

4. Instill small volume of sterile normal saline into the tracheostomy tube, if needed for thick or dry secretions. Excessive use of saline is not recommended. Use saline only if the mucus is very thick, hard to cough up, or difficult to suction.

5. Gently insert catheter into the tracheal tube without applying suction, passing to the previously estimated needed depth.

6. Put thumb over opening in catheter to create suction and use a circular motion (twirl catheter between thumb and index finger) while withdrawing the catheter so that the mucus is removed well from all areas. Avoid suctioning longer than 10 seconds because of oxygen loss. Suction normal saline from a container if needed to clear catheter.

7. For tracheostomy tubes with cuffs, it may be necessary to deflate the cuff periodically for suctioning to prevent pooling of secretions above tracheal cuff.

8. Let patient rest and breathe, then repeat suction, if needed, until clear (trying to allow about 30 seconds between suctioning).

9. Oxygenate/ventilate, as needed.

DEATH IN THE FIELD

This protocol is designed to be used when EMS personnel encounter patients who are dead at the time of arrival in which resuscitation is medically inappropriate **or** for use immediately after the **Cease-Effort Protocol 9102** has been performed.

A. Perform initial assessment as per any patient.

B. Determine history.

C. **Criteria:** The decision to not begin resuscitation may occur under the following circumstances if ordered in **consultation with MCP**.

1. When there are changes to the body which indicate a prolonged postmortem interval (i.e. decomposition, rigor in normo-thermic body).

2. Injuries incompatible with life such as decapitation or transection of torso.

3. Pulseless, apneic patients in multiple casualty situations where resources are required to maintain living patients and those resources are unavailable.

4. Proper “Do Not Resuscitate” documentation has been discovered or clarified by family, **Medical Command Electronic Registry (End of Life Registry)**, or power of attorney.

5. Resuscitation efforts pose a danger to the health and/or safety of the rescuers and/or the scene is judged unsafe for rescuers to continue providing care.

D. **Criteria:** The decision to not begin resuscitation may occur under the following circumstances by **order of MCP**.

1. Victims of trauma who are pulseless and apneic at the time of arrival of first responders or EMS personnel.

2. Blunt trauma patients, who become pulseless and apneic, cannot be extricated quickly, and the entrapment precludes medically effective resuscitation efforts.

3. Circumstances where beginning or continuing resuscitation is not medically appropriate as determined by EMS personnel and direct contact with the **Medical Command Physician.**

4. Proper “Do Not Resuscitate” documentation has been discovered or clarified by family, **Medical Command Electronic Registry (End of Life Registry)**, or power of attorney.

DEATH IN THE FIELD

E. Procedure:

1. Contact **Medical Command** immediately and **consult with MCP** as required in "C" and "D" above. Discuss situation and **obtain confirmation that no resuscitation is indicated.**

2. Protect and preserve the scene until jurisdictional authority has been determined as in #4 below.

3. Notify the Medical Examiner Authority (County or State) on all out-of-hospital deaths **including** those registered with and receiving hospice care.

4. If the county authority is unavailable or does not call back within 10 minutes, then contact the State Medical Examiner's Office at 1-877-563-0426

5. Check with your county dispatch to ensure that Law Enforcement has been notified.

6. EMS personnel are not required to transport the body, but may do so if instructed and this is standard practice as a courtesy to the local community.

7. EMS personnel should document carefully the signs, symptoms, and vital signs which confirmed and allowed the declaration of death. These facts should be recorded in the patient care record.

8. For Medical Examiner cases, the hospital copy of the patient care record should be completed and given to the Medical Examiner Authority (County or State) if they are on-scene or left with the body at the morgue if transport is made.

CEASE EFFORTS

This protocol is designed to be used when in **direct consultation with the Medical Command Physician (MCP)**, the medical decision is made to discontinue resuscitation efforts in the field and proceed to the **Death in the Field Protocol 9101.**

A. Criteria: EMS personnel may request orders to cease resuscitation efforts on a patient in the field when any of the following are present:

1. Resuscitation initially started by first responders, family members, etc. is determined to have been medically inappropriate (i.e. terminal cancer or traumatic arrest).

2. A full cycle of ALS treatment has been unsuccessful and one (1) of the following criteria are met:

   - Patient remains in PEA or Asystole > 20 minutes with no rhythm change confirmed in two (2) leads.

   - EtCO2 < 10 mmHg with high quality CPR for greater than ten (10) minutes (if available).

3. Proper "Do Not Resuscitate" documentation has been discovered or clarified by family, **Medical Command Electronic Registry (End of Life Registry)**, or power of attorney.

4. BLS resuscitation has proved unsuccessful and no ALS is available > thirty (30) minutes or the patient has been confirmed pulseless and apneic for > twenty (20) minutes with NO shocks delivered from an AED at any time during the resuscitation effort.

5. Physical exhaustion of available providers to provide care.

6. The scene environment is judged to be unsafe for rescuers to continue resuscitation.

7. Extremely remote areas where evacuation may require hours or days.

B. Procedure:

1. EMS personnel will contact **Medical Command** and speak **directly to the MCP.**

2. Specific history and details of care will be discussed and **MCP will make final decision**, give final order to cease resuscitation, and note exact date and

time.

3. Proceed immediately to **Death in the Field Protocol 9101.**

C. Exceptions: The following situations may necessitate transport of patients and continued resuscitation efforts **per direct MCP order:**

1. Volatile or potentially dangerous situations where movement of the patient and exit from the scene is required for the safety of the rescuers.

2. Hypothermic patients: Treat per **Cold Exposure Protocol 4503.**

3. Pediatric patients less than 12 years of age.

Note: If patient is removed from scene and resuscitation continued, the resuscitation efforts should be continued until arrival at the hospital.

FIELD TRAUMA TRIAGE

Field triage of critically injured trauma patients and their transport to an appropriate level trauma center is often vital to their survival. Recognition of these patients should be assisted by the Priority 1 (P1) and Priority 2 (P2) criteria recommended by the State Trauma and Emergency Medical System. Patients meeting P1 or P2 criteria should generally be transported to the highest level trauma center within 30 minutes transport time using the algorithm below:

En route to scene, consider aeromedical standby alert as per Field Aeromedical Protocol 9105

Immediate Transport Criteria
Patient has an immediate life-threatening condition (lack of airway, uncontrollable massive hemorrhage, etc.)

YES → ***Contact Medical Command: Consider immediate aeromedical evacuation, or transport the patient to the nearest facility capable of definitive resuscitation, regardless of trauma center designation status.***

NO

Category A. Assess for P1 Criteria

1. Respiratory compromise or intubated
2. Blood Pressure < 90 at any time in adults, or age specific hypotension in children
3. GCS<9
4. GSW to neck, chest, abdomen or extremities proximal to the elbow/knee

YES → ***Contact Medical Command: Consider immediate aeromedical evacuation, or transport the patient to the highest level trauma center within 30 minutes transport via ground or air. If time is >30 minutes to a designated trauma center, transport the patient to the nearest facility capable of resuscitation and stabilization.***

Request Priority 1 Trauma Team activation.

NO

Category B. Assess for P2 (Physiologic or Anatomy) Criteria

1. Respiratory Rate <10 and >29 Infants with RR<20 if <1 year old.
2. GCS ≥9 and <14
3. Penetrating injuries to head, neck, torso or extremities proximal to elbow or knee (other than GSW to neck, chest, abdomen or proximal to the elbow/knee)
4. Chest wall instability (e.g. flail chest)
5. Two (2) or more proximal long-bone fractures
6. Crush, degloved, or mangled extremity
7. Amputation proximal to wrist or ankle
8. Pelvic fracture
9. Open or depressed skull fracture
10. Paralysis
11. Time sensitive extremity injury

YES → ***Contact Medical Command: Consider immediate aeromedical evacuation, or transport the patient to the highest level trauma center within 30 minutes transport via ground or air. If time is >30 minutes to a designated trauma center, transport the patient to the nearest facility capable of resuscitation and stabilization.***

Request Priority 2 Trauma Team activation.

NO

FIELD TRAUMA TRIAGE

Category C. <u>Assess for P2 (Mechanism) Criteria</u>

1. Falls:
   Adults > 20 feet; Children >10 feet or 2-3 times the height of the child.
2. High Risk Auto Crash:
   Ejection
   Intrusion, including roof: >12 inches, occupant site
   >18 inches, any site
   Death in same passenger compartment
   Vehicle telemetry data (if available) consistent with high risk of injury
3. Auto vs. Pedestrian/Bicyclist thrown, run over, or with significant impact (≥ 20 mph)
4. Motorcycle or ATV crash > 20 mph

YES

Contact Medical Command: Transport the patient to the highest level trauma center within 30 minutes transport. If time is >30 minutes to a designated trauma center, transport the patient to the nearest facility capable of resuscitation and stabilization.

Request Priority 2 Trauma Team activation.

AMBULANCE DIVERSION POLICY

The purpose of this policy is to establish common, acceptable guidelines for Medical Command Centers, hospitals, and EMS personnel under which diversion of ground ambulances transporting patients from the field may occur. This policy **DOES NOT** supersede a hospital's or EMS personnel's obligation to provide care should a patient require emergency stabilization or in the event that a patient desires to be transported to and treated at a specific facility. Any unstable patient should be transported to the closest appropriate facility regardless of the facility's alert status. Additionally, ambulances should not bypass a hospital on red alert if transport time will be lengthened by more than 15 minutes.

A. **Definitions of diversion alert status system:**

1. **Red Alert Status:** Notification from a hospital to **Medical Command** that said hospital has identified a strain in operational ability due to any two (2) of the criteria listed below and that such hospital is requesting that affected EMS personnel make the condition known to all patients and/or patients' families requesting transportation to said hospital.

2. **Yellow Alert Status:** Notification from a hospital to **Medical Command** that said hospital has identified a temporary lack of ability to provide a particular type of service or specialty support that they normally and routinely provide. Said hospital is requesting that affected EMS personnel make this condition known to all patients and/or patients' families requesting transport to said hospital. Yellow alert status may place the facility on red alert if criteria #1 is also met and, in consultation with **Medical Command**, it is determined with reasonable certainty that the patient in question may require the services affected by the yellow alert.

3. **Mini-Disaster Alert:** Notification from a hospital that a physical incapacitation of a necessary functional component of the hospital has occurred making further patient care untenable (i.e. fire, flood, gas leak, bomb scare, etc). The facility has, in effect, suspended operation and can receive absolutely no patients. Unless the situation is isolated to the Emergency Department, all other means of patient admissions must be halted prior to a mini-disaster alert being implemented.

B. **Diversion Criteria:** The determination to place a hospital on red alert status and consider diversion of ambulances from any hospital emergency department can only be made when two (2) of the following criteria are met. **Criteria #1 must always be one of the two criteria prompting the red alert.**

1. The emergency department is overloaded (i.e. filled to capacity with patients whose conditions do not allow for extended delay in treatment); or, there is

already an overwhelming number of critical patients and any additional critical patients would exceed the care capability of the facility.

2. There are no monitored beds available in the emergency department.

3. There are no monitored beds available in the entire facility.

4. The entire facility is full to capacity with no beds available.

5. A particular service is on yellow alert and **Medical Command** has determined with reasonable certainty that the particular patient in question may require that specific service on an urgent basis.

C. **Override:** A red alert will be automatically disregarded if any of the following conditions occur:

1. A patient is unstable and requires immediate stabilization as determined by EMS personnel in consultation with **Medical Command**.

2. The diversion of the patient would add an additional 15 minutes to the transport time. This may frequently occur in the more rural areas.

3. The patient or patient's family, after explanation of risks and consultation with the **MCP**, still insist on transport to the red alert facility, and the MCP has determined that this decision poses no immediate danger to the patient. Patient or legal guardian must sign refusal of appropriate care section of patient care record.

D. Each hospital will pre-determine a representative position which will be the sole communicator with **Medical Command**. The designated position must be provided in writing to **Medical Command**.

1. The designated hospital representative will notify **Medical Command** when requesting a particular diversion alert status. The representative will report to **Medical Command** the criteria met to qualify for the diversion alert status, first by phone and then by faxing the **Diversion Alert Status Form (Appendix B)** directly to **Medical Command**. The requesting hospital will maintain the information as contained in Section "F" below on file for one year following the request for diversion.

2. **Medical Command** will notify affected EMS agencies when a particular hospital is on a diversion alert. EMS personnel will inform the patient and/or patient's family of possible extensive delays in treatment at the hospital

which is on diversion status. **However, the patient or patient's family has the final destination decision unless there is a concern by the EMS personnel that the patient will be adversely affected by the requested destination. In the case of that concern, consultation with the Medical Command Physician should occur to determine the final destination of the patient.**

3. It is the designated hospital representative's responsibility to notify **Medical Command** when the diversion status changes. Red alert status will automatically terminate after two (2) hours unless the hospital notifies Medical Command and requests an additional 2 hour extension. If after four (4) hours the operational deficits have not been corrected, then the hospital may request an additional two (2) hour extension, but hospital administration must explain in writing within 24 hours what measures have been taken to assure that this situation does not reoccur. At no time may a facility be on red alert status for more than six (6) hours in a 24 hour period beginning at 12 midnight.

4. In the event that all hospitals within a catchment area meet criteria for red alert status, then **Medical Command** will notify those hospitals that red alert status is automatically suspended and patients are transported to the usual closest appropriate facility.

5. Yellow alert status must be updated by the hospital representative to **Medical Command** every six (6) hours.

E. **Compliance Monitoring: Medical Command** will maintain the data base on all alert status diversions and report them to the regional medical director for review.

1. In the event that non-compliance with this policy is identified, the Regional Medical Director will notify the hospital in question and request in writing an explanation for the variance.

2. If non-compliance continues to be an issue, then the Regional Medical Director will notify in writing the WVOEMS State EMS Medical Director for further action, including possible site visit by the Bureau for Public Health.

**** Diversion Alert Status Form (Appendix B).**

FIELD AEROMEDICAL

Field access to aeromedical transport may enhance the probability of survival of a select, small percentage of patients. The objective of a field response to the scene of injury by an EMS helicopter is to utilize the speed of the helicopter or the advanced skills of the medical crew to supplement patient care.

All requests for scene helicopter responses will come through **Medical Command**. Inappropriate requests for a helicopter subject the flight crew and the patient to needless risk. **Medical Command** shall deny inappropriate requests for a helicopter. EMS personnel considering the need for a helicopter are encouraged to discuss their situation with **Medical Command**. If the drive time to a designated Level I or II Trauma Center is less than 30 minutes and there is no extrication delay at the scene, aeromedical transport is rarely indicated. Appropriate requests for a helicopter include the following:

A. Trauma Criteria:

1. Patient meets **Field Trauma Triage Protocol 9103** Immediate Transport: ***OR***

2. Patient meets **Field Trauma Triage Protocol 9103 A** (P1 Criteria); ***OR***

3. Patient meets **Field Trauma Triage Protocol 9103 B (**P2 Criteria).

Note: Patients meeting only **Field Trauma Triage Protocol 9103 C.** P2 (Mechanism Criteria) ***may*** need a helicopter, but require that you discuss the details with **MCP** for approval.

B. Medical Criteria:

1. Some non-trauma patients with life-threatening medical conditions and far from definitive care, may benefit from air evacuation. Such circumstances may include:

   a. Acute stroke patients within the window of opportunity for thrombolytic or endovascular intervention at an appropriate hospital.

   b. Acute myocardial infarction patients needing thrombolytics or angioplasty.

   c. Major overdose patients with coma.

   d. Major burns > 20% TBSA (second or third degree) needing flown directly to a Burn Center.

C. Environmental Criteria:

1. Patients in remote locations inaccessible by ground EMS.

2. Mass casualty incidents that totally overwhelm local agency capabilities (industrial accidents, multi-vehicle crashes, hazmat incidents, etc.)

D. Procedure:

1. **Contact Medical Command**. If radio communication or cell phone service is not available, contact your local dispatch or 911 communications center to contact **Medical Command**. Discuss clearly the need for the helicopter based on the above criteria with **Medical Command**. Saying "I need a helicopter" is inadequate.

2. Identify agency, unit number, incident location, description of incident, and any other information requested.

3. Request either response or standby alert. Request can be made for helicopter to be placed on standby alert even before arrival on scene, which may shorten the helicopter's lift-off time if air transport is deemed necessary. Request response as soon as criteria is identified.

4. Give a brief description of incident and GPS coordinates if available, or an accurate location, including names of roadways, cross streets, and other pertinent landmarks. Names of nearby towns and your location in reference to them is helpful.

5. Advise **Medical Command** of the agency and radio frequency of the ground contact for the helicopter.

6. Remain in contact with **Medical Command** for information concerning availability of aircraft, estimated flight time, and/or other special landing zone or scene requirements.

7. **Medical Command** will coordinate dispatch of the closest appropriate helicopter based on location of incident and will coordinate destination notification.

8. Landing zone preparation:

   a. Secure a level 100' X 100' area clear of power lines, trees, debris, and other obstructions.

   b. Ensure all bystanders and personnel remain at least 100 feet from aircraft at all times.

c. At night, use of flashing blue, green, or amber lights is encouraged to mark the landing area since they interfere less with night vision technology. Red lights of an emergency vehicle may be used; but use only the red lights on the vehicle (**NO** white lights or flood lights). Do not shine any lights at the aircraft either on approach or while on the ground. High intensity light sticks may be used but NO flares.

d. After landing, do not approach the aircraft.

9. Communications:

a. Designate one (1) individual to monitor ground contact radio frequency and communicate with the aircraft. Do not change frequency unless instructed to do so by aircraft or **Medical Command**.

b. Establish radio and visual contact with the aircraft and give a quick update of any LZ changes, hazards, and patient update information.

c. When aircraft is making final approach to land, keep radio traffic to a minimum so as not to distract the pilot. Alert pilot immediately if new hazard or situation develops. Follow directions given by pilot.

10. Use of hospital based landing sites

a. EMS shall be permitted to utilize hospital based landing sites in cases where it is more practical and safer to do so verses a field based landing site created at or near an incident scene.

b. EMS shall develop an MOU with the facility prior to utilizing section 10 of this protocol.

c. The hospital shall be contacted prior to use and permission granted by the facility to utilize the hospital based landing site. This shall assure that the landing site is clear and there are no other inbound flights due to arrive.

d. EMS shall not be required to enter the emergency room when simply utilizing the landing site for EMS field operations subject to the following:

1) Medical Command has been contacted and given a detailed patient assessment

2) The Hospital has been contacted and permission granted to utilize the facility

3) The patient has been determined to be stable for continued transport evidenced by:
    - An easily maintained, patent airway with or without an advanced airway adjunct
    - Vascular access via IV or IO
    - A perfusing cardiac rhythm

11. Should aeromedical not be at the landing site upon arrival of EMS, contact should be made with the flight team to verify an ETA. If communication with the flight team verifies an extensive delay in arrival of the aircraft; earnest consideration should be given to divert the patient to the Emergency Room.

MEDICAL COMMUNICATION POLICY

The West Virginia OEMS protocols are designed to allow EMS personnel the ability to provide a wide variety of treatments to many types of patients by utilizing off-line protocols. However, since protocols cannot cover all situations, on-line medical direction is essential to a quality EMS system.

EMS personnel are expected to contact **Medical Command** for on-line medical direction as outlined in the protocols or anytime additional consultation is needed by the provider. Additionally, EMS personnel should notify **Medical Command** on inter-facility transports being transferred to the emergency department not less than fifteen (15) minutes prior to arrival. All ALS treatment rendered, even by off-line protocol, requires notification of **Medical Command**. In order to provide for the most efficient and accurate communication between the provider and the **Medical Command** Operator, the following procedures will be used when communicating with **Medical Command**.

A. **Call-in Status Level:** In order to quickly and effectively identify the level of interaction required to properly manage the patient, the following terminology will be used:

1. **Status 3** - Provider has provided care to patient following off-line protocol and no further consultation or orders are required at this time. **Medical Command** is being notified to receive a report on the patient, to confirm the treatment given, to identify which protocol was used, and to allow notification of appropriate destination facility.

Note: Even if treatment was rendered fully by off-line protocol, notification and report are still required. **Medical Command** Operator will also confirm that proper protocol procedure was followed and request additional information as required.

2. **Status 2** - Provider has provided care to patient and has followed protocol to the point where contact with **Medical Command** is now required in order to proceed with additional off-line treatment or treatments found in the protocol. These treatments within the protocols will include the words... ***"by order of Medical Command"*** or ***"in consultation with Medical Command"*** or ***"contact Medical Command."*** Status 2 consultation allows the provider and the Medical Command operator to confer and confirm that the next steps in treatment are appropriate by jointly interpreting that section of the protocol. If they both agree, then **Medical Command** will provide the necessary confirmation to proceed. If they do not agree, then consultation with the **Medical Command Physician (MCP)** is indicated.

3. **Status 1 Charlie** ("C" signifies "Consultation"): Provider has provided care to patient and has followed protocol to the point where consultation with **Medical Command Physician (MCP)** is now required in order to proceed with

additional treatment(s). These orders or treatments within the protocols will include the words....“by order of MCP” or “by MCP order” or “in consultation with MCP”. The **Medical Command Operator** is permitted to relay the consult information between the provider and the **MCP** and communicate the orders back to the provider from the **MCP**. If any uncertainty exists during this process, then the provider, operator, or **MCP** may upgrade the call to a Status 1 Delta.

4. **Status 1 Delta** (“D” signifies “Direct”): Provider has provided care to patient and has followed protocol to the point where direct voice communication with **Medical Command Physician (MCP)** is now required in order to proceed with additional treatment or treatments. These orders or treatments within the protocols will include the words....”by direct order of **MCP**” or “by direct **MCP** order” or “in direct consultation with **MCP**”. There are only a few situations where direct communication with **MCP** is required in the protocols (i.e. Cease-Efforts Protocol 9102 requires direct consultation with **MCP** to discontinue efforts in the field). Occasionally field providers will encounter patients who, in their opinion, require direct consultation with the **MCP** in order to formulate the proper care plan for the patient. Additionally, there may be situations which are so complex that direct consultation with the **MCP** is critical for proper resolution of the situation (i.e. discussion with family concerning a certain therapy, physician on the scene who wishes to take control of the patient, etc.). In these situations, field providers can request a **Status 1 Delta** to speak directly with the **MCP**. In addition, Medical Command Operators or MCPs can also upgrade any call to a **Status 1 Delta** if they feel the situation dictates.

B. **Communication Procedures:** When communicating with **Medical Command**, the provider should use the following designations:

1. Unit with an EMT-P level of ALS care should be designated as a “Medic” Unit. (For example: “*Oakland County **Medic** 690 calling Charleston MedBase on Call 9"*).

2. Unit with an EMSA-I level of ALS care should be designated as an “ALS” Unit. (For example: “*Oakland County **Intermediate** 690 calling Charleston MedBase on Call 9"*).

3. Unit with an EMT-B level of BLS care should be designated as an “EMT” Unit. (For example: *“Oakland County **EMT** 690 calling Huntington MedCom on Call 9*”).

4. Unit with a CCT-Paramedic or CCT-Nurse should be designated as a “CCT” Unit. (For example: “*Oakland County **CCT** 690 calling WVU*

MedCom on 340").

C. Methods for contacting **Medical Command:** There are three (3) general methods for contacting Medical Command:

1. Telephone (landline): Should be used whenever the patient's location and condition permit. It offers the best quality communication available and keeps radio frequencies less congested. It also provides a greater amount of security for discussion of sensitive patient information. Providers may use the local phone number of the Medical Command Center or the toll free 800 number of the specific center.

2. Cellular Phone: Cell phone is an acceptable method of contact if landline is not available and sensitive information needs to be given, however, when in a mobile unit, it is not a substitute for radio contact if the coverage is available.

3. UHF or VHF Radio: Direct radio contact with **Medical Command** is the preferred method of contact while responding to a call, transporting a patient, or on the scene of an MVC or other non-residential incident. Depending on the area of the state, this may best be accomplished by either UHF or VHF frequencies.

D. **Inability to contact Medical Command:** If the provider is unable to make contact with Medical Command by any of the above means, properly authorized EMS personnel may continue to follow the appropriate protocol(s) in the best interest of the patient. However, the provider must then:

1. Immediately upon arrival at the receiving facility, contact **Medical Command** by phone and provide a full patient report **and** the method, time, and location of the unsuccessful efforts to reach **Medical Command**.

2. If this report is made prior to leaving the receiving facility, no further reporting is required by the provider.

3. If **Medical Command** is not contacted prior to leaving the receiving facility, by law, the provider must submit a report (Appendix H) to the State Office of Emergency Medical Services on the appropriate form within 48 hours. Failure to do so may be grounds for suspension or even legal action.

E. **Details of Call-in:** When contacting **Medical Command** the following specific procedures should be followed:

MEDICAL COMMUNICATION POLICY

1. In establishing initial contact, EMS personnel shall identify their unit with the proper designation as above.

2. After **Medical Command** has answered, provide the following information:

    - Unit ID
    - EMSP last name and certification number
    - Age and sex of patient
    - Chief Complaint
    - Status of call
    - Destination

3. **Medical Command** will then determine priority of call if other calls are also occurring.

4. **If Status 1 Delta**, **Medical Command** will alert the **MCP** and establish contact between provider and MCP.

5. **If Status 1 Charlie, Medical Command** will take information and consult with **MCP** for further orders.

6. **If Status 2, Medical Command** will take information and either concur with further treatment by protocol or consult with **MCP** for further orders.

7. **If Status 3**, **Medical Command** will take information for report, clarify details, confirm protocol usage, and notify the receiving facility. If there is increased traffic during this time, the Medical Command Operator may ask the provider to continue transport and call by phone after arrival at the receiving facility, and give complete report at that time.

8. When **Medical Command** is prepared to receive the full report, the provider will give the following pertinent patient information:

    - Age and sex of patient
    - Chief complaint/mechanism of Injury
    - Brief history of present condition
      BREAK
    - Past medical history
    - Medications
    - Allergies
    - Vital signs, GCS, and ECG
    - Assessment

BREAK

- Treatment given and in progress (include protocol # (s))
- Treatment and orders requested
- Updated ETA and destination

9. If the patient's condition changes or new complaints develop, **Medical Command** shall be recontacted with updated findings and treatment.

PATIENT HANDOFF

The “hand-off” or transfer of patients, between EMS providers, (Emergency Medical Responders, EMT-Basic, and Paramedic) represents one of the most important elements of successful pre-hospital patient care.

Transferring patient care involves the transfer of patient rights and duty to provide care, from one person, or one team, to another. This transfer of care may be from a higher level provider to a lower level provider, from a lower level provider to a higher level, or between the same levels of provider. The term Provider, refers to the level of Certification. The importance of transferring patient information including history and plan of treatment cannot be overemphasized. The providers must communicate events, treatments, and ongoing plan of care during the “transfer of care” process. This provides a smooth transition for continued continuity of treatment.

This protocol addresses transfer of care involving any level of EMS provider.

A. Care involving Emergency Medical Responders (EMR):

1. Any provider with a higher level of certification may not transfer care (handoff) to an EMR.

2. An EMR shall provide a verbal transfer of care report when handing off a patient to a higher level provider.

3. An EMR may continue to assist in the care of the patient during transport to a medical facility, but may not function as the primary care provider in the patient compartment of an ambulance.

4. This protocol addresses, but is not limited to:

   a. CCT Squad to CCT Aeromedical Unit.

   b. ALS Squad to ALS or CCT Aeromedical Unit.

   c. ALS Squad transferring care to a different ALS Squad.

   d. Situations when ALS and BLS squads are on scene and it is determined the BLS Squad is appropriate to transport.

   e. ALS Squad intercepts a BLS squad and determines the patient is appropriate for BLS transport.

   f. An ALS crew consisting of an ALS level provider and EMT determine the patient is appropriate for BLS transport and the EMT

serves as the primary attendant in the patient compartment.

B. When a higher level provider (certification), transfers care to a lower level provider (certification), the following criteria must be met:

1. The lower level provider must agree to the transfer of care.

2. In the event the higher level provider chooses to drive, there must be another EVOC certified crew member present on the vehicle to drive in case the higher level provider needs to resume patient care.

3. The higher certified provider must evaluate and, if needed, provide initial treatment prior to handoff.

4. Anticipated additional treatment may not exceed the scope of practice of the level of certification assuming the patient care, or the level of licensure of the EMS vehicle and EMS Agency.

5. Prior to the transfer of care, a history and physical examination (H&P) must be performed by the higher level provider. This H&P must be documented and the higher level provider must affix their signature to the report. This H&P may be documented on the patient care record of the transporting unit, or on a separate PCR. If documented on a separate PCR, the H&P must be forwarded to the receiving medical facility.

6. With any transfer of care, the provider transferring care must interface directly with the receiving provider and ensure all pertinent information is conveyed.

7. Any transfer of care between EMS providers must be documented in the patient care record.

8. Any level of provider accepting transfer of patient care must be continuously alert for changes in patient condition and be prepared to provide immediate medical intervention and potentially call for a higher level intercept.

C. Transfer of care decision should be a joint decision reached by all involved providers. If transfer to lower provider (certification) the higher level provider will determine who remains in the patient compartment, drives, or allow a lower certified crew to transport the patient.

PATIENT HANDOFF

D. If the Lower Certified provider is not comfortable accepting responsibility for primary care, and the providers cannot agree, contact Medical Command for further direction and resolution.

NERVE AGENT - OPTIONAL

Nerve agents are very toxic organophosphorus compounds that have biological activity similar to that of many insecticides. They cause biological effects by inhibiting acetylcholinesterase and, thereby, allowing acetylcholine to accumulate. Initial effects from small amounts of a nerve agent differ, depending on the route of exposure. There is usually an asymptomatic interval of minutes after liquid exposure before these occur. Effects from vapor occur almost immediately.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocols for medical management based on clinical presentation.

B. The patient should be removed from the environment.

1. Never attempt rescue unless trained, certified, and properly equipped.

2. Never place yourself or your crew in danger.

C. Mild to moderate signs and symptoms (including dyspnea and nausea/vomiting):

1. Administer one (1) MARK I Kit IM or **Atropine** 2 mg IM or IV (Adult: 2 mg / Peds: 0.02mg/kg) and **Pralidoxime** 600 mg IM or IV (Peds 25 - 50 mg/kg). **Atropine** should be repeated every five (5) minutes until improvement is noted.

2. Oxygen should be administered at 15 LPM via non-rebreather.

3. Do not treat for isolated miosis (unless eye pain is severe) or rhinorrhea (unless severe).

D. Severe signs and symptoms (including loss of consciousness, seizures, or apnea):

1. Administer three (3) MARK I Kits IM or **Atropine** 6 mg IM or IV and **Pralidoxime** (if available) 1800 mg IM or 2 grams slow IV drip over 20 minutes. Repeat **Atropine** 2 mg IM or IV every five (5) minutes until:

   a. secretions diminish; **or**

   b. airway resistance is less or is normal.

2. Secure airway. Refer to **Airway Management Protocol 4901**.

3. In patients with seizure activity administer **Midazolam** 2 mg IV/IO/IM or 5 mg (IN) via atomizer.

E. Monitor patient via pulse oximeter and cardiac monitor.

F. Decisions regarding the transportation of patients should be made in consultation with **Medical Command** and the on-scene incident management system.

Note: EMT-Bs may administer MARK I Kits [up to total of three (3) kits] to symptomatic public safety personnel or when directed to do so by an ALS provider based on signs and symptoms in a mass casualty incident (MCI) or on-site chemical testing, confirming nerve or organophosphate agent presence in a mass casualty incident. **Medical Command** consultation is not required in these situations.

LEFT VENTRICULAR ASSIST DEVICE (LVAD)

A. Assessing and Treating an LVAD Patient:

1. Recognize that you have a patient with an LVAD.

2. Determine if your patient has an LVAD problem, an unrelated illness, or injury.

3. A completely stable patient may have **NO** palpable pulse or measurable blood pressure.

4. Mental status and skin color must be used to determine patient stability.

5. CPR should rarely be performed on an LVAD patient.

6. Patients with an LVAD should almost never be pronounced dead at the scene.

7. Call the Emergency Contact Number located on the LVAD control unit.

B. Overview of an LVAD:

The LVAD or Left Ventricular Assist Device is a mechanical device that takes over some or all of the pumping function of the heart's left ventricle. This device is used for patients of any age or gender with advanced heart failure who would not otherwise survive without this device.

Some LVAD patients will have an LVAD while they are waiting for a heart transplant (called Bridge-to-Transplant). Other LVAD patients, who are not eligible for a heart transplant for some reason, will live with the device for the rest of their lives (called Destination Therapy or Lifetime use).

1. How the Heart Works versus How LVADs Work:

The normal pumping function of the heart is achieved by the contraction of the left ventricular muscle which pushes a bolus of blood forward in the cardiovascular system with each contraction. This contraction is what we feel when checking a pulse, and what we hear when taking a blood pressure.

If the heart is not contracting, blood is not moving forward in the system, and we do not feel or hear a pulse. The LVAD, in contrast, flows constantly and, therefore, creates no "pulse" to feel or hear.

The LVAD is a tube that is about one (1) inch in diameter with a pump in the middle. One end of the tube (inflow) is surgically inserted into the left ventricle,

and the other end (outflow) is sewn into the aorta, just above where it exits the heart.

The pump on the LVAD spins constantly. The right side of the heart still pushes blood through the lungs and back to the left ventricle, but then the LVAD pump pulls the blood out of the left ventricle and pumps it out to the body, taking over most or all of the failed pumping action of the left ventricle.

NOTE: The important part to EMS providers is that the pump is a constant flow pump. There is no rhythmic pumping as there is with the ventricle, and therefore there is little to no pulse. This means you can have a perfectly stable and healthy looking person who has no palpable pulse and whom you may or may not be able to take a blood pressure.

C. Assessing the LVAD Patient:

1. Recognize you have an LVAD patient.

   a. The LVAD patient has a control unit attached to their waist or in a shoulder bag.

   b. The control unit will be attached to batteries mounted to the belt, in shoulder holsters, or in a shoulder bag. At home, it could be attached to a long cord that connects to a large power unit.

2. Decide if you have a patient with an LVAD problem or a patient with a medical problem who just happens to have an LVAD. Patients with LVADS will have all the same illnesses and injuries as any other patient you see. Their LVAD may have nothing to do with the reason you were called.

3. LOOK:

   a. Alarms on the control unit will most likely indicate an LVAD problem. Follow resource guides with the patient to trouble shoot.

   b. Skin color and mental status are the most reliable indicators of patient stability for the LVAD patient.

4, LISTEN:

   a. Listen over the LVAD pump location to make sure you can hear it running. This will be just to the left of the epigastrium, immediately below the base of the heart.

b. The patient and their family are experts on this device. Listen to what they have to say about any problems with the LVAD.

5. FEEL:

a. Feel the control unit. A hot control unit indicates the pump is working harder than it should and often indicates a pump problem such as a thrombosis (clot) in the pump.

b. The use of pulse and blood pressure to assess stability can be unreliable in an LVAD patient, even if they are very stable.

6. VITALS:

a. Pulse: Generally you will be unable to feel a pulse.

b. Blood Pressure: You may or may not be able to obtain a BP. Standard readings are unreliable and may vary from attempt to attempt.

c. Pulse Oximetry: Readings seem to be fairly accurate and consistent, according to data, despite the manufacturer stating that pulse oximetry often does not work.

d. Quantitative Continuous Waveform Capnography: This should remain accurate as it relies on respiration, not pulse.

e. Temperature: Infection and sepsis are common. Check temperature!

NOTE: *LVAD patients can remain stable and experience a range of ECG rhythms that could be dangerous or fatal in another patient. Remember blood sugar and stroke assessment, particularly for an altered mental status.*

D. Treating the LVAD Patient:

1. Generally, treatments for an LVAD patient will follow the current WVOEMS Protocols. However, there are a few special considerations to keep in mind. Do not let the LVAD distract you from treating the patient!

2. The best medical resource available to you for LVAD related problems is the patient's VAD coordinator. The patient will have a contact sheet for the VAD coordinator with them at all times. **Contact the VAD coordinator as soon as possible.**

3. If you are assisting patient to change batteries or power source, **never** remove both batteries at the same time. This will cause the LVAD pump to immediately stop.

4. Sepsis and stroke are leading causes of death for LVAD patients.

5. Treating ECG changes:

   a. Many LVAD patients already have an implanted defibrillator and/or a pacemaker in place.

   b. The continuous flow of the LVAD means changes in ECG rhythms, including atrial fibrillation, SVT, ventricular tachycardia, and even ventricular fibrillation may have minimal to no short-term effect on the cardiac output and stability. Treat ECG changes according to protocol.

   c. Use of external pacing or defibrillation is unchanged for LVAD patients.

   d. Use of ACLS education is unchanged for LVAD patients. Follow standard AHA and protocol guidelines, as appropriate.

6. LVAD patients are always on anticoagulant medications. Even minor appearing chest or abdominal trauma, such as a seatbelt mark, could be hiding a very serious injury.

7. LVAD manufacturers currently recommend against CPR, especially if there is any evidence the pump is still functioning. There currently are no published studies or published consensus statements regarding whether and under what circumstances to perform CPR on a deceased LVAD patient. LVAD devices are not all the same and, if at all possible, clinical decisions regarding LVADs should be made in consultation with the patient's VAD coordinator. The decision to perform CPR should be made based upon best clinical judgment of the provider in consultation with the patient's family and the **VAD coordinators or Medical Command.** In any event, CPR should be initiated only where:

   a. You have confirmed the pump has stopped (by listening for pump sounds) AND all trouble shooting efforts to restart it (connect wires, batteries, new control unit, etc.) have failed, AND;

   b. The patient is unconscious, unresponsive, and has no detectable signs of life (no pulse, no blood pressure, no pulse oximetry reading or wave form capnography reading, AND;

c. The patient does not have a valid DNR in place.

8. Patients should not be pronounced dead if LVAD continues to function, unless they have obvious factors of death such as decapitation, rigor mortis, or dependent lividity.

E. Transporting the LVAD Patient:

1. Patients without an LVAD problem should be transported to the closest appropriate hospital for their condition.

2. When in doubt, transport to the closest hospital to access more transport resources and support.

3. Always bring the patient's resource bag with you. It should have spare batteries, possibly a spare control unit, contact sheets for the VAD coordinator, and directions for equipment and system alarms.

4. Always bring spare batteries for the LVAD with the patient, even if it is not an LVAD problem. Fresh batteries generally last 3 - 5 hours. Dead batteries mean a dead patient.

5. If you have a long transport or expect that the patient may be away from home for more than 4 - 5 hours, then try and bring the patient's power base unit.

6. Use your patient and their family as a resource. They are experts about this device and can help you assist the patient.

Recommended Unit Resource: Print EMS Guide for Mechanical Circulatory Support and place in all ambulances (20 pages). This guide has excellent information and "trouble shooting" guidance for the five (5) LVAD devices that EMS providers may encounter. Access the resource guide at: http://www.mylvad.com/assets/

End Tidal CO2 (EtCO2) - OPTIONAL

EtCO2 monitoring is evaluated in a numerical reading and waveform reading. This protocol uses the understanding of the tool, physiology, and interpretation of EtCO2 to help the provider assess and treat patients appropriately. This tool gives the provider the ability to support a physical exam and confirm the ventilation process. Normal EtCO2 is 35 - 45 mm/hg.

A. Perform **Initial Treatment / Universal Patient Care Protocol** and follow the proper protocols for medical management based on clinical presentation.

B. If EtCO2 is available it may evaluated in a moving vehicle.

C. Waveform EtCO2 numerical readings can be utilized to assess the following:

1. Confirm breathing is present
2. Confirm the airway is open and patent
3. Confirm the physiology of ventilation is normal or abnormal

D. Non-Intubated patients; EtCO2 readings can be utilized to assess the following:

1. Rapid assessment of the patients respiratory status
2. Monitor critically ill patients to alert providers to impending respiratory arrest
3. Assist in managing patients with ICP by verifying and maintaining levels of EtCO2 at 30 - 35 mm/hg

E. Intubated patients; EtCO2 readings can be utilized to assess the following:

1. Verification of Tube placement
2. Proper titration of respiratory assistance to maintain proper EtCO2.
3. Evaluate cardiac output during CPR. (perfusion efforts and early detection of ROSC)
4. Assist in managing patients with ICP by verifying and maintaining levels of EtCO2 at 30 - 35 mm/hg

End Tidal CO2 (EtCO2) - OPTIONAL

EVENT	EVIDENCE	TREATMENT
Apnea	No EtCO2 number. No waveform, No RR	O2, Ventilate
Obstruction	No waveform, No or decreased LS, impedance	O2, alignment maneuvers, remove obstruction
Laryngospasm	No waveform, No LS, Impedance, does not respond to alignment maneuvers	O2, Ventilate
Bronchospasm	Waveform abnormality	O2, breathing tx, CPAP
COPD	Abnormal EtCO2 level	O2, possibly Nitro / possibly breathing tx, CPAP
Hypoventilation	Low EtCO2, short wave form	O2, Ventilate
Tube Displacement	Short or no waveform, low or no EtCO2 number	Intubate
ROSC	Increase EtCO2 number, waveform, impedance	O2, Assist Ventilations
ICP	If signs of ICP	Maintain EtCO2 at 30 - 35 mm/hg

Sports Venue Coverage: EMS Guidelines for Medical Time Out

High school sporting venues are high profile community events with an inherent risk of sports trauma or spectator illness or injury. Emergency Medical Services (EMS) coverage of West Virginia inter-scholastic Friday night football has been documented to occur in over 94% of contests. Similar to other rural states, physician and certified athletic trainers (NATA) are present in less than 50% of events. The Medical Time Out protocol promotes pre-game organization for response to athlete and spectator injury.

These guidelines provide a rationale and structure for EMS entry to the sports trauma arena with the focus on pre-game preparation and communication with medical staff for participating schools. The guidelines in this protocol provide procedures for catastrophic injury recognition and response. This encourages direct participation and venue awareness with EMS positioning to promote precision of response. EMS event coverage is a valued community service with a component of unique high visibility "fish-bowl arena" and deserves a component of protection for adverse outcomes.
EMS Squad education and implementation for a Medical Time Out prior to providing coverage for scholastic sporting events is consistent with new legislation for sports concussion in all 50 states.

Medical Time Out education and checklist should be monitored by the Squad Training Officer and Squad Medical Director.

A. The pre-game checklist should be initiated 15-30 minutes prior to the event and should document cell **phone contacts** for all participants - Team Medical Staff, EMS, Police, and School Officials.

B. The checklist should include hand signals for EMS response to the field of play with need for sport concussion, backboard, ACLS support, and spectator response. Event sideline and press box radio communication is recommended but optional.

C. **AED locations** in the venue should be recorded with documentation of Sentinel Seizure awareness in athlete sudden cardiac arrest.

D. Procedures for **head and neck injury** should be reviewed with the captain assigned for C-spine control, face mask removal equipment, and agreed **technique for boarding** (log roll or 8 person lift).

Sports Venue Coverage: EMS Guidelines for Medical Time Out

E. Additional information included in the checklist depending on the sport venue may include **cheerleading injury response** and in geographically isolated locations designated **aero-medical landing zone coordinates,** and back-up EMS when game coverage is limited to a single unit.

F. **Check List Items:**

1. Phone Contacts
2. Hand Signals
3. AED Locations
4. Head and Neck Injury
5. Technique for Boarding
6. Cheerleading Injury Response
7. Aero-medical Landing Zone Coordinates

G. Sports Concussion

1. West Virginia 2013 legislation on sports concussion return to play requires mandatory removal from contest in all cases of suspected head injury identified by sideline physician, athletic trainer or coach.

   Return to play guidelines require a 5 day progression after symptom resolution and neuropsychological testing with physician involvement.

2. EMS intervention is typically requested in cases with loss of consciousness or worsening symptoms. During transport a symptom checklist should be recorded and provided to the receiving Emergency Department. (Sports Concussion Checklist Tools can be found online).

Sports Venue Coverage: EMS Guidelines for Medical Time Out

H. Heat Illness

1. Heat stress is common in high school football. Exertion Heat Stroke with rectal temperature above 104 F and altered mental status requires rapid cooling with ice bath immersion prior to transport. Heat exhaustion with temp above 100 F should include IVF with normal saline bolus (1 liter). Athletes with known or suspected sickle cell trait (SCT) are at increased risk for heat stress and may progress to explosive rhabdomyolysis and deterioration to PEA cardiac arrest from acute renal failure induced hyperkalemia. SCT athletes with heat stress require cardiac monitoring for development of peaked T waves or QRS prolongation.

I. Athlete Sudden Cardiac Arrest (SCA)

1. Intense exercise is a trigger for Sudden Cardiac Arrest in athletes with unrecognized Hypertrophic Cardiac Myopathy (HCM), Coronary Artery Anomalies, Arrhythmogenic Right Ventricular Dysplasia (ARVD), and Long QT Syndrome.

2. ***Sudden collapse during sports play should be considered cardiac in origin.*** Athlete collapse with seizure (Sentinel Seizure) and/or agonal respirations require chest exposure for AED placement or cardiac monitor with high index of suspicion for cardiac etiology.

FIBRINOLYTIC CHECK SHEET

Cardiac Thrombolytic Therapy Screening:

Person filling out form:_____

Patient Name:_____ Age:_____

Duration of symptoms:____/____hrs./mins.		Yes	No
1.	S-T segment elevated or depressed at least 0.1 mv?	___	___
2.	History of bleeding problems, i.e. nose, gums, etc?	___	___
3.	History of bleeding ulcers?	___	___
4.	History of bleeding hemorrhoids?	___	___
5.	Any surgery in last 6 months?	___	___
6.	Any dental procedures in last 6 months?	___	___
7.	History of stroke (including family)?	___	___
8.	History of sudden/temporary weakness/numbness of face or extremities, dizziness or unsteadiness?	___	___
9.	History of difficulty with speech or visions?	___	___
10.	History of headaches or mental status changes?	___	___
11.	Any recent falls or injuries?	___	___
12.	History of high blood pressure?	___	___
13.	History of diabetes?	___	___
14.	History of hemorrhagic retinopathy?	___	___
15.	Pregnant?	___	___
16.	Receiving oral anticoagulants?	___	___
17.	CPR performed recently?	___	___
18.	IM injections recently?	___	___
19.	Known cardiac arrhythmias?	___	___
20.	Liver dysfunctions?	___	___

DIVERSION ALERT STATUS FORM

***Diversion Alert Status Form**: To be completed by designated hospital representative and faxed to Medical Command immediately after phone notification.*

Date:	Hospital:
Time Initiated:	Time Cancelled:
Charge Physician:	Charge Nurse:
Representative Requesting Diversion:	
Alert Status Requested and Criteria: (i.e. Red Alert, Yellow Alert, Criteria 1-5)	
Medical Command Operator:	
Number of Patients in ED:	Number of Critical Patients:
Number of Monitor Beds in ED:	Number in Use:
Number of Monitor Beds In-House:	Number in Use:
Number of Beds In-House:	Number in Use:
Signature of Designated Representative:	

PEDIATRIC REFERENCES

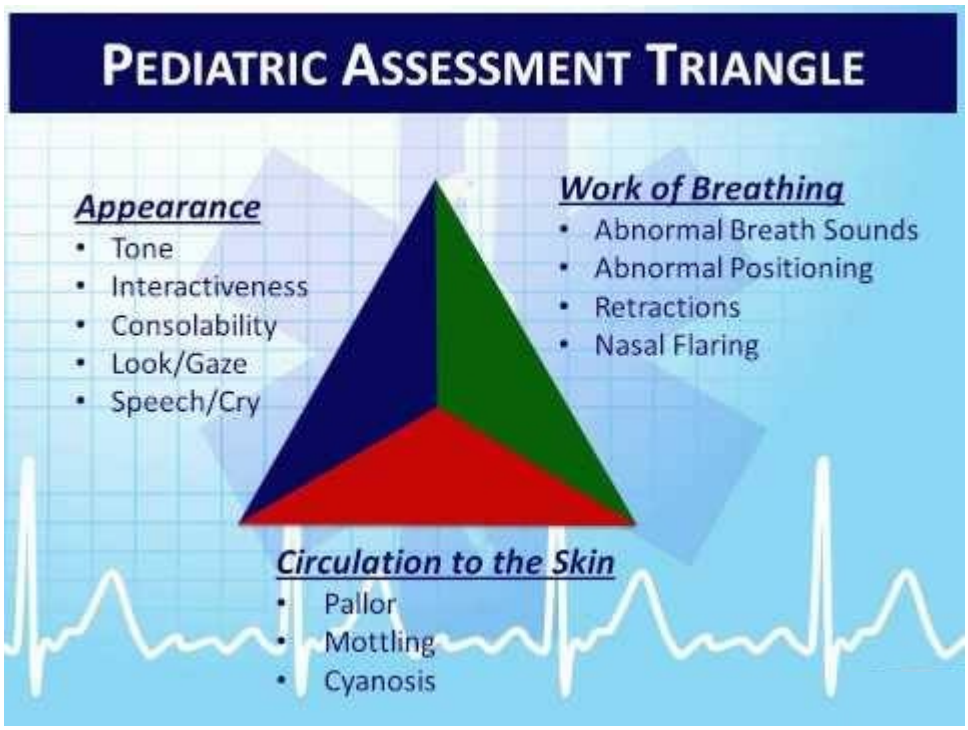
Pediatric Vital Signs

Age	Heart Rate	Respiratory Rate	Minimum Systolic BP
Infant (less than 1 year)	100 – 160	30 – 60	greater than 60
Toddler (1 to 2 years)	90 – 150	24 – 40	greater than 70
Preschooler (3 to 5 years)	80 – 140	22 – 34	greater than 75
School-aged child (6 to 10 years)	70 – 120	18 – 30	greater than 80
Adolescent (11 to 18 years)	60 – 100	12 – 16	greater than 90

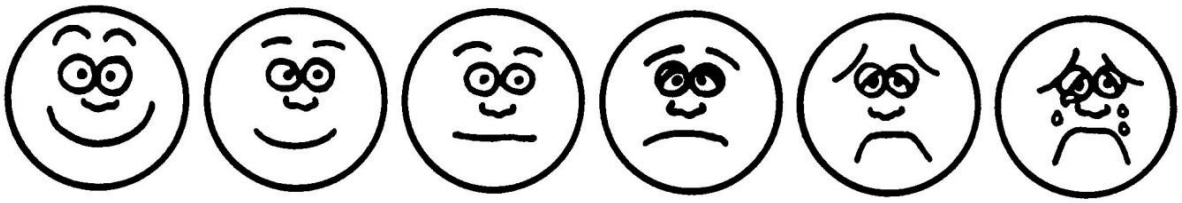
Pediatric Airway Management Supplies

Weight (kg)	Laryngoscope Blade	ET Tube	ET Tube Length	Stylet	Suction Catheter
Newborn **3-5 kg**	0-1 straight	3.0-3.5 uncuffed	10-10.5	6 Fr	6-8 Fr
Infant **6-9 kg**	1 straight	3.5 uncuffed	10-10.5	6 Fr	8 Fr
Toddler **10-11 kg**	1 straight	4.0 uncuffed	11-12	6 Fr	8-10 Fr
Small Child **12-14 kg**	2 straight	4.5 uncuffed	12.5-13.5	6 Fr	10 Fr
Child **15-18 kg**	2 straight or curved	5.0 uncuffed	14-15	6 Fr	10 Fr
Child **19-22 kg**	2 straight or curved	5.5 uncuffed	15.5-16.5	14 Fr	10 Fr
Large Child **24-30 kg**	2-3 straight or curved	6.0 cuffed	17-18	14 Fr	10 Fr
"Adult" **greater than or equal to 32 kg**	3 straight or curved	6.5 cuffed	18.5-19.5	14 Fr	12 Fr

PEDIATRIC REFERENCES



Wong-Baker FACES Pain Rating Scale



0 1 2 3 4 5

Explain to the person that each face is for a person who feels happy because he has no pain (hurt) or sad because he has some or a lot of pain. Face 0 is very happy because he doesn't hurt at all. Face 1 hurts just a little bit. Face 2 hurts a little more. Face 3 hurts even more. Face 4 hurts a whole lot. Face 5 hurts as much as you can imagine, although you don't have to be crying to feel this bad. Ask the person to choose the face that best describes how he is feeling.

Rating scale is recommended for persons age 3 years and older.

ASSESSMENT MNEMONICS

ENAME

A checklist for first tasks on scene of a motor vehicle collision.

- **E**nvironmental hazards
- **N**umber of patients
- **A**dditional resources
- **M**echanism of injury
- **E**xtrication?

MIST

A checklist for handover of a trauma patient.

- **M**echanism of injury - describe it
- **I**njuries - describe them
- **S**igns - vital signs, abnormal s/s
- **T**reatment - what have you done?

SOAP

This is the general order for treating a patient.

- **S**ubjective information (What is the patient telling you?)
- **O**bjective information (What are your observations and tools telling you?)
- **A**ssessment of the patient (What do you think is happening?)
- **P**lan of action (What are you going to do about it?)

PENMAN

A different checklist for first tasks at an MVC.

- **P**ersonal **P**rotective **E**quipment
- **E**quipment needed
- **N**umber of injured
- **M**echanism of injury
- **A**dditional resources needed
- **N**eed for immobilization?

CHATT

Elements of a Patient Contact/Care Report or Patient Report Form

- **C**hief complaint
- **H**istory - recent & relevant long term
- **A**ssessment - your conclusions
- **T**reatment - include patient reactions
- **T**ransport - note changes en route

CHEATED

This is a summary of a patient contact, from start to finish.

- **C**hief Complaint
- **H**istory
- **E**xamination
- **A**ssessment
- **T**reatment
- **E**valuation (Did the treatment help?)
- **D**isposition (What was the final outcome?)

ASSESSMENT MNEMONICS

OPQRST

Used to assess PAIN.

- **O**nset (this event)
- **P**rovoke, **P**alpation
- **Q**uality
- **R**adiates (Does it spread out?)
- **S**everity
- **T**ime (history)

SAMPLE

SAMPLE is the acronym covering the details we need to get about any patient.

- **S**igns & **S**ymptoms
- **A**llergies
- **M**edications
- **P**ast pertinent history
- **L**ast oral intake, liquid & solid
- **E**vents leading to the incident

AVPU

This is the mnemonic to establish level of responsiveness.

- **A**lert
- **V**erbal (Instructions are mostly followed. Answers are delayed or inappropriate.)
- **P**ain (Sternal rub. Thumb web pinch.)
- **U**nresponsive

PERRLA

I can't believe I never included this list for evaluating the eyes during a field exam.

- **P**upils are
- **E**qual,
- **R**ound, and
- **R**eactive to
- **L**ight
- **A**ccomodation

START & RPM

***START** is an acronym for a copyrighted system for triage. **RPM** is the list of specific actions taken in this system.*

- **S**imple
- **T**riage
- **A**nd
- **R**apid
- **T**ransport *and*
- **R**espirations
- **P**erfusion
- **M**entation

SLUDGE

These are the symptoms of excessive stimulation of body functions due to organophosphate poisoning.

- **S**alivation (Drool)
- **L**acrimation (Tears)
- **U**rination
- **D**efecation
- **G**astric juices (Heartburn)
- **E**mesis (Vomiting)

GLASGOW COMA SCALE

Glasgow Coma Scale		
Response	Scale	Score
Eye Opening Response	Eyes open spontaneously	4 Points
	Eyes open to verbal command, speech, or shout	3 Points
	Eyes open to pain (not applied to face)	2 Points
	No eye opening	1 Point
Verbal Response	Oriented	5 Points
	Confused conversation, but able to answer questions	4 Points
	Inappropriate responses, words discernible	3 Points
	Incomprehensible sounds or speech	2 Points
	No verbal response	1 Point
Motor Response	Obeys commands for movement	6 Points
	Purposeful movement to painful stimulus	5 Points
	Withdraws from pain	4 Points
	Abnormal (spastic) flexion, decorticate posture	3 Points
	Extensor (rigid) response, decerebrate posture	2 Points
	No motor response	1 Point
Minor Brain Injury = 13-15 points; **Moderate Brain Injury** = 9-12 points; **Severe Brain Injury** = 3-8 points		

APPROVED ABBREVIATIONS

ABBREVIATION	MEANING
ā	before
Ab	abortion
abd	abdomen
adm	admission
AED	automatic external defibrillator
AIDS	acquired immune deficiency syndrome
AKA	above the knee amputation
ALOC	altered level of consciousness
ALS	advanced life support
am	morning
AMA	against medical advice
Amb	ambulation/ambulance
amt	amount
ant	anterior
a/o x3	alert and oriented to person, place, and time
approx	approximately
ASC	Approved Stroke Center
appt	appointment
ARDS	adult respiratory distress syndrome
ASA	aspirin
ASAP	as soon as possible
ASHD	atherosclerotic heart disease
BCP	birth control pills
BIB	brought in by
BKA	below the knee amputation
BLS	basic life support
BM	bowel movement
BOA	born out of asepsis
BOW	bag of waters
BP	blood pressure
BS	breath sounds
BSA	body surface area

APPROVED ABBREVIATIONS

ABBREVIATION	MEANING
$\overline{c}$	with
C	centigrade
CA	cancer
CAD	coronary artery disease
cc	cubic centimeter
CC or c/c	chief complaint
CHF	congestive heart failure
cm	centimeter
C/O	complains of
CO_2	carbon dioxide
COA	condition on arrival
COPD	chronic obstructive pulmonary disease
CP	chest pain
CPAP	continuous positive airway pressure
CPR	cardiopulmonary resuscitation
CRF	chronic renal failure
CSF	cerebrospinal fluid
CSM	circulation, sensation, movement
CVA	cerebral vascular accident
CXR	chest x-ray
D&C	dilation and curettage
dc	discharge/discontinue
DM	diabetes mellitus
DNR	do not resuscitate
DOA	dead on arrival
DOB	date of birth
DOE	dyspnea on exertion
DT's	delirium tremors
DVT	deep vein thrombosis
DX	diagnosis
EBL	estimated blood loss
ECG	electrocardiogram
ED/ER	emergency dept. / emergency room
EDAP	emergency dept. approved for pediatrics

APPROVED ABBREVIATIONS

ABBREVIATION	MEANING
EMS	emergency medical services
EMT	emergency medical technician
EMT-P	emergency medical technician-paramedic
ET	endotracheal
ETA	estimated time of arrival
ETOH	ethanol (alcohol)
FB	foreign body
f/u	follow up
fx	fracture
G	gravida
GB	gallbladder
GI	gastrointestinal
gm	gram
GSW	gunshot wound
gtt	drop
GU	genitourinary
HMO	health maintenance organization
hosp	hospital
hr(s)	hour(s)
hs	at night
ht	height
HTN	hypertension
Hx	history
ICU	intensive care unit
IUD	intrauterine device
IUP	intrauterine pregnancy
IV	intravenous
IVP	Intravenous push
JVD	jugular vein distention
KCL	potassium chloride
kg	kilogram

APPROVED ABBREVIATIONS

ABBREVIATION	MEANING
KO	knocked out (loss of consciousness)
KVO	keep vein open
L	liter
lab	laboratory
lac	laceration
lb	pound
LLE	left lower extremity
LLL	left lower lobe (lung)
LLQ	left lower quadrant (abdomen)
LMP	last menstrual period
LOC	level of consciousness/loss of consciousness
LUE	left upper extremity
LUL	left upper lobe (lung)
LUQ	left upper quadrant
MAR	most accessible receiving facility
max	maximum
MCL	mid clavicular line
MD/PMD	medical doctor/private medical doctor
mEq	milliequivalent
mg	milligram
MI	myocardial infarction
MICN	mobile intensive care nurse
min	minutes/minimum
ml	milliliter
MS	multiple sclerosis/morphine sulfate
MVA	motor vehicle accident
NA	not applicable/not available
NAD	no apparent distress
narc	narcotic
NB	newborn
neg	negative

APPROVED ABBREVIATIONS

ABBREVIATION	MEANING
NKA	no known allergies
NP	nurse practitioner
npo	nothing per mouth
NSR	normal sinus rhythm
NTG	nitroglycerin
nv	nausea/vomiting
n/v/d	nausea/vomiting/diarrhea
O2	oxygen
O2 sat	oxygen saturation
OB/GYN	obstetrical/gynecological
OD	overdose/right eye
OS	left eye
OU	both eyes
p̄	after
P	para
PE	physical exam/pedal edema/pulmonary embolus
Peds	pediatric/pedestrians
perf	perforation
PERL	pupils equal, react to light
PIH	pregnancy induced hypertension
pm	evening
PMH	past medical history
po	by mouth
post	posterior/after
PPD	purified protein derivative (TB skin test)
pr	per rectum
prn	as needed
Psych	psychiatric
pt	patient
PTA	prior to arrival
PVC	premature ventricular contraction

APPROVED ABBREVIATIONS

ABBREVIATION	MEANING
q	every
rehab	rehabilitation
RLE	right lower extremity
RLL	right lower lobe (lung)
RLQ	right lower quadrant (abdomen)
RML	right middle lobe (lung)
RN	registered nurse
r/o	rule out
RUE	right upper extremity
RUL	right upper lobe (lung)
RUQ	right upper quadrant (abdomen)
Rx	prescription
s̄	without
SC	specialty center
sec	second
SIDS	sudden infant death syndrome
SL	saline lock/sublingual
SOB	shortness of breath
sq	square
SQ	subcutaneous
SRC	STEMI Receiving Center
TB	tuberculosis
TBC	total body check
Tbsp	tablespoon
TIA	transient ischemic attack
TKO	to keep open (IV rate)
TK	tourniquet
tsp	teaspoon
TV	tidal volume
UTI	urinary tract infection
vs	versus

APPROVED ABBREVIATIONS

ABBREVIATION	MEANING
VS	vital signs
wk	weak
WNL	within normal limits
wt	weight
y/o	year old
yr	year
@	at
↑	increase/positive
↓	decrease/negative
%	percent
2°	secondary to/ second degree
Δ	change
=	equal
♀	female
♂	male
#	number
>	greater than
<	less than
+	plus/positive
-	minus/negative

CINCINNATI PREHOSPITAL STROKE SCALE

CINCINNATI PREHOSPITAL STROKE SCALE		
SIGN OF STROKE	**PATIENT ACTIVITY**	**INTERPRETATION**
Facial Droop	Have the patient look up at you, smile, and show his teeth	Normal: Symmetry to both sides. Abnormal: One side of the face droops or does not move symmetrically.
Arm Drift	Have patient lift arms up and hold them out with eyes closed for 10 seconds	Normal: Symmetrical movement in both arms. Abnormal: One arm drifts down or asymmetrical movement of the arms.
Abnormal Speech	Have the patient say, "You can't teach an old dog new tricks"	Normal: The correct words are used and no slurring of words is noted. Abnormal: The words are slurred, the wrong words are used, the patient is aphasic.

REPORT OF EMS PATIENT CARE WITHOUT TELECOMMUNICATIONS

Report of EMS Patient Care Without Telecommunications

This report is for the purpose of documenting to the Medical Director of the Office of EMS the circumstances surrounding the administration of drugs or fluids or the application of advanced life support techniques to a patient or patients without direct voice contact with a medical command physician or designee or written order of a medical command physician or designee in accordance with Section 15, Article 4C, Chapter 16 of the Code of West Virginia as amended.

Date of Incident:_____

Pre-hospital Care Record Form Number (attach copy):_____

Patient Name(s):_____

_____

_____

EMS services provided (use additional sheets if necessary:_____

_____

_____

_____

Justification for providing services (radio failure, multiple patients, etc.- use additional sheets if necessary):

_____

_____

_____

EMS Agency:_____ County:_____

Person reporting incident:_____ _____ _____
(Last) *(First)* *(MI)*

EMSP Number:_____ Date of Expiration:_____

Signature:_____ Date:_____

Return to:
State EMS Medical Director
Office of EMS
350 Capitol Street, Room 425
Charleston, WV 25301-3714

EMS Without Telecommunications
1-01-2015

EMS MEDICATION FORMULARIES

ACETAMINOPHEN

Scope	EMT	ACT	Paramedic

Generic Name: **Acetaminophen** (a-seet-a-**min**-oh-fen)

Trade Name: Tylenol

Chemical Class: N/A

Therapeutic Class: Antipyretics, non-opioid analgesics

Actions: Inhibits the synthesis of prostaglandins that may serve as mediators of pain and fever, primarily in the CNS. Has no significant anti-inflammatory properties or GI toxicity.

Pharmacokinetics: Absorption: Well absorbed following oral administration. Rectal absorption is variable.

Distribution: Widely distributed. Crosses the placenta; enters breast milk in low concentrations.

Metabolism and Excretion: 85–95% metabolized by the liver (CYP2E1 enzyme system). Metabolites may be toxic in overdose situation. Metabolites excreted by the kidneys.

Half-life: Neonates: 7 hr; Infants and Children: 3–4 hr; Adults: 1–3 hr.

Indications: Treatment of fever in pediatrics

Contraindications: Previous hypersensitivity; Products containing alcohol, aspartame, saccharin, sugar, or tartrazine (FDC yellow dye #5) should be avoided in patients who have hypersensitivity or intolerance to these compounds; Severe hepatic impairment/active liver disease.

Precautions:
Pregnancy Cat. B

Hepatic disease/renal disease (lower chronic doses recommended); Alcoholism, chronic malnutrition, severe hypovolemia or severe renal impairment; Chronic alcohol use/abuse; Malnutrition; OB: Use in pregnancy only if clearly needed

Lactation: Use cautiously Pedi: Neonates (safety and effectiveness not established).

Side Effects: CNS: agitation, anxiety, headache, fatigue, insomnia

Resp: atelectasis, dyspnea

CV: hypertension, hypotension

GI: HEPATOTOXICITY, constipation, nausea, vomiting

F and E: hypokalemia

GU: renal failure (high doses/chronic use).

Hemat: neutropenia, pancytopenia.

MS: muscle spasms, trismus.

Interactions: Chronic high-dose acetaminophen (2 g/day) may increase risk of bleeding with warfarin (INR should not exceed 4). Hepatotoxicity is additive with other hepatotoxic substances, including alcohol

Administration: *Pediatric* Administer 15 mg/kg oral with temperature > 102° F

Supply: 160 mg in 5 mL UD solution

160 mg in 5 ml elixer

Notes:

ADENOSINE (Adenocard®)

Scope	ACT	PARAMEDIC

Generic Name: **Adenosine (ah-den'oh-seen)**

Trade Name: Adenocard®

Chemical Class: Endogenous nucleoside

Therapeutic Class: Antiarrhythmic

Actions: Adenosine is a naturally occurring substance that is present in all body cells. Adenosine decreases conduction of the electrical impulse through the AV node and interrupts AV reentry pathways in paroxysmal supraventricular tachycardia (PSVT). It can effectively terminate rapid supraventricular tachycardia such as PSVT. Because of its rapid onset and very short half-life, the administration of Adenosine is sometimes referred to as chemical cardioversion. A single bolus of the drug was effective in converting PSVT to a normal sinus rhythm in a significant number (90%) of patients in initial drug studies.

Pharmacokinetics: Cleared from plasma in less than 30 seconds; $t_{½}$ = 10 seconds

Indications:
- Unstable narrow QRS tachycardia refractory to vagal maneuvers.
- Stable, regular, monomorphic wide-complex tachycardia.

Contraindications:
- Second- or third-degree heart block.
- Sick sinus syndrome.
- Hypersensitivity to the drug.
- Bradycardia.
- Broncho-constrictive lung disease (i.e. asthma).
- Irregular wide-complex tachycardias

Precautions:
Pregnancy Cat. C
Adenosine typically causes dysrhythmias at the time of cardioversion. These generally last a few seconds or less and may include PVCs, PACs, sinus bradycardia, sinus tachycardia, and various degrees of AV block. In extreme cases, transient asystole may occur. If this occurs, appropriate therapy should be initiated.

Side Effects:
CNS: dizziness, headache
CV: dysrhythmia outlined under precautions, chest pain, facial flushing, palpitations, diaphoresis
GI: nausea
RESP: chest pressure, dyspnea

Administration:

Adult	Administer 6 mg IV over 1 to 3 seconds. If not effective after 2 minutes, give 12 mg IV over 1 to 3 seconds.
Pediatric	Administer 0.1 mg/kg IV over 1 to 3 seconds (maximum first dose 6 mg) **[per MCP]**. If not effective after 2 minutes, administer 0.2 mg/kg IV over 1 to 3 seconds (maximum second dose 12 mg).

Supply: Vials or prefilled syringes containing 6 mg in 2 mL and/or 12 mg in 2 mL

Notes:
- Give Adenosine rapidly over 1 to 3 seconds, into the medication administration port closest to the patient, through a large (e.g., antecubital) vein followed by a 10 mL Normal Saline flush and elevation of the arm.
- Higher doses than usual may be needed for patients receiving Theophylline preparations or consuming large quantities of Caffeine.
- Dipyridamole (Persantine) can potentiate the effects of Adenosine. The dosage of Adenosine may need to be reduced in patients receiving Dipyridamole.
- Use of Adenosine for irregular wide-complex tachycardias may cause degeneration of the rhythm to VF.

ALBUTEROL (Proventil®)

Scope	EMT	ACT	Paramedic

Generic Name: **Albuterol (al-byoo'ter-ole)**

Trade Name: Airet®, Proventil®, Repetabs®, Respirol®, Ventolin®, Volmax®; Combivent® (combined with Ipratropium Bromide)

Chemical Class: Sympathomimetic amine; β_2-adrenergic agonist

Therapeutic Class: Antiasthmatic; bronchodilator

Actions: Albuterol is a selective β_2-adrenergic agonist with a minimal number of side effects. It causes prompt bronchodilation and has a duration of action of approximately 5 hours.

Pharmacokinetics: Onset 5 to 15 minutes. Peak 1 to 1½ hours. Duration 4 to 6 hours. $t_{½}$ = 2½ to 4 hours.

Indications:
- Bronchial asthma.
- Reversible bronchospasm associated with chronic bronchitis and emphysema.
- Anaphylactic respiratory distress.
- Crush syndrome **[per MCP]**.

Contraindications:
- Hypertension
- Tachycardia (HR greater than 130 adult, HR greater than 150 child).
- Severe cardiac disease.
- Hypersensitivity to the drug.

Precautions:
Pregnancy Cat. C
- Hyperthyroidism.
- Diabetes mellitus.
- Convulsive disorders.

Side Effects:
CNS: dizziness, headache, stimulation, tremors
CV: chest pain, dysrhythmias, hypertension, palpitations, tachycardia
GI: nausea, vomiting

Administration: Using a small volume nebulizer, adjust the oxygen flowmeter to 6 to 10 L/minute to produce a steady, visible mist.

Adult	Give 2.5 mg (3 mL of 0.083% solution) with a mouthpiece, facemask, or CPAP.
Pediatric	Give 2.5 mg (3 mL of 0.083% solution) with a mouthpiece, blow-by, or CPAP.

Supply: Unit dose vials containing 2.5 mg in 3 mL.

Notes:
- The possibility of developing unpleasant side effects increases when Albuterol is administered with other sympathetic agonists.
- β-blockers may blunt the pharmacological effects of Albuterol.
- Albuterol is also supplied in metered-dose inhalers (MDI) that deliver 90 mcg per inhalation. Be sure to obtain a complete medication history detailing administration times and frequency of use of home inhalation therapy. Overdoses of inhalers cause bronchial constriction and possibly death.

AMIODARONE (Cordarone®)

Scope	ACT	PARAMEDIC

Generic Name: **Amiodarone (a-mee'oh-da-rone)**

Trade Name: Cordarone®, Pacerone®

Chemical Class: Iodinated benzofuran derivative

Therapeutic Class: Antiarrhythmic

Actions: Amiodarone prolongs myocardial action potential and effective refractory period and causes noncompetitive α- and β-adrenergic inhibition. Amiodarone suppresses atrial and ventricular ectopy (PSVT, AF, ATach, VT, VF, etc.) and slows conduction through the AV node (ventricular rate control; useful in WPW). Amiodarone also causes vasodilation resulting in reduced cardiac work.

Pharmacokinetics: $t_{½}$ = 20 to 47 days

Indications:
- Shock refractory ventricular fibrillation and pulseless ventricular tachycardia
- Ventricular tachycardia
- Wide-complex tachycardia of unknown type (regular rhythm)

Contraindications:
- Cardiogenic shock (SBP <90 mm Hg)
- Marked sinus bradycardia
- Second- or third-degree heart block
- Hypersensitivity to the drug
- Torsades de pointes

Precautions:
Pregnancy Cat. D
- May worsen existing or precipitate new dysrhythmias, including torsades de pointes and VF.
- Use with beta-blocking agents could increase risk of hypotension and bradycardia. Amiodarone inhibits atrioventricular conduction and decreases myocardial contractility, increasing the risk of AV block with Verapamil or Diltiazem or of hypotension with any calcium channel blocker.
- Use with caution in pregnancy and with nursing mothers.

Side Effects:
CNS: dizziness, headache
CV: bradycardia, cardiac conduction abnormalities, CHF, dysrhythmias, hypotension, SA node dysfunction, sinus arrest
RESP: dyspnea, pulmonary inflammation

Administration:

Adult	**VF and pulseless VT:** Give 300 mg IV/IO. Give additional 150 mg IV push in 3 to 5 minutes for refractory or recurrent VF/VT. **VT with pulse:** Give a slow infusion of 150 mg over 10 minutes. Mix in 100 mL of NS and infuse at 150 gtts/minute (15 drop set).
Pediatric	**VF and pulseless VT:** Give 5 mg/kg IV/IO. May repeat up to 2 times for refractory VT/pulseless VT. Maximum single dose 300 mg. **VT with pulse:** Give an infusion of 5 mg/kg. Mix in 100 mL of NS and infuse at 75 gtts/minute (15 drop set). Maximum dosage is 300 mg.
Slow Infusion	1 mg/minute. Mix 150 mg in 250 mL NS and infuse at 100 gtts/minute (60 drop set).

Supply: Vial containing 150 mg in 3 mL.

Notes:

ASPIRIN

Scope	EMT	ACT	Paramedic

Generic Name: **Aspirin (as'pir-in)**

Trade Name: Bayer®, Bufferin®, Ecotrin®

Chemical Class: Salicylate derivative

Therapeutic Class: Antiplatelet agent

Actions: Aspirin blocks the formation of the substance thromboxane A_2, which causes platelets to aggregate and arteries to constrict. This results in an overall reduction in mortality associated with myocardial infarction. It also appears to reduce the rate of nonfatal reinfarction and nonfatal stroke.

Pharmacokinetics: Onset 15 to 30 minutes. Peak 1 to 2 hours. Duration 4 to 6 hours. $t_{½}$ = 3 hours at low doses.

Indications: Chest pain suggestive of an acute myocardial infarction.

Contraindications:
- Hypersensitivity to the drug, NSAIDS, and Tartrazine (FDC yellow dye #5).
- Bleeding disorders including GI hemorrhage and hemophilia.
- Hemorrhagic states.

Precautions: Children or teenagers with flu-like symptoms (may be associated with the development of Reye's syndrome).

Pregnancy Cat. C

Side Effects: *GI:* GI bleeding, heartburn, nausea

HEME: prolonged bleeding time

Interactions: When administered together, Aspirin and other anti-inflammatory agents may cause an increased incidence of side effects and increased blood levels of both drugs. Administration of aspirin with antacids may reduce the blood levels of the drug by decreasing absorption.

Administration: Administer four (4) 81 mg chewable tablets (324 mg total dose) PO as soon as possible after the onset of chest pain.

Supply: 81 mg low dose chewable tablets or 81 mg quick absorbing powder

Notes:

ATROPINE

Scope	ACT	PARAMEDIC

Generic Name: **Atropine (a'troe-peen)**

Trade Name: Atropine Care®, Atropen Autoinjector®, Atropisol®, Atrosulf-1®

Chemical Class: Belladonna alkaloid

Therapeutic Class: Anticholinergic

Actions: Atropine is a potent parasympatholytic that increases cardiac output and heart rate. Atropine acts by blocking acetylcholine receptors, thus inhibiting parasympathetic stimulation. Although it has positive chronotropic properties, it has little or no inotropic effect.

Pharmacokinetics: Peak 2 to 4 minutes. Duration 4 to 6 hours.

Indications:

- **[Adult]** Hemodynamically significant bradycardia (HR less than 50):
  - Acute altered mental status, Hypotension, ongoing chest pain, acute heart failure, or other signs of shock.
  - Bradycardia associated with "escape" ventricular ectopy (i.e., PVCs attributed to the underlying slow heart rate).
- **[Pediatric]** Hemodynamically significant bradycardia [HR less than 60 (neonate less than 80/minute)] due to increased vagal tone or primary AV block.
- Severe organophosphate poisonings (insecticides).

Contraindication: Hypersensitivity to the drug

Precautions:
Pregnancy Cat. C

- Use Atropine cautiously in the presence of acute coronary ischemia or myocardial infarction; increased heart rate may worsen ischemia or increase the zone of infarction.
- Avoid relying on Atropine in type II second-degree or third-degree AV block or in patients with third-degree AV block with a new wide-QRS complex. These patients require immediate pacing.

Side Effects:
CNS: drowsiness, confusion
CV: angina, PVCs, tachycardia
EENT: blurred vision, dilated pupils
GI: dry mouth

Administration:

Adult	**Bradycardia:** Administer 0.5 mg IV. May repeat every 5 minutes to a total dose of 3 mg if needed. **Cholinergic Toxicity:** Give 2 mg IV. Repeat every 5 minutes if needed.
Pediatric	**Bradycardia:** Administer 0.02 mg/kg IV/IO. May repeat once in 3 to 5 minutes if needed. (Minimum dose = 0.1 mg, maximum dose = 0.5 mg for child and 1mg for adolescent)

Supply: Prefilled syringe containing 1 mg in 10 mL.

Notes:

DEXTROSE (Glucose®)

Scope	ACT	PARAMEDIC

Generic Name: **Dextrose (dex'trose)**

Trade Name: Glucose®, Glutose®, Insta-Glucose®

Chemical Class: Carbohydrate

Therapeutic Class: Nutrient, caloric

Actions: Dextrose supplies supplemental glucose in cases of hypoglycemia and restores blood sugar level to normal (80 to 120 mg/dL).

Pharmacokinetics: N/A

Indications:
- Altered mental status of unknown etiology (GCS less than or equal to 12).
- Hypoglycemia (less than 60 mg/dL) based on rapid glucose determination or clinical judgment.
- Status epilepticus.
- Oral hypoglycemic agent overdose.
- Neonatal resuscitation not responsive to ventilation and chest compressions.

Contraindications: No contraindications for a patient with suspected hypoglycemia.

Precautions:
- Use with caution in patients with increased intracranial pressure because the Dextrose load may worsen cerebral edema.
- Localized venous irritation may occur when smaller veins are used.
- Infiltration may result in tissue necrosis.
- Dextrose is only administered via the IV or IO route.

Side Effects: Tissue necrosis and phlebitis at the injection site.

Administration:

Patient 2 years of age or older – If blood glucose is < 60 mg/dl, administer D50W 1 ml/kg IV/IO. Maximum dose is 25 grams

Patient older than 1 month but younger than 2 years *old* – If blood glucose is < 60 mg/dl, administer 2 ml/kg of D25 IV/IO; (D25 Is prepared by mixing 25 ml NS with 25 ml D50W).

Patient 1 month of age or younger – If blood glucose is < 60 mg/dl, administer 5 ml/kg Dextrose 10% IV/IO (D10 is prepared by mixing 40 ml of NS with 10 ml of D50W).

Supply:
- Prefilled syringe containing 25 g in 50 mL (50% solution)
- Prefilled syringe containing 2.5 g in 10 mL (25% solution)

Notes:
- Establish a free flowing IV of Normal Saline in a large vein. Aspirate blood before and during administration of Dextrose to ensure IV patency.
- Hypoglycemic states require immediate intervention. Prolonged hypoglycemia can result in permanent brain damage.

DILTIAZEM

Scope | **PARAMEDIC**

Generic Name: **Diltiazem (dil-tye-a-zem)**

Trade Name: Cardizem, CardizemCD, CardizemLA, Cartia XT, Dilacor XR, Taztia XT, Tiazac

Chemical Class: Calcium channel blockers

Therapeutic Class: Therapeutic: antianginals, antiarrhythmics (class IV), antihypertensives

Actions: Inhibits transport of calcium into myocardial and vascular smooth muscle cells, resulting in inhibition of excitation-contraction coupling and subsequent contraction.

Pharmacokinetics: Absorption: Well absorbed, but rapidly metabolized after oral administration.
Distribution: Unknown.
Protein Binding: 70–80%.
Metabolism and Excretion: Mostly metabolized by the liver (CYP3A4 enzyme system).
Half-life: 3.5–9 hr.

Indications: Supraventricular tachyarrhythmias and rapid ventricular rates in atrial flutter or fibrillation.

Contraindication: Hypersensitivity; Sick sinus syndrome; 2nd- or 3rd-degree AV block (unless an artificial pacemaker is in place); Systolic BP< 90mmHg; Recent MI or pulmonary congestion; Concurrent use of rifampin.

Precautions: Severe hepatic impairment, consider age related decrease in body mass,
Pregnancy Cat. C Severe renal impairment; Serious ventricular arrhythmias or heart failure.

Side Effects: *CNS: anxiety, confusion, dizziness, drowsiness, headache, nervousness, psychiatric disturbances, weakness.*
EENT: blurred vision, disturbed equilibrium, epistaxis, tinnitus.
Resp: cough, dyspnea.
CV: ARRHYTHMIAS, HF, peripheral edema, bradycardia, chest pain, hypotension, palpitations, syncope, tachycardia.
GI: constipation, diarrhea, dry mouth, dyspepsia, nausea, vomiting.
GU: dysuria, nocturia, polyuria, sexual dysfunction, urinary frequency.
Derm:, erythema, flushing, sweating, photosensitivity, pruritus/urticaria, rash.
Endo: gynecomastia, hyperglycemia
MS: joint stiffness, muscle cramps.
Neuro: paresthesia, tremor.

Administration: Adult: Administer 0.25 mg/kg slow IVP. Repeat dose in 15 minutes if needed at 0.35 mg/kg slow IVP. **[per MCP]**

Supply:
- 100 mg vial requiring reconstitution with 0.9% NS diluent
- 50 mg per 10 mg vial (requires refrigeration)

Notes:

DIPHENHYDRAMINE (Benadryl®)

Scope | **PARAMEDIC**

Generic Name: **Diphenhydramine (dye-fen-hye'dra-meen)**

Trade Name: Benadryl®

Chemical Class: Ethanolamine derivative

Therapeutic Class: Antihistamine, antianaphylactic (adjunct)

Actions: Diphenhydramine is an antihistamine with anticholinergic (drying) and sedative side effects. Diphenhydramine decreases the allergic response by blocking Histamine at H_1 receptor sites.

Pharmacokinetics: N/A

Indications:
- Anaphylaxis, *as an adjunct to Epinephrine*.
- To treat dystonic reactions and extrapyramidal reactions caused by phenothiazines.

Contraindications:
- Bronchial asthma.
- Nursing mothers.
- Children less than 10 kg.
- Glaucoma.
- Hypersensitivity to the drug or other antihistamines.

Precautions: Use with caution in patients with a history of hyperthyroidism, cardiovascular disease, and hypertension.

Pregnancy Cat. B

Side Effects:
CNS: dizziness, drowsiness, sedation, sleepiness
CV: headache, palpitations
GI: dryness of mouth, nose and throat
RESP: thickening of bronchial secretions, wheezing

Interactions:
- Diphenhydramine has additive effects with alcohol and other CNS depressants (hypnotics, sedatives, tranquilizers, etc).
- MAO inhibitors prolong and intensify the anticholinergic (drying) effects of antihistamines.

Administration:
Adult Give 25 mg IM or slow IVP
Pediatric Give 1 mg/kg up to 25 mg IM or slow IVP

Supply: Vial containing 50 mg in 1 mL

Notes: The IV route is preferred for the patient in severe shock. If an IV cannot be readily established, give Diphenhydramine via the IM route.
Administer deep IM into large muscle mass.

DOPAMINE (Intropin®)

Scope | **PARAMEDIC**

Generic Name: **Dopamine (doe'pa-meen)**

Trade Name: Intropin®

Chemical Class: Catecholamine

Therapeutic Class: Vasopressor, α- and β-adrenergic sympathomimetic

Actions: Dopamine stimulates both adrenergic and dopaminergic receptors in a dose-dependent manner. Low doses (1-5 mcg/kg/minute) stimulate mainly dopaminergic receptors producing renal and mesenteric vasodilation. Intermediate doses (5-10 mcg/kg/minute) stimulate both dopaminergic and β_1-adrenergic receptors producing cardiac stimulation and renal dilation. Large doses (10-20 mcg/kg/minute) stimulate α-adrenergic receptors producing vasoconstriction and increases in peripheral vascular resistance and blood pressure.

Pharmacokinetics: Onset 5 minutes. Duration less than 10 minutes. $t_{½}$ = 2 minutes.

Indications:
- Hemodynamically significant bradycardia that does not respond to Atropine and/or transcutaneous pacing.
- Hemodynamically significant hypotension associated with cardiogenic shock.

Contraindications:
- Hypovolemic shock; volume replacement *must* be accomplished prior to using Dopamine.
- Pheochromocytoma (tumor of the adrenal gland).

Precautions:
Pregnancy Cat. C
- Dopamine increases heart rate and can induce or worsen supraventricular and ventricular dysrhythmias.
- Dopamine should not be administered in the presence of tachydysrhythmias or ventricular fibrillation.

Side Effects: *CNS:* headache, nervousness
CV: anginal pain, ectopic beats, hypertension, palpitation, tachycardia, vasoconstriction
GI: nausea, vomiting
RESP: dyspnea

Administration: IV infusion at 5 to 10 mcg/kg/minute. Piggyback the Dopamine infusion into an already established IV infusion.
ROSC: IV infusion at 5 to 20 mcg/kg/minute. Piggyback the Dopamine infusion into an already established IV infusion.

Supply: Premixed Bag containing 800 mg in 250 mL (3,200 mcg/mL).

Notes:
- To prepare a Dopamine infusion, mix 200 mg Dopamine in a 250 mL bag of NS and mix well. Resultant concentration is 800 mcg/mL. Infuse using a 60 drop administration set. Use the formula below to calculate the drip rate.
- Tissue sloughing may occur with extravasation. Antecubital veins are preferable sites. Monitor closely for leakage and/or infiltration.

Dopamine Infusion Formula

$$\frac{\text{Dose x weight in kg x 60 drops/min}}{\text{Concentration of drug in 1 mL}} = \text{gtts/minute}$$

EPINEPHRINE 1:1,000

Scope	EMT	ACT	PARAMEDIC

Generic Name: **Epinephrine 1:1,000**

Trade Name: Adrenalin®

Chemical Class: Catecholamine

Therapeutic Class: Bronchodilator, vasopressor

Actions: Epinephrine is a naturally occurring catecholamine. It acts directly on α- and β-adrenergic receptors. Its effect on β-receptors is much more profound that its effect on α-receptors. The effects of Epinephrine on β_1-adrenergic receptors include a positive chronotropic effect (increased heart rate) and a positive inotropic effect (cardiac contractile force). The effects of Epinephrine on α-adrenergic receptor sites include increased systemic vascular resistance. The effects on these receptors sites together cause an increased blood pressure. Epinephrine also causes bronchodilation due to its effects on β_2-adrenergic receptors.

Pharmacokinetics: *IM:* Onset variable; Peak unknown; Duration 1 to 4 hours
SC: Onset 5 to 10 minutes; Peak 30 minutes; Duration 1 to 4 hours

Indications:
- Anaphylaxis.
- Bronchial asthma.
- Respiratory distress due to epiglottitis or croup **[per MCP]**.

Contraindications: Epinephrine should be avoided in the following patients unless signs and symptoms are severe:
- Hypertension
- Tachycardia
- Cardiovascular disease.
- Elderly
- Angle closure glaucoma.

Precautions:
Pregnancy Cat. C
- Hyperthyroidism.
- Diabetes Mellitus.
- Give Epinephrine cautiously in geriatric and cardiac patients.

Side Effects: *CNS:* anxiety, dizziness, restlessness, tremulousness, headache
CV: anginal pain, dysrhythmias, hypertension, palpitations
GI: nausea, vomiting
SKIN: pallor

Interactions: Cyclic antidepressants and antihistamines may potentiate the effects of Epinephrine.

PARAMEDIC/ACT Administration:

Adult Anaphylaxis:	Administer 0.3 mg IM/IM/IO. Repeat dose per MCP.
Adult Bronchospasm:	Administer 0.3 mg IM/IM/IO. **[per MCP]**
Pediatric Anaphylaxis:	Administer 0.3 mg for patients >30 kg. Administer 0.15 mg for patients <30 kg.
Pediatric Cardiac Arrest:	Administer 0.1 mg/kg ET

EMT Administration:

Adult Anaphylaxis:	Administer 0.3 mg IM/IM/IO. Repeat dose per MCP
Pediatric Anaphylaxis:	Administer 0.3 mg for patients

Supply: Ampule containing 1 mg in 1 mL.
Multidose Vial containing 30 mg in 30 mL.

Notes: The IM route is preferred for the patient in severe shock.

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EPINEPHRINE 1:10,000		
Scope	**ACT**	**PARAMEDIC**

Generic Name: **Epinephrine 1:10,000**

Trade Name: Adrenalin®

Chemical Class: Catecholamine

Therapeutic Class: Bronchodilator, vasopressor

Actions: Epinephrine is a naturally occurring catecholamine. It acts directly on α- and β-adrenergic receptors. Its effect on β-receptors is much more profound that its effect on α-receptors. The effects of Epinephrine on β_1-adrenergic receptors include a positive chronotropic effect (increased heart rate) and a positive inotropic effect (cardiac contractile force). The effects of Epinephrine on α-adrenergic receptor sites include increased systemic vascular resistance. The effects on these receptors sites together cause an increased blood pressure. Epinephrine also causes bronchodilation due to its effects on β_2-adrenergic receptors.

Pharmacokinetics: *IV:* Onset immediate; Peak 5 minutes; Duration short

Indications:
- Cardiac arrest.
- Anaphylaxis and asthma patients in severe distress.

Contraindications: No contraindications when used for indicated conditions.

Precautions: No precautions when used for indicated conditions.

Pregnancy Cat. C

Side Effects: *CNS:* anxiety, dizziness, restlessness, tremulousness, headache
CV: anginal pain, dysrhythmias, hypertension, palpitations
GI: nausea, vomiting
SKIN: pallor

Administration:

Adult	Give 1 mg (10 mL) IV/IO. Repeat every 3 to 5 minutes if needed.
Pediatric	Give 0.01 mg/kg (0.1 mL/kg) IV/IO. Repeat every 3 to 5 minutes if needed.
Anaphylaxis	0.5 – 1 mg slow IVP **[per MCP]**

Supply: Prefilled syringe containing 1 mg in 10 mL

Notes:

EPIPEN®, EPIPEN JR. ®

Scope	EMT	ACT	PARAMEDIC

Drug Names: **Epinephrine** (EpiPen®, EpiPen Jr.®)

Overview: Epinephrine auto-injector (EpiPen®) is a life-saving self-administered medication that is prescribed by a physician to a specific patient. Epinephrine dilates the bronchioles and constricts blood vessels to treat anaphylactic shock.

Indications: Patient exhibiting the assessment findings of an allergic reaction (shock and/or respiratory distress).

Contraindications: No contraindications when used in a life-threatening situation.

Precautions: Give Epinephrine cautiously in geriatric and cardiac patients.

Side Effects: Increased pulse rate, tremors, nervousness.

Administration:

- Assure right medication, right patient, right route, and right dose.
- Ensure medication is not discolored (liquid may not be visible inside all types of devices).
- Remove safety cap from the auto-injector.
- Place tip of auto-injector against the thigh and press firmly until the injector activates.
- Hold injector firmly against thigh for a *minimum of 10 seconds* to allow for full dose delivery.
- Record activity and time.
- Dispose of injector in biohazard container.
- If patient condition continues to worsen:
    - Decreasing mental status, increasing breathing difficulty, decreasing blood pressure.
    - Give an additional dose of Epinephrine using a second EpiPen®.

Supply:

- EpiPen® contains 0.3 mg of Epinephrine
- EpiPen Jr.® contains 0.15 mg of Epinephrine

Notes:

FENTANYL (Sublimaze®)

Scope	ACT	PARAMEDIC

Generic Name: **Fentanyl (fen'-ta-nil)** ***DEA Class: Schedule II***

Trade Name: Sublimaze®, Duragesic®, Fentora®

Chemical Class: Opiate derivative

Therapeutic Class: Narcotic analgesic

Actions: Fentanyl is a powerful synthetic opiate with mechanism of action similar to Morphine. It is considered both faster acting and of shorter duration than Morphine. Interacts with opiate receptors decreasing pain impulse transmission.

Pharmacokinetics: *IV:* Onset immediate. Peak effect several minutes. Duration of action 30 to 60 minutes.

IM: Onset of action 7 – 8 minutes. Duration of action 1 – 2 hours.

Indication: Moderate to severe pain.

Contraindications:
- Known hypersensitivity
- Respiratory depression

Precautions:
Pregnancy Cat. C
- Use with caution with suspected traumatic brain injury.
- Use with caution in patients with COPD.
- Use with caution in patients with cardiac bradyarrhythmias.

Side Effects:
CNS: dizziness
CV: hypotension, hypertension, bradycardia
EENT: blurred vision
GI: nausea, vomiting
RESP: respiratory depression, apnea, laryngospasm
SKIN: diaphoresis

Administration:

Pain Adult	1 mcg/kg up to 100 mcg IM, IV, IO, IN over 1 to 2 minutes. Repeat doses require MCP order.
Pain Pediatric	1 mcg/kg up to 50 mcg IM, IV, IO, IN over 1 to 2 minutes. MCP order required for pediatric patients less than 12 years of age.
Pain >55 years	0.5 mcg/kg up to 100 mcg IM or IV over 1 to 2 minutes.
Chest pain	50 mcg IV q 5 minutes (up to 150 mcg).

Supply: 100 mcg in 2 mL

Notes: If a subsequent dose is given prior to the peak effect of the initial dose, there is a risk of dose stacking and potential overdose.

FUROSEMIDE

Scope	ACT	PARAMEDIC

Generic Name: **Furosemide** (fur-**oh**-se-mide)

Trade Name: Lasix®

Chemical Class: Loop diuretics

Therapeutic Class: Diuretic

Actions: Inhibits the reabsorption of sodium and chloride from the loop of Henle and distal renal tubule. Increases renal excretion of water, sodium, chloride, magnesium, potassium, and calcium. Effectiveness persists in impaired renal function. Therapeutic Effects: Diuresis and subsequent mobilization of excess fluid (edema, pleural effusions). Decreased BP.

Pharmacokinetics: *Absorption: 60–67% absorbed after oral administration*
Distribution: Crosses placenta, enters breast milk.
Protein Binding: 91–99%.
Metabolism and Excretion: Minimally metabolized by liver, some non-hepatic metabolism, some renal excretion as unchanged drug.
Half-life: 30–60 min

Indications: Edema due to heart failure, hepatic impairment or renal disease. Hypertension.

Contraindications: Hypersensitivity; Cross-sensitivity with thiazides and sulfonamides may occur; Hepatic coma or anuria; Some liquid products may contain alcohol, avoid in patients with alcohol intolerance.

Precautions:
Pregnancy Cat. C
Severe liver disease (may precipitate hepatic coma; concurrent use with potassium-sparing diuretics may be necessary); Electrolyte depletion; Diabetes mellitus; Hypoproteinemia; Severe renal impairment; OB, Lactation: Safety not established; Pedi: increased risk for renal calculi and patent ductus arteriosis in premature neonates; Geri: May have increased risk of side effects, especially hypotension and electrolyte imbalance, at usual doses.

Side Effects:
CNS: blurred vision, dizziness, headache, vertigo.
EENT: hearing loss, tinnitus.
CV: hypotension.
GI: anorexia, constipation, diarrhea, dry mouth, dyspepsia, increased liver enzymes, nausea, pancreatitis, vomiting.
GU: increased BUN, excessive urination, nephrocalcinosis.
Derm: photosensitivity, rash, urticaria.
Endo: hypercholesterolemia, hyperglycemia, hypertriglyceridemia, hyperuricemia.
Hemat: hemolytic anemia, leukopenia, thrombocytopenia.
MS: muscle cramps.
Neuro: paresthesia.
Misc: fever.

Interactions: Increased risk of hypotension with antihypertensives, nitrates, or acute ingestion of alcohol. Increased risk of hypokalemia with other diuretics, amphotericin B, stimulant laxatives, and corticosteroids.

Administration:
Adult
- Administer 40 mg if the patient is not currently prescribed furosemide and SBP ≥ 100 mmHg.
- Administer 80 mg if the patient is currently prescribed furosemide and SBP ≥ 100 mmHg.

Supply:
- Vial containing 40 mg in 4 mL.
- Prefilled Syringe containing 40 mg in 4 mL.

GLUCAGON (GlucaGen®)

Scope	ACT	PARAMEDIC

Generic Name: **Glucagon (gloo'ka-gon)**

Trade Name: GlucaGen®

Chemical Class: Polypeptide hormone

Therapeutic Class: Antihypoglycemic

Actions: Glucagon is a protein secreted by the α cells of the pancreas. When released, it causes the breakdown of glycogen, stored in the liver, to glucose. It also inhibits the synthesis of glycogen from glucose. Both actions tend to cause an increase in circulating blood glucose. A return to consciousness following the administration of glucagon usually takes 5 to 20 minutes. Glucagon is only effective if there are sufficient stores of glycogen in the liver.

Pharmacokinetics: Onset within 15 minutes. $t_{½}$ = 3 to 6 minutes.

Indications: When unable to obtain IV access and give Dextrose, *and:*

- Altered mental status of unknown etiology (GCS less than or equal to 12).
- Hypoglycemia (less than 60 mg/dL) based on rapid glucose determination or clinical judgment.
- Status epilepticus.
- Oral hypoglycemic agent overdose.

Contraindications: Hypersensitivity to the drug.

Precautions: Glucagon is only effective if there are sufficient stores of glycogen with the liver. In an emergency situation, intravenous Dextrose is the agent of choice.

Pregnancy Cat. C

Side Effects: *CNS:* dizziness, headache

CV: hypotension

GI: nausea, vomiting

Administration:

Adult	1 mg IM
Pediatric	1 mg IM

Supply: Glucagon must be reconstituted before administration. It is supplied in rubber-stoppered vials containing 1 mg of powder and 1 mL of diluting solution.

Notes: Glucagon may be given to reverse effects of beta-blocker drug overdoses. A significant dose is needed to be effective, usually 3 to 10 mg IV bolus followed by a 2 to 5 mg/hour infusion).

HALOPERIDOL (Haldol®)

Scope | **PARAMEDIC**

Generic Name: **Haloperidol (ha-loe-per'idole)**

Trade Name: Haldol®

Chemical Class: Butyrophenone derivative

Therapeutic Class: Antipsychotic

Actions: Haloperidol is a major tranquilizer that has provided effective in the management of acute psychotic episodes. Haloperidol appears to block Dopamine receptors in the brain associated with mood and behavior. Haloperidol has weak anticholinergic properties.

Pharmacokinetics: *IM:* Peak 10-20 minutes, $t_{½}$ = 17 hours; *IV:* N/A

Indications: Combative patients secondary to acute psychotic episodes.

Contraindications:

- Severe toxic central nervous system depression or comatose states from any cause.
- Hypersensitivity to the drug.
- Patients suffering from Delirium Tremens (DTs) from long-term alcohol abuse as it reduces seizure threshold.
- Parkinson's disease.
- Age less than 8 years. **[per MCP]**

Precautions:
Pregnancy Cat. C

- Haloperidol may impair mental and physical abilities. Occasionally, orthostatic hypotension may be seen in conjunction with Haloperidol use. Caution should be used when administering Haloperidol to patients on anticoagulants.
- Extrapyramidal reactions have been known to occur following the administration of Haloperidol, especially in children. Diphenhydramine should be available.

Side Effects: *CNS:* extrapyramidal symptoms, drowsiness, headache, insomnia, restlessness, seizures, vertigo

CV: hypertension, hypotension, tachycardia

EENT: blurred vision

GI: nausea, vomiting, dry mouth, constipation

Administration:

Adult	Give 5 mg IM/IV/IO. Contact **[per MCP]** for repeat dosing.
Pediatric	Contact **Medical Command Physician**

Supply: Ampule containing 5 mg in 1 mL.

Note: If dystonic reaction (dyskinesia) is noted secondary to Haloperidol (Haldol®) administer Diphenhydramine (Benedryl®) 25 mg IV or IM

HYDROXOCOBALAMIN (Cyanokit®) (OPTIONAL)

Scope | **PARAMEDIC**

Generic Name: **Hydroxocobalamin (hye-drox-oh-koe-bal'-a-min)**

Trade Name: Cyanokit®

Chemical Class: Vitamin B complex

Therapeutic Class: Hematinic; vitamin

Actions: Cyanide is an extremely toxic poison. In the absence of rapid and adequate treatment, exposure to a high dose of Cyanide can result in death within minutes due to inhibition of cytochrome oxidase resulting in arrest of cellular respiration. Specifically, Cyanide binds rapidly with cytochrome a3, a component of the cytochrome c oxidase complex in mitochondria. Inhibition of cytochrome a3 prevents the cell from using oxygen and forces anaerobic metabolism, resulting in lactate production, cellular hypoxia and metabolic acidosis. The action of Cyanokit® in the treatment of cyanide poisoning is based on its ability to bind cyanide ions to form Cyanocobalamin, which is then secreted in the urine.

Pharmacokinetics: *N/A*

Indications: Known or suspected cyanide poisoning.

Contraindications: Hypersensitivity to Hydroxocobalamin or Cyanocobalamin

Precautions:
Pregnancy Cat. C

- Allergic reactions may include anaphylaxis, chest tightness, edema, urticaria, pruritus, dyspnea, and rash.
- Hypertension.

Side Effects:

CNS: headache

CV: increased blood pressure

GI: transient chromoaturia (abnormal coloration of the urine), nausea

SKIN: erythema, rash, injection site reactions

Administration:

Adult	Give 5 g IV infused over 15 minutes. If signs and symptoms persist, a repeat dose can be administered **[per MCP]**. The infusion rate for second dose is usually between 15 minutes and 2 hours.
Pediatric	Give 70 mg/kg, up to 5 g IV infused over 15 minutes. If signs and symptoms persist, a repeat dose can be administered **[per MCP]**. The infusion rate for second dose is usually between 15 minutes and 2 hours.

Supply: Each 5 g vial needs to be reconstituted with 200 mL of Normal Saline. Total volume prior to administration is 200 mL and contains 5 g of drug.

Notes:

- The drug substance is the hydroxylated active form of Vitamin B12.
- Cyanide poisoning may result from inhalation, ingestion, or dermal exposure to various cyanide-containing compounds, including smoke from closed-space fires. The presence and extent of Cyanide poisoning are often initially unknown. There is no widely available, rapid, confirmatory cyanide blood test. Treatment decisions must be made on the basis of clinical history and signs and symptoms of cyanide intoxication. If clinical suspicion of Cyanide poisoning is high, Cyanokit® should be administered without delay.
- Incompatible with Diazepam, Dobutamine, Dopamine, Fentanyl, Nitroglycerin, Pentobarbital, Propofol, Thiopental, blood products, Sodium Thiosulfate, Sodium Nitrite, and ascorbic acid. Use separate IV lines.
- The standard administration drip set that comes with the Cyanokit is 20 drops/mL.

IPRATROPIUM (Atrovent®)

Scope	EMT	ACT	PARAMEDIC

Generic Name: **Ipratropium (eye-pra-troep'ee-um) Bromide**

Trade Name: Atrovent®

Chemical Class: Quaternary ammonium compound

Therapeutic Class: Bronchodilator

Actions: Ipratropium Bromide is an anticholinergic bronchodilator that is chemically related to Atropine. Ipratropium acts by inhibiting the action of acetylcholine at receptor sites on bronchial smooth muscle, thus inhibiting parasympathetic stimulation and causing bronchodilation. Ipratropium has antisecretory properties when applied locally.

Pharmacokinetics: Onset 5 to 15 minutes. Peak effect 1 to 2 hours. Duration of action 3 to 6 hours.

Indications:

- Bronchoconstriction in COPD, including chronic bronchitis and emphysema as an adjunct to Albuterol.
- Bronchial asthma as an adjunct to Albuterol.

Contraindications: Hypersensitivity to the drug, or to Atropine and its derivatives.

Precautions: Ipratropium should be used with caution in patients with narrow-angle glaucoma, prostatic hypertrophy, or bladder-neck obstruction.

Pregnancy Cat. B

Side Effects:

CNS: anxiety, dizziness, headache, nervousness

CV: palpitations

EENT: blurred vision, dry mouth

GI: nausea, vomiting

RESP: bronchospasm, cough

Administration:

Using a small volume nebulizer, adjust the oxygen flowmeter to 6 to 10 L/minute to produce a steady, visible mist.

Adult	Give 0.5 mg in 2.5 mL with a mouthpiece or facemask. Repeat doses per Medical Command.
Pediatric	Not Administered in patients < 12 years of age.

Supply: Unit dose vials containing 0.5 mg in 2.5 mL

Notes: Give only one dose of Ipratropium with the initial Albuterol treatment. Ipratropium is not used as a stand alone drug.

KETAMINE (Ketalar®) (Optional)

Scope | **PARAMEDIC**

Generic Name: **Ketamine (ket'-a-meen)**

Trade Name: Ketalar®

Chemical Class: Analgesic

Therapeutic Class: General anesthetic

Actions: Ketamine attaches to NMDA receptors which disassociates the portion of the brain that controls consciousness from the portion of the brain that controls vital bodily functions. The result is, when given in sufficient doses, anesthesia that provides pain control and amnesia while not causing hypotension or prolonged apnea.

Pharmacokinetics: *IV:* Onset 30-40 seconds. $t_{½}$ = 5 minutes.

Indications:
1. Excited Delirium
2. Non Cardiac related pain secondary to administration of Morphine and/or Fentanyl

Contraindications:
1. Hypersensitivity to the drug.
2. Marked hypertension with potential for increased intracranial pressure (ICP).
3. Patients less than twelve (12) years of age.

Precautions: In patients with cardiac diseases/syndromes, Ketamine might worsen such conditions; NOT indicated as sedation prior to cardioversion or transcutaneous pacing.

Pregnancy Cat. B

Side Effects:
CNS: confusion, delirium, vivid dreams
CV: hypertension, tachycardia
GI: nausea, vomiting, hypersalivation
RESP: respiratory depression

Administration

Adult: ***Pain Augmentation (if pain persists after initial dose of first line analgesic is given)***: Administer 0.2 mg/kg IV to a maximum single dose of 20 mg. Alternatively may administer 0.5 mg/kg IM

Adult: ***Excited Delirium:*** Administer 5 mg/kg IM or 2 mg/kg IV/IO
IV/IM:

Pediatric: ***Do not administer Ketamine in patients under the age of 12 years and/or 50 kg.***

Supply: Vial contains 500 mg in 10 mL.

Notes:
1. Ketamine (in lower doses) is much more effective in relieving pain when given following a dose of an opiate analgesic. It is effective in relieving pain when combined with another opioid.

LABETALOL (Trandate®)

Scope | **PARAMEDIC**

Generic Name: **Labetalol (la-bet-a-lole)**

Trade Name: Trandate®

Chemical Class: Beta Blockers

Therapeutic Class: Antianginals, Anti-hypertensive

Actions: Blocks stimulation of beta1 (myocardial)- and beta2 (pulmonary, vascular, and uterine)-adrenergic receptor sites. Also has alpha1-adrenergic blocking activity, which may result in more orthostatic hypotension.

Pharmacokinetics: *Absorption: Well absorbed but rapidly undergoes extensive first-pass hepatic metabolism, resulting in 25% bioavailability.*

Distribution: Some CNS penetration; crosses the placenta.

Protein Binding: 50%.

Metabolism and Excretion: Undergoes extensive hepatic metabolism.

Half-life: 3–8 hr.

Indications: Management of hypertension

Contraindications:

- Hypersensitivity to the drug
- Uncompensated HF
- Pulmonary edema
- Cardiogenic shock
- Bradycardia or heart block

Precautions:
Pregnancy Cat. C

Renal impairment; Hepatic impairment; Pulmonary disease (including asthma); Diabetes mellitus (may mask signs of hypoglycemia); Thyrotoxicosis (may mask symptoms); Patients with a history of severe allergic reactions (intensity of reactions may be elevated); OB: May cause fetal/neonatal bradycardia, hypotension, hypoglycemia, or respiratory depression; Lactation: Usually compatible with breast feeding (AAP); Pedi: Limited data available; Geri: Elevated sensitivity to beta blockers (risk of orthostatic hypotension); lowered initial dosage recommended.

Side Effects: *CNS: fatigue, weakness, anxiety, depression, dizziness, drowsiness, insomnia, memory loss, mental status changes, nightmares.*

EENT: blurred vision, dry eyes, intraoperative floppy iris syndrome, nasal stuffiness.
Resp: bronchospasm, wheezing.

CV: ARRHYTHMIAS, BRADYCARDIA, CHF, PULMONARY EDEMA, orthostatic hypotension.

GI: constipation, diarrhea, nausea.

GU: erectile dysfunction, plibido.

Derm: itching, rashes.

Endo: hyperglycemia, hypoglycemia.

MS: arthralgia, back pain, muscle cramps.

Neuro: paresthesia.

Interactions: Since injection may be administered to patients already being treated with other medications, including other antihypertensive agents, careful monitoring of these patients is necessary to detect and treat promptly any undesired effect from concomitant administration.

Labetalol HCL blunts the reflex tachycardia produced by nitroglycerin without preventing its hypotensive effect. If labetalol HCL is used with nitroglycerin in patients with angina pectoris, additional antihypertensive effects may occur.

Administration:

Adult	Administer 10 mg slow IVP over 2 minutes **[per MCP]**. Repeat dose in 10 minutes at 20 mg if BP remains > 180/120 and symptoms remain
Pediatric	*N/A*

Supply: Prefilled syringe or vials containing 20 mg in 4 mL

Notes:

LIDOCAINE (Xylocaine®)

Scope	ACT	PARAMEDIC

Generic Name: **Lidocaine (lye'doe-kane) Hydrochloride 1% or 2%**

Trade Name: Xylocaine®

Chemical Class: Amide derivative

Therapeutic Class: Anesthetic, local

Actions: Lidocaine stabilizes the neuronal membrane by inhibiting the ionic fluxes required for the initiation and conduction of nerve impulses, thereby effecting local anesthetic action.

Pharmacokinetics: Onset of anesthesia: 15-30 seconds. Duration 30-60 minutes.

Indication: Pain associated with infusing fluid under pressure via the EZ-IO system.

Contraindications: Hypersensitivity to the drug.
Stokes-Adams syndrome.
Wolff-Parkinson-White syndrome.
Severe degrees of sinoatrial, atrioventricular, or intraventricular block in the absence of an artificial pacemaker.

Precautions: Use cautiously in patients with severe liver or kidney disease, hypovolemia, severe congestive heart failure, and shock.
Pregnancy Cat. B

Side Effects: *CNS:* seizures, tremors, twitching, dizziness, unconsciousness
CV: bradycardia, edema, heart block, hypotension
EENT: blurred or diplopia, tinnitus
Other: respiratory depression, nausea, vomiting

Administration IO Analgesia:	*Adult:*	40 mg IO. Give slowly
	Pediatric	0.5 mg/kg up to 40 mg IO.
Administration Cardiac Arrest:	*Adult*	1 – 1.5 mg/kg repeated at 0.5-0.75 mg/kg IV/IO to a maximum dose of 3 mg/kg
	Pediatric	1 mg/kg repeated at 1mg/kg IV/IO
Administration Wide Complex Tachycardia:	*Adult*	0.5-0.75 mg/kg IV/IO to a maximum dose of 3 mg/kg
	Pediatric	1 mg/kg repeated at 1mg/kg IV/IO **[per MCP]**.
Administration ROSC:	*Adult*	1g / 250 mL titrated at 1 – 4 mg/min.

Supply:
- 100mg / 5ml prefilled syringe
- 1g in 250 mL

MAGNESIUM SULFATE

Scope | **Paramedic**

Generic Name: **Magnesium Sulfate (mag-nee'see-um sul'fate)**

Trade Name: Magnesium Sulfate Inj. 50%

Chemical Class: Divalent cation

Therapeutic Class: Antiarrhythmic, electrolyte

Actions: Magnesium Sulfate is a salt that dissociates into the Magnesium cation (Mg^{2+}) and the Sulfate anion when administered. Magnesium is an essential element in many of the biochemical processes that occur in the body. It acts as a physiological calcium channel blocker and blocks neuromuscular transmission by decreasing acetylcholine release at the neuromuscular junction. Magnesium slows the rate of SA node impulse formation and prolongs conduction time.

Pharmacokinetics: Onset immediate. Duration 30 minutes.

Indications: Torsades de pointes.
Eclampsia.
Tricyclic antidepressant toxicity.
Status asthmaticus non-responsive to standard medications.

Contraindications: Third-degree AV block.

Precautions:
Pregnancy Cat. B

- If reflexes disappear in the eclamptic patient, do not repeat the dose.
- Magnesium Sulfate should be administered slowly to minimize side effects.
- Any patient receiving intravenous Magnesium Sulfate should have continuous cardiac monitoring and frequent monitoring of vital signs.
- Magnesium Sulfate should be given very cautiously in the presence of serious impairment of renal function since it is excreted almost entirely by the kidneys.

Side Effects: *CNS:* coma, depressed reflexes, lethargy, weakness
CV: heart block, hypotension, bradycardia
RESP: respiratory depression
SKIN: flushing, sweating

Interactions: Magnesium Sulfate can cause cardiac conduction abnormalities if administered in conjunction with Digitalis.

Administration:

Adult

Torsades administer Magnesium Sulfate 1 gram diluted in 10 ml NS over 5 – 20 min

Eclampsia: 4 g (20% solution) IV over 5 minutes. Repeat dose (if available) in 5 minutes if seizure persists **[per MCP]**.

Supply: Vial containing 1 g in 2 mL

Notes:

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MIDAZOLAM (Versed®)

Scope	ACT	PARAMEDIC

Generic Name: **Midazolam (mid-az'zoe-lam)** ***DEA Class: Schedule IV***

Trade Name: Versed®

Chemical Class: Benzodiazepine

Therapeutic Class: Sedative/hypnotic

Actions: Midazolam causes central nervous systems depression via facilitation of inhibitory $GABA^1$ at benzodiazepine receptor sites (BZ_1 – associated with sleep; BZ_2 – associated with memory, motor, sensory, and cognitive function). Midazolam is a short-acting benzodiazepine that is three to four times more potent than Diazepam. Midazolam has important amnestic properties.

Pharmacokinetics: *IM:* Onset 15 minutes. Peak 30 to 60 minutes.
IV: Onset 3 to 5 minutes. $t_{½}$ = 1.2 to 12.3 hours.

Indications:
- Pre-medication sedation for transcutaneous pacing.
- Sedation for endotracheal intubation only after the ET tube is inserted.
- Seizures not caused by hypoglycemia
- Severe agitation, tachycardia, or hallucinations caused by alcohol withdrawal
- Behavioral or alcohol related agitation as an adjunct to Haloperidol.

Contraindications:
- Hypersensitivity to the drug.
- Hypotension (SBP less than 90 mm Hg).
- Acute angle closure glaucoma.

Precautions:
Pregnancy Cat. D
Administer cautiously when alcohol intoxication is suspected. Emergency resuscitative equipment must be available prior to the administration of Midazolam. Vital signs must be continuously monitored during and after drug administration. Midazolam has more potential than the other benzodiazepines to cause respiratory depression and respiratory arrest.

Side Effects: *CNS:* drowsiness, amnesia, altered mental status
CV: hypotension, tachycardia, PVCs
RESP: bronchospasm, coughing, laryngospasm, respiratory depression, and arrest

Interactions: The effects of Midazolam can be accentuated by CNS depressants such as narcotics and alcohol.

Administration Seizures:

Adult
- Administer 2 mg slow IV/IO/IM. Repeated per MCP order
- Midazolam may also be administered 5 mg IN if unable to readily establish IV access.
- Patients age 55 or older administer 1 mg slow IV/IO/IM (IN dose remains 5 mg)

Pediatric
- Give 0.1 mg/kg slow IV/IO/IM **[per MCP]**.
- Midazolam may also be administered 0.2 mg/kg IN if unable to readily establish IV access **[per MCP]**.

Administration Behavioral:

Adult
- Administer 5 mg IV/IO/IM/IN. Repeated per MCP order.
- Patients age 55 or older administer 2 mg slow IV/IO/IM (IN dose remains 5 mg)

Administration Post Intubation Management:

Adult
- Administer 2 mg slow IV/IO q 5 minutes to a maximum dose of 10 mg. Repeated doses per MCP order

Administration Pre-Medication:

Adult
- Administer 2 mg slow IV/IO/IM.

Supply: Vial containing 5 mg in 1 mL.

Notes:

MORPHINE

Scope	ACT	PARAMEDIC

Generic Name: **Morphine (mor'feen) Sulfate** ***DEA Class: Schedule II***

Trade Name: Astramorph®, Duramorph®, MS Contin®, Roxanol®

Chemical Class: Natural opium alkaloid, phenanthrene derivative

Therapeutic Class: Narcotic analgesic

Actions: Morphine is a central nervous system depressant that acts on opiate receptors in the brain, providing both analgesia and sedation. It increases peripheral venous capacitance and decreases venous return. Morphine also reduces myocardial oxygen demand due to both the decreased systemic vascular resistance and the sedative effects of the drug.

Pharmacokinetics: *IM:* Onset 10 to 30 minutes. Peak analgesia 30 to 60 minutes. Duration 4.5 hours.
IV: Peak analgesia 20 minutes. $t_{½}$ = 2.5 to 3 hours.

Indications:
- Pain associated with acute myocardial infarction unresponsive to nitrates.
- Pain management unspecified

Contraindications:
- Hypotension (SBP < 90 mmHg)
- Respiratory depression.
- Hypersensitivity to the drug.
- Multi-system trauma.
- Head injury.
- Altered mental status from any cause.

Precautions:
Pregnancy Cat. B
Morphine causes severe respiratory distress in high doses, especially in patients who already have some form of respiratory impairment. Naloxone should be readily available whenever morphine is administered.

Side Effects: *CNS:* dizziness, drowsiness, headache, sedation
CV: hypotension
EENT: blurred vision, constricted pupils, diplopia
GI: abdominal cramps, constipation, nausea, vomiting
RESP: respiratory depression

Interactions: The CNS depression associated with Morphine can be enhanced when administered with antihistamines, antiemetics, sedatives, hypnotics, barbiturates, and alcohol.

Administration:

Adult	Administer 2 mg IV/IM/IO q 5 minutes to a maximum dose of 10 mg. Additional doses per MCP order. Patients age 55 or older administer 1 mg slow IV/IO/IM q 5 minutes to a maximum dose of 10 mg. Additional doses per MCP order.
Pediatric	Administer 0.05 mg/kg IV/IO/IM **[per MCP]**.

Supply:
- Vial containing 10 mg in 1 mL.
- 10mg in 1 mL carpuject

Notes: Discontinue the IV injection if the pain is relieved or a contraindication develops.

NALOXONE (Narcan®)

Scope	EMT	ACT	Paramedic

Generic Name: **Naloxone (nal-oks'one)**

Trade Name: Narcan®

Chemical Class: Thebaine derivative

Therapeutic Class: Antidote, opiate

Actions: Naloxone is chemically similar to the narcotics. However, it has only antagonistic properties. Naloxone competes for opiate receptors in the brain. It also displaces narcotic molecules from opiate receptors. It can reverse respiratory depression associated with narcotic overdose.

Pharmacokinetics: *IV:* Onset 2 minutes. $t_{½}$ = 64 minutes.

Indications:
- Respiratory depression caused by narcotics.
- Coma unknown etiology.

Contraindications: Hypersensitivity to the drug.

Precautions:
Pregnancy Cat. B
Naloxone should be administered cautiously to patients who are known or suspected to be physically dependent on narcotics. Abrupt and complete reversal by Naloxone can cause withdrawal-type effects (this includes newborns of mothers with known or suspected narcotic dependence).

Side Effects: *CNS:* seizures, tremulousness
CV: hypertension, hypotension, tachycardia, ventricular dysrhythmia
GI: nausea, vomiting

Interactions: Naloxone may cause narcotic withdrawal in the narcotic-dependent patient. In cases of suspected narcotic dependence, only enough drug to reverse respiratory depression should be administered.

Administration:
Paramedic / ACT

Adult	*IV:* Administer 0.4 mg/minute to restore respiratory drive. *IN:* Administer 2 mg IN (1 mL in each nostril).

Administration:
EMT

Adult	*IN:* Administer 2 mg IN (1 mL in each nostril).

Supply: Vial containing 4 mg in 10 mL.

Notes:
- Unless necessary, avoid insertion of an advanced airway prior to administration of Naloxone.
- Administer Naloxone by a slow IV push (0.4 mg/minute).
- Reversal of the effects of narcotics may be only temporary. Titrate administration of Naloxone to respiratory rate.
- Common narcotic agents include Codeine, Darvon®, Demerol®, Dilaudid®, Fentanyl, Heroin, Methadone, Morphine, Nubain®, Paregoric, Percodan®, Stadol® and Talwin®.

NITROGLYCERIN (Nitrostat®)

Scope	EMT	ACT	Paramedic

Generic Name: **Nitroglycerin (nye-troe-gli'ser-in)**

Trade Name: Nitrolingual®, Nitroquick®, Nitrostat®, Nitr-bid®, Nitrol®

Chemical Class: Nitrate, organic

Therapeutic Class: Antianginal, vasodilator

Actions: Nitroglycerin is a rapid smooth muscle relaxant that causes vasodilation and, to a lesser degree, dilates the coronary arteries. This results in increased coronary blood flow and improved perfusion of the ischemic myocardium. Relief of ischemia causes reduction and alleviation of chest pain. Vasodilation decreases preload and leads to decreased cardiac work that can help reverse the effects of angina pectoris. Additionally, decreased preload results in decreased pulmonary capillary hydrostatic pressure and reduction of fluid passing into the pulmonary interstitium and alveoli in cardiogenic pulmonary edema.

Pharmacokinetics: *SL:* Onset 1 to 3 minutes. Peak 5 minutes. Duration at least 25 minutes. $t_{½}$ = 2 to 3 minutes.

TOP: Onset 15 to 60 minutes. Peak 30 to 120 minutes. Duration 2 to 12 hours.

Indications:

- Chest pain suspected to be cardiac in origin.
- Severe Hypertension
- Cardiogenic pulmonary edema.

Contraindications:

- Hypotension (SBP less than 90 mm Hg).
- Bradycardia (HR less than 60).
- Increased intracranial pressure (i.e., CVA, head injury).
- Hypersensitivity to the drug.
- Patients who are using anti-impotence agents (Cialis®, Levitra®, Viagra®).

Precautions:
Pregnancy Cat. C

- Administer nitrates with extreme caution if at all to patients with suspected inferior wall MI with possible right ventricular (RV) involvement because these patients require adequate RV preload.
- Patients taking the drug routinely may develop a tolerance and require an increased dose.
- Postural syncope sometimes occurs following the administration of Nitroglycerin; it should be anticipated and the patient kept supine when possible.
- Careful clinical or hemodynamic monitoring must be used because of the possibility of hypotension and tachycardia.

Side Effects: *CNS:* dizziness, headache, weakness

CV: dysrhythmias, palpitations, postural hypotension, tachycardia

GI: nausea, vomiting

SKIN: diaphoresis, flushing, pallor, rash

Interactions:

- Severe hypotension is possible when administered to patients who have recently ingested alcohol.
- Orthostatic hypotension is possible when used in conjunction with β-adrenergic antagonists.
- Administration of Nitroglycerin is contraindicated in patients who are using anti-impotence agents such as Sildenafil (Viagra®) since these agents have been shown to potentiate the hypotensive effects of organic nitrates.

CONTINUED ON NEXT PAGE

NITROGLYCERIN (Nitrostat®)

Scope	EMT	ACT	Paramedic

Administration Chest Pain:	*Adult*	Administer 0.4 mg SL. Repeat q 5 minutes, if needed, to a maximum of 3 doses.
Administration Pulmonary Edema:	*Adult*	**(SBP ≥ 110 mmHg):** Administer 0.4 mg SL. Repeated q 5 minutes to a maximum of 3 doses if needed.
Administration Severe Hypertension:	*Adult*	Administer 0.4 mg SL. Repeat q 5 minutes, if needed, to a maximum of 3 doses.

Supply: *Tablet:* Bottle containing 0.4 mg (1/150 grain) tablets.
Liquid: 400mcg metered dose spray

Notes: Nitroglycerin should be kept in the original glass container, tightly capped.

ONDANSETRON (Zofran®)

Scope	EMT	ACT	Paramedic

Generic Name: **Ondansetron (on-dan-she'tron)**

Trade Name: Zofran®

Chemical Class: Carbazole derivative

Therapeutic Class: Antiemetic

Actions: Ondensetron is a selective 5-HT_3 antagonist which is an effective anti-nausea and anti-emetic medication with minimal reported significant side effects. Nausea and vomiting are strongly associated with serotonin receptors of the 5-HT_3 type, present both peripherally on vagal nerve terminals and centrally in the chemoreceptor trigger zone of the area postrema.

Pharmacokinetics: *IV:* Peak immediate. *IM:* N/A

Indications:
1. Severe vomiting or nausea.
2. Vertigo.

Contraindications:
1. Hypersensitivity to the drug.
2. Pregnancy (all trimesters).
3. Prolonged QT interval

Precautions: Rarely, transient ECG changes including QT interval prolongation have been reported.

Pregnancy Cat. B

Side Effects:
CNS: headache, lightheadedness, seizures
CV: angina, bradycardia, syncope, tachycardia
EENT: blurred vision
GI: constipation, diarrhea
RESP: bronchospasm
SKIN: rash

Interactions: N/A

Administration:
Paramedic / ACT
- Administer 4 mg IV/IM over 4 minutes. Repeat dose requires MCP order.
- Administer 4 mg ODT. Place tablet on patient's tongue. The tablet dissolves quickly and can be swallowed with saliva. Repeat dose requires MCP order.

Administration:
EMT
- *Administer* 4 mg ODT. Place tablet on patient's tongue. The tablet dissolves quickly and can be swallowed with saliva. Repeat dose requires MCP order.

Supply: Vial containing 4 mg in 2 mL
Single dose tablets

ORAL GLUCOSE (Insta-Glucose®)

Scope	EMT	ACT	Paramedic

Drug Names: **Dextrose** (Glutose®, Insta-Glucose®)

Overview: Oral glucose is used to treat patients with a history of diabetes exhibiting an altered mental status and the ability to swallow. Oral glucose is a form of glucose that can reverse a diabetic's hypoglycemic condition. Time of administration can make a critical difference. The preparation comes in a tube.

Indications: Patient with altered mental status and a known history of diabetes controlled by medication.

Contraindications:
- Unresponsive.
- Unable to swallow.

Side Effects: None when given properly. May be aspirated by the patient without a gag reflex.

Administration:
- Assure signs and symptoms of altered mental status with a known history of diabetes.
- Assure patient is conscious and can swallow and protect the airway.
- Administer glucose:
  - Between cheek and gum.
  - Place on tongue depressor between cheek and gum.

Supply: Tube contains 12.5 g, 15 g, or 25 g (varies per manufacturer).

SODIUM BICARBONATE

Scope	ACT	PARAMEDIC

Generic Name: **Sodium Bicarbonate (so'dee-um bye-kar'boe-nate)**

Trade Name: N/A

Chemical Class: Monosodium salt of carbonic acid

Therapeutic Class: Alkalinizing agent; electrolyte supplement

Actions: Sodium Bicarbonate is an alkalizing agent used to buffer acids present in the body during and after severe hypoxia. Sodium Bicarbonate combines with excess acids (usually lactic acid) present in the body to form a weak, volatile acid. This acid is broken down into CO_2 and H_2O. Sodium Bicarbonate is effective only when administered with adequate ventilation and oxygenation. Sodium Bicarbonate may be administered to alkalinize the urine to speed excretion of tricyclic antidepressants.

Pharmacokinetics: Onset in seconds. Peak 1 to 2 minutes. Duration 10 minutes.

Indications:

- Prolonged cardiac arrest.
- Known metabolic acidosis.
- Cardiac arrest in a dialysis patient (hyperkalemia). Should be an early treatment consideration.
- Tricyclic antidepressant (TCA) overdose.
- Crush syndrome

Contraindications: Hypokalemia.

Precautions: Sodium Bicarbonate can cause metabolic alkalosis when administered in large quantities. It is important to calculate the dosage based on patient weight and size.

Pregnancy Cat. C

Side Effects:

- Metabolic alkalosis.
- Hypernatremia.
- Hypokalemia.

Interactions:

- Most catecholamines and vasopressor (e.g., Dopamine and Epinephrine) can be deactivated by alkaline solutions such as Sodium Bicarbonate; assure these drugs are not administered simultaneously.
- Sodium Bicarbonate should not be administered in conjunction with Calcium Chloride. A precipitate can form and block the IV line.

Administration:

Adult **Cardiac arrest:** Administer 15 mEq IV/IO

Pediatric Contact **[Medical Control]**.

Supply: Prefilled syringe containing 50 mEq in 50 mL (8.4% solution).

Notes:

TETRACAINE HCL

Scope	EMT	ACT	Paramedic

Generic Name: **Tetracaine Hydrochloride Ophthalmic Solution (te-truh-keyn)**

Trade Name: Cepacol Viractin, Pontocaine

Chemical Class: Topical anesthetics

Therapeutic Class: Ophthalmic drops

Actions: Tetracaine is a topical local anesthetic for the eyes. Tetracaine works by interfering with entry of sodium ions into nerve cells. This reduces the ability of nerves to generate an impulse and send pain sensations.

Pharmacokinetics: The systemic exposure to tetracaine following topical ocular administration of Tetracaine Hydrochloride Ophthalmic Solution 0.5% has not been studied. Tetracaine hydrochloride is metabolized by plasma pseudocholinesterases and nonspecific esterases in ocular tissues.

Indications: Tetracaine Hydrochloride Ophthalmic Solution 0.5%, an ester local anesthetic, is indicated for procedures requiring a rapid and short-acting topical ophthalmic anesthetic

Contraindications: Hypersensitivity; Thromboembolic disorders (current, history of, or at risk for); Acquired defective color vision (IV); Subarachnoid hemorrhage; Concurrent use of combination hormonal contraception (PO).

Precautions:

- Corneal injury with Intracameral Use. Not for injection or intraocular use. Do not use intracamerally because use of Tetracaine Hydrochloride Ophthalmic Solution 0.5% may lead to damage of the corneal endothelial cells.
- Corneal Toxicity Prolonged use or abuse may lead to corneal epithelial toxicity and may manifest as epithelial defects which may progress to permanent corneal damage.
- Corneal Injury due to Insensitivity Patients should not touch the eye for at least 10-20 minutes after using anesthetic as accidental injuries can occur due to insensitivity of the eye.

Side Effects:

- Severe burning, stinging, or sensitivity where the medicine is applied;
- Swelling, warmth, or redness;
- Oozing, blistering, or any signs of infection; or.
- Eye irritation, watering, or increased sensitivity to light.

Interactions: Tetracaine hydrochloride should not be used if the patient is being treated with a sulfonamide because aminobenzoic acid inhibits the action of sulfonamides.

Administration:

Adult One drop topically in the eye(s) as needed in conjunction with Morgan Lens insertion. Discard unused portion.

Supply:

Notes:

THIAMINE

Scope	ACT	PARAMEDIC

Generic Name: **Betaxin, Vitamin B1**

Chemical Class: Ethanolamine derivative

Therapeutic Class: Vitamin

Actions: Required for carbohydrate metabolism. Therapeutic Effects: Replacement in deficiency states.

Pharmacokinetics: Absorption: Well absorbed from the GI tract by an active process. Excessive amounts are not absorbed completely. Also well absorbed from IM sites.
Distribution: Widely distributed. Enters breastmilk.
Metabolism and Excretion: Metabolized by the liver. Excess amounts are excreted unchanged by the kidneys.
Half-life: Unknown.

Indications: Treatment of thiamine deficiencies.
Prevention of Wernicke's encephalopathy.
Dietary supplement in patients with GI disease, alcoholism, or cirrhosis.

Contraindications: Hypersensitivity
Known alcohol intolerance or bisulfite hypersensitivity

Precautions: Wernicke's encephalopathy (condition may be worsened unless thiamine is administered before glucose).

Pregnancy Cat. A

Side Effects: *CNS: restlessness, weakness.*
EENT: tightness of the throat.
Resp: pulmonary edema, respiratory distress.
CV: VASCULAR COLLAPSE, hypotension, vasodilation.
GI: GI bleeding, nausea.
Derm: cyanosis, pruritus, sweating, tingling, urticaria, warmth.
Misc: ANGIOEDEMA.

Interactions: NONE

Administration: *Adult* Administer 100 mg IV/IM/IO

Supply: Vial containing 100 mg in 2 mL vial

Notes: Administer prior to Glucose or Glucagon administration

TRANEXAMIC ACID (OPTIONAL)

Scope | **Paramedic**

Generic Name: **Tranexamic Acid (tran-ex-am'-ik as-id)**

Trade Name: Cyklokapron®

Chemical Class: Amino acid derivative

Therapeutic Class: Antifibrinolytic

Actions: Inhibits plasminogen activation and plasmin activity.

Pharmacokinetics: *IV:* Onset 5-15 minutes. $t_{½}$ = 2 hours. Duration of action: approximately 3 hours.

Indications:

- Any trauma patient, 14 years of age or older, who is at high risk for ongoing internal hemorrhage meeting one or more of the following criteria:
- Systolic blood pressure less than 90 mm Hg.
- Patients over 65 years of age with systolic blood pressure less than 110 mm Hg.
- Tachycardia with heart rate greater than 120 beats per minute with signs of hypoperfusion present (confusion, altered mental status, cool extremities, etc.).
- Contact **[Medical Control]** as needed if the patient does not meet the above criteria.

Contraindications:

- Injuries greater than 3 hours old.
- Evidence of disseminated intravascular coagulation (DIC).
- Hypersensitivity to the drug.

Precautions:

- Excreted in breast milk.

Pregnancy Cat. B

- Caution in patients with history of deep vein thrombosis (DVT), pulmonary embolus, other blood clots, or severe renal failure.
- Can cause worsened coagulopathy in some patients.

Side Effects:

CNS: anxiety, blurred vision, confusion

CV: hypotension, chest pain, tachycardia

GI: nausea, vomiting, diarrhea

RESP: shortness of breath, cough

Interactions: Female patients taking or using any form of birth control containing estrogen and progestin are at an increased risk for blood clots and this medication increases that risk significantly.

Administration:

Loading Dose	IV infusion of 1 gram Tranexamic Acid (TXA) infused over 10 minutes. Piggyback the TXA infusion into an already established IV infusion.
Maintenance Dose:	IV infusion of 1 gram Tranexamic Acid (TXA) infused over 8 hours. Piggyback the TXA infusion into an already established IV infusion.

Supply: Vial containing 1,000 mg in 10 mL.

Notes:

- To prepare loading dose, mix 1 gram TXA in 100 mL or 250 ML NS. Attach a 15 drop administration set and infuse over 10 minutes.
- To prepare maintenance infusion, mix 1 gram TXA in 100 mL or 250 ML NS. Attach a 60 drop administration set and infuse over 8 hours.
- Major external bleeding MUST be controlled by direct pressure, hemostatic dressings, and tourniquets; TXA administration does NOT control external hemorrhage.
- Be sure to CLEARLY document the mechanism of injury, the time of injury/incident, and the time that the TXA bolus was administered (as well as when the maintenance infusion was started, if applicable).

WVOEMS PROTOCOL SUBMISSION POLICY

WVOEMS PROTOCOL SUBMISSION

Policy

WEST VIRGINIA
Department of
Health & Human Resources
BUREAU FOR PUBLIC HEALTH
Office of Emergency Medical Services

West Virginia Office of Emergency Medical Services

2018 EDITION

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Protocol Submission Policy and Procedure

PURPOSE: To establish standards for the submission and approval or modification and approval of West Virginia State-wide EMS protocols.

RATIONAL: Deciding to develop a new protocol or evaluate an existing one should be based on a rational process. Questions that should be asked and answered when considering a new drug therapy or procedure are as follows:

Key Questions for any New Protocol

- Is the drug therapy or procedure medically indicated and safe?
- Is it within the scope of practice for the provider?
- How specifically will this protocol benefit patient care?
- What specifically is needed to implement this protocol (education/training, medical director protocol development/authorization, equipment needs, etc.)?
- How will this protocol impact operation?
- What is the opinion of providers concerning this protocol?
- Does the medical community support this protocol change?
- What are all the costs versus benefits associated with implementation and maintenance?
- What are the medical-legal implications?
- What ongoing provider involvement such as skills maintenance and continuous quality improvement is necessary?
- How will success be measured?

Rational Protocol Development Process to Make the Right Protocol Decision

- Study the issue thoroughly
- Identify key questions
- Compare with goals
- Assess fit with system
- Cost benefit analysis
- Identify measuring tools

Stakeholders in this process are recognized to include, but not be limited to:

- Medical direction (on-line and off-line)
- Educators/training programs
- WVOEMS, MPCC, EMSAC
- Service directors
- Service providers
- Consumers
- Third party payers

Protocol Submission Policy and Procedure

POLICY: West Virginia State-wide protocol additions, deletions, and/or modifications shall be submitted utilizing the content outlined in this policy with heavy consideration given to the content listed in the Rational section. Submissions may come from any healthcare provider or interested party.

A. Complete the attached "Protocol Submission Template."

B. Each application will need a sponsoring "System Medical Director" (someone from the following groups: Squad Medical Directors, State EMS Medical Director, Regional Medical Directors, or Educational Institute Medical Directors.

C. The Protocol Submission Template will be sent to the State EMS Medical Director.

ESSENTIAL CRITERIA:

A. Clearly defined indication(s) for the proposed protocol

B. An explanation providing the advantages and disadvantages that the Proposed Protocol will have on patients encountered by EMS and how it will impact the delivery of EMS within West Virginia

C. Strong evidence supporting the implementation of the Proposed Protocol (as noted on the template)

D. Fiscal impact statement

E. A System Medical Director sponsor

EVALUATION:

A. The Protocol Submission Template will be evaluated by the State EMS Medical Director with input from subject matter experts.

B. Once the Protocol submission has been appropriately formatted and reviewed, it will be forwarded to the WV EMS Advisory Council (EMSAC) for peer review within the Policy, Procedure, and Protocol Committee.

C. The State EMS Advisory Council will vote to forward the protocol submission to the Medical Policy Care Committee (MPCC) for further consideration.

Protocol Submission Policy and Procedure

D. MPCC may choose one of the following:

   a. Request more information/research on the proposal

   b. Request a pilot study be performed and base a decision on the results of that study

   c. Disapprove the submission

   d. Approve the submission as is or with modifications.

E. Once approved by MPCC the protocol submission will be published for 30 days of public comment unless such an immediate response is warranted under exigent circumstances.

Protocol Submission Template

This document shall be completed as part of the requirements for submission to modify, delete, or add a new protocol the WV State-wide EMS protocols. Complete the cover sheet and attach all supporting documentation per policy to this form.

NAME of submitter:	
Certification Number (if applicable): **WV**	Expiration Date:
Agency Affiliation:	☐ Not Affiliated
Phone Number:	
Email:	
Sponsoring Medical Director (Print):	
Phone Number:	
Email:	
Both signatures below are required for this submission to be reviewed.	
Agency Medical Director: _____ *Signature*	
Submitter: _____ *Signature*	

Submit to:
WVOEMS Medical Director
West Virginia Office of Emergency Medical Services
350 Capitol Street
Room 425
Charleston WV, 25301

Official Use Only:

Date received by State Medical Director:	
Date Reviewed by EMSAC:	
Date Reviewed By MPCC:	
Decision: ☐ Approved ☐ Denied ☐ Pilot Project ☐ Requested additional Information	
Posted to 30 day comment period:	
WVOEMS Medical Director Signature: _____	

Protocol Submission Template

A. EXPLANATION

B. INDICATION

C. SUPPORTING EVIDENCE AND LITERATURE

D. SUPPORTING WEST VIRGINIA and/or NATIONAL DATA

E. DEFINE AREA OF PROTOCOL CONTENT

1. Patient Care Presentation
2. Treatment
    i. Basic Life Support
    ii. Advanced Life Support
    iii. Adult
    iv. Pediatric
    v. Geriatric
    vi. Medical Command
    vii. Algorithm
    viii. Alerts
3. Procedure/ Skill
    i. Purpose
    ii. Indication
    iii. Contraindications
    iv. Potential Adverse Effects/Complications Precautions
    v. Procedure
4. Medication
    i. Indication
    ii. Pharmacokinetics
    iii. Adverse Effects
    iv. Precautions
    v. Contraindications
    vi. Preparations
    vii. Dosage
        a. Adult
        b. Pediatric
        c. Geriatric
        d. Medical Consultation

F. FISCAL IMPACT STATEMENT COVERING THE START-UP AND MAINTENANCE COST OF THE MEDICATION, DEVICE, REPLACEMENT PARTS, AND ANY UNIQUE REQUIREMENTS TO IMPLEMENT THE PROTOCOL.

G. IMPACT ON THE EXISTING WEST VIRGINIA STATE-WIDE EMS PROTOCOLS