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

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Paramedic Treatment Protocol

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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 BLS 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 BLS 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.

Acknowledgments

WV Medical Policy and Care Committee

Dr. Jonathan Newman, State Medical Director	
Dr. Jennifer Auxier	Dr. William Brocklehurst
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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:

WEST VIRGINIA Department of Health & Human Resources BUREAU FOR PUBLIC HEALTH	**Paramedic Treatment Protocol**	**4101**
SEVERE EXTERNAL BLEEDING		

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.

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 - AEMT
6000 - EMT

Note: 7, 8 and 9 thousand series are used as follows:
7000 - BLS Procedural Protocols
5800 - AEMT 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.

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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 %. Maintain COPD patient's SpO2 > 90%.

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 as needed.
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.

F. **Interfacility Transport** - If the patient presents with highly unstable symptoms or a scope of care which exceeds that of the provider class, contact Medical Command

for assistance in determining the proper class of transport including aeromedical, C2IFT, or CCT transport.

1. Class of provider are as follows:

   a. Class 6 (EMT-B)

   b. Class 5 (AEMT)

   c. Class 4 (Field EMT-P)

   d. Class 3 (C3-IFT-P)

2. The sending facility has stabilized the patient to the best of their ability and the patient's care requires transfer to another facility. In the pediatric population, any question of overall stability shall ultimately be determined by the Medical Command Physician in consultation with the sending and/or receiving physician.

3. Prior to arrival, the IFT provider should receive general information from their communications center or the sending facility. Information should include the medical necessity and reason for transfer, current patient condition and interventions, expected medical needs during the transfer, and finally the receiving physician, facility and unit-department assignment.

4. Upon arrival at the sending facility, the IFT provider should receive a verbal report from the primary care nurse or physician and a signed Physician Certification Report as appropriate. Updated information regarding current condition, medical care, and destination should be obtained.

5. Upon initial contact with the patient, begin and document an assessment.

   a. Airway, Breathing, Circulation, Disability, and GCS.

   b. SAMPLE history and obtain initial vital signs.

   c. Detailed physical examination as appropriate for situation.

   d. Inspect all dressings, drains, and tubes for amount, color, and consistency of drainage. Document location, size, and patency.

   e. Monitors: All patients must be on monitoring devices consistent with the Class of transport and scope of care being provided. All Class 3, 4, and 5 IFT patients must be on a cardiac monitor and continuous pulse oximetry

during transport.

f. All patients must have an accepting (receiving) physician. Document the name of this physician on the patient care record.

g. Determine if the patient is packaged properly for transfer, all records are with the patient, and prepare for departure.

h. If family members are present, make sure that destination and travel instructions are given.

6. During transport, vital signs should be monitored and documented every 30 minutes. Some protocols require more frequent vital signs checks. If the patient condition changes, repeat vital signs every 5 minutes and **consult MCP**.

7. At the completion of the transport, give report to the receiving nurse or physician. Include condition during transfer, interventions and outcomes, and most recent set of vital signs.

8. Turn over all medical record documents, transport notes, and patient belongings to the staff.

9. The Class 4 Paramedic is limited to providing inter-facility care to those patients whose medical conditions can be addressed utilizing only the medications and procedures outlined in the 4000 Series Protocols. No additional medications or procedures are authorized.

10. Any anticipated medications which the patient may need while in transport should be identified and the sending physician MUST provide written orders outlining the exact route and dosing of the medication. The Class 4 Paramedic must obtain these orders in writing prior to leaving the facility. All continuous IV infusion medications except maintenance IV fluid must infuse via pump. In the event that unforeseen or unanticipated events develop during transport the Class 4 Paramedic should utilize the 4000 series protocols and contact Medical Command.

11. Turn over all unused medications to Registered Nurse at receiving facility and have the nurse sign the Patient Care Record attesting to receipt of medication(s) or wasting of excess medication as appropriate. Note: The disposition of Schedule II and IV medications may require additional specific documentation per local squad medical director or squad policy.

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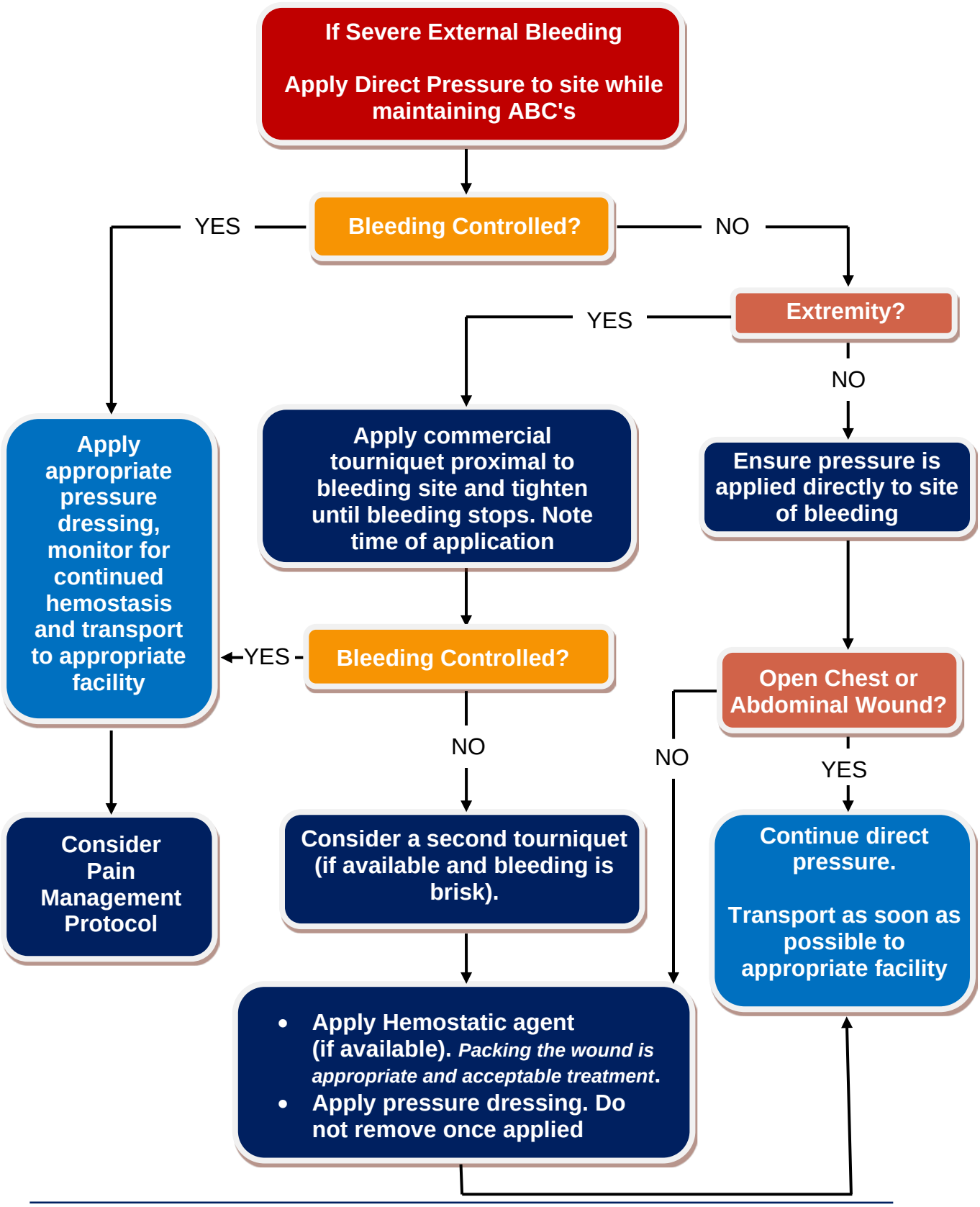

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SELECTIVE SPINAL IMMOBILIZATION

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.

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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**.

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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**.

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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.

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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.

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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.

HYPOPERFUSION / SHOCK

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 20 ml/kg normal saline bolus, then:

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

   b. **Contact Medical Command** and consider initiate an **Epinephrine infusion** (mix 1 mg of Epinephrine 1:1,000 in 1 L of normal saline producing a concentration of 1 mcg/ml) titrating from 1 mcg/min to 10 mcg/min for adults utilizing the Emergency Epinephrine Infusion Drip Charts. **per MCP order**.

   

   c. Titrate **Epinephrine infusion** for a SBP > 90 mmHg or a MAP > 65 mmHg **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:

a. **Contact Medical Command** and consider initiate an **Epinephrine infusion** (mix 1 mg of Epinephrine 1:1,000 in 1 L of normal saline producing a concentration of 1 mcg/ml) titrating from 1 mcg/min to 10 mcg/min for adults utilizing the Emergency Epinephrine Infusion Drip Charts. **per MCP order**.

b. Titrate **Epinephrine infusion** for a SBP > 90 mmHg or a MAP > 65 mmHg **per MCP order**.

I. Emergency Epinephrine Infusion Drip Charts

ADULT DOSING – 10 gtts/ml Solution Set	
1 mcg/min = 10 gtts/min	6 mcg/min = 60 gtts/min
2 mcg/min = 20 gtts/min	7 mcg/min = 70 gtts/min
3 mcg/min = 30 gtts/min	8 mcg/min = 80 gtts/min
4 mcg/min = 40 gtts/min	9 mcg/min = 90 gtts/min
5 mcg/min = 50 gtts/min	10 mcg/min = 100 gtts/min
ADULT DOSING – 15 gtts/ml Solution Set	
1 mcg/min = 15 gtts/min	6 mcg/min = 90 gtts/min
2 mcg/min = 30 gtts/min	7 mcg/min = 105 gtts/min
3 mcg/min = 45 gtts/min	8 mcg/min = 120 gtts/min
4 mcg/min = 60 gtts/min	9 mcg/min = 135 gtts/min
5 mcg/min = 75 gtts/min	10 mcg/min = 150 gtts/min

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

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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.

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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. Assure scene safety and notify appropriate agencies to mitigate the hazard.

2. 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.

3. Assess for multiple entrance and exit wounds.

4. Cover wounds with clean dressings as required.

5. 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.

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.

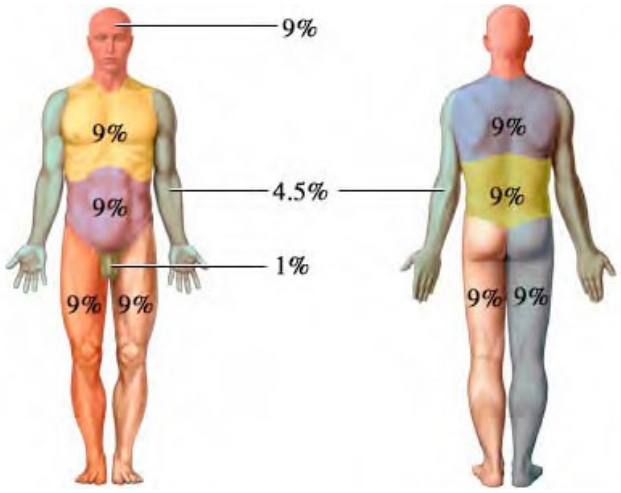
   d. **Riot Control Agents** (Mace, Pepper Spray, etc.) cause intense irritation of the eyes, mucous membranes, and respiratory tract. Treatment is supportive and most patients recover in 10 - 20 minutes of exposure to fresh air. If necessary, irrigate the patient's eyes with Normal Saline if you suspect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

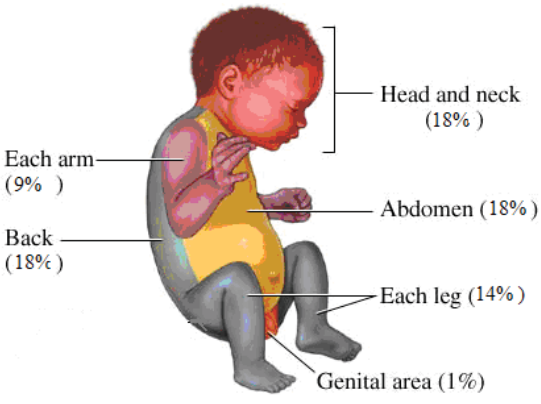
   e. **Hydrofluoric Acid** is a common corrosive that reacts with water. It produces heat and subsequent chemical and thermal injuries resulting in extreme pain to the affected areas. Cover the wound and avoid contact with water.

BURNS

7. Flush with large amounts of water. Precaution: Certain substances such as heavy metals may cause further burning if flushed with water. If in doubt about flushing, contact Medical Command. If eyes are involved, flush for at least 20 minutes.

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. Foreign Bodies in the eye that require irrigation

1. Administer Tetracaine (optional), 2 drops per eye being irrigated. (Consider using a Morgan Lens Protocol 8102.)
2. Attached saline bag to IV tubing.
3. Turn patients' head injured eye down and flush continuously throughout transport.

NOTE: Tetracaine is a single use medication. Repeated doses will predispose the cornea to ulceration and destruction of the superficial layer of the cornea.

F. Transport and continue treatment enroute.

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

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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. Sustained hypotension (systolic blood pressure (SBP) < 90mmHg) and sustained tachycardia (>110 beats per minute)
3. Time of injury is <3 hours from initiation of TXA
4. Adult and Pediatric patients with acute traumatic brain injury (TBI) who are within 3 hours of injury, have a Glasgow Coma Scale (GCS) score of 9 - 15 and are without major extracranial bleeding.

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 requires MCP order. Advise MCP of Vitals, GCS, and trimester if known.

3. Known allergy to TXA

E. Dosage and Administration: Consult MCP for destination determination

Pediatric (< 12 years) Loading Dose:	IV infusion of 15 mg/kg to a max of 1 gram Tranexamic Acid (TXA) diluted in 100ml or 250 ml NS infused over 10 minutes.
Pediatric Maintenance Dose:	IV infusion of 15 mg/kg Tranexamic Acid (TXA) diluted in 100 ml or 250 ml NS infused over 8 hours.
Adult (> 12 years) Loading Dose:	IV infusion of 1 gram Tranexamic Acid (TXA) diluted in 100ml or 250 ml NS infused over 10 minutes.
Adult Maintenance Dose:	IV infusion of 1 gram Tranexamic Acid (TXA) diluted in 100ml or 250 ml NS infused over 8 hours.

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ANTIBIOTIC ADMINISTRATION for LONG BONE FRACTURES - OPTIONAL

Administration of Antibiotics in the event of any open orthopedic trauma fracture is intended to reduce patient morbidity and mortality. Administration of first-generation Cephalosporin's within three hours of injury has been shown to improve patient outcome, reduce overall infection related to open trauma injuries and reduce trauma related deaths. Careful clinical evaluation shall be used to determine if any known or suspected orthopedic involvement is present. If open orthopedic trauma is identified, the optional procedure for administration of Cephazolin may be implemented.

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

B. Indications:

1. Patient exhibits with open long bone fracture in the pre-hospital setting.

2. Patient exhibits with a complete or partial amputation of an appendage or limb.

C. Control bleeding and manage extremities according to the 4100 series protocols based on injury presentation.

D. Contraindications:

1. Time since injury >3 hours

2. Known allergy to Cephalosporin

E. Dosage and Administration: Consult MCP for destination determination

Pediatric Dose (Pt 1 - 12 years):	35 mg/kg to a max of 2 Grams Cefazolin diluted in 10 ml Normal Saline or sterile water over 3 – 5 minutes slow IVP.
Adult Dose (Pt <120kg):	2 Grams Cefazolin diluted in 10 ml Normal Saline or sterile water over 3 – 5 minutes slow IVP.
Adult Dose (Pt >120kg):	3 Grams Cefazolin diluted in 10 ml Normal Saline or sterile water over 3 – 5 minutes slow IVP.

F. Closely monitor the patient for adverse reactions and treat per appropriate protocol(s).

G. Upon transfer of care at the receiving facility, notify the physician that Cephazolin has been administered.

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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).

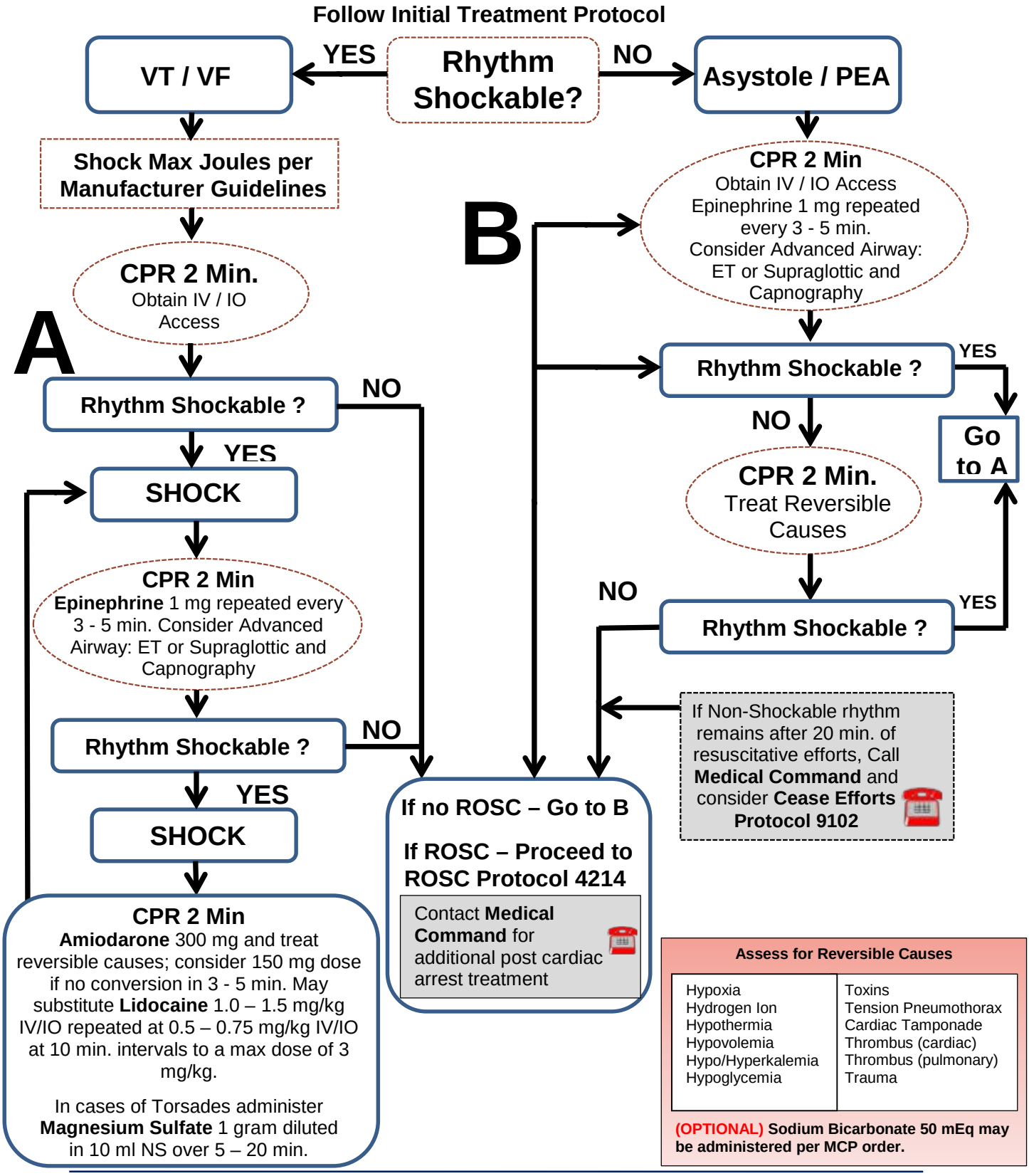
CONSIDER NITROGLYCERIN AS A FIRST LINE ANTIHYPERTENSIVE IN THE SETTING OF HYPERTENSIVE CRISIS WITH CHEST PAIN OR ISCHEMIC EKG CHANGES.

-OR-

Morphine Sulfate *(third line medication)*

2 - 10 mg IVP or IM

ADULT CARDIAC ARREST



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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.

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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 1.0 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

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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 92 - 98%.

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).

Note: *Continue using the anti-arrhythmic medication that was administered during resuscitation.*

- Amiodarone administration is 150 mg in 100 ml NS or D_5W infused at 1mg/min or 40 gtts/min utilizing a 60 gtt/ml set. Alternatively, Amiodarone can be mixed 150 mg in 250 ml NS or D_5W infused at 1mg/min or 100 gtts/min utilizing a 60 gtt/ml set.

- Lidocaine administration is administered 1 g in 250 ml NS titrated at 1 – 4 mg/min.

O. Initiate an **Epinephrine infusion** (mix 1 mg of Epinephrine 1:1,000 in 1 L of normal saline producing a concentration of 1 mcg/ml) titrating from 1 mcg/min to 10 mcg/min for adults titrate for a SBP > 90 mmHg or a MAP > 65 mmHg or 0.02 mcg/kg/min to 0.3 mcg/kg/min for pediatric patients utilizing the Emergency Epinephrine Infusion Drip Charts. Titrate for a SBP > 70 + 2(age in years) mmHg **per MCP Order**.

P. **Emergency Epinephrine Infusion Drip Charts**

ADULT DOSING – 10 gtts/ml Solution Set	
1 mcg/min = 10 gtts/min	6 mcg/min = 60 gtts/min
2 mcg/min = 20 gtts/min	7 mcg/min = 70 gtts/min
3 mcg/min = 30 gtts/min	8 mcg/min = 80 gtts/min
4 mcg/min = 40 gtts/min	9 mcg/min = 90 gtts/min
5 mcg/min = 50 gtts/min	10 mcg/min = 100 gtts/min

ADULT DOSING – 15 gtts/ml Solution Set	
1 mcg/min = 15 gtts/min	6 mcg/min = 90 gtts/min
2 mcg/min = 30 gtts/min	7 mcg/min = 105 gtts/min
3 mcg/min = 45 gtts/min	8 mcg/min = 120 gtts/min
4 mcg/min = 60 gtts/min	9 mcg/min = 135 gtts/min
5 mcg/min = 75 gtts/min	10 mcg/min = 150 gtts/min

PEDIATRIC DOSING – 10 gtts/ml Solution Set

Age	Appr. Wt.	Dose	Age	Appr. Wt.	Dose
1	10kg	0.2-3 mcg/min = **2 - 30** gtts/min	6	22kg	0.44-6.6 mcg/min = **4.5 - 65** gtts/min
2	12kg	0.24-3.6 mcg/min = **2.5 - 36** gtts/min	7	25kg	0.5-7.5 mcg/min = **5 - 75** gtts/min
3	15kg	0.3-4.5 mcg/min = **3 - 45** gtts/min	8	27kg	0.54-8.1 mcg/min = **5.5 - 80** gtts/min
4	17kg	0.34-5.1 mcg/min = **3.5 - 50** gtts/min	9	30kg	0.6-9 mcg/min = **6 - 90** gtts/min
5	20kg	0.4 – 6 mcg/min = **4 - 60** gtts/min	10	32kg	0.64-9.6 mcg/min = **6.5 - 95** gtts/min

PEDIATRIC DOSING – 15 gtts/ml Solution Set

Age	Appr. Wt.	Dose	Age	Appr. Wt.	Dose
1	10kg	0.2-3 mcg/min = **3 - 45** gtts/min	6	22kg	0.44-6.6 mcg/min = **6.5 - 99** gtts/min
2	12kg	0.24-3.6 mcg/min = **3.5 - 5**4 gtts/min	7	25kg	0.5-7.5 mcg/min = **7.5 - 112** gtts/min
3	15kg	0.3-4.5 mcg/min = **4.5 - 68** gtts/min	8	27kg	0.54-8.1 mcg/min = **8 - 122** gtts/min
4	17kg	0.34-5.1 mcg/min = **5 - 77** gtts/min	9	30kg	0.6-9 mcg/min = **9 - 135** gtts/min
5	20kg	0.4 – 6 mcg/min = **6 - 90** gtts/min	10	32kg	0.64-9.6 mcg/min = **9.5 - 144** gtts/min

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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 decreased lung sounds or decreased lung compliance, inability to speak in full sentences, and/or lethargy.

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 moderate distress and:

1. Heart rate is < 130:

2. Administer **Albuterol** 5.0 mg combined with **Ipratropium Bromide (Atrovent®)** 0.5 mg with oxygen 8 - 10 LPM. If Ipratropium Bromide (Atrovent®) is contraindicated, administer Albuterol only.

3. Reassess vital signs and lung sounds.

4. If distress is unrelieved and patient appears severe:

   a. Expedite transport.

   b. Administer a second dose of **Albuterol** 5.0 mg combined with **Ipratropium Bromide (Atovent®)** 0.5 mg with oxygen 8 – 10 LPM. If Ipratropium Bromide (Atrovent®) is contraindicated, administer Albuterol only.

   c. If no relief, administer **Dexamethasone** 10 mg IV/IO/IM 

5. If distress is relieved:

   a. Monitor vital signs and transport.

   b. Notify **Medical Command**.

BRONCHOSPASM

C. If patient is in severe distress and:

1. Heart rate is < 130:

   a. Treat as outlined in “B” above.

   b. If transport time permits, consider administration of **Magnesium Sulfate** 2 grams in 100 ml of Normal Saline IV/IO drip administered over 20 minutes. 

   c. Apply CPAP with in-line nebulizer if indicated. CPAP may be useful in lowering the work of breathing in severe episodes.

2. Heart rate is > 130:

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

   b. Treat as outlined in “B” above.

   c. Monitor patient’s symptoms and vital signs closely.

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

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

D. For extreme respiratory distress marked by diminished air movement or bronchospasm refractory to treatment, resulting in questionable delivery of nebulized medication, apnea, or other signs of impending respiratory arrest; administer Epinephrine (1:1,000) 0.3 mg IM.

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 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.

G. 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.

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

PULMONARY EDEMA

I. 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**. 

J. 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.

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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. Medical Command may consider initiation of an **Epinephrine infusion** (mix 1 mg of Epinephrine 1:1,000 in 1 L of normal saline producing a concentration of 1 mcg/ml) titrating from 0.02 mcg/kg/min to 0.3 mcg/kg/min for pediatric patients utilizing the Emergency Epinephrine Infusion Drip Charts.

   e. Titrate for a SBP > 70 + 2(age in years) mmHg **per MCP order.**

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.** Medical Command may consider initiation of an **Epinephrine infusion** (mix 1 mg of Epinephrine 1:1,000 in 1 L of normal saline producing a concentration of 1 mcg/ml) titrating from 0.02 mcg/kg/min to 0.3 mcg/kg/min for pediatric patients utilizing the Emergency Epinephrine Infusion Drip Charts.

   c. Titrate for a SBP > 70 + 2(age in years) mmHg **per MCP order**.

PEDIATRIC HYPOPERFUSION (SHOCK)

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.** Medical Command may consider initiation of an **Epinephrine infusion** (mix 1 mg of Epinephrine 1:1,000 in 1 L of normal saline producing a concentration of 1 mcg/ml) titrating from 0.02 mcg/kg/min to 0.3 mcg/kg/min for pediatric patients utilizing the Emergency Epinephrine Infusion Drip Charts.

b. Titrate for a SBP > 70 + 2(age in years) mmHg **per MCP order**.

G. Emergency Epinephrine Infusion Drip Charts

PEDIATRIC DOSING – 10 gtts/ml Solution Set

Age	Appr. Wt.	Dose	Age	Appr. Wt.	Dose
1	10kg	0.2-3 mcg/min = **2 - 30** gtts/min	6	22kg	0.44-6.6 mcg/min = **4.5 - 65** gtts/min
2	12kg	0.24-3.6 mcg/min = **2.5 - 36** gtts/min	7	25kg	0.5-7.5 mcg/min = **5 - 75** gtts/min
3	15kg	0.3-4.5 mcg/min = **3 - 45** gtts/min	8	27kg	0.54-8.1 mcg/min = **5.5 - 80** gtts/min
4	17kg	0.34-5.1 mcg/min = **3.5 - 50** gtts/min	9	30kg	0.6-9 mcg/min = **6 - 90** gtts/min
5	20kg	0.4 – 6 mcg/min = **4 - 60** gtts/min	10	32kg	0.64-9.6 mcg/min = **6.5 - 95** gtts/min

PEDIATRIC DOSING – 15 gtts/ml Solution Set

Age	Appr. Wt.	Dose	Age	Appr. Wt.	Dose
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2	12kg	0.24-3.6 mcg/min = **3.5 - 5**4 gtts/min	7	25kg	0.5-7.5 mcg/min = **7.5 - 112** gtts/min
3	15kg	0.3-4.5 mcg/min = **4.5 - 68** gtts/min	8	27kg	0.54-8.1 mcg/min = **8 - 122** gtts/min
4	17kg	0.34-5.1 mcg/min = **5 - 77** gtts/min	9	30kg	0.6-9 mcg/min = **9 - 135** gtts/min
5	20kg	0.4 – 6 mcg/min = **6 - 90** gtts/min	10	32kg	0.64-9.6 mcg/min = **9.5 - 144** gtts/min

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

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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. Febrile – Refer to **Fever Protocol 4409**
2. Trauma – Refer to **Initial Treatment / Universal Patient Care Protocol**
3. 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 given prescription for **Diastat** and is still seizing, administer **Diastat** per rectum 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: **WV Code §49-2-803** sets forth that as mandated reporters of child abuse and neglect, EMS providers who have reasonable cause to suspect circumstances of child abuse/neglect shall immediately, and not more than 24 hours after suspecting this abuse or neglect, report the circumstances to the Department of Health and Human Resources. Additionally, EMS providers are required to report the circumstances to the person in charge of the receiving institution or a designated person thereof at time of patient handoff. Notifying a person in charge, supervisor, or superior does not exempt a person from his or her mandate to report suspected abuse or neglect directly to the Department of Health and Human Resources. Situations of serious physical or sexual abuse also require immediate reporting to law Enforcement.
Visit https://dhhr.wv.gov/bcf/Services/Pages/Centralized-Intake-for-Abuse-and-Neglect.aspx for more information.

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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**.

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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.

PEDIATRIC CARDIAC ARREST

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**.

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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**.

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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.

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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. Suction only if there is believed to be an airway obstruction while being cognizant of bradycardia and hypoxia. 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).* Obtain medical consultation to administer a second dose.

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).* Obtain medical consultation to administer a second dose.

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. Obtain medical consultation to administer a second dose.

5. **Optional Treatment Pathway: D10**

   a. **Patients 30 days (1 month) up to 4 years:**

      i. Administer 2 mL/kg of 10% dextrose IV/IO to a maximum of 25 grams.
      ii. If blood glucose is less than 60 mg/dl, obtain medical consultation to administer second dose of D10W.

   b. **Pediatric (5 – 12 years of age):**

      i. Administer 1 mL/kg of 10% dextrose IV/IO to a maximum of 25 grams.

ii. If blood glucose is less than 60 mg/dl, obtain medical consultation to administer second dose of D10W.

a. 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. Medical Command may consider initiation of an **Epinephrine infusion** (mix 1 mg of Epinephrine 1:1,000 in 1 L of normal saline producing a concentration of 1 mcg/ml) titrating from 0.02 mcg/kg/min to 0.3 mcg/kg/min for pediatric patients utilizing the Emergency Epinephrine Infusion Drip Charts.

3. Titrate for a SBP > 90 mmHg or a MAP > 65 mmHg.

4. Reassess and expedite transport.

F. **Emergency Epinephrine Infusion Drip Charts**

PEDIATRIC DOSING – 10 gtts/ml Solution Set

Age	Appr. Wt.	Dose	Age	Appr. Wt.	Dose
1	10kg	0.2-3 mcg/min = **2 - 30** gtts/min	6	22kg	0.44-6.6 mcg/min = **4.5 - 65** gtts/min
2	12kg	0.24-3.6 mcg/min = **2.5 - 36** gtts/min	7	25kg	0.5-7.5 mcg/min = **5 - 75** gtts/min
3	15kg	0.3-4.5 mcg/min = **3 - 45** gtts/min	8	27kg	0.54-8.1 mcg/min = **5.5 - 80** gtts/min
4	17kg	0.34-5.1 mcg/min = **3.5 - 50** gtts/min	9	30kg	0.6-9 mcg/min = **6 - 90** gtts/min
5	20kg	0.4 – 6 mcg/min = **4 - 60** gtts/min	10	32kg	0.64-9.6 mcg/min = **6.5 - 95** gtts/min

PEDIATRIC DOSING – 15 gtts/ml Solution Set

Age	Appr. Wt.	Dose	Age	Appr. Wt.	Dose
1	10kg	0.2-3 mcg/min = **3 - 45** gtts/min	6	22kg	0.44-6.6 mcg/min = **6.5 - 99** gtts/min
2	12kg	0.24-3.6 mcg/min = **3.5 - 5**4 gtts/min	7	25kg	0.5-7.5 mcg/min = **7.5 - 112** gtts/min
3	15kg	0.3-4.5 mcg/min = **4.5 - 68** gtts/min	8	27kg	0.54-8.1 mcg/min = **8 - 122** gtts/min
4	17kg	0.34-5.1 mcg/min = **5 - 77** gtts/min	9	30kg	0.6-9 mcg/min = **9 - 135** gtts/min
5	20kg	0.4 – 6 mcg/min = **6 - 90** gtts/min	10	32kg	0.64-9.6 mcg/min = **9.5 - 144** gtts/min

PEDIATRIC BRONCHOSPASM

Pediatric Bronchospasm is a manifestation of several disease processes. In children, the most common are reactive airway disease (asthma), viral bronchiolitis, pneumonia, bronchopulmonary dysplasia, and foreign body obstructions. Physical examination reveals wheezing with a prolonged expiratory phase of breathing. Cough and dyspnea are often present. Respiratory Distress is categorized as follows:

- **Minimal Distress:** A slight increase in work of breathing and respiratory rate with minimal wheezing or stridor evident.
- **Moderate Distress:** A considerable increase in work of breathing and respiratory rate with wheezing and/or abnormal breath sounds evident. Nasal flaring and mild intercostal retractions are present.
- **Severe Distress:** Extreme work of breathing with nasal flaring and intercostal, subcostal, and suprasternal retractions. Additional accessory muscle use (sternocleidomastoid) may be evident. The expiratory phase becomes prolonged and may be silent. Wheezes may be absent as airflow is significantly compromised.

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 moderate distress and:

1. Heart rate is < 180:

   a. Administer **Albuterol**
      - 5.0 mg with oxygen 8 - 10 LPM for children 6 – 12 years of age.
      - 2.5 mg with oxygen 8 - 10 LPM for children < 6 years of age.

   b. Administer **Ipratropium Bromide (Atrovent®)**
      (may be nebulized with the albuterol)
      - 0.5 mg with oxygen 8 - 10 LPM for children 6 – 12 years of age.
      - 0.25 mg with oxygen 8 - 10 LPM for children > 1 – < 6 years of age.
      - *Contraindicated in children <1 year of age.*

   c. Reassess vital signs and lung sounds.

2. If distress is unrelieved and patient appears severe:

   a. Expedite transport.

   b. Administer a second dose of **Albuterol**
      - 5.0 mg with oxygen 8 - 10 LPM for children 6 – 12 years of age.
      - 2.5 mg with oxygen 8 - 10 LPM for children < 6 years of age.

c. Administer a second dose of **Ipratropium Bromide (Atrovent®)** *(may be nebulized with the albuterol)*
   - 0.5 mg with oxygen 8 - 10 LPM for children 6 – 12 years of age.
   - 0.25 mg with oxygen 8 - 10 LPM for children > 1 - < 6 years of age.
   - *Contraindicated in children <1 year of age.*

d. Administer **Dexamethasone** IV/IO/IM 0.6 mg/kg to a maximum dose of 10 mg 

3. If distress is relieved:

   a. Monitor vital signs and transport.

   b. Notify **Medical Command**.

C. If patient is in severe distress and:

1. Heart rate is < 180:

   a. Administer **Albuterol**
      - 5.0 mg with oxygen 8 - 10 LPM for children 6 – 12 years of age.
      - 2.5 mg with oxygen 8 - 10 LPM for children < 6 years of age.

   b. Administer **Ipratropium Bromide(Atrovent®)** *(may be nebulized with the albuterol)*
      - 0.5 mg with oxygen 8 - 10 LPM for children 6 – 12 years of age.
      - 0.25 mg with oxygen 8 - 10 LPM for children 1 – 6 years of age.
      - *Contraindicated in children <1 year of age.*

   c. Administer **Dexamethasone** IV/IO/PO/IM 0.6 mg/kg to a maximum dose of 10 mg

   d. If transport time permits, consider administration of **Magnesium Sulfate** 50 mg/kg IV/IO diluted in 100ml of Normal Saline administered over 1 hour. 

2. If heart rate > 180:

   a. Confirm that patient's tachycardia appears to be from respiratory distress and not from other causes.
   b. Proceed with treatment as in "B" above.

PEDIATRIC BRONCHOSPASM

c. Monitor patient's symptoms and vital signs closely.

d. 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 

E. For extreme respiratory distress marked by diminished air movement or bronchospasm refractory to treatment, resulting in questionable delivery of nebulized medication, apnea, or other signs of impending respiratory arrest; administer Epinephrine (1:1,000) 0.15 mg IM.

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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.** MCP may order initiation of an **Epinephrine infusion** (mix 1 mg of Epinephrine 1:1,000 in 1 L of normal saline producing a concentration of 1 mcg/ml) titrating from 1 mcg/min to 10 mcg/min for adults utilizing the Emergency Epinephrine Infusion Drip Charts.

3. Titrate for a SBP > 90 mmHg or a MAP > 65 mmHg **per MCP Order**.

4. Reassess and expedite transport.

F. **Emergency Epinephrine Infusion Drip Charts**

ADULT DOSING – 10 gtts/ml Solution Set	
1 mcg/min = 10 gtts/min	6 mcg/min = 60 gtts/min
2 mcg/min = 20 gtts/min	7 mcg/min = 70 gtts/min
3 mcg/min = 30 gtts/min	8 mcg/min = 80 gtts/min
4 mcg/min = 40 gtts/min	9 mcg/min = 90 gtts/min
5 mcg/min = 50 gtts/min	10 mcg/min = 100 gtts/min
ADULT DOSING – 15 gtts/ml Solution Set	
1 mcg/min = 15 gtts/min	6 mcg/min = 90 gtts/min
2 mcg/min = 30 gtts/min	7 mcg/min = 105 gtts/min
3 mcg/min = 45 gtts/min	8 mcg/min = 120 gtts/min
4 mcg/min = 60 gtts/min	9 mcg/min = 135 gtts/min
5 mcg/min = 75 gtts/min	10 mcg/min = 150 gtts/min

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. Heat illnesses at secondary schools may be using cold water immersion (CWI) tubs for treating heat illness. Refer to protocol 9205.

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.

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.**

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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**.

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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.

HYPOPERFUSION / SHOCK

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 initiate an **Epinephrine infusion** (mix 1 mg of Epinephrine 1:1,000 in 1 L of normal saline producing a concentration of 1 mcg/ml) titrating from 1 mcg/min to 10 mcg/min for adults utilizing the Emergency Epinephrine Infusion Drip Charts.

   

   c. Titrate for a SBP > 90 mmHg or a MAP > 65 mmHg **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:

a. **Contact Medical Command** and consider repeat 250 ml fluid bolus. Initiate an **Epinephrine infusion** (mix 1 mg of Epinephrine 1:1,000 in 1 L of normal saline producing a concentration of 1 mcg/ml) titrating from 1 mcg/min to 10 mcg/min for adults utilizing the Emergency Epinephrine Infusion Drip Charts.

b. Titrate for a SBP > 90 mmHg or a MAP > 65 mmHg **per MCP order**.

I. Emergency Epinephrine Infusion Drip Charts

ADULT DOSING – 10 gtts/ml Solution Set	
1 mcg/min = 10 gtts/min	6 mcg/min = 60 gtts/min
2 mcg/min = 20 gtts/min	7 mcg/min = 70 gtts/min
3 mcg/min = 30 gtts/min	8 mcg/min = 80 gtts/min
4 mcg/min = 40 gtts/min	9 mcg/min = 90 gtts/min
5 mcg/min = 50 gtts/min	10 mcg/min = 100 gtts/min

ADULT DOSING – 15 gtts/ml Solution Set	
1 mcg/min = 15 gtts/min	6 mcg/min = 90 gtts/min
2 mcg/min = 30 gtts/min	7 mcg/min = 105 gtts/min
3 mcg/min = 45 gtts/min	8 mcg/min = 120 gtts/min
4 mcg/min = 60 gtts/min	9 mcg/min = 135 gtts/min
5 mcg/min = 75 gtts/min	10 mcg/min = 150 gtts/min

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

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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 recognize stroke symptoms, determine the **severity** of the stroke using a stroke severity screening tool and quickly notify medical command and receiving hospital in order to mobilize important time-sensitive intervention. Prior to hospital arrival, goals are to maintain stable vital signs, increase oxygen delivery if saturation is < 95%, protect the patient's airway, and provide psychological support as well as immediate transport to the most appropriate stroke center.

A. Perform **Initial Treatment / Universal Patient Care Protocol**. If neurologic symptoms are evident, proceed with this protocol.

B. Check a serum glucose level with a glucometer. If the serum glucose is < 60 mg/dL, administer 50% dextrose IV. If after treatment, there is no resolution of the patient's neurological symptoms, proceed with the remainder of this protocol.

C. Determine and document when the patient was Last Known Well (LKW) and the Time of Symptoms Onset (TSO) if known. Family or bystanders are often the best source of this information.

D. Determine the Cincinnati Pre-hospital Stroke Score (CPSS):

1. Speech disturbances (abnormal speech).

2. Facial weakness or paralysis (facial droop).

3. Extremity weakness or paralysis (arm drift).

E. If the patient is positive for any of the items in D, the CPSS is positive and a pre-hospital **stroke severity score** should be performed. The FAST-ED© free mobile app (available under the JoinTriage© app for Apple iOS or Android devices - see **Notes** below) is recommended to help determine the possibility of a large vessel occlusion (LVO). LVOs are clots, in the neck or brain, which may be able to be removed at certain interventional facilities.

F. FAST-ED© is POSITIVE - If the FAST-ED© app indicates the potential for a LVO, the patient may benefit from being transferred directly to a Comprehensive Stroke Center (CSC) or a Primary Stroke Center with interventional capabilities (thrombectomy-capable or PSC-I are, in this protocol, interchangeable terms) rather than a Primary Stroke Center (PSC) or Acute Stroke Ready (ASR) facility. **Contact Medical Command** for possible diversion to a CSC or thrombectomy-capable PSC-I if the following criteria are met:

1. The LKW is < 24 hours.

2. Diversion to a CSC/PSC-I will add no more than 45 minutes transport time to the nearest PSC or ASR or will not preclude TPA administration, if applicable. That is, if transport to the CSC/PSC-I will take the patient out of the TPA window, transport to the nearest PSC or ASR where the patient can receive TPA prior to transfer to an interventional facility (the patient must receive that TPA within 4.5 hours of the LKW, a LKW > 3.5 hours makes it unlikely this will occur).

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

G. If the above criteria are not met or LVO is not likely according to FAST-ED©, transport directly to the nearest PSC or ASR. Notify **Medical Command**.

H. Initiate immediate transport with head elevated at least 30 degrees and on left side if there is a decreased level of consciousness.

I. Obtain 12 lead EKG while in transport as not to cause delay.

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

Notes:

1. If possible, transport a witness, family member, or caregiver with the patient to verify the time of onset or last know well. If this cannot be accomplished provide the receiving hospital with a cell phone number to reach such a witness.

2. It is preferred that you bring the patient's medications to the receiving ED but if unable to do so, a list will suffice.

3. The priority of transfer facilities for patient's determined to have a possible LVO (by FAST-ED©) should be CSC first, then a PSC-I, and lastly a PSC or ASR when no CSC or PSC-I meets the above criteria in F.

4. To acquire and access FAST-ED©:
- **a.** From the App Store of either Apple iOS or Android devices, download JoinTriage©
- **b.** Open JoinTriage©, create an account - email address is ID, choose a password
- **c.** Open JoinTriage© and choose FAST-ED© from the options in opening screen
- **d.** You may stay signed in to JoinTriage©. Subsequent opening of the app won't require your email and password.

5. Regional Medical Command Centers with the consultation of the Regional Medical Directors in their areas of coverage will maintain a list of hospitals and their capabilities to treat stroke patients (whether or not specifically designated) in the interest of best directing pre-hospital care or destination decisions.

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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/IM/IO prior to **Oral Glucose**, **Dextrose,** or **Glucagon** administration

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

4. **Optional Treatment Pathway: D10**

   a. **Adult:** administer 10% dextrose in 50 mL (5 grams) boluses, one minute apart, to a maximum of 250 mL OR 25 grams of 50% dextrose IVP, until:

      i. patient has a return to normal mental status, and
      ii. patient's blood glucose is at least 60 mg/dl.

      NOTE: If, following 250 mL of 10% dextrose or 25 grams of 50% dextrose, patient has persistently altered mental status and blood glucose less than 60 mg/dl, repeat dosing regimen for second bolus.

   b. **Pediatric (5 – 12 years of age):**

      i. Administer 1 mL/kg of 10% dextrose IV/IO to a maximum of 25 grams.
      ii. If blood glucose is less than 60 mg/dl, obtain medical consultation to administer second dose of D10W.

c. **Patients 30 days (1 month) up to 4 years:**

i. Administer 2 mL/kg of 10% dextrose IV/IO to a maximum of 25 grams.
ii. If blood glucose is less than 60 mg/dl, obtain medical consultation to administer second dose of D10W.

d. **Patient less than 30 days (1 month)**:

i. Administer 5 mL/kg of 10% dextrose IV/IO.
ii. (D10W is prepared by mixing one part of D50W – 10 ml and with four parts NS – 40ml).
iii. If blood glucose is less than 40 mg/dl, obtain medical consultation to administer second dose of D10W.

5. If unable to initiate an IV, and blood glucose is < 60 mg/dl, administer **Glucagon** 1mg IM.

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 4102.**

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**.

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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), or, Administer Naloxone (Narcan®) 2 mg IM *(Anterior Lateral Thigh)*. If patient does not show signs of improvement (adequate respiratory response/increased LOC) administer an additional 2 mg IN/IM.

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 optional 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.

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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 – Hyperactive Delirium with Severe Agitation:**

1. **(OPTIONAL):** If psychotic/behavioral presentation consistent with Hyperactive Delirium with Severe Agitation is suspected, administer:
Ketamine 4 mg/kg IM to a max single dose of 300 mg
-OR-
If IV/IO already in place, 2 mg/kg IV/IO to a max single dose of 200 mg Per MCP Order.
(Video laryngoscope is required equipment for any agency administering Ketamine in the setting of behavioral emergencies)

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

J. 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 **only** if there is believed to be an airway obstruction while being cognizant of bradycardia and hypoxia.

   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. Attempt to keep the baby level with the placenta until the cord is clamped. 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 =

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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®) in the first trimester of pregnancy requires MCP Order.

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ADULT FEVER

Fever is defined as a 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 adult 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 the patient appears to be acutely ill, do not delay transport to check temperature. Transport and treat associated problems per appropriate protocol.

C. If the patient has symptoms of fever, such as of headache, myalgias, and arthralgias, check temperature. If temperature >100.4° F:

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

2. Administer Acetaminophen (Tylenol®) at 15 mg/kg up to a maximum of 1,000 mg dose if the patient meets all of the following conditions:

   a. No known allergy or intolerance to acetaminophen

   b. No history of hepatic disease such as liver transplant, cirrhosis or hepatitis

   c. No other administrations of Acetaminophen (Tylenol®) containing products in the last four (4) hours

   d. Giving additional medication would not exceed 4,000 mg per day

D. If the patient has a temperature >105° F:

1. Treat as in “C” above and facilitate active cooling by applying wet towels with tepid water to trunk and head.

2. Do not submerge in water or use ice or rubbing alcohol

E. Monitor vital signs closely

F. Transport

G. Continue supportive care and notify **Medical Command**

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ADULT SUSPECTED ABUSE / NEGLECT

In cases of suspected adult abuse/neglect, it is imperative to remain calm and professional to prevent the emotional reaction of the patient and others on the scene to become more intense. **Use extreme tact and professionalism. DO NOT let emotions or prejudices interfere with appropriate patient care**.

Abuse is the infliction or threat of physical or psychological harm, including the use of undue influence or the imprisonment of a vulnerable adult or facility resident.

Neglect is the unreasonable failure by a caregiver to provide the care necessary to maintain the safety or health of a vulnerable adult or self-neglect by a vulnerable adult, including the use of undue influence by a caregiver to cause self-neglect.

Self-neglect is the inability of a vulnerable adult to meet his/her own basic needs of daily living due to mental or physical condition.

Financial exploitation is the intentional misappropriation, misuse, or use of undue influence to cause the misuse of funds or assets of a vulnerable adult or facility resident. Financial exploitation does not apply to a transaction or disposition of funds or assets where a person made a good-faith effort to assist the vulnerable adult or facility resident with the management of his or her money or other items of value.

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. Do not allow patient to change clothes or wash.

3. Give nothing by mouth.

F. Transport.

ADULT SUSPECTED ABUSE / NEGLECT

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: **WV Code §9-6-11** sets forth that as mandated reporters of adult abuse and neglect, EMS providers who have reasonable cause to suspect circumstances of neglect, abuse, or financial exploitation of a vulnerable adult or facility resident, or of an emergency situation involving such an adult, shall report immediately, and not more than 48 hours after suspecting abuse, neglect or financial exploitation, to the WV Department of Health and Human Resources (WVDHHR). Additionally, EMS providers are required to report the circumstances to the person in charge of the receiving institution or a designated person thereof at time of patient handoff. Notifying a person in charge, supervisor, or superior does not exempt a person from his or her mandate to report suspected abuse or neglect directly to the Department of Health and Human Resources. Situations of serious physical/sexual abuse or financial exploitation also require immediate reporting to law Enforcement. Visit Centralized Intake for Abuse and Neglect (wv.gov) for more information.

West Virginia Department of Health and Human Resources Adult Protective Services Mandatory Reporting Form: APS Mandatory Reporting Form Rev 08.2017.pdf (wv.gov)

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.

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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.

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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.**

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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.

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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.

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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.

G. If endotracheal intubation is not possible, insert supra-glottic airway (iGel®) 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.

AIRWAY MANAGEMENT

IDEAL BODY WEIGHT CHART

WOMEN				MEN			
Height	Frame Size			Height	Frame Size		
Ft. In.	Small	Med.	Large	Ft. In.	Small	Med.	Large
4'10"	102-111	109-121	118-131	5'2"	128-134	131-141	138-150
4'11"	103-113	111-123	120-134	5'3"	130-136	133-143	140-153
5'0"	104-115	113-126	122-137	5'4"	132-138	135-145	142-156
5'1"	106-118	115-129	125-140	5'5"	134-140	137-148	144-160
5'2"	108-121	118-132	128-143	5'6"	136-142	139-151	146-164
5'3"	111-124	121-135	131-147	5'7"	138-145	142-154	149-168
5'4"	114-127	124-138	134-151	5'8"	140-148	145-157	152-172
5'5"	117-130	127-141	137-155	5'9"	142-151	156-160	155-176
5'6"	120-133	130-144	140-159	5'10"	144-154	151-163	158-180
5'7"	123-136	133-144	143-163	5'11"	146-157	154-166	161-184
5'8"	126-139	136-150	146-167	6'0"	149-160	157-170	164-188
5'9"	129-142	139-153	149-170	6'1"	152-164	160-174	168-192
5'10"	132-145	142-156	152-173	6'2"	155-168	165-178	172-197
5'11"	135-148	145-159	155-176	6'3"	158-172	167-182	176-202
6'0"	138-151	148-162	158-176	6'4"	162-176	171-187	181-207

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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, IM, IO, or IN (max dose of 50 mcg (1ml) per nostril).

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, IM, or IO 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**

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 may be treated as follows: PER Medical Command Physician ORDER Administer Ketamine (Ketelar) 0.2 mg/kg to a max dose of 20 mg slow IVP over one (1) minute or 0.5 mg/kg IM to a max dose of 20 mg. Subsequent doses also require Medical Command Physician (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. (Optional): Ketamine* (Ketalar®): 2 mg/kg IV/IO

Note: ***Etomidate and Ketamine** are 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. (Optional): **Ketamine (Ketalac®):** 2 mg/kg IV/IO**, OR**

      ii. **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

      -OR-

      Rocuronium (Zemuron®): 1.0 mg/kg IV/IO *(OPTIONAL MEDICATION)*

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 enroute 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.

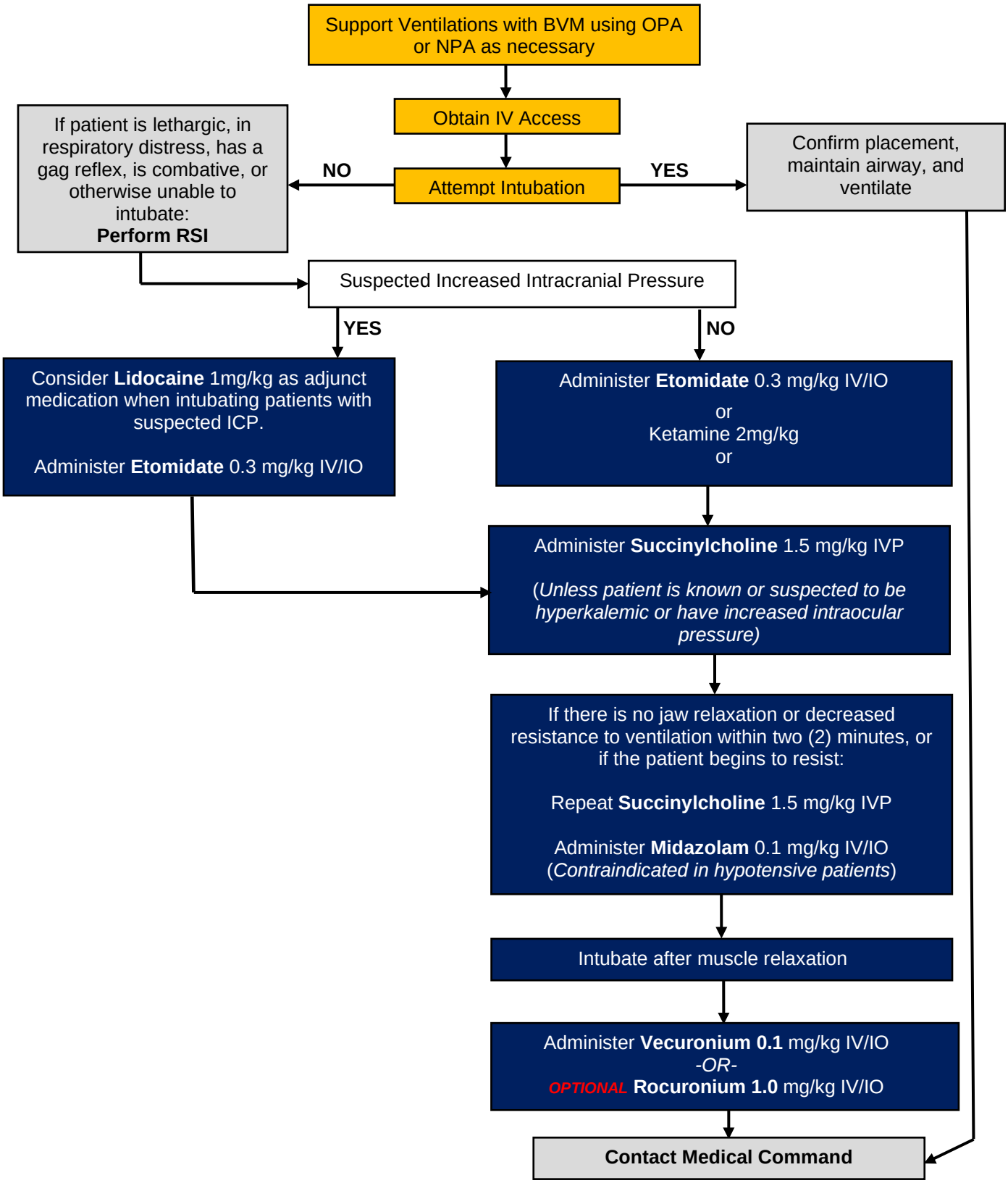
- At the 12 month point in the program, the SMD must reapply with the WVOEMS State Medical Director to continue the program.

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.

2. Indications for use:

   a. Chemical or Thermal burns
   b. Foreign body sensation with no visible foreign body
   c. To remove non embedded foreign materials

B. Application:

1. Administer **Tetracaine**, 2 drops per eye being irrigated.

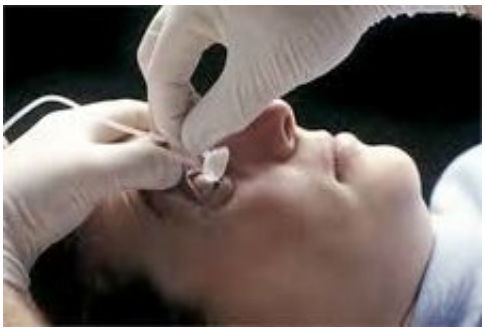
2. Attach mixed saline bag to IV tubing.

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.

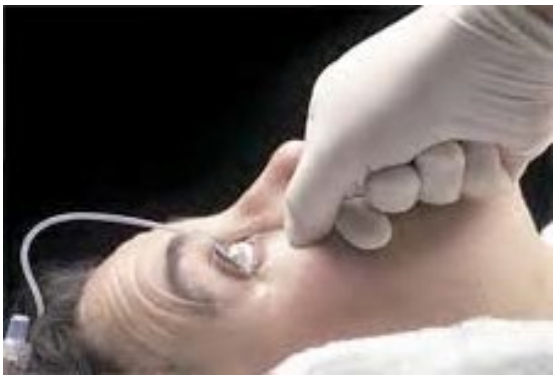
11. Irrigate eye(s).

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

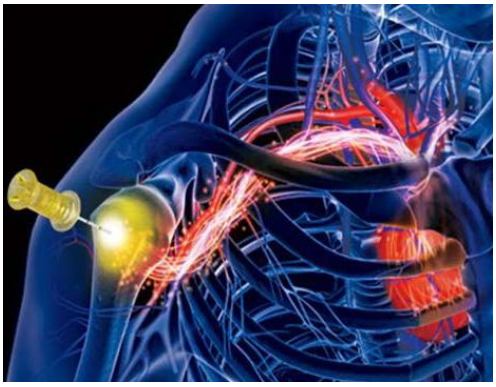
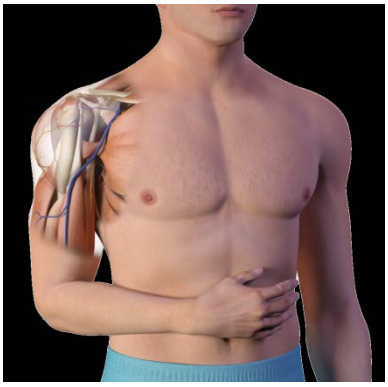
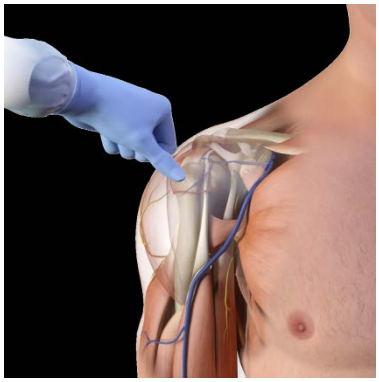
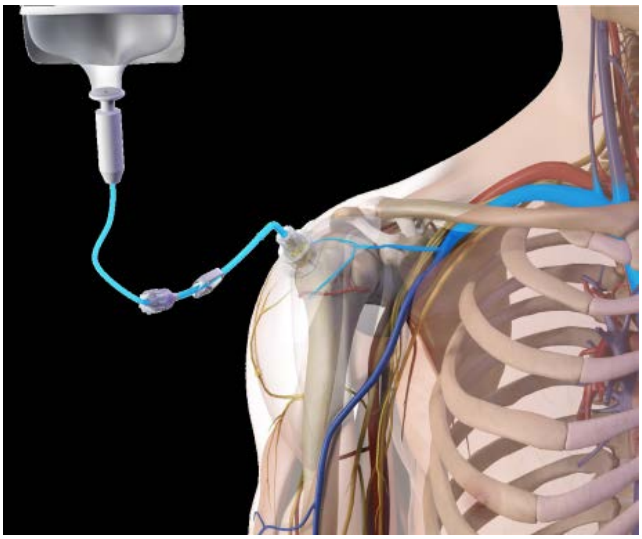
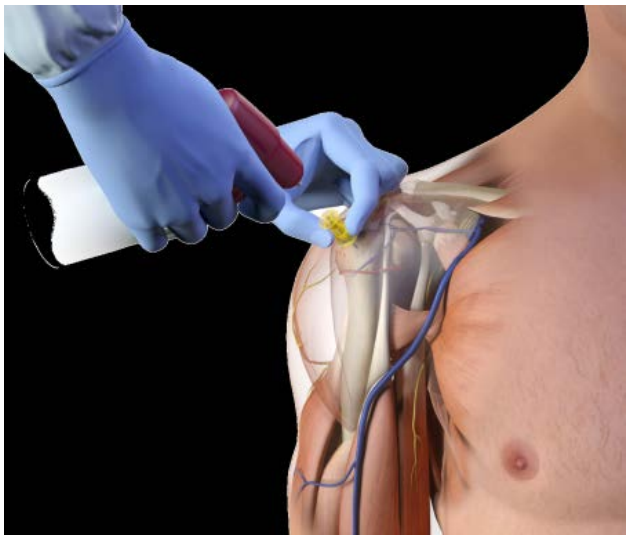
C. Procedure:

1. **ADULT:** Select insertion site in the following order, unless contraindicated: proximal humerus, proximal tibia, then distal tibia.

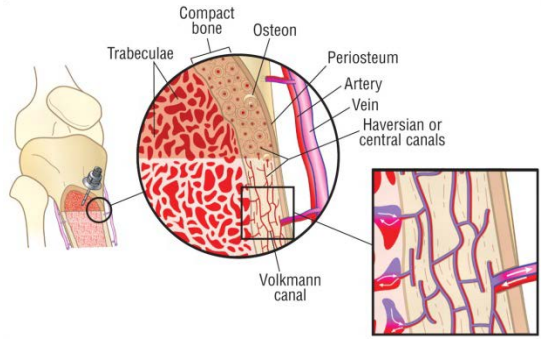
2. **PEDIATRIC:** Select insertion site in the following order, unless contraindicated: proximal tibia, distal tibia, then proximal humerus.

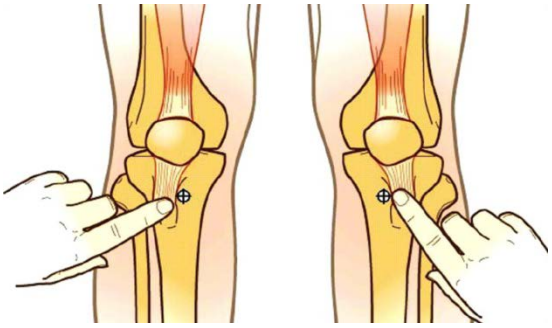
Note: Red arrows point to targeted insertion sites.

a. Adult and Pediatric proximal humerus: greater tubercle just anterior to midline.

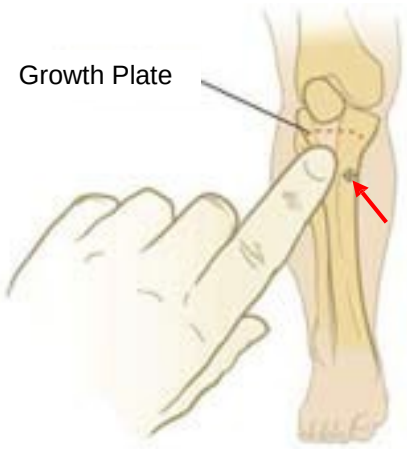






b. Adult proximal tibia: Measure one (1) fingerbreadth *medial* to the tibial tuberosity, along the flat aspect of the medial tibia as shown below.

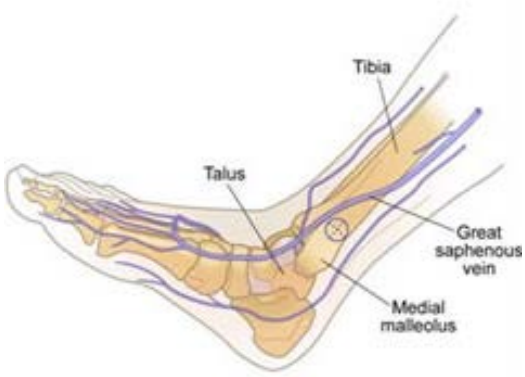


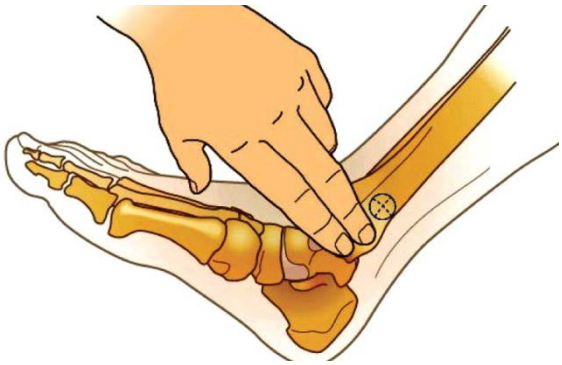


c. Pediatric proximal tibia: one (1) finger width distal to tibial tuberosity OR if unable to palpate tibial tuberosity, two finger widths below the patella along the flat aspect of the medial tibia. Avoid growth plates.

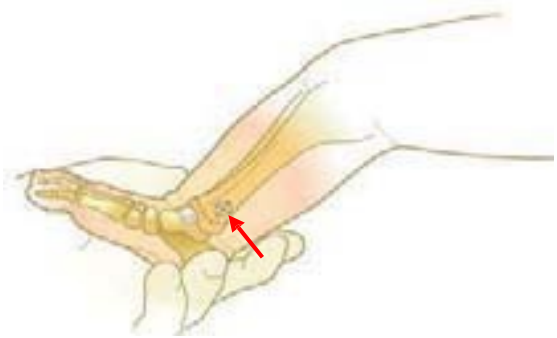


d. Adult distal tibia: two (2) finger widths proximal to the medial malleolus and midline on the medial shaft.





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.*

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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.**

PERIPHERALLY INSERTED CENTRAL CATHETER (PICC LINE) ACCESS

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

NON-INVASIVE VENTILATION – (NIV)

FOR USE ONLY IF SPECIFICALLY INCLUDED WITHIN THE APPROVED SCOPE OF PRACTICE OF THE PROVIDER

Acute non-invasive ventilation (NIV) involves providing respiratory support through a tight-fitting mask, which is usually applied around the patient's mouth and nose. It may take the form of continuous positive airway pressure (CPAP) or bilevel inspiratory positive airway pressure (BiPAP). Acute NIV is usually used in hospital but can be administered enroute to hospital. CPAP is simpler to use and thus more suitable for pre-hospital care. Acute respiratory failure is often associated with elevated carbon dioxide levels and acidosis, in addition to hypoxia. In patients with chronic respiratory disease, oxygen therapy may reduce respiratory drive and worsen hypercapnia and thus outcome. BiPAP can improve gas exchange and outcome in these circumstances.

NIV Continuous Positive Airway Pressure (CPAP) and Bilevel Inspiratory Positive Airway Pressure (BiPAP) have 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.

Continuous Positive Airway Pressure (CPAP)

A. INDICATIONS: When tolerated by the patient, CPAP is most effective in treating hypoxic respiratory failure. Any patient who is in respiratory distress with hypoxia 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. If after 3 to 5 minutes the patient does not respond, cannot tolerate CPAP, or their condition worsens then the CPAP will be disconnected and patient will receive a trial of Bi-PAP, 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.

B. CONTRAINDICATIONS **(Do not use if any are present):**

1. Respiratory arrest.
2. Hypercapnic respiratory failure (See BiPAP)
3. Hypotension (Blood pressure < 90 systolic).
4. Suspected pneumothorax.
5. Patient has a tracheostomy.
6. Foreign body airway obstruction.
7. Facial deformity or trauma causing inability to achieve mask seal.
8. Actively vomiting.
9. Recent facial, neurological, or gastric surgery.
10. 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).

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.

NON-INVASIVE VENTILATION – (NIV)

Bilevel Inspiratory Positive Airway Pressure (BiPAP) - OPTIONAL

A. INDICATIONS: BiPAP is particularly effective when treating hypercapnic respiratory failure with associated respiratory acidosis (ETCO2 >45). Any patient who is in respiratory distress with hypoxia or hypercapnia and who has signs and symptoms consistent **with at least one of the following**: asthma, COPD, pneumonia, CHF, or pulmonary edema **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 BiPAP 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 BiPAP 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 BiPAP mask (unless appropriate fitting mask is available as in the situation of an interfacility transfer).

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.

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. Assure a patent airway.
3. Ensure emergency equipment is immediately available and an alternative management plan has been established.
4. 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.
   d. Continuously monitor pulse oximeter and ETCO2 monitoring (nasal prong

devices can be utilized as long as they do not compromise a good mask seal.

5. Ensure adequate oxygen supply to the BiPAP device.

6. Turn BiPAP device on.

7. Have the patient sit up as much as possible.

8. Apply the device as per manufacturer's directions.

9. Field Procedure: Set initial inspiratory positive airway pressure (IPAP) and expiratory positive airway pressure (EPAP) to decrease patient respiratory effort and adjust as needed.

   a. Start with EPAP at 5 cmH2O (max 8 cmH2O) (Adult)

   b. Start IPAP at 10 cmH2O (max 15 cmH2O) (Adult)

   c. IPAP is increased in steps of 2 cmH2O every 10 minutes to the max listed above as needed till patient improvement.

   d. EPAP is increased in steps of 2 cmH2O every 10 minutes to max listed above as needed for an oxygen saturation >93%.

   e. Do not exceed above maximums without MCP order.

10. Interfacility Transfer Procedure:

    a. Set EPAP and IPAP to current settings if patient is tolerating them.

    b. If patient is not tolerating the current settings consult referring physician and respiratory therapist or contact MCP.

    c. Pediatric NIV setting should be established through contact with MCP based upon the following:

Age	EPAP Max	IPAP (5-10cm H20 over EPAP)
Infant	7-8cm H20	12-18cmH20
Toddler	8-10cm H20	13-20cmH20
Adolescent	10-12cm H20	15-20cmH20

11. Initially assist the patient in holding the mask tightly to their face and evaluate their tolerance of the mask.

12. 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.

13. Check for air leaks.

14. Continue to monitor the patient during transport.

15. Contact **Medical Command,** as early as possible, so the receiving hospital can be prepared for the patient.

E. REMOVAL: BiPAP 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).

Notes:

1. While both CPAP and BiPAP can be used to treat hypoxic respiratory failure, BiPAP is most effective at treating hypercapnic respiratory failure. BiPAP is essentially interchangeable with indications for CPAP but CPAP is not interchangeable with BiPAP when it comes to the treatment of hypercapnic respiratory failure.

2. BiPAP should continue upon arrival at the emergency department until patient care is transferred to the emergency department staff. Do not remove BiPAP until hospital emergency therapy is ready to be placed on the patient.

3. This procedure may be performed on a patient with a *Do Not Resuscitate order*.

4. BiPAP should be used with caution with portable oxygen systems due to limited amounts of oxygen available to operate the device (If BiPAP device is oxygen powered).

5. **DO NOT** delay other emergency interventions to establish BiPAP. BiPAP 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 BiPAP use on patients who have failed at past attempts to utilize noninvasive ventilation techniques and request that it not be applied.

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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.

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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.

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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, dependent lividity).

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 the 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 Chief Medical Examiner's Office on all out-of-hospital deaths **including** those registered with and receiving hospice care.

4. Contact the State Medical Examiner's Office at (304) 558-6921 or 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 carefully document 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.

F. Reporting to Medical Command

1. These reports should be given by landline phone if possible. If landline is unavailable, a cell phone may be used. This information is **NOT** to be given over radio communications.

   a. If phone service is unavailable at the time of the call, the information shall be given as soon as phone service is available.

2. The following information shall be collected **before contacting the Medical Examiner's Office**, to report on all death in the field cases:
   a. Decedent's first and last name
   b. Decedent's date of birth (if available)
   c. Decedent's Social Security Number (if available)
   d. Decedent's gender
   e. Decedent's Primary Care Physician (If they have one)
   f. Decedent's next of kin name and contact phone number (if available)
   g. Time of death
   h. Pronouncing doctor's name
   i. Place of death (physical address or location of death at the time of pronouncement)
   j. Primary Provider's first and last name
   k. Primary Provider's certification number

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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).**

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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 or off-line medical direction as outlined in the protocols, transporting to an emergency department, or anytime additional consultation is needed by the provider. This provides hospital's early notification, provider's legal protection, and protocol guidance if needed. **Additionally, EMS personnel should notify Medical Command on inter-facility transports being transferred to the ED not less than fifteen (15) minutes prior to arrival.** 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. **Patient Hand Off / Transfer of Care:** Formal exchange of information between receiving healthcare providers/facilities and EMS providers pertaining to the overall scene, patient presentation, care rendered, and response to care rendered prior to arrival has proven to alleviate repeated services, confusion, and medication errors. EMS shall adhere to following for all patients:

1. EMS Time Out Report – This report constitutes a verbal exchange of information to provide continuity of patient care. WVOEMS recognizes the "MIST" format to meet this need.

a. **M - Mechanism of injury/Medical Complaint**
- Name, Age, and Sex
- Location of patient when found (Home, nursing home, assisted living facility, road, freeway, rural area)
- Onset of injury/symptoms (For Stroke last time known normal)
- Description of cause of injury (MVC, Fall, Weapon, Assault)
- Details of injury (Vehicle's involved, Speed, Position in/on vehicle, Pertinent damage to the vehicle, Restraint use, Helmet use, Height)

b. **I - Injuries or illness**
- Pain, deformities, Injury patterns, new disabilities (Loss of Airway, Movement, Sensory, Speech, Sight)
- Results of tests ECG, Stroke neuro assessment, Blood glucose (BG)

c. **S - Signs and Symptoms**
- Duration of symptoms, Location of symptoms, Any modifiers of the symptoms (movement, eating, medications taken).

- Age of patient. Pertinent Medical History.
- Vital Signs - First set, Lowest BP, Current Set (Include HR, BP, RR, SPO2, ETCO2, BG, ECG Monitor rhythm and Normal and current responsiveness - GCS or AVPU)

d. **T – Treatment**

- Tubes, Lines (Location and size), Fluids (type and amount), Oxygen delivery description
- Medications administered, stabilization applied Dressings applied, Tourniquet applied (when was it applied)
- Defibrillation, Pacing, and other treatments.
- Response to treatments: Symptoms resolved, improved, worse, or no change.

2. Hand Off Report – The patient hand off report shall be written documentation of a minimal set of data and shall be provided to the receiving facility prior to EMS departure. This does NOT take the place of an EPCR which may be required by the receiving facility at a later time. The minimal data that must be provided is as follows:

a. Agency name and name of care providers
b. Patient's name
c. Chief complaint and history of the chief complaint
d. Vital signs, level of consciousness, and pertinent physical findings
e. Pertinent past medical history, medications, and allergies
f. Treatment rendered

B. **Initial Call-in Procedure:** In order to quickly and effectively identify the level of interaction required to properly manage the patient, the following procedure will be used:

1. **Initial Call Requirements:** *Call 9 and Channel "C" Charlie are the initial call frequencies.*

a. Squad and Unit Number

b. Destination and ETA

c. Situation: (*What you have/What you need*)

- BLS
- ALS
- Trauma
- Stroke
- STEMI
- Aeromedical request
- MCP orders request

- MCP conference request

2. Communication Example:

a. Cabell County unit 41 contacting Huntington MedCom on call 9 with a BLS report, ETA 10 min to Cabell Huntington Hospital.

b. *Berkeley County Medic 971 contacting WVU MedCom on C with an ALS STEMI, ETA 12 minutes to Berkeley Medical Center.*

C. Methods for contacting **Medical Command:** There are two (2) general methods for contacting Medical Command:

1. UHF, VHF, or IRP 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 UHF, VHF, or IRP Radio frequencies. Call 9 and Channel "C" Charlie are the initial call frequencies.

2. Phone (landline or cellular): Should be used whenever the patient's location and condition permit. Phones, both landline and cellular, provide a great amount of security for discussion of sensitive patient information. However, when in a mobile unit, phones are not a substitute for radio contact if the coverage is available. Providers may use the local number of the Medical Command Center or the toll free 800 number of the specific center.

D. **Detail Call Requirements:** When providing a detailed report to **Medical Command** the following procedures should be followed:

1. After **Medical Command** has answered the EMS initial call and assigned a frequency to take a full report, provide the following information:

a. Age and sex of patient
b. Chief Complaint/ Mechanism of Injury
c. Brief history of present illness
d. Pertinent past medical history
e. Pertinent medications
f. Allergies (only if requesting medications)
g. Vital signs
h. GCS (if applicable)
i. Stroke score (if applicable)
j. ECG findings
k. Assessment

l. Treatment administered
m. Orders requested (if applicable)
n. Updated ETA and destination (if it has changed since initial call)

2. If the patient's condition changes or new complaints develop, **Medical Command** shall be contacted with updated findings and treatment.

3. It is understood that not all information listed in D-1 is required for every patient. Providers shall make every effort to provide a complete and thorough report reflective of patient presentation.

E. **Performance Improvement:** EMS field providers and Medical Command operators shall have the ability to identify performance improvement opportunities. These may manifest in recognition of a job well done or as an opportunity to improve.

1. EMS providers may, at any time, request a call to be flagged for review. The MedCom operator will do so and follow up will be provided to the EMS provider and administrator.

2. Anytime a requested order is denied, the call will be automatically flagged for review and follow up will be provided to the EMS provider and administrator.

3. The MedCom operator may, at any time, flag a call for review. Follow up will be provided to the EMS provider and administrator.

F. **Inability to contact Medical Command:** If the provider is unable to contact 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 within 6 hours of 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.

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.

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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.

NERVE AGENT - OPTIONAL

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/

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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).

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).

H. Heat Illness

1. The West Virginia Secondary School Activities Commission (WVSSAC) has put in place a policy for their schools to follow for heat acclimatization and heat illness policy and procedures. The policy applies to all practice and conditioning activities (in season, out of season, and summer) in which heat illness poses a risk, both outdoor and indoor. This includes the following assessment and treatment for heat exposure emergencies treatment:

   a. “Monitoring of student-athlete safety will be continuous during any physical activity. School staff should be educated on the signs and symptoms of exertional heat illness. The signs and symptoms include, but are not limited to:

i. Headache
ii. Confusion or
iii. Disorientation
iv. Dizziness
v. Altered consciousness or coma
vi. Nausea or vomiting
vii. Diarrhea
viii. Hot and moist or dry skin

b. A rectal temperature greater than 104 F at the time of the incident indicates exertional heatstroke.

c. If a student-athlete is suspected of having an exertional heat stroke, EMS must be called immediately. However, anyone with exertional heat stroke must be COOLED FIRST and then transported by EMS.

d. A cooling zone must be designated at each practice site. Treatment must include a minimum:

i. Removing excess clothing
ii. Placing patient in a cold-water immersion tub (35-59 F), or ice floating on top of the tub if no thermometer available to check the water temperature
iii. Placing an ice-cold towel over the head/neck and rewetting/replacing every 2 minutes while in the tub."

2. BLS Treatment

a. Assess the patient in the tub (Cold Water Immersion – CWI) and review the ongoing treatment. If needed assist with keeping the athlete's head and neck above water, and with the neck towel that has been soaked in the ice water as noted above.

b. If the patient begins to shiver, take the patient's hands out of the water and gently warm them.

c. If the school representatives have checked the patient's temperature before the patient was put in the CWI, note the temperature and what type of thermometer was used (scan, oral, rectal) in your note.

d. If they have been checking the patient's rectal temperature every 5 minutes during the CWI make sure to take the patient out of the CWI when the

patient's temperature drops to/or below 102 degrees and transport the patient.

e. If no rectal temperatures have been taken after 15 minutes of CWI, reassess the patient, contact Medical Command, relay your assessments and consider transferring the patient at this time. During the transport repeat your assessment (vital signs and mental status) every 5 minutes and follow your protocol 6502.

f. If CWI has not been implemented but the facility has the capability:

i. Quickly start setting up CWI. If set up cannot be accomplished in < 5 minutes, transport the patient. Start cooling the patient per protocol 6502 while waiting.

ii. Once CWI has been established, treat per H, 1, c-d above for 15 minutes then contact Medical Command.

iii. Assist patient in removing clothing/equipment that would interfere with CWI.

iv. If CWI capability is not available, transport the patient and refer to protocol 6502.

3. Additional ALS Treatment

a. If no rectal temperatures have been taken after 15 minutes, check the patient's rectal temperature at a six-inch depth (if available). If the temperature is above 102 F degrees, check the patient's rectal temperature again continuously or every 3-5 minutes until the temperature drops to/or below 102 degrees, then take the patient out of the CWI and transport the patient.

b. Consider IV bolus 250ml NS.

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.

BLS PRE-ESTABLISHED TREATMENT MONITORING

This protocol applies specifically to BLS providers who are transporting patients with pre-established treatment modalities to home or extended care facilities. BLS pre-established treatment monitoring is limited to Jackson-Pratt (JP) drain tubes, chest tubes, negative pressure wound therapy systems, and IV therapy.

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

B. Make sure the patient has been provided discharge information that details how to utilize the device when they are home.

C. **Jackson Pratt (JP) drains**

1. Jackson Pratt drains are most often used after surgery to remove drainage from the surgical site.

2. Jackson Pratt drains are often used before surgery to drain infected areas.

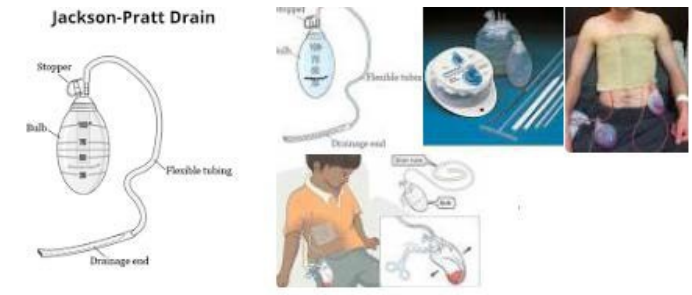
3. Jackson Pratt drains are round or grenade in shape and made of flexible plastic that is attached to a tube that remains in the patient.

4. BLS Monitoring:

   a. Note the length of exposed tubing outside the patient. Take caution not to manipulate the patient in a manner to pull on this device. The length noted initially should **NOT** change during transport.

   b. Monitor any patient complaint that is related to the area the JP drain is located. This should not change during the transport.

   c. If new discomfort occurs, the normal discomfort increases, the tube becomes dislodged contact **Medical Command**.



Jackson-Pratt drain

BLS PRE-ESTABLISHED TREATMENT MONITORING

D. **Chest Tubes**

1. Chest tubes vary in diameter and are plastic tubes that have been inserted through the chest wall.

2. Chest tubes remove air, fluid, or pus from the intrathoracic space.

3. BLS Monitoring:

   a. Note the length of the exposed chest tube outside the patient. Take caution not to manipulate the patient in a manner to pull on this device. The length noted initially should **NOT** change during transport.

   b. The attached drainage tubing should never be placed above the insertion site at any time.

   c. Monitor the patient's breathing and note if it remains normal and any changes during the transport.

   d. If the patient's breathing becomes labored or the chest tube becomes dislodged contact **Medical Command** and transport the patient to the nearest emergency department.

E. **Negative Pressure Wound Therapy Systems**

1. Identify the patient has a NPWT system in place

2. Examine the site for the following:

   a. The dressing should be sealed

   b. There should not be any foul odors

   c. Fluid should be clear or may a slightly red tinge

3. If active bleeding is noted or develops suddenly, immediately stop the NPWT, take measures to stop bleeding, and consult with **Medical Command.**

4. If the NPWT unit alarms, check the following:

a. Does the canister need replaced?

b. Is the dressing sealed?

c. Is the tubing kinked?

d. Is the pump working?

5. Turning off the NPWT:

a. Close the tubing clamp on the dressing

b. Place the pump in standby or off position

c. Disconnect the canister tubing

d. The NPWT should not be off more than 2 hours per day.

6. If the NPWT comes loose from the wound:

a. Apply a sterile bandage to the wound

b. Assist the patient in contacting their clinician for replacement

7. If Patient has noted any of the following, they should contact their Health care provider immediately. If unable to do so, offer to transport them to the ER.

a. Fever ≥ 101°

b. Vomiting / Diarrhea

c. Headache

d. Sore throat

e. Confusion

f. Dizziness

g. Redness around wound

h. Rash

i. Puss and/or swollen area around wound

F. **IV Fluids**

BLS monitoring of IV therapy patients is intended for IVs that have been established and running but whose medical condition is not dependent on fluid resuscitation. This is not intended to be an interfacility transport protocol for any patient requiring IV fluids as a medical treatment to prevent deterioration of their condition or as treatment for any volume depleting illness. ALS would be required in these cases.

1. IV Monitoring applies to ADULTS ONLY (>12 years old).

2. IV Fluids shall **NOT** be flowing more than 100 ml/hour to be transported BLS.

3. The patient must be considered stable for a period of one (1) hour with an IV drip rate ≤100 ml/hour prior to transport.

4. BLS Monitoring:

   a. IV fluids shall include: clear non-medicated Normal Saline 0.9% or Lactated Ringers only.

   b. IV fluid must be gravity fed ONLY. IV pumps are not allowed.

   c. The IV must be established by the initiating facility staff - **venous peripheral only- arm or hand only.**

   d. Monitor flow rate every 15 minutes during transport

   e. Check site for infiltrations (fluid leaking into surrounding soft tissue), pain at IV site, inflammation, and/or tightness of skin at site.

   f. Should you identify any of the items listed in “e” above: stop the flow, gently remove the IV catheter, elevate the extremity, and apply a bandage to the site.

   g. Document the procedures and have the receiving facility evaluate the site upon arrival.

WEARABLE CARDIOVERTER DEFIBRILLATOR (WCD)

A. Assessing and Treating a Patient utilizing a WCD:

1. Recognize that you have a patient with an WCD.

2. Determine if your patient has an WCD problem, an unrelated illness, or injury.

3. When preparing your patient for transport, be sure the WCD is under their clothing and applied directly to their skin per manufacturers labeling.

4. If the patient has a cardiac event indicating the patient could be unconscious, an alarm will sound. The device will respond with treatment in one (1) minute if not overridden by deactivating the alarm per manufacturers requirements.

5. If the patient is unresponsive and requires treatment, the device will warn bystanders prior to administering a shock.

6. Once the device has administered treatment, the provider should do the following:

   a. Perform an assessment

   b. Secure the airway

   c. Check for a pulse

   d. Obtain a complete set of vitals

   e. Call for ALS if you are a BLS provider

7. If the heart rate does not return to normal and the WCD treatment cycles repeat, follow protocol 4205, 5205, and 6205 treatment for cardiac arrest.

8. If you are on scene and the patient regains consciousness and refuses to go to the hospital; contact Medical Command, document the refusal, and ask that they follow up with their primary care physician.

9. In the event that the vest has not administered treatment and the patients exhibits with chest pain, The vest can be removed, and the patient treated per protocol including obtaining a 12 lead EKG.

B. Overview of a WCD:

Patients at high risk for sudden cardiac death (SCD) may benefit from wearable

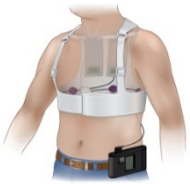
cardioverter defibrillators (WCD) by avoiding immediate implantable cardioverter defibrillator (ICD) implantation. The WCD is an external device capable of automatic detection and defibrillation of ventricular tachycardia (VT) or ventricular fibrillation (VF). The approved devices do not have pacing capabilities and therefore are unable to provide therapy for bradycardic events or antitachycardic pacing.

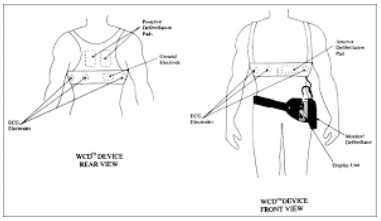
The WCD is composed of four dry, nonadhesive monitoring electrodes, three defibrillation electrodes incorporated into a chest strap assembly, and a defibrillation unit carried on a waist belt. The monitoring electrodes are positioned circumferentially around the chest, held in place by tension from an elastic belt, and provide two surface electrocardiogram (ECG) leads. The defibrillation electrodes are positioned in a vest assembly for apex-posterior defibrillation. Proper fitting is required to achieve adequate skin contact to avoid noise and frequent alarms.

A wearable cardioverter-defibrillator (WCD) is a vest that has a defibrillator built into it. A defibrillator is a device that fixes serious changes in your heartbeat. The device is always checking your heart rate and rhythm. If it detects a life-threatening, rapid heart rhythm, it sends an electric shock to the heart. This can restore a normal rhythm. A WCD helps control abnormal heart rhythms.

Patients may wear the WCD for about 2 to 6 weeks or longer. They will be measured so the vest will be the right size. The vest is worn under your clothes. It has electrodes and wires that lie against the skin and a monitor that is worn around the waist or over the shoulder. The WCD should be worn all the time except when you bathe. patients can perform your normal activities while wearing it. Providers need to be aware of the alert sounds and pay attention to the messages on the monitor. You need to follow the monitor's instructions exactly.

Like all therapies, the WCD is most effective when used as prescribed, but this requires continuous adherence for up to 90 days as well as constant attention towards the various device alarms that may become activated at any given moment. Developments are underway to improve the garments, monitors and overall patient experience, but adherence will likely limit the patient population who will actually benefit from this cumbersome device. In the meantime, it will remain up to the cardiologist to decide which patients are the most appropriate candidates to receive the WCD.





PATIENT REFUSAL GUIDELINES

This guideline applies to all EMS providers at all levels. All departments shall have an established Patient Refusal process that incorporates the contents of this document. The purpose of this guideline is to establish provider reference for the management and documentation of situations where refusal of assessment, treatment, and/or transportation is requested by a patient.

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

B. Communication and documentation will comply with agency and/or medical direction authority specific policy when a patient is refusing EMS intervention. Such refusals may include, but are not limited to:

1. Refusal of treatment or assessment

2. Refusal of procedures

3. Refusal of transport for either themselves or a person for whom they are the legal decision maker.

C. Who may refuse assessment, treatment, or transport

1. The patient with decisional capacity has the right to refuse assessment, treatment, and/or transport. This is true regardless of the severity of the patient's expected outcome. The patient must clearly communicate their understanding of the risk of refusing the above measures.

2. Parent

   a. A custodial parent (i.e. a parent with a legal right to custody of a minor child) may refuse care on behalf of a minor child. If the parent is not on scene, the parent may designate another adult to assume care of the minor or the minor may be left in the care of law enforcement.

   b. A minor (i.e. under 18 years of age) may refuse care for his or her child.

   c. Emancipated minors must show legal proof of emancipation to refuse.

3. Guardian

   a. A legal guardian is one who is appointed by a court to act as

"guardian of the person" of an individual who has been found by a court to be incapacitated or is otherwise not of legal standing to make their own medical decisions.

b. Legal guardian may also be appointed by the court in lieu of parents for a minor.

4. Medical Power of Attorney

a. A person appointed by the patient to make healthcare decisions.

b. This document only comes into effect if the patient loses decisional capacity regarding healthcare.

D. Patients under the age of eighteen (18) years of age cannot refuse medical attention. The patient's parent or guardian must assume responsibility for the patient.

E. Decision making capacity to refuse treatment or transportation must be determined and documented in the Patient Care Report. Individuals who do not demonstrate decisional capacity cannot refuse assessment, treatment, or transport.

F. EMS personnel shall provide an explanation of possible risks and dangers associated with not accepting medical intervention to the patient or other authorized responsible party.

G. If EMS personnel need assistance in determining a patients' decisional capacity, the EMS personnel shall contact a Medical Command Physician (MCP) – typically via online medical command through a recorded line of communication.

H. EMS documentation should include but is not limited to:

1. Determination of decision-making capacity based on the provided CRAM criteria.

2. The patient acknowledges an understanding of the risks of refusing transport or treatment including the possibility of worsening illness, discomfort, morbidity, permanent disability, and/or death.

3. Administrative medical director or agency specific guidelines for patient refusals.

PATIENT REFUSAL GUIDELINES

I. Special Circumstances:

1. If patient does not have the mental capacity to refuse care, and no other individual is authorized to refuse care for the patient, all reasonable steps to secure treatment and transportation without placing EMS providers in jeopardy should be taken.

2. If the patient is combative or otherwise represents a danger to the providers attempting to render care to the patient then local law enforcement, fire department personnel, or other EMS providers should be called upon to assist.

   a. If the patient lacking capacity cannot be reasonably assessed, treated, restrained, and/or transported without additional assistance and the aforementioned providers are unable or otherwise unwilling to assist then the EMS providers should not place themselves at extraordinary personal risk of harm to secure the patient until appropriate personnel and/or necessary legal documentation can be secured.

3. If law enforcement personnel insist on asserting medical responsibility for patient, EMS personnel should contact MCP. EMS personnel should document the law enforcement officer's name and badge number on the patient care report.

4. Under no circumstance should a patient be transported while in handcuffs placed with arms/wrists behind the patient's back. If a patient has handcuffs on, they must be in front of the person's body and a law enforcement officer must accompany the patient/EMS crew in the ambulance during care, treatment, and transport – if possible.

J. Determine capacity utilizing CRAM:

- **C**: *Communicate* a clear choice with consistency in thought and logic.
- **R**: *Relevant* information regarding their illness, symptoms, proposed intervention, and transport are all understood.
- **A**: *Appreciation* of the serious nature of the situation - especially in the absence of assessment by a physician or other licensed independent medical provider at time of EMS refusal.
- **M**: *Manipulation* of information in a rational manner – as it relates to risks/benefits as well as refusing proposed intervention and/or transport.

PATIENT REFUSAL GUIDELINES

K. Special Considerations

1. Being alert and oriented x 4 does NOT automatically mean a patient has capacity.

2. Being disoriented does NOT mean a patient lacks capacity to refuse treatment.

3. Capacity can wax and wane. It may be present one day and gone the next then return on subsequent calls. Every encounter is a new start and capacity must be reassessed when considering a refusal.

4. Consistency is key. If a patient is not consistently describing their choice/desire, then they do not have capacity to refuse.

L. When a refusal is the outcome of a patient encounter you **MUST** have an appropriately signed refusal form.

M. Best practice is to have the witness signature come from a party who witnessed the conversation and is NOT a member of the EMS team. The best options include:

1. Family or other member on the side of the patient's dynamics

2. Fire or another first responder from outside agency

3. Law enforcement officer

4. All other neutral parties available

5. The second crew member of EMS team may sign as witness if and only if there is nobody else available. This is a scenario where I would encourage you to contact online medical command.

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?	___	___

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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:	

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PEDIATRIC REFERENCES

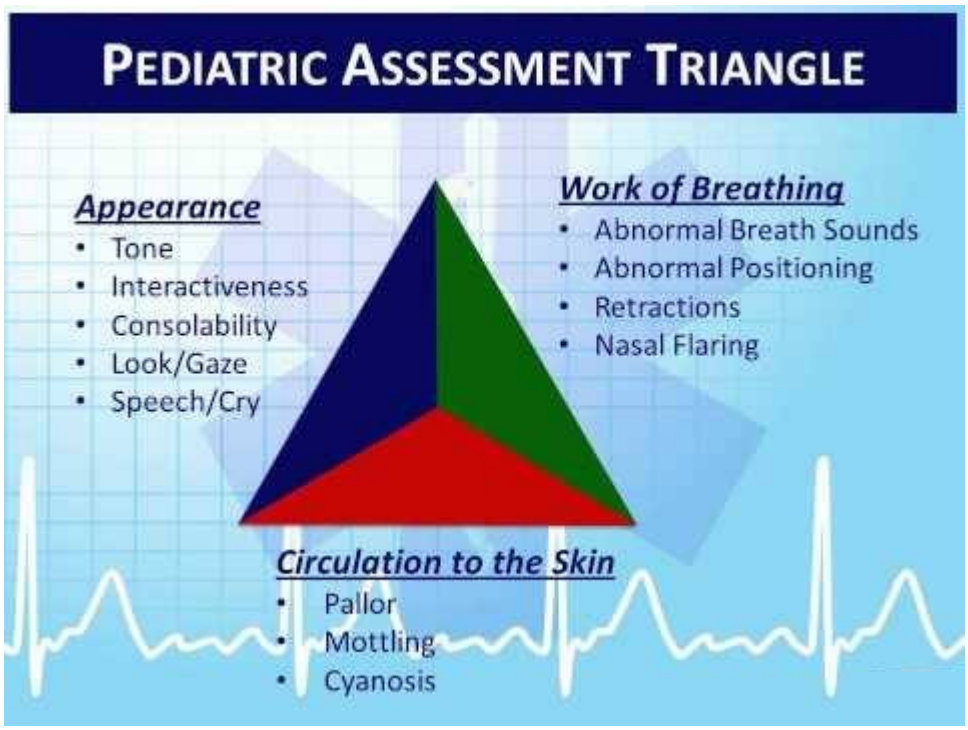
Pediatric Vital Signs

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

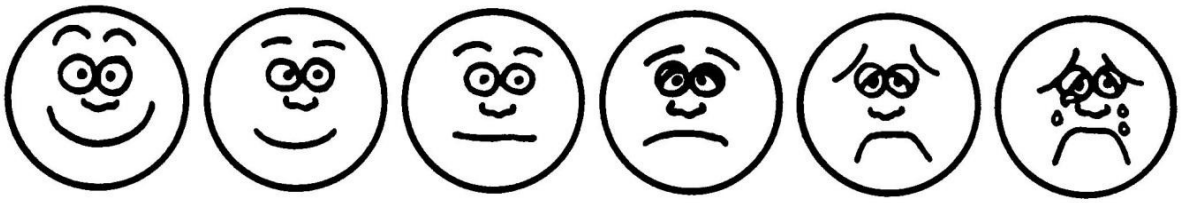
Pediatric Airway Management Supplies

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**ccommodation

START & RPM

***START** is an acronym for a copyrighted system for triage. **RPM** is the list of specific actions taken in this system.*

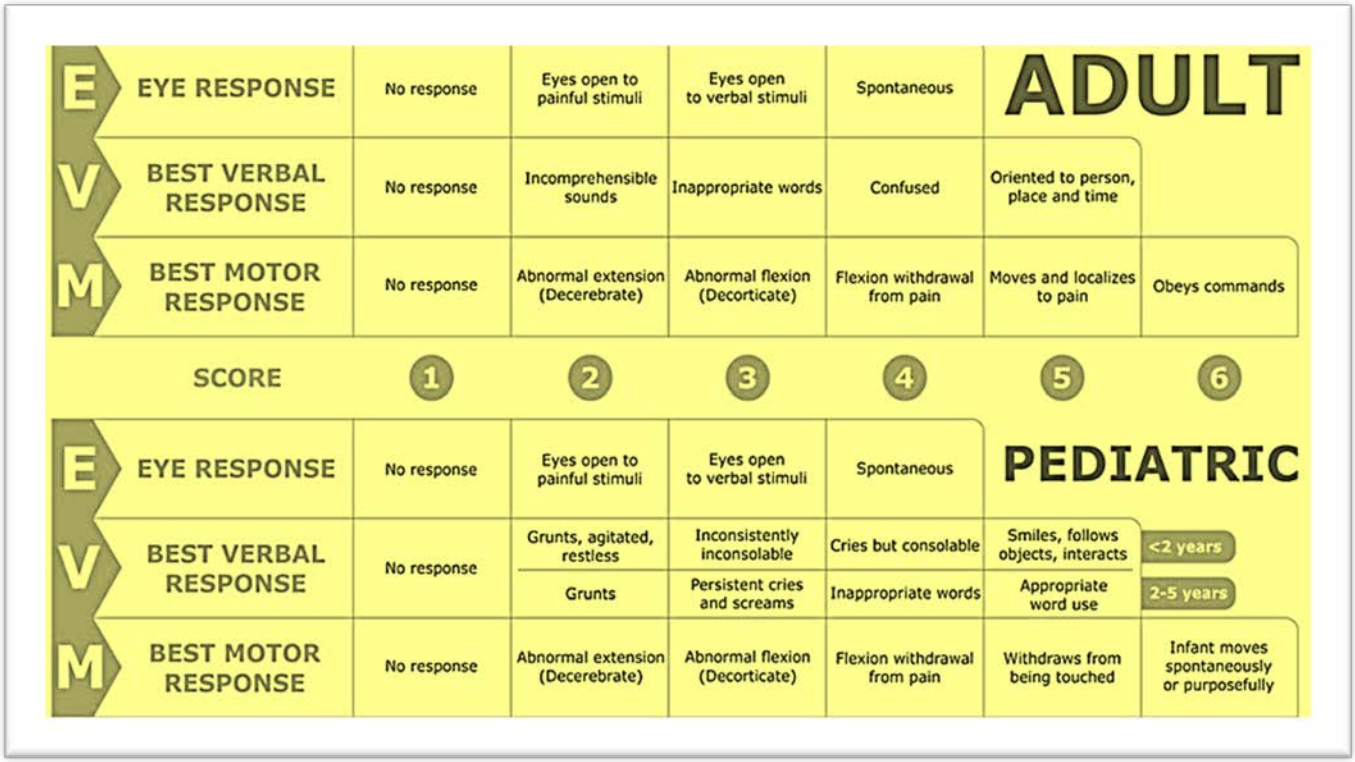
- **S**imple
- **T**riage
- **A**nd
- **R**apid
- **T**ransport *and*
- **R**espirations
- **P**erfusion
- **M**entation

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



E	EYE RESPONSE	No response	Eyes open to painful stimuli	Eyes open to verbal stimuli	Spontaneous	ADULT	
V	BEST VERBAL RESPONSE	No response	Incomprehensible sounds	Inappropriate words	Confused	Oriented to person, place and time	
M	BEST MOTOR RESPONSE	No response	Abnormal extension (Decerebrate)	Abnormal flexion (Decorticate)	Flexion withdrawal from pain	Moves and localizes to pain	Obeys commands
	SCORE	1	2	3	4	5	6
E	EYE RESPONSE	No response	Eyes open to painful stimuli	Eyes open to verbal stimuli	Spontaneous	PEDIATRIC	
V	BEST VERBAL RESPONSE	No response	Grunts, agitated, restless	Inconsistently inconsolable	Cries but consolable	Smiles, follows objects, interacts	<2 years
			Grunts	Persistent cries and screams	Inappropriate words	Appropriate word use	2-5 years
M	BEST MOTOR RESPONSE	No response	Abnormal extension (Decerebrate)	Abnormal flexion (Decorticate)	Flexion withdrawal from pain	Withdraws from being touched	Infant moves spontaneously or purposefully

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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
ROSC	return of spontaneous circulation
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

APPROVED ABBREVIATIONS

ABBREVIATION	MEANING
vs	versus
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

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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.

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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:_____

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State EMS Medical Director
Office of EMS
350 Capitol Street, Room 425
Charleston, WV 25301-3714

EMS Without Telecommunications
1-01-2015

2023 EDITION

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EMS MEDICATION FORMULARIES

ACETAMINOPHEN

Scope	EMT	AEMT	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	AEMT	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:
- If drawing from a vial, draw up the desired dose in a 10 ml syringe, dilute in saline for a total of 10 ml then administer 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, momentarily open the IV wide open, 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	AEMT	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:
- Hyperthyroidism.
- Diabetes mellitus.
- Convulsive disorders.

Pregnancy Cat. C

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 8 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.
Adult Bronchospasm	Give 5 mg with a mouthpiece, blow-by, or CPAP.

Supply: Unit dose vials containing 2.5 mg in 3 mL, 5 mg in 0.5mL, or 5mg 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	AEMT	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
- Prolonged QT interval or history of Long QT syndrome
- 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	AEMT	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	AEMT	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 1 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 with a goal of drying up secretiions.
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:

CEFAZOLIN

Scope | **PARAMEDIC**

Generic Name: **Cefazolin (sef a' zoe lin)**

Trade Name: Ancef, Cefacidal

Chemical Class: First-generation cephalosporin

Therapeutic Class: Beta-lactam antibiotic

Actions: Inhibits the biosynthesis of cell walls.

Pharmacokinetics: Elimination half-life 1.8 hours given IV and 2 hours given IM.
Excreted by the kidney.

Indications:
1. Patient with open long bone fracture in the pre-hospital setting.
2. Patient with a complete or partial amputation of an appendage or limb.

Contraindication: Hypersensitivity; Time of Injury >3 hours; It does not penetrate the CNS, so it is not useful against meningitis

Precautions: Hypersensitivity reactions: cross-hypersensitivity may occur in up to 10% of patients with a history of penicillin allergy. If an allergic reaction occurs, discontinue the drug. **A penicillin allergy is not a contraindication.**

Pregnancy Cat. B

Side Effects: *Common (1-10%)*

Gastrointestinal (nausea, vomiting, and diarrhea). If an allergy does occur, it will include anaphylaxis, urticaria, skin rash, and potential swelling.

Uncommon (< 1%)

Dizziness, headache, fatigue, itching, and transient hepatitis.

Administration: **Pediatric Dose**

(Age 1-12 years): 35 mg/kg to a max of 2 grams diluted in 10 ml of normal saline or sterile water over 3-5 minutes slow IVP.

Adult Dose

(Weight < 120 kg): 2 grams diluted in 10 ml of normal saline or sterile water over 3-5 minutes slow IVP.

Adult Dose

(Weight > 120 kg): 3 grams diluted in 10 ml normal saline or sterile water over 3-5 minutes slow IVP.

Supply: Vial contains 1 gm to be reconstituted in 10 ml of normal saline or sterile water.

Notes:
1. Use in patients with known renal impairment: dose adjustment required for patients with a creatinine clearance less than 55 mL/min. This will not be an issue for EMS as the first dose is not reduced, subsequent doses are where the dose reduction begins.
2. Can cause Clostridium difficile-associated diarrhea later in the course, not going to be a concern with the initial dose.

DEXAMETHOSONE (Decadron®)

Scope	AEMT	PARAMEDIC

Generic Name: **Decadron, Solurex, Baycadron**

Trade Name: Decadron®

Chemical Class: Corticosteroid, Anti-Inflammatory

Therapeutic Class: Endocrine-Metabolic Agent

Actions: Dexamethasone provides relief for inflamed areas of the body. It is used to treat a number of different conditions, such as inflammation (swelling), severe allergies, adrenal problems, arthritis, asthma, blood or bone marrow problems, kidney problems, skin conditions, and flare-ups of multiple sclerosis. Dexamethasone is a corticosteroid (cortisone-like medicine or steroid). It works on the immune system to help relieve swelling, redness, itching, and allergic reactions.

Pharmacokinetics: Biological half-life about 190 minutes. Duration of 4 – 6 hours.

Indication: Bronchospasm secondary to administration of Albuterol and Ipratropium Bromide.

Contraindications:
Peptic ulcers
Osteoporosis
Psychoses
Infectious diseases (e.g. herpes simplex, keratitis)
Diabetes
Hypertension
Hypersensitivity to the drug.

Side Effects:
CNS: Convulsions, headache, increased intracranial pressure with papilledema
CV: Bradycardia, cardiac arrest, cardiac arrhythmias, cardiac enlargement, circulatory collapse, congestive heart failure, hypertension, myocardial rupture following recent myocardial infarction, syncope, tachycardia, thromboembolism, thrombophlebitis, vasculitis, edema
EENT: blurred or diplopia, tinnitus
Other: nausea, vomiting

Administration
Adult: 10 mg IV/IO/IM
Pediatric 0.6 mg/kg up to a max dose of 10 mg IV/IO/IM

Supply: 1 mL in 4 mg, 5 mL in 20 mg, 10 mg/mL-1 mL vial

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:

DEXTROSE (Glucose®)

Scope	AEMT	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.

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).

Administration: ***OPTIONAL:*** ***Adult:*** Administer 10% dextrose in 50 mL (5 grams) boluses, one minute apart, to a maximum of 250 mL OR 25 grams of 50% dextrose IVP

OPTIONAL: ***Pediatric (5 - 12 years of age):*** Administer 1 mL/kg of 10% dextrose IV/IO to a maximum of 25 grams.

OPTIONAL: ***Patients 30 days (1 month) up to 4 years:*** Administer 2 mL/kg of 10% dextrose IV/IO to a maximum of 25 grams.

OPTIONAL: ***Patient less than 30 days (1 month):*** Administer 5 mL/kg of 10% dextrose IV/IO. (D10W is prepared by mixing one part of D50W – 10 ml and with four parts NS – 40ml).

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.

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.
- Administered as a second line agent in hemodynamically significant hypotension associated with cardiogenic shock unresponsive to IV fluids.

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 400 mg / 250 ml, 800 mg / 250 mL, 1600 mg / 250 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	AEMT	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
IV Infusion: onset near immediate with a half-life of 3.5 minutes

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.

AEMT 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

PARAMEDIC Administration:

Adult Anaphylaxis:	Administer 0.3 mg IM//. Repeat dose per MCP. Anaphylactic shock unresponsive to IM administration: infusion mix 1 mg 1,1,000 in 1 liter of normal saline (shake contents to mix) producing a concentration of 1 mcg/ml, titrate from 1 mcg/min to 10 mcg/min for a SBP > 90 mmHg or a MAP > 65 mmHg. Utilizing the Epinephrine infusion drip charts contained in the protocol.

Continued on next page

PARAMEDIC Administration:	*Adult Bronchospasm:*	Administer 0.3 mg IM/IM/IO. **[per MCP]**
		Administer 0.3 mg for patients >30 kg. Administer 0.15 mg for patients <30 kg.
	Pediatric Anaphylaxis:	Anaphylactic shock unresponsive to IM administration: infusion mix 1 mg of 1,1000 in 1 liter of normal saline (shake contents to mix) producing a concentration of 1 mcg/ml, titrate from 0.02 mcg/kg/min to 0.3 mcg/kg/min for a SBP > 70 + 2(age in years). Utilizing the Epinephrine infusion drip charts contained in the protocol.
	Pediatric Cardiac Arrest:	Administer 0.1 mg/kg ET
EMT Administration:	*Adult Anaphylaxis:*	Administer 0.3 mg IM. Repeat dose per MCP
	Pediatric Anaphylaxis:	Administer 0.3 mg for patients <30 kg.

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.

PEDIATRIC DOSING – 10 gtts/ml Solution Set

Age	Appr. Wt.	Dose	Age	Appr. Wt.	Dose
1	10kg	0.2-3 mcg/min = **2 - 30** gtts/min	6	22kg	0.44-6.6 mcg/min = **4.5 - 65** gtts/min
2	12kg	0.24-3.6 mcg/min = **2.5 - 36** gtts/min	7	25kg	0.5-7.5 mcg/min = **5 - 75** gtts/min
3	15kg	0.3-4.5 mcg/min = **3 - 45** gtts/min	8	27kg	0.54-8.1 mcg/min = **5.5 - 80** gtts/min
4	17kg	0.34-5.1 mcg/min = **3.5 - 50** gtts/min	9	30kg	0.6-9 mcg/min = **6 - 90** gtts/min
5	20kg	0.4 – 6 mcg/min = **4 - 60** gtts/min	10	32kg	0.64-9.6 mcg/min = **6.5 - 95** gtts/min

PEDIATRIC DOSING – 15 gtts/ml Solution Set

Age	Appr. Wt.	Dose	Age	Appr. Wt.	Dose
1	10kg	0.2-3 mcg/min = **3 - 45** gtts/min	6	22kg	0.44-6.6 mcg/min = **6.5 - 99** gtts/min
2	12kg	0.24-3.6 mcg/min = **3.5 - 5**4 gtts/min	7	25kg	0.5-7.5 mcg/min = **7.5 - 112** gtts/min
3	15kg	0.3-4.5 mcg/min = **4.5 - 68** gtts/min	8	27kg	0.54-8.1 mcg/min = **8 - 122** gtts/min
4	17kg	0.34-5.1 mcg/min = **5 - 77** gtts/min	9	30kg	0.6-9 mcg/min = **9 - 135** gtts/min
5	20kg	0.4 – 6 mcg/min = **6 - 90** gtts/min	10	32kg	0.64-9.6 mcg/min = **9.5 - 144** gtts/min

ADULT DOSING – 10 gtts/ml Solution Set

1 mcg/min = 10 gtts/min	6 mcg/min = 60 gtts/min
2 mcg/min = 20 gtts/min	7 mcg/min = 70 gtts/min
3 mcg/min = 30 gtts/min	8 mcg/min = 80 gtts/min
4 mcg/min = 40 gtts/min	9 mcg/min = 90 gtts/min
5 mcg/min = 50 gtts/min	10 mcg/min = 100 gtts/min

ADULT DOSING – 15 gtts/ml Solution Set

1 mcg/min = 15 gtts/min	6 mcg/min = 90 gtts/min
2 mcg/min = 30 gtts/min	7 mcg/min = 105 gtts/min
3 mcg/min = 45 gtts/min	8 mcg/min = 120 gtts/min
4 mcg/min = 60 gtts/min	9 mcg/min = 135 gtts/min
5 mcg/min = 75 gtts/min	10 mcg/min = 150 gtts/min

EPINEPHRINE 1:10,000

Scope	AEMT	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.

Supply: Prefilled syringe containing 1 mg in 10 mL

Notes:

EPIPEN®, EPIPEN JR. ®

Scope	EMT	AEMT	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 | **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/IO:* 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.

IN: Onset of action 7 minutes. Duration of action 1 hour.

Indication: Moderate to severe pain.

Contraindications:
- Known hypersensitivity
- Respiratory depression

Precautions:
- Use with caution with suspected traumatic brain injury.
- Use with caution in patients with COPD.
- Use with caution in patients with cardiac bradyarrhythmias.

Pregnancy Cat. C

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 over 1 to 2 minutes. IN administered by atomization device no more than 1 ml (50 mcg) per nostril. Repeat doses require MCP order.
Pain Pediatric	1 mcg/kg up to 50 mcg IM, IV, IO over 1 to 2 minutes. IN administered by atomization device no more than 1 ml (50 mcg) per nostril. 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. IN administered by atomization device no more than 1 ml (50 mcg) per nostril.
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	AEMT	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	AEMT	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 also be administered in the following instances per **MCP Order:**
  - 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).
  - To treat anaphylaxis refractory to epinephrine because they may be on a beta blocker. Administer 1 mg IV/IM/IO.
- If Glucagon is administered recurrent hypoglycemia is highly likely and such patients should be transported.

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, especially in the setting of seizure/come following exposure to a structure fire.

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	AEMT	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.
Pediatric patients < 1 year old

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 8 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 < 1 years of age.
	Pediatric Bronchospasm	0.5 mg for children 6 – 12 years of age 0.25 mg for children < 6 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 standalone 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

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.
2. Ketamine administration is optional and requires access to a video laryngoscope.

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	AEMT	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 and COPD exacerbation non-responsive to standard medications.

Contraindications: Third-degree AV block.

Administer with caution if SBP < 90 mmHg, requires IV access and a fluid bolus to counteract potential exacerbation of hypotension.

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]**.

Bronchodilation: 2 g IV over 20 minutes

Supply: Vial containing 1 g in 2 mL

Notes:

MIDAZOLAM (Versed®)

Scope: 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 | **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.
- End-Stage renal disease

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	AEMT	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 / AEMT

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) or 4 mg IN (2 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	AEMT	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®) within the last 3 days.

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	AEMT	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	AEMT	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 / AEMT
- 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	AEMT	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	AEMT	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:

- Cardiac arrest in a dialysis patient/suspected hyperkalemia. Must be an early treatment consideration.
- Tricyclic antidepressant (TCA) or wide-complex tachycardia in the setting of overdose.
- Prolonged cardiac arrest.
- Known metabolic acidosis.
- 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
- Can worsen a respiratory acidosis if not properly ventilating
- 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 50 mEq IV/IO

Pediatric Contact **[Medical Control]**.

Supply: Prefilled syringe containing 50 mEq in 50 mL (8.4% solution).

Notes:

TETRACAINE HCL

Scope	EMT	AEMT	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 Two (2) drop topically in the eye(s) as needed in conjunction with Morgan Lens insertion. Discard unused portion.

Supply:

Notes:

THIAMINE

Scope	AEMT	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. $t_{1/2}$ = 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:
- Adult systolic blood pressure less than 90 mmHg.
- Pediatric systolic blood pressure less than 70 + 2 (age in years) or signs of hypoperfusion.
- 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.).
- Penetrating wounds to the thorax or abdomen.
- Contact **MCP** 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	**Adult:** IV infusion of 1 gram Tranexamic Acid infused over 10 min. Piggyback the TXA infusion into an already established IV infusion. **Pediatric:** 20 mg/kg (max 1 gram) IV bolus over 10 minutes.
Maintenance Dose:	**Adult:** IV infusion of 1 gram Tranexamic Acid infused over 8 hours. Piggyback the TXA infusion into an already established IV infusion. **Pediatric:** Administer 2 mg/kg (max 1 gram) Tranexamic Acid (TXA) infused over 8 hours.

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

2023 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.

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:	
Protocol Number Assigned:	
Date Reviewed by EMSAC:	
Date Reviewed By MPCC:	
Decision: ☐ Approved ☐ Denied ☐ Pilot Project ☐ Requested additional Information	
Posted to 30 day comment period:	
Date Reviewed by DHHR Commissioner:	
WVOEMS Medical Director Signature: _____	
DHHR Commissioner 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

ANNUAL PROTOCOL UPDATE ANNOTATIONS

This appendix is developed to give a quick overview of update topics, address specific goals of updates, and to relay specific annotations. This section does not replace a full 2-hour review of the protocols required between January 1 and February 14 annually. Protocols go into effect each year on February 15th and all providers are required to be updated prior to continuing to provide patient care.

Update 2022:

- Routes of Naloxone administration have been updated at all levels
- Appendix K has been added to all protocols
- Optional D10 has been added to the diabetic protocols 5604 and 4604 for AEMT and paramedic level providers
- Acceptable routes of medication administration were updated throughout to include Fentanyl IM and IN as well as Morphine IM.
- Patient Comfort protocol updated for paramedic level providers
- Communications Protocol updated at all levels
- Several adjustments were made to the formularies
- 4108, 4214, 4402, 4412, 4501, 4601 were updated to include the use of an EPI drip in place of Dopamine. Education will be required on mixing and administering per the tables included in the protocols.
- 4607 Behavioral Emergencies was changed to require availability of a video laryngoscope if administering optional Ketamine.
- 4902 Patient Comfort protocol was updated to allow Ketamine as a first line medication.
- King Airway has been replaced with the i-gel®
- ROSC Protocols 5214 and 4214 were updated to clarify mixing and administration of an Amiodarone drip.
- MPCC released the Adult Fever protocol 4610, 5610, and 6610 in February of 2022 for immediate use.

2022 SPECIAL ANNOTATIONS:

- The King® Airway has been replaced with the i-gel® airway throughout the protocols where a supraglottic airway is indicated. EMS agencies are permitted to continue to use current stock of King® Airways until depleted or expired with a final required i-gel® implementation date of July 1, 2023.

Update 2023:

- The initial treatment section of all protocols was updated to include determining factors of interfacility transports at each respective level.
- Appendix J WVOEMS Protocol Submission Template was updated to include an assigned protocol number and sign off by the DHHR Commissioner.
- 4112 Tranexamic Acid (TXA) optional protocol has been updated as follows:
  - allows the administration of TXA in pediatric patients. Please review the

administration chart.
    - Allows administration to pregnant patients following consultation with MCP.
    - Added indication: Adult and Pediatric patients with acute traumatic brain injury (TBI) who are within 3 hours of injury, have a Glasgow Coma Scale (GCS) score of 9 - 15 and are without major extracranial bleeding.
- Protocol 4113 Antibiotic Administration for Long Bone Fractures has been added to the paramedic protocols as an optional protocol. The protocol allows for the pre-hospital administration of Ancef. Please refer to the dosing chart.
- The Morgan Lens protocols 8103, 7102, and 5801 have been updated at all levels to add clarification to the indications for use.
- 9101 Death in Field protocol has been updated to detail the information that should be collected by EMS prior to contacting the Medical Examiner as well as update the contact information for the Medical Examiner's Office.
- Protocol 9207, Wearable Cardioverter Defibrillator (WCD), has been added to all level as an informative protocol to assist the EMS provider when encountering patients that may be utilizing one of these devices.
- 9206 BLS Pre-established Treatment Monitoring has been updated to include Negative Pressure Wound Therapy Systems. The protocol also clarifies the monitoring of IV fluids.
- Protocol 9205 Sports Medicine was updated to include the new heat related illness treatment. This was initially put out as a memo and is now included within protocol.
- EMT protocol 6412 was updated to allow the BLS provider to administer 0.15 mg IM of Epinephrine instead of the previous 0.3mg.
- 8301 and 5803 CPAP Protocol changed to Non-Invasive Ventilation allowing the use of Continuous Positive Airway Pressure (CPAP) and Bilevel Inspiratory Positive Airway Pressure (BiPAP).
- Protocol 6606 was updated to include the optional administration of 4 mg Naloxone intranasal (IN) via atomizer. If patient does not show signs of improvement (adequate respiratory response/increased LOC) administer an additional 4 mg IN and request ALS backup.
- Protocol 4611, 5611, and 6611 Adult Neglect added to clarify that EMS providers are mandated reporters in these situations. Protocol compliments existing pediatric protocols 4404, 5404, and 6404 which was modified to match state code requirements.
- 6901 Airway Management protocol was updated to include an ideal body weight chart in Kg.
- 9208 Patient Refusal Guidelines was added to give EMS providers a reference guide when encountering difficult patient refusal scenarios.
- 4607 Behavioral Emergencies was changed to reflect the correct terminology of "Hyperactive Delirium with Severe Agitation". In addition, the initial IM dose of Ketamine has been changed to 4mg/kg to a max dose of 300 mg. Administration requires MCP order.

ANNUAL PROTOCOL UPDATE ANNOTATIONS

- 5411 Pediatric Diabetic Emergencies modified the Glucagon to match the paramedic protocols based on the patient being weight > or < 20kg.
- Appendix E was modified to include a pediatric Glasgow Coma Scale.

2023 SPECIAL ANNOTATIONS:

- All ALS and BLS ambulances must have continuous CO2 Monitoring devices in place prior to mandatory implementation date of January 1, 2024. These are to be utilized at any time an airway device is in place.