2026
EDITION

WEST VIRGINIA STATEWIDE EMS PRE-HOSPITAL PROTOCOLS

Empowering Success

West Virginia Department of HEALTH
OFFICE OF EMERGENCY MEDICAL SERVICES

EMT AEMT PARAMEDIC

EMSW

WEST VIRGINIA STATEWIDE EMS PROTOCOLS

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WEST VIRGINIA STATEWIDE EMS PROTOCOLS

The first set of West Virginia EMS Statewide 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 services in West Virginia.

Unified statewide protocols have 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. From a patient care prospective, more uniform standards should be applicable to EMS on a statewide basis. The 2014 initiative created individualized statewide protocols with respect to discipline. This 2024 release truly creates one unified set of statewide protocols for the 911 setting. These protocols also provide commonality for Providers, Medical Command and MCPs to work from.

Representatives from every region of the state have contributed to the development of these protocols overseen by the protocol committee of the West Virginia EMS Advisory Council. Input from EMS providers and Medical Directors in all regions was welcomed and encouraged throughout the process of development. The target was consistent quality patient care utilizing evidence-based medicine while allowing EMS providers to critically think through patient care. The protocol committee focused on a compact, modern product that can be utilized quickly and efficiently by all involved in the EMS circle of care.

These protocols will continue to grow over time as the EMS profession advances. They will remain a dynamic document with annual updates required for EMS providers to remain compliant and proficient.

EMS personnel who use these protocols are encouraged to provide suggestions for improvement and feedback through their Agency Medical Director to their Regional Medical Director utilizing the process outlined in the appendix.

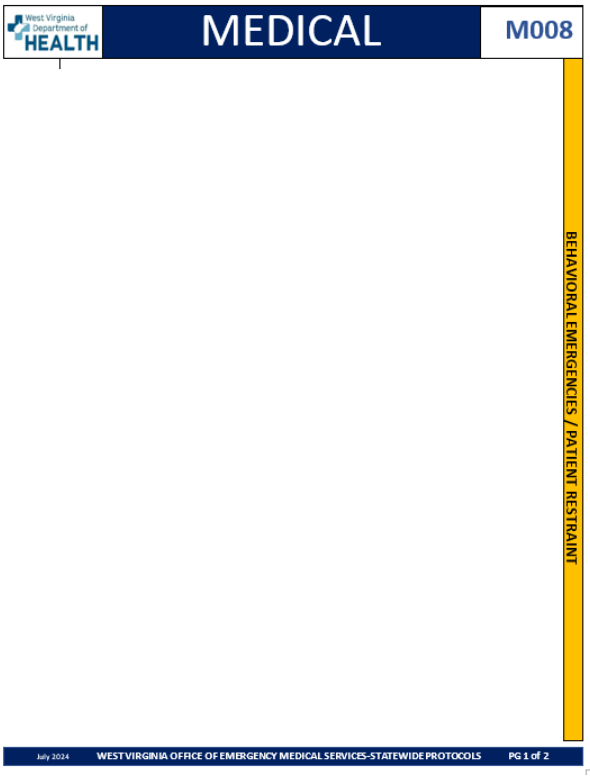
These protocols are a critical part of our quest to assist EMS personnel in providing the citizens and visitors of the State of West Virginia the finest emergency medical care in the country.

TOC

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.

These protocols are a guide to decision making and command that EMS providers are competent in their respective discipline allowing them to invoke critical thinking skills to properly treat respective patients. These protocols come with great responsibility that must be noted by the EMS providers utilizing them.

I. **Protocol Layout:**



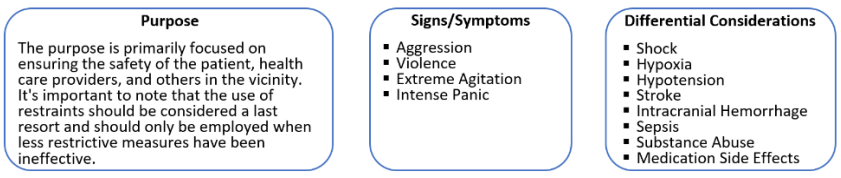
A. The following information is found on each protocol
   - Logo
   - Classification of Protocol
   - Protocol Number
   - Title of Protocol
   - Release Date of the Particular Protocol
   - Page Number(s)

B. All protocols are written in algorithmic format with arrows directing the provider through the respective treatment possibilities. As the algorithm progresses, levels of care required to perform certain skills may also change.

C. EMS disciplines are unified into singular protocols. Indications of respective provider level of care are identified beside each treatment modality.
   - **E** – EMT Level
   - **A** – AEMT Level
   - **P** – Paramedic Level

E A P	Perform Initial Treatment/Universal Patient Care. Perform rapid glucose for patients with altered mental status.

D. Treatment Protocols begin with the following information:
   - Purpose
   - Signs/symptoms
   - Differential Considerations



E. Some protocols contain light blue boxes. These boxes indicate significant information or considerations to assist the provider in the critical thinking process.

Precautions/Considerations:
- Certain substances such as heavy metals may cause further burning if flushed with water.
- If eyes are involved, flush for at least 20 minutes.
- Remove clothing from around burned area but DO NOT remove/peel off skin or tissue.
- Remove and secure all jewelry and tight-fitting clothing.
- Consider Inhalation Protocol if facial burns, singed face or nasal hairs, swollen, sooty, or reddened mucous membranes, or patient was in a confined space and/or unconscious.

II. Icons

A. Any item in **red** throughout the protocols indicates an "***action***" item on the part of the provider. The provider shall perform action prior to proceeding through the algorithm.

B. Contact Medical Command and Medical Command Physician icons are identified in red as follows:

C. These protocols do not have an individual pediatric section. Pediatric Icon will be displayed in the lower left corner of any adult protocol that has a corresponding pediatric protocol. In addition, that corresponding protocol will be directly behind the adult protocol in each respective protocol category. The pediatric Icon is as follows:

III. Protocol Numbering:

A. The protocols are numbered by a simple three (3) digit number preceded by the category abbreviation.
- AUC – Adult Universal Care
- PUC – Pediatric Universal Care
- T – Trauma
- PT – Pediatric Trauma
- C – Cardiac
- PC – Pediatric Cardiac
- R – Respiratory
- PR – Pediatric Respiratory
- M – Medical
- PM – Pediatric Medical
- E – Environmental
- PE – Pediatric Environmental
- GL – Guidelines
- Appendices

IV. **Dates**

- The most current protocol date will be displayed on the cover of the protocols. The date on the individual protocols indicate when/if a particular protocol was updated.

V. **Guidelines**

A. The 2024 protocols utilize guidelines to assist the EMS provider in decision making. The guidelines encompass the old procedural and special operations protocols.

B. These guidelines are provided to assist in core skills and components of EMS care or contain information not routinely utilized.

VI. **Initial Treatment / Universal Patient Care:**

- The Initial Treatment / Universal Patient Care protocols are to be used universally on all patients as a starting point for assessment and treatment prior to moving on to a specific protocol. The universal protocols have been divided into adult and pediatric and are 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.

VII. **Special Pediatric Note**

- For the purposes of these protocols, any patient ≤12 years old or <40 kg 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 the Medical Command Physician as needed in making this determination.

TOC

UNIVERSAL CARE

Purpose

This protocol is designed to guide the provider in the initial and ongoing assessment of 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.
- The goal for on-scene time should not exceed ten minutes for high priority trauma and medical patients.

Signs/Symptoms

- Medical s/s will be associated with the Nature of the Illness.
- Trauma signs and symptoms will be determined by the Mechanism of Injury.

Differential Considerations

- Altered Mental Status/Overdose
- Cardiac Management
- Airway Management
- Respiratory Distress
- Field Trauma Triage

E	BLS must be cognizant of ALS availability, applicability of requesting ALS, and response time of ALS assistance.
E A P	Medical Command should be notified as soon as possible when applicable to prepare the receiving hospital for the patient.
E A P	Anytime a provider is uncertain of how to best manage a patient, on-line Medical Command must be contacted for instruction.
E A P	Evaluate the risks and benefits of an emergent transport (lights and siren).
E A P	Pediatric patients are considered patients ≤12 years old and/or <40 kg. ▪ Treatment may vary based on the presentation and size of the patients ▪ The provider shall critically think through appropriate care based on presentation.

SCENE SIZE-UP

E A P	▪ Personal Protective Equipment ▪ Assess scene safety ▪ Determine number of patients ▪ MOI ▪ Additional resources

PRIMARY SURVEY

E A P	▪ General Impression • Appearance • Work of breathing • Circulation ▪ Patient's mental status ▪ Assess ABCDE's ▪ Treat immediate life threats ▪ Acquire 12 lead EKG ▪ Determine Priority ▪ Determine transport status
A P	▪ Establish IV/IO access ▪ Apply cardiac monitor

SECONDARY SURVEY

E A P	▪ Assess vitals ▪ Determine chief complaint ▪ Determine history of present illness - SAMPLE ▪ Perform ongoing assessment ▪ Reassess interventions ▪ Conduct full physical exam ▪ Perform ongoing exams

DETERMINE PATIENT PATHWAY

MEDICAL

E A P	Determine the appropriate Protocol for treatment
E A P	Consider patient comfort

TRAUMA

E A P	Consider Field Trauma Triage and Field Aeromedical
E A P	Initiate a mass casualty plan if necessary and initiate triage
E A P	Determine the appropriate Protocol for treatment
E A P	Consider manual in-line stabilization of the head and neck for suspected spinal injury as appropriate
E A P	If signs of impending CNS herniation attempt to maintain ETCO2 at 35mm/Hg by ventilating at 12-20 bmp

INTER-FACILITY

E A P	Obtain appropriate report, labs and documents
E A P	Determine the appropriate Class & Protocol for Transport ▪ EMT-B ▪ AEMT ▪ EMT-P ▪ C3-IFT-P
E A P	Inspect all interventions prior to transport
E A P	Confirm an accepting physician

UNIVERSAL CARE

E A P	Medications which the patient may need while in transport shall be identified. ▪ The sending physician MUST provide written orders outlining exact route and dose of the medication ▪ Class 4 Paramedics must obtain these orders in writing prior to leaving the facility

SPECIAL CONSIDERATIONS

- Perform a Blood Glucose reading on all patients exhibiting altered mental status
- DO NOT use nasal cannulas in infants and small children. Use Blow-by or mask to keep SPO2 at 94-99%
- Consider patient comfort for all patients when appropriately indicated
- Respiratory Distress
  - Severe Distress – Administer Oxygen with a non-rebreather mask at 15 L/minute
  - 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%
- Patients >65 years of age may benefit from starting narcotic administration at half the dose. This consideration should be applied throughout the protocols when treating these patients.
- Equipment needed for initial evaluation and stabilization to be taken in on every patient:
  - First-in bag
  - Cardiac monitor
  - Suction (some form of suction device)
- Thoroughly evaluate every patient prior to moving to the truck. Extenuating circumstances are understandable such as unsafe scene.

UNIVERSAL CARE

Purpose

This protocol is a baseline to assess and manage pediatric patients.

Treat "life-threats" on scene and attempt to keep on-scene time <10 min or within 5 min of extrication time.

Signs/Symptoms

- Pediatric patients may experience respiratory distress as a result of many causes.
- Medical and Trauma s/s will be associated with the nature of illness or mechanism of injury.

Differential Considerations

- Altered mental status
- Respiratory distress
- Fever/Infection-viral/bacterial
- Abuse/Neglect
- Allergic reaction/Anaphylaxis
- Trauma triage
- MCI events

EAP	Perform Initial Treatment / Universal Patient Care Protocol.
EAP	Pediatric patients are considered patients ≤12 years old and/or <40 kg. ▪ Treatment may vary based on the presentation and size of the patient. ▪ The provider shall critically think through appropriate care based on presentation.
EAP	Anytime a provider is uncertain of how to best manage a patient, on-line Medical Command must be contacted for instruction.
EAP	Evaluate the risks and benefits of an emergent transport (lights and siren).
E	BLS must be cognizant of ALS availability, applicability of requesting ALS, and response time of ALS assistance.

TREATMENT PATHWAYS

Medical

EAP	Perform a hands-on physical assessment utilizing ABCDE's.
EAP	Utilize the PAT (Pediatric Assessment Triangle) for appropriate patients.
EAP	Perform focused history, more detailed physical exam and on-going assessment appropriately.
EAP	Provide immediate resuscitation and make a transport decision.
EAP	Pediatric patients rarely have cardiac problems as primary issues.
EAP	Do not use nasal cannula in infants and small children. Use blow-by O2 to obtain SPO2 >94%.

Special Needs

EAP	Listen to the caregiver and respect their guidance.
EAP	Obtain and transport the patient's "go bag".
EAP	Perform a hands-on physical assessment utilizing ABCDE's.
EAP	Utilize the PAT (Pediatric Assessment Triangle) for appropriate patients.
EAP	Perform additional assessments and treatments as appropriate.
AP	If patient is unconscious and IV access is unobtainable, establish IO.
EAP	Do not use nasal cannula in infants and small children. Use blow-by O2 to obtain SPO2

Trauma

EAP	Perform initial trauma assessments using ABCs and AVPU or GCS.
EAP	Immobilize if appropriate according to Spinal Trauma Protocol.
EAP	Evaluate patient for shock and treat appropriately.
EAP	Consider aeromedical and destination decisions.
EAP	Consider Nasogastric tube placement if patient has supraglottic placement or intubation with no facial trauma.
EAP	Ped patients 10-40 lbs., not in a viable car seat, shall be transported utilizing a WVOEMS approved device.
EAP	Alert Medical Command early for all MCI's.

For the purposes of these protocols, any patient ≤12 years old and/or <40 kg 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 the Medical Command Physician as needed in making this determination.

TOC

Purpose

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

Signs/Symptoms

D-Deformity
C-Contusion
A-Abrasion
P-Penetrating
B-Bruising
T-Tenderness
L-Lacerations
S-Swelling

Differential Considerations

- Internal hemorrhage
- Cervical/Spinal stabilization
- Excessive bleeding with tourniquet use

E
- Perform Initial Treatment / Universal Patient Care Protocol.
- Determine patient priority status – Stable/Nonstable.
- Treat all painful, swollen, or deformed areas as fractures.
- Consider Patient Comfort treatment.

SEVERE BLEEDING

E A P Apply Direct Pressure

Bleeding Controlled

E A P
- Transport and monitor.
- Consult Medical Command to determine best mode of transport and appropriate destination.

Bleeding Uncontrolled

E A P
- Continue Direct Pressure.
- Extremity: apply commercial tourniquet proximal to bleeding site and tighten until bleeding stops
- Note time of application.

E A P

If bleeding continues:
- Consider a 2nd tourniquet on the extremity
- Apply Hemostatic agent (if available). *Packing the wound is appropriate treatment.*
- Apply pressure dressing.

A P

Consider:
TXA
- Loading Dose: IV infusion of 2 grams Tranexamic Acid (TXA) diluted in 100ml NS infused over 10 minutes.

Indications:
- Known or suspected significant hemorrhage after crush, blunt or penetrating trauma.
- Time of injury is <3 hours from initiation of TXA.
- 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.
- Transport to a definitive trauma center that has the capability to administer/continue TXA.

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

SEVERE BLEEDING

SEVERE BLEEDING

TOURNIQUET CONVERSION

Procedure

E
A
P

- Evaluate a patient following tourniquet placement.
  - Assure appropriate placement, should be just proximal to the wound and not over a joint. If the TQ is placed too proximal, place another TQ distally (just proximal to the wound) and release the inappropriately placed TQ.
  - Expose the wound to assure no active arterial bleeding
    - If active arterial bleeding is present, tighten TQ and pack wound (hemostatic gauze and pressure dressing), wait (3) minutes before considering TQ take down step
    - If no active arterial bleeding from the packed wound, proceed with TQ take down step
- Tourniquet Conversion (Take Down) Step
  - Slowly loosen the TQ and closely observe the site for any signs of continued bleeding
  - If bleeding occurs, stop releasing the TQ and try to control with direct pressure
    - If bleeding controlled with direct pressure, assess distal perfusion.
    - If distal perfusion is present, apply pressure dressing and leave TQ in current position.
    - If no distal perfusion is present, relax TQ further until perfusion is restored
  - If bleeding is not controlled with direct pressure, replace the TQ at the previous tension
  - If the conversion fails, it may be reattempted X1 in 15 minutes
  - Every effort should be made to convert tourniquets in less than (2) hours if bleeding can be controlled by other means
  - If loosening the TQ to allow blood flow into the injured limb simply results in continued bleeding, this is a failed conversion, stop further attempts.
  - If the TQ is released and distal perfusion is restored, this could result in increased pain in the affected limb, be prepared to treat appropriately
  - If the TQ has been in place > 2 hours prior to attempted conversion, proceed with the Crush Syndrome protocol
  - If bleeding persists after placement or replacement of a TQ and the initial TQ cannot be tightened any further, apply a second TQ proximal to the first to control further bleeding.
  - Assure an appropriate packing and pressure dressing is in place

Note:
- **Never** attempt tourniquet takedown on a limb that has been amputated. The tourniquet should be placed as close to the amputation as possible but not over a joint.

TRAUMA - PEDS

Purpose

- Isolated musculoskeletal and extremity injuries are rarely first priority.
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Differential Considerations

- Internal hemorrhage
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- Excessive bleeding with tourniquet use

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- Perform Initial Treatment / Universal Patient Care Protocol.
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- Treat all painful, swollen, or deformed areas as fractures.
- Consider Patient Comfort treatment.

SEVERE BLEEDING

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- Transport and monitor.
- Consult Medical Command to determine best mode of transport and appropriate destination.

Bleeding Uncontrolled

E A P
- Continue Direct Pressure.
- Extremity: apply commercial tourniquet proximal to bleeding site and tighten until bleeding stops
- Note time of application.

E A P

If bleeding continues:
- Consider a 2nd tourniquet on the extremity
- Apply Hemostatic agent (if available). *Packing the wound is appropriate treatment.*
- Apply pressure dressing.

A P

Consider:
TXA
- 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.
- Maintenance Dose: IV infusion of 15 mg/kg Tranexamic Acid (TXA) diluted in 100ml or 250 ml NS infused over 8 hours.

Indications:
- Known or suspected significant hemorrhage after crush, blunt or penetrating trauma.
- Time of injury is <3 hours from initiation of TXA.
- 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.
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Note:
- **Never** attempt tourniquet takedown on a limb that has been amputated. The tourniquet should be placed as close to the amputation as possible but not over a joint.

SPINAL MOTION RESTRICTION

Purpose

To define the indications for selective spinal immobilization in an attempt to stabilize existing injuries and mitigate the risk of causing additional harm to patients with acute neurologic and/or spinal column compromise.

Signs/Symptoms

- Paresthesia
- Loss of sensation in extremities
- Weakness
- Loss of urethral or sphincter control

Differential Considerations

- Distracting injuries from trauma
- Altered Mental Status
- Apparent Intoxication

E A P Perform Initial Treatment / Universal Patient Care Protocol.

SPECIAL CONSIDERATIONS

- Prevent and/or reduce further spinal column or spinal cord injury through application of appropriate evidenced-based immobilization.
- Patients not immobilized or immobilized with a C-Collar only, shall be transported supine with the head elevated no higher than 30°.

SPINAL INJURY CONSIDERATIONS

CERVICAL COLLAR

E A P

- Patient complaint of neck pain.
- Tenderness upon palpation of neck.
- Altered Mental Status (including agitation and neurological deficit).
- Evidence of drug/alcohol ingestion.

FULL MOTION RESTRICTION

E A P

- Abnormal neurologic exam/complaint.
- Distracting injuries.
- Tenderness upon palpation of spine
- Patient falls into any of the following categories:
  - Drug/alcohol ingestion or chemically altered
  - Altered Mental Status (even if its patient's baseline).
  - Other non-communicable instances.

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 except in the following instances:

- Backboard is being utilized as an element of the splinting strategy such as multiple long bone fractures.
- The patient is at risk of vomiting but unable to protect their own airway.
- Cases in which the patient is agitated or unresponsive.
- Removal of the backboard would otherwise delay transport in a critical patient.
- Exclusion criteria:
  - No history of spinal injury.
  - Patients with penetrating trauma to the chest, abdomen, head, neck, or back.
  - Patients with non-traumatic back or neck pain related to movement, position, or heavy lifting.

TOC

Purpose

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 lifesaving.

Signs/Symptoms

- Absent breath sounds
- No sliding by ultrasound
- SBP < 90 mmHg in adults or SBP < 80 mmHg in children
- Patient has altered mental status
- Remember that tracheal deviation is a late sign.

Differential Considerations

- Closed or Penetrating chest trauma with respiratory distress
- Hypotension/shock

EAP Perform Initial Treatment / Universal Patient Care Protocol.

TREATMENT PATHWAYS

Flail Segment/Impaled Object

EAP
- Stabilize flail segment
- Stabilize impaled object

Open Chest Wound

E A P Seal wound with application of an occlusive dressing

Tension Pneumothorax

A P Perform chest decompression on affected side

E A P
- Transport immediately
- Contact Medical Command for additional treatment options

- Chest decompression is only indicated for a true tension pneumothorax.
- 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
- If tension pneumothorax develops in a patient with a sealed sucking chest wound, attempt to resolve by releasing air from the seal

TOC

TRAUMA

Purpose

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

Signs/Symptoms

- Deformities
- Contusions especially periumbilical and flank areas
- Abrasions
- Punctures
- Evisceration
- Distention
- Tenderness
- Rigidity

Differential Considerations

- Blunt Trauma
- Penetrating Trauma
- Accompaniment with head, chest, pelvic injuries, diaphragmatic ruptures,
- Internal Bleeding
- Lacerated Spleen/Liver
- Vascular tears
- Kidney damage
- Hypovolemic shock

E	Perform **Initial Treatment / Universal Patient Care Protocol**
A	If open abdominal wound, apply direct pressure and transport to closest appropriate facility.
P	Contact Medical Command for any additional treatment

PENETRATING TRAUMA

E	Considerations:
A	▪ Stabilize impaled objects with bulky dressings
P	▪ Control external bleeding ▪ Search and locate exit wounds, when applicable

EVISCERATING TRAUMA

E	Considerations:
A	▪ Cover eviscerations with moist, sterile dressings
P	▪ Apply occlusive bandage over dressings

BLUNT TRAUMA

E	Considerations:
A	▪ Recognize and reassess
P	▪ Rapid transport

TOC

TRAUMA

Purpose

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

Signs/Symptoms

D-Deformity
C-Contusion
A-Abrasion
P-Penetrating
B-Bruising
T-Tenderness
L-Lacerations
S-Swelling

- Open orthopedic trauma fracture
- Large grossly contaminated wound

Differential Considerations

- Internal hemorrhage
- Cervical/spinal stabilization
- Excessive bleeding with tourniquet use
- Open long bone fracture
- Complete or partial amputation of an appendage or limb

E
A
P

- Perform Initial Treatment / Universal Patient Care Protocol.
- Treat all painful, swollen, or deformed areas as fractures.
- Determine patient priority status – Stable/Nonstable.
- Consider Patient Comfort treatment.

TREATMENT PATHWAYS

Pelvic Injury

E
A
P

- Splint with sheet or commercially available immobilization device.

Extremity Injury

E
A
P

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

Amputation Injury

E
A
P

- Bandage extremity with sterile compress dressing just tight enough to control bleeding.
- If partial or total amputation:
  - wrap severed part in sterile gauze slightly dampened with normal saline.
  - place in sealed container (waterproof bag) immersed in ice water.

OPEN FRACTURE / GROSS CONTAMINATION OF AN OPEN WOUND

A
P

If injury occurred <3 hours prior, administer:
Cefazolin

- 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.

E
A
P

Contact Medical Command for assistance with destination determination, as not every facility can manage such patients. The decision will be based upon the patient's airway, hemodynamic stability, the capabilities of local facilities, and transport time to nearest appropriate facilities.

TOC

TRAUMA - PEDS

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- Excessive Bleeding with tourniquet use
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TREATMENT PATHWAYS

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Extremity Injury

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Amputation Injury

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- If partial or total amputation:
  - wrap severed part in sterile gauze slightly dampened with normal saline.
  - place in sealed container (waterproof bag) immersed in ice water.

OPEN FRACTURE / GROSS CONTAMINATION OF AN OPEN WOUND

A
P
If injury occurred <3 hours prior, administer:
Cefazolin
- 30 mg/kg to a max of 2 Grams Cefazolin diluted in 10 ml Normal Saline or sterile water over 3 – 5 minutes slow IVP.

E
A
P
Contact Medical Command for assistance with destination determination as not every facility can manage such patients. The decision will be based upon the patient's airway, hemodynamic stability, the capabilities of local facilities, and transport time to nearest appropriate facilities.

TOC

Purpose

Pre-hospital treatment of head injuries is to prevent further neurological deterioration until definitive care can be provided. The purpose of this protocol is to minimize the adverse effects of increased intracranial pressure and to maintain optimal oxygenation and cerebral perfusion in head injured patients.

Signs/Symptoms

- Abnormal combativeness
- Hypertension
- Brain Herniation/ICP
- Decreasing GCS
- Decorticate/decerebrate posturing
- Seizures/numbness
- Irregular breathing
- Bradycardia
- unequal pupils/dilated pupils/non-reactive
- Nausea/vomiting

Differential Considerations

- Hypoxia
- Hypotension
- Over-sedation
- Hyperventilation

E A P	Perform Initial Treatment/Universal Patient Care
	Airway Management Considerations: ▪ Place all patients on high flow oxygen while maintaining SpO2 ≥94%. ▪ If no signs of CNS herniation, ventilate 10 - 12 bpm to maintain ETCO2 at 35 - 45 mm/Hg. ▪ If signs of CNS herniation (increasing BP, bradycardia, decreasing GCS, dilation of one pupil, and decerebrate or decorticate posturing) are present, then ventilate to maintain end tidal CO2 at 35mm/Hg.
	Identify indications of Herniation Syndrome and assess the presence of Cushing's Triad.
	Progressive deterioration with known head trauma: Defined as a decrease in the patient's GCS score of more than two points from the patient's prior best score in a patient with an initial GCS < 9.
A P	Maintain systolic BP> 110 mmHg for adults and BP> 70 + 2(age in years) for pediatric patients. ▪ Maintain with Isotonic fluids.
P	Consider Blood administration over isotonic fluids when active hemorrhage is known or suspected.

TREATMENT

E A P	Perform and document neurological status checks every five (5) minutes
	Elevate head 30 degrees
	PEEP above 5 cm/H2O should be avoided unless needed for adequate oxygenation as it may contribute to an elevated ICP
	Consider gastric decompression via OG/NG tube, avoid NG in maxillofacial trauma
	Monitor airway, vital signs, and level of consciousness repeatedly at scene and during transport
	Treat associated symptoms per appropriate protocol
	Status changes are important.
A P	Consider TXA for 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. Refer to Severe Bleeding Protocol.
P	If patient exhibits S/S of herniation, administer: **Hypertonic Saline 3%** ▪ Adult: 250ml IV/IO over 10 minutes ▪ Pediatric: 3 ml/kg IV/IO over 10 minutes (not to exceed 250 ml)

TOC

Purpose

Patients who are found in full cardiac arrest resulting from trauma have an essentially zero chance of survival. If the patient has any signs of life (pulse or respirations), rapid transportation and treatment offer the only hope for survival. A witnessed traumatic arrest requires rapid treatment and transportation.

Signs/Symptoms

No signs of life following a traumatic event

Differential Considerations

- Blast Injuries
- Burn
- MVC
- Fall
- Violence/Physical Abuse
- GSW

E A P	Perform Initial Treatment / Universal Patient Care Protocol
	Minimize on-scene time to <5 min

TREATMENT PATHWAYS

Possible pulse/respirations or witnessed arrest

EAP	Begin CPR with basic airway maneuvers and C-spine protection.

A P	Perform bilateral chest decompression.
	Establish: ▪ Secure airway ▪ Two (2) IV lines of normal saline with as large a catheter as possible up to a 14 gauge. ▪ Administer 20 ml/kg normal saline IV up to 2 liters and reassess.
P	▪ If available: Consider blood product administration if

Pulseless and Apneic

E A P	Contact MCP directly for consultation on not beginning resuscitation.

Considerations:

- If Supraglottic placement/intubated and unable to ventilate due to increased airway pressures, reconfirm proper airway placement and reassess bilateral chest decompression to determine if they need repeated.
- If patient is entrapped for an extended period, contact MCP for cease efforts direction.

TRAUMATIC ARREST

TOC

BURNS

Purpose

Burns can be caused by direct thermal injury, exposure to caustic chemicals, and contact with electrical sources. Factors to be considered include the nature of the burn, if the patient was in an enclosed space, the source of the burn, duration of contact, and temperature of the thermal agent.

Signs/Symptoms

- Edematous airway
- Red area
- Pain
- Blisters
- Thickened, dry, white/leathery-like
- Charred appearance
- Blood clotted edges
- Tissue necrosis

Differential Considerations

- Smoke/Carbon Monoxide/Hydrogen cyanide gas inhalation
- Bleeding control
- Fluid resuscitation
- Neurological deficits
- Burn wound care

EAP

- Perform Initial Treatment/Universal Patient Care.
- 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. Request additional resources, as needed (ERG, Haz Mat Team, etc.).
- Consider decontamination by qualified personnel.
- Assess for inhalation injury per protocol.

SPECIAL CONSIDERATION

Stop the burning process

THERMAL BURNS

EAP

- Irrigate the burned area with tepid water (sterile, if possible) to cool skin. Cool water immersion of minor localized burns may be effective if accomplished quickly.
- Do not apply ice or attempt to wipe off semi-solids.
- Dry the body when the burn area is ≥ 10% BSA to prevent hypothermia.

ELECTRICAL BURNS

EAP

- Cover wounds with clean dressings as required.
- Perform 12 lead ECG and transmit.
- Considerations:
  - Long bone fractures, cardiac dysrhythmias, and neurological deficits commonly occur.
  - Lightning strikes may cause cardiac arrest, patients can frequently be resuscitated after intubation and assisted ventilations.
  - Assess for multiple entrance and exit wounds.

AP

- Continuous cardiac monitoring is required.

CHEMICAL BURNS

EAP

- Attempt to identify substance and consult with Medical Command on the nature of the substance.
- Brush off dry powder.
- Rinse with copious amounts of tepid water (sterile if possible) for 20 minutes.
- Perform gross decontamination by removing excess chemicals if appropriately trained.

EAP

- Consider Patient Comfort / Pain Management.
- Cover extensive partial and full thickness burns with a dry, sterile dressing. Use soft, non-adherent dressings between areas of full thickness burns.
- Assess the extent of the burn using the Rule of Nines and the degree of burn severity

EAP

- Contact Medical Command for the following:
  - Coordination of appropriate mode of transport and facility decisions.
  - Additional treatment options.

BURNS

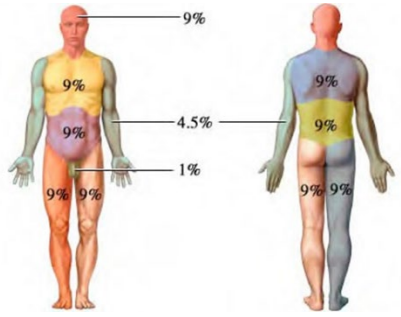
A P	Establish IV access and administer: **Normal Saline** ▪ If <20% TBSA burns, administer at KVO. ▪ If >20% TBSA burns and transport time <1 hour: • Adult (>12 years old) - 500 ml/hour • Peds (6-12 years old) - 250 ml/hour • Peds (<6 years old) - 125 ml/hour
	▪ If transport time >1 hour, contact MCP to consider maintenance fluids.
	Maintenance fluid calculations: ▪ If >20% TBSA thermal or chemical burn use the modified Parkland (total ml to be infused during the first 8 hours). • Adult: [2ml x %TBSA x Wt(kg)] / 2 = ml NS over 8 hours. • Pediatric: [3ml x %TBSA x Wt(kg)] / 2 = ml NS over 8 hours. ▪ If >20% TBSA electrical burn: • Adult and Pediatric: [4ml x %TBSA x Wt(kg)] / 2 = ml NS over 8 hours

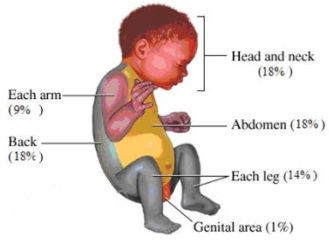
Precautions/Considerations:
- Certain substances such as heavy metals may cause further burning if flushed with water.
- If eyes are involved, flush for at least 20 minutes.
- Remove clothing from around burned area but DO NOT remove/peel off skin or tissue.
- Remove and secure all jewelry and tight-fitting clothing.
- Consider Inhalation Protocol if facial burns, singed face or nasal hairs, swollen, sooty, or reddened mucous membranes, or patient was in a confined space and/or unconscious.

Common chemicals that cause burns:

- **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.
- **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.
- **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.
- **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.
- **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.

Minor Burns Criteria	Major Burns Criteria
▪ Superficial and partial thickness: Adult <18%, Child <9% ▪ Full thickness <2%	▪ Superficial and partial thickness: Adult >18%, Child >9% ▪ Full thickness >2% ▪ Partial or full thickness of: face, neck, hands, feet, genitalia ▪ Suspected or positive airway involvement ▪ Electrical burns ▪ Circumferential burns or associated injuries





Purpose

Injuries to the structures of the orbit and eye are common and often result from direct traumas to the face.
Proper eye care increases the prognosis of vision.

Signs/Symptoms

- Eye lid laceration
- Corneal abrasions
- Subconjunctival hemorrhage
- Hyphemia
- Open globe fractures (punctures/penetrations)

Differential Considerations

- MVC
- Work/Sports related injuries
- Violence
- Falls
- Burns
- Flashes

E A P	Perform Initial Treatment/Universal Patient Care.
	Contact Medical Command for further treatment options when needed.

TREATMENT PATHWAYS

Penetrating trauma

E A P	Observe for bleeding and leakage of iris material or clear fluid.
	Shield injured eye and cover the non-injured eye.
	Stabilize impaled objects.
	Do not palpate globe or apply any pressure to the eye and avoid unnecessary movement.

Ultraviolet light exposure

E A P	Place cool compresses lightly over both eyes.
	Symptoms may be delayed 3-10 hours after exposure.

Sudden, painless loss of vision

E A P	Administer O2 2-6 LPM via nasal cannula.
	Transport supine.
	May be due to central retinal artery occlusion, stroke, or another embolic event.

Foreign bodies

E A P	Administer: *(Optional)* **Tetracaine** ▪ 2 drops per eye being irrigated.
	Turn patients head, injured eye down and flush continuously with Normal Saline.
	Tetracaine *(Optional)* is a single use medication. Repeated doses will predispose the cornea to injury.

TOC

CRUSH SYNDROME

Purpose

This protocol addresses the treatment of patients prior to, during, and after extrication that are:

- Entrapped for 30-240 minutes
- Crushed under a heavy load for > 30 min
- Have a torso or extremity crush

Signs/Symptoms

Suspected trauma accompanied by obvious scene assessment with

- Building or trench collapse
- Industrial accident
- Entrapment under heavy equipment

Differential Considerations

- Neurological damage to extremities
- Hypotension
- Pain
- Severe bleeding
- Hyperkalemia
- Acidosis
- Cardiac Arrest

E
- Perform Initial Treatment/Universal Patient Care
- Assess neurological status of involved extremities, provide continuous ECG and SPO2 monitoring.
- Confirm and document time of entrapment

A P
- Never place you or your crew in danger or attempt to remove patient from an immediately dangerous to life and health (IDLH) environment unless trained, certified, and properly equipped to do so.

TREATMENT CONSIDERATIONS

A P

Initiate:
Normal Saline
- 20 ml/kg IV/IO to a max of 1 liter.
- Initiate a second IV/IO prior to extrication if possible.

Entrapment >2 hours

A P

Administer additional:
Normal Saline
- 10 ml/kg IV/IO to a max of 500 ml.

Consider:
Patient Comfort/Pain Management

If hypotensive: assess etiology and consider requesting blood products to scene if determined to be hemorrhagic. Additional fluid boluses at 10 ml/kg if dehydration. Contact MCP to guide further volume management.

A P

Extremity crushed and entrapped >4 hours and unable to administer IV/IO fluid immediately:
- Apply a tourniquet to the extremity until the IV/IO fluid can be administered to prevent the release of toxic breakdown products into the blood stream prior to volume replacement.
- Once the volume replacement is complete, release the tourniquet over a couple minutes.
- Monitor ECG for signs of hyperkalemia (QRS widens and/or peaked T waves) treat per hyperkalemia protocol.

Post Extrication

A P

Consider:
Normal Saline
- 10 ml/kg IV/IO boluses as needed to maintain SBP >100 mmHg [Pediatric SBP > 70 + 2(age)].

P

QRS widens and/or peaked T waves, Consider:
- Repeat treatment per hyperkalemia protocol.

Sodium Bicarbonate and Calcium Chloride will precipitate if given together. Administer via a different access or following a 50 ml fluid bolus between doses.

E A P

Contact Medical Command:
- To request additional treatment options if needed.
- To continually update mitigation progress.

TOC

Purpose

- Identify patients with any signs and symptoms consistent with a cardiac related event.
- Identify patients of any age with suspected drug abuse and chest pain.
- Identify known diabetic, female, and/or elderly patients with atypical presentation in the absence of pain.

Signs & Symptoms

- History of previous ACS / AMI or other cardiac events.
- Any patient experiences the following:
  - Lightheadedness
  - Syncope
  - Chest discomfort
  - Back/shoulder pain
  - Arm pain
  - Lower back pain
  - Jaw pain
  - Epigastric Pain
  - Nausea/Vomiting

Differential Considerations

- Suspected drug abuse
- STEMI/NSTEMI
- Posterior STEMI RV STEMI
- STEMI equivalent Aneurysm
- Pulmonary Embolus
- Pulmonary Edema
- Spontaneous pneumothorax

E A P Perform Initial Treatment / Universal Patient Care Protocol.

↓

E A P 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:
Aspirin
- Four (4) 81 mg chewable orally (324 mg total).

A P Aspirin may be administered prior to obtaining 12 lead ECG and/or establishment of IV access.

↓

E A P Obtain 12 lead ECG (Optional for class B).
- Transmit 12 lead ECG or interpretation to the receiving facility or Medical Command.

↓

If blood pressure > 100 mm/Hg systolic and patient has **not** taken Viagra or Levitra within last 24 hours (or Cialis within the last 72 hours):

↓

E A P Administer:
Nitroglycerine
- 0.4 mg SL.
- Repeat every q (5) minutes until pain is relieved, or max of three (3) doses.
- Recheck blood pressure between each dose administered. If blood pressure falls < 100 systolic, discontinue dosing.

↓

A P 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 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.

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.
- Aeromedical transport to PCI capable facility, if available.
- Transport to closest facility with fibrinolytic capability.

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

Consider the administration of:
Unfractionated Heparin
- bolus at 60 units/kg to a max of 5,000 units administered slow IV push over 2 – 4 minutes.

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, establish two (2) IV lines, preferably 18 gauge or larger, of normal saline. If patient has a BP < 100 DO NOT administer nitroglycerin.

If 12 lead ECG indicates PVC's, evaluate for underlying causes. Treat dysrhythmias according to specific protocols.

If a patient has respiratory distress with fluid in their lungs as suggested by crackling, and/or frothy sputum, and has inadequate respirations, they should have their ventilation assisted with 100% oxygen, positive pressure Bag Valve Mask (BVM) while implementing Non-Invasive Ventilation.

A P	If blood pressure < 100 systolic and/or patient is experiencing severe bradycardia or tachycardia, treat according to appropriate protocol. Further treatment per MCP orders.
A	If discomfort persist, consult Medical Command Physician for further treatment.

If BP > 90 and chest pain persists:

P	Administer: **Fentanyl** (Sublimaze®) ▪ 1 microgram/kilogram – up to 100 micrograms max single dose, slow IV. Additional doses require MCP order.
	Administration of pain medications may not be tolerated well in patients over 65 years of age. Doses should be initiated at half the normal dose and repeated as indicated above.
	If discomfort persist, consult Medical Command Physician to discuss further treatment with nitroglycerin or Fentanyl. Monitor blood pressure and respiratory effort.

Purpose

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.

Signs/Symptoms

- Chest pain
- Seizures
- Focal motor deficits
- Changes in mental status
- Decreased or blurred Vision
- Shortness of breath
- Headache

Differential Considerations

- Hypertensive Crisis
- Preeclampsia
- Pain
- Intracranial Hemorrhage
- Cardiovascular Event
- Drug-induced Hypertension
- Endocrine Disorders
- White Coat Hypertension
- Coarctation of the Aorta
- Sleep Apnea

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.

E A P

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

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

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 ANTIHYPERTENSIVE AGENTS.

A P

Treatment **goal: reduce MAP by 10 - 15%** of initial value. **DO NOT** reduce BP to normal range as it may lead to a decrease in cerebral perfusion.

TREATMENT

- 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.

A

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

P

Hydralazine *(1st line medication)*
- Initial: 10 mg slow IV push over 2 minutes.
- Repeat in 20 minutes to a max dose of 20 mg if BP remains > 180/120 and symptoms remain.

-OR-

Nitroglycerin *(2nd 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 first line if patient is complaining of CP.)

HYPERTENSION

TOC

CARDIAC

Purpose

Cardiac Arrest can be reversed with early recognition, early defibrillation, early advanced care.

Signs and Symptoms

- Pulseless
- Agonal
- Apneic

Differential Considerations

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

EAP Perform Initial Treatment/Universal Patient Care.
Begin high quality CPR and attach AED/Defibrillator with pads placed anterior/posterior.

BLS TREATMENT

E
- Attach AED *(if not completed).*
- Deliver Shock per AED.
- Continue CPR for 2 min.

SHOCKABLE

E
- SHOCK per AED prompts.
- Continue CPR.
- Consider Advanced Airway and Capnography.

NOT SHOCKABLE

E
- Continue CPR.
- Consider Advanced Airway and Capnography.

ASYSTOLE/PEA

A P CPR 2 min.
Obtain IV/IO Access.

A P Administer:
Epinephrine
- 1 mg every 3-5 min.

A P
- CPR for 2 min.
- Treat reversible causes.
- Consider Advanced Airway and Capnography.

VF/Pulseless or Polymorphic V-TACH

A P
- Defibrillate at 200 J or maximum output.
- Continue **CPR for 2 min.**
- If no change, Defibrillate at 200 J or maximum output.

Administer:
Epinephrine
- 1 mg every 3-5 min.

A P
- Place Advanced Airway and Capnography.
- SHOCK if indicated.
- If NO shockable rhythm, follow Asystole/PEA or ROSC.

A P Administer:
Amiodarone
- 300mg
- Consider 150mg dose if no conversion in 3-5 min. Treat reversible causes

May substitute:
Lidocaine
- 1.5 mg/kg IV/IO or
- repeat at 0.5 – 0.75 mg/kg IV/IO at 10 min intervals to max dose of 3 mg/kg.

Continue alternating drug therapy with defibrillation.

A P In cases of Torsades;
- Immediately provide unsynchronized defibrillation.
- If conversion to a rhythm with a long QT interval (>450 ms) Administer:
Magnesium Sulfate
- 2 grams diluted in 10 ml of NS over 5 min.

In the presence of polymorphic VT with a normal QT interval, Lidocaine and Amiodarone can be considered.

NOT SHOCKABLE/NO ROSC

E A P
- 20 minutes of resuscitative efforts.
- Contact Medical Command for Cease Efforts.

ROSC OBTAINED

E A P
ROSC
- Follow ROSC Protocol.
- Continuously monitor.
- Transport.
- Contact MCP for further orders.

- Anterior/posterior pad placement has shown to have fewer failures of transcutaneous pacing, therefore, it can be expected that there will be fewer failed defibrillations as well.
- In cases of a refractory shockable rhythm, change the vector of defib by moving the pads from anterior posterior to anterior lateral or visa versa based upon the original position.
- If changing the vector does not lead to a successful defibrillation, contact MCP to consider a double sequential defibrillation or consider ECMO if near a facility with such resources.

ADULT CARDIAC ARREST

TOC

CARDIAC - PEDS

Purpose

Cardiac Arrest in infants and children is usually a result of deterioration of respiratory function.
Cardiac Arrest can be prevented if symptoms of respiratory failure and/or shock are recognized and treated quickly.

Signs and Symptoms

- Pulseless
- Agonal
- Apneic

Differential Considerations

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

EAP — Perform Initial Treatment/Universal Patient Care.
Begin high quality CPR and attach AED/Defibrillator with pads placed anterior/posterior.

BLS TREATMENT

E
- Attach AED.
- Deliver shock per AED.
- Check pulse.
- Continue CPR.

SHOCKABLE

E
- SHOCK per AED prompts.
- Continue CPR.
- Consider Supraglottic Airway and Capnography.

NOT SHOCKABLE

E
- Continue CPR.
- Consider Supraglottic Airway and Capnography.

ASYSTOLE/PEA

A P — CPR 2 min.
Obtain IV/IO Access.

A P — Administer:
Epinephrine 1:10,000
- 0.01 mg/kg every 3-5 min. IV/IO

P — Place Advanced Airway and Capnography.

A — Place Supraglottic Airway and Capnography.

A P — Review potentially reversible causes.

VF/Pulseless V-TACH

A P — Defibrillate:
- **2 joules/kg.**
- Continue 2 min. of CPR.

If No Conversion:
Defibrillation:
- **4 joules/kg.**
- Continue 2 min. of CPR.
- Repeat between medication administration.

A P — Administer:
Epinephrine 1:10,000
- 0.01 mg/kg every 3-5 min.

P
- Place Advanced Airway and Capnography.

A
- Place Supraglottic Airway and Capnography.

A P
- SHOCK if indicated.
- If NO shockable rhythm, follow Asystole/PEA or ROSC.

A P — Administer:
Lidocaine
- 1 mg/kg IV/IO

-OR-
Amiodarone
- 5 mg/kg

Continue alternating drug therapy with defibrillation.

NOT SHOCKABLE/NO ROSC

E A P
- Continue resuscitative efforts and transport.
- Contact Medical Command.

ROSC OBTAINED

E A P

ROSC
- Follow ROSC Protocol.
- Continuously monitor.
- Transport.
- Contact MCP for further orders.

PEDIATRIC CARDIAC ARREST

TOC

Purpose

The purpose of medical intervention in cases of tachycardia is to identify and treat the underlying cause, alleviate symptoms, and prevent potential complications, which can include decreased cardiac output, hypotension, and, in severe cases, life-threatening arrhythmias or heart failure.

Signs/Symptoms

- Hypo/Hypertension
- SOB
- Chest Pain
- Syncope
- Palpitations
- Diaphoresis
- Dizziness

Differential Considerations

- CHF
- Pulmonary Emboli
- Anaphylaxis
- Hemorrhage
- Anemia
- Hypovolemia
- Sepsis
- Fever
- Medication
- Thyroid

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

YES

E
- Consider ALS back up.
- Expedite transport.

A
Immediate Synchronized Cardioversion
- 200 J or equivalent biphasic. If no conversion, repeat with 360 J or equivalent biphasic.
- Check for conversion after each shock.
- If no conversion, prepare for expedited transport.

P
Pre-medicate, administer:
Fentanyl (Sublimaze®)
- 1 mcg/kilogram up to 100 micrograms max single dose, slow IV.

A
Consider additional treatment of SVT or VT:
- Adenosine if ECG QRS is regular and monomorphic.
- Consider antiarrhythmic infusion per Medical Command Physician.

Atrial Fibrillation/Atrial Flutter

A
Rate > 150 and a systolic BP > 100, consider:
Metoprolol (Lopressor)
- Mix 15 mg in 100ml NS
- Infuse at 1mg/min.
- Hold for HR<60 or MAP<65.

NOTE: Do Not use in patients with decompensated heart failure.

NO

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

NARROW

Supraventricular Tachycardia

A
- Valsalva/Vagal maneuvers
- Administer:
  Adenosine
  - 6 mg IV push
- If no conversion in 1 - 2 minutes, administer:
  Adenosine
  - 12 mg IVP
- If conversion, support and transport.

A
If no conversion (QRS<0.12), consider:
Metoprolol (Lopressor)
- Mix 15 mg in 100ml NS
- Infuse at 1mg/min.
- Hold for HR<60 or MAP<65.

NOTE: Do Not use in patients with decompensated heart failure.

QRS becomes wide (>0.12)

WIDE

Wide Complex Tachycardia

A
If 12 lead ECG shows waveform Monomorphic and regular, consider:
Amiodarone
- 150 mg IV over 10 minutes. Repeat 150 mg if Ventricular Tachycardia reoccurs

-OR-

Lidocaine
- 0.5 to 0.75 mg/kg every 5 - 10 minutes with maximum total dose of 3 mg/kg

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

TACHYCARDIA

TOC

CARDIAC - PEDS

Purpose

The purpose of medical intervention in cases of tachycardia is to identify and treat the underlying cause, alleviate symptoms, and prevent potential complications, which can include decreased cardiac output, hypotension, and, in severe cases, life-threatening arrhythmias or heart failure.

Signs/Symptoms

- Hypo/Hypertension
- SOB
- Chest Pain
- Syncope
- Palpitations
- Diaphoresis
- Dizziness

Differential Considerations

- CHF
- Pulmonary Emboli
- Anaphylaxis
- Hemorrhage
- Anemia
- Hypovolemia
- Sepsis
- Fever
- Medication

Heart Rate Typically > 220 bpm in Infants and > 180 bpm in a Child with evidence of hemodynamic instability such as shock, or decreased level of consciousness.

YES

NO

E — Consider ALS back up.
Expedite transport.

A P — **Immediate Synchronized Cardioversion**
- 0.5 – 1.0 Joules/kg.
- If no conversion, repeat with 2.0 Joules/kg.
- Check for conversion after each shock.
- If no conversion, prepare for expedited transport.

A P — Consider additional treatment of SVT or VT:
- Adenosine if ECG QRS is regular and monomorphic.
- Consider antiarrhythmic infusion per Medical Command Physician.

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

NARROW

WIDE

Supraventricular Tachycardia

A P — Valsalva/Vagal maneuvers

A P — Administer:
Adenosine
- 0.1 mg/kg IV/IO push.
- 6 mg max first dose.

A P — If no conversion in 1 - 2 minutes, administer:
Adenosine
- 0.2 mg/kg IV/IO push.
- 12 mg max dose.

A P — If conversion, contact MCP to discuss further treatment options.

QRS becomes wide (>0.12)

Wide Complex Tachycardia (HR>150 likely VT)

A P — If 12 lead ECG shows waveform Monomorphic and regular, consider:
Amiodarone
- 5 mg/kg IV/IO over 10 minutes

-OR-

Lidocaine
- 1mg/kg IV/IO

A P — If conversion, contact MCP to discuss further treatment options.

TOC

SYMPTOMATIC BRADYCARDIA

Purpose

The purpose of medical intervention in cases of bradycardia is to identify and treat the underlying cause, alleviate symptoms, and prevent potential complications, which can include decreased cardiac output, dizziness, fainting, and, in severe cases life-threatening arrhythmias or heart failure.

Signs/Symptoms

- Signs of shock
- Hypotension
- Acutely altered LOC
- Shortness of breath
- Chest pain
- Diaphoresis
- Impending doom
- Confusion
- Syncope
- CHF
- Dizziness
- Pale
- Fatigue

Differential Consideration

- Hyperkalemia (Sepsis/ARF)
- Medication (beta/ca channel blocker)
- AV block
- Hypotension
- Toxin/Organophosphate poisoning
- Hypothyroidism
- Sick Sinus Syndrome

E	Perform Initial Treatment/Universal Patient Care.
A	Perform 12 lead ECG and transmit.
P	Identify and treat underlying causes for all patients.

ADULT BRADYCARDIA *(with a pulse)*

HR<50

YES

E A P	If asymptomatic simply observe the patient.
E A P	Associated with S/S of poor perfusion: ▪ Hypotension ▪ Acutely altered mental status ▪ Signs of shock ▪ Chest discomfort ▪ Acute heart failure ▪ Ischemic or abnormal ECG findings
A P	If S/S of poor perfusion or AV Block noted, place pacer pads on patient (Anterior/Posterior).
A P	Increase heart rate, administer: **Atropine** ▪ 1.0 mg IV/IO. ▪ May repeat every 3-5 minutes up to a max 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.

NO

E A P	Closely observe and monitor for deterioration during transport.

P	TCP pre-medication, administer: **Fentanyl (Sublimaze ®)** ▪ 1 mcg/kg up to 100 micrograms max single dose, slow IV.
	▪ Repeat Fentanyl PER MCP order at 1 microgram/kilogram up to 100 micrograms max per dose. ▪ Additional sedation per MCP order.
P	Confirm TCP capture by identifying palpable pulses, electrical capture, pulse ox pleth waveform, and trending ETCO2 and; Administer: **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 utilizing the Emergency Epinephrine Infusion Drip Charts. ***OPTIONAL:*** **Push Dose Epinephrine** *(option during limited resources only)* ▪ mix 1 ml of Epi 1:10,000 in a syringe of 9 ml of NS = 10 mcg/ml. Administer 1-2 ml q 2 minutes PRN.
	▪ Titrate Epinephrine using the smallest dose possible to maintain a heart rate >60 bpm and a SBP >90 mmHg or MAP >65 mmHg.

EPINEPHRINE INFUSION CHART

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

TOC

CARDIAC - PEDS

PC005

PEDIATRIC SYMPTOMATIC BRADYCARDIA

Purpose

The purpose of medical intervention in cases of bradycardia is to identify and treat the underlying cause, alleviate symptoms, and prevent potential complications, which can include decreased cardiac output, dizziness, fainting, and, in severe cases life-threatening arrhythmias or heart failure.

Signs/Symptoms

- Signs of shock
- Hypotension
- Acutely altered LOC
- Shortness of breath
- Chest pain
- Diaphoresis
- Impending doom
- Confusion
- Syncope
- CHF
- Dizziness
- Pale
- Fatigue

Differential Consideration

- Hyperkalemia (Sepsis/ARF)
- Medication (beta/ca channel blocker)
- AV block
- Hypotension
- Toxin/Organophosphate poisoning
- Hypothyroidism
- Sick Sinus Syndrome

E Perform Initial Treatment/Universal Patient Care.
A Perform 12 lead ECG and transmit.
P Identify and treat underlying causes for all patients.

Pediatric BRADYCARDIA *(with a pulse)*

HR<60

YES

E
A
P

If asymptomatic simply observe the patient.

Associated with S/S of poor perfusion:
- Hypotension
- Acutely altered mental status
- Signs of shock
- Chest discomfort
- Acute heart failure
- Ischemic or abnormal ECG findings

E
A
P

- Bradycardia is usually due to hypoxia.
- Aggressively manage the airway.
- If Bradycardia persists; begin CPR.

A
P

Increase heart rate, administer:
Epinephrine (1:10,000)
- 0.01mg/kg IV/IO
- If Epinephrine administration is ineffective, administer:

Atropine
- 0.02 mg/kg IV/IO.
- Minimum dose: 0.1 mg.
- Maximum single dose: 0.5 mg for child; 1.0 mg for adolescent.

- Repeat dose of either medication requires MCP order.
- If treatment is ineffective, consider transcutaneous at the AEMT level.

P

- If treatment is ineffective, consider transcutaneous pacing and Epinephrine infusion.

NO

E
A
P

Closely observe and monitor for deterioration during transport.

PEDIATRIC EPI INFUSION DOSING – 10 gtts/ml Solution Set					
Age	Wt.	Dose	Age	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	Wt.	Dose	Age	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 - 54** 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

TOC

Purpose

For patients with signs of an Inferior Wall ST Elevation Myocardial Infarction (STEMI) with concurrent ST elevation in right chest lead V4R.

Signs/Symptoms

- Chest pain.
- similar symptoms of a previous MI
- lightheadedness or syncope.
- Diabetic, female, and/or elderly patients with atypical chest discomfort or other symptoms associated with ACS /AMI in the absence of pain.

Differential Considerations

- STEMI/NSTEMI
- Posterior STEMI
- RV STEMI
- STEMI equivalent
- Aneurysm
- Pulmonary Embolus
- CHF
- Spontaneous pneumothorax

A P	Perform Initial Treatment/Universal Patient Care.
	Nitroglycerin may be administered if the SBP is greater than 100 mmHg or MAP greater than 70 mmHg, must have IV access prior to administration in case the patient requires a fluid bolus should hypotension occur.

TREATMENT

A P	Administer: **Aspirin** ▪ Four (4) 81 mg (324mg) chewable ASA orally if no true allergy exists.
	Establish 2 IV lines/18 gauge or larger of Normal Saline.

A P	If BP < 90, administer: **Normal Saline** ▪ Bolus 250 ml
	• Reassess lung sounds and contact MCP. • Repeat bolus if systolic BP remains <90 and clear lung sounds.

P	If chest pain present, administer: **Fentanyl** (Sublimaze®) ▪ 1 microgram/kilogram up to 100 micrograms max single dose, slow IV.
A P	If Chest Pain continues and BP >100, consider: **Nitroglycerine** ▪ 0.4 mg SL. ▪ Repeat every q (5) minutes until pain is relieved, or max of three (3) doses. ▪ Recheck blood pressure between each dose administered. If blood pressure falls < 110 systolic, discontinue dosing.

A P	If discomfort persists, consult Medical Command Physician to discuss further treatment.
	Administration of pain medications may not be tolerated well in patients > 65 years of age. Doses should be initiated at half the normal dose and repeated as indicated above.

RIGHT VENTRICULAR AMI

TOC

Purpose

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

Signs/Symptoms

During CPR there is a return of:
- pulse or respirations
- Capnography waveform after being absent
- Perfusable cardiac rhythm
- NO SHOCK ADVISED using an AED with signs of life.

Differential Considerations

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

E A P

Perform Initial Treatment/Universal Patient Care.

If ventilation assistance is required, ventilate at 10 - 12 breaths per minute.
- Do not hyperventilate.
- Titrate to target ETCO2 of 35 - 40 mm/Hg.
- Titrate oxygen to minimum necessary to achieve SpO2 at 92 - 98%.

CONSIDER ADVANCED AIRWAY

EA Supraglottic

P ET / Supraglottic

FREQUENT ASSESSMENT

E A P

If patient becomes pulseless, begin CPR.

Stabilize the patient on scene prior to movement. Complete the Post-ROSC Time Out, prior to scene departure. (Appendix K)

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

TREATMENT

E

Prepare for transport if ALS is delayed.

Contact Medical Command for additional treatment options.

A P

Treat hypotension (SBP < 90 mm/Hg) with an IV/IO fluid bolus consistent with hypoperfusion/shock.

Perform 12 lead ECG. If STEMI, follow STEMI guidelines. Consider the reversible causes above.

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

A P

Amiodarone Infusion
- 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 infusion
- 1 g in 250 ml NS titrated at 1 – 4 mg/min.

RETURN OF SPONTANEOUS CIRCULATION - ROSC

RETURN OF SPONTANEOUS CIRCULATION - ROSC

P	Initiate: **Epinephrine** infusion ▪ (Mix 1 mg of Epinephrine 1:1,000 in 1 L of normal saline producing a concentration of 1 mcg/ml) ▪ Adults: titrate from 1 mcg/min to 10 mcg/min for a SBP > 90 mmHg or a MAP > 65 mmHg ▪ Pediatric: titrate from 0.02 mcg/kg/min to 0.3 mcg/kg/min utilizing the Emergency Epinephrine Infusion Drip Charts. ▪ Titrate for a SBP > 70 + 2(age in years) mmHg. ***OPTIONAL:*** **Push Dose Epinephrine** *(option during limited resources only)* ▪ *Adult ONLY* ▪ mix 1 ml of Epi 1:10,000 in a syringe of 9 ml of NS = 10 mcg/ml. Administer 1-2 ml q 2 minutes PRN.
	▪ Titrate Epinephrine using the smallest dose possible to maintain a heart rate >60 bpm and a SBP >90 mmHg or MAP >65 mmHg.

Pediatric physiologic variations:
- Shock presents differently in pediatric patients and often in the following order:
  - Capillary refill >3 seconds/Mottling
  - Altered Mental Status
  - Tachycardia
  - Hypotension (late sign)
- At the earliest signs of shock, immediately initiate:
  Normal Saline
  - 20 mL/kg bolus

  and consider
  Epinephrine Infusion
  - Titrate from 0.02 mcg/kg/min to 0.3 mcg/kg/min utilizing the Emergency Epinephrine Infusion Drip Charts.
  - Titrate for a SBP > 70 + 2(age in years) mmHg.

EPINEPHRINE INFUSION CHART

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2 mcg/min = 20 gtts/min	7 mcg/min = 70 gtts/min
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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 EPI INFUSION DOSING – 10 gtts/ml Solution Set					
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5	20kg	0.4 – 6 mcg/min = **4 - 60** gtts/min	10	32kg	0.64-9.6 mcg/min = **6.5 - 95** gtts/min
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5	20kg	0.4 – 6 mcg/min = **6 - 90** gtts/min	10	32kg	0.64-9.6 mcg/min = **9.5 - 144** gtts/min

RESPIRATORY

Purpose

Airway management is an essential part of care for all patients and is an ongoing process. It requires assessment and reassessment of many different signs and symptoms.

Signs/Symptoms

- Airway is not patent
- Inadequate Breathing
- Obstructed Airway/Stridor
- Absent Breath Sounds

Differential Considerations

- Respiratory Distress
- Airway Obstruction
- Respiratory Failure
- Tension Pneumothorax
- Respiratory arrest

E Perform Initial Treatment / Universal Patient Care Protocol.

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

P

TREATMENT PATHWAYS

Airway Patent with Adequate Breathing

E Mild to Moderate distress, administer:
Oxygen, nasal cannula
- 2-6 LPM to obtain ideal SPO2 at 94 - 99%

E Severe distress, administer:
Oxygen, non-rebreather
- 15 LPM to obtain ideal SPO2 at 94 - 99%

Airway Unstable or Not Patent

E Open airway and assess for FBAO

A Consider spinal precautions

P Ventilate with 100% O2 BVM

If anatomical obstruction or airway cannot be maintained and patient is unconscious, consider OPA or NPA.

Inadequate Breathing

E Open airway and assess for FBAO

A Consider spinal precautions

P Ventilate with 100% O2 BVM

E If prolonged assisted ventilation is anticipated, Consider:
Supra-glottic Airway
- Insert per manufacturer recommendations.
- Advance an SGA gastric tube through the SGA port and apply suction.

P If prolonged assisted ventilation is anticipated, Consider:
Endotracheal Intubation
- Confirm using ETCO2 monitoring.
- Place an NG or OG *(if facial fractures present)* and apply suction.

Post intubation sedation/pain management:
Ketamine
- 2 mg/kg IV/IO

-or-

Fentanyl
- 1 mcg/kg up to 100 mcg max single dose, slow IV

+/-

Midazolam
- 2 mg IV/IO/IM q 5 min max dose of 10mg
- Hold if BP <90 systolic

May repeat above doses q 30 minutes

IDEAL BODY WEIGHT CHART

MALE			FEMALE		
Height in Feet	Height in Meters	Ideal Weight	Height in Feet	Height in Meters	Ideal Weight
4' 6"	1.3524	28 - 35 Kg	4' 6"	1.3524	28 - 35 Kg
4' 7"	1.3778	30 - 39 Kg.	4' 7"	1.3778	30 - 37 Kg.
4' 8"	1.4032	33 - 40 Kg.	4' 8"	1.4032	32 - 40 Kg.
4' 9"	1.4286	35 - 44 Kg.	4' 9"	1.4286	35 - 42 Kg.
4' 10"	1.454	38 - 46 Kg.	4' 10"	1.454	36 - 45 Kg.
4' 11"	1.4794	40 - 50 Kg.	4' 11"	1.4794	39 - 47 Kg.
5' 0"	1.5	43 - 53 Kg.	5' 0"	1.5	40 - 50 Kg
5' 1"	1.5254	45 - 55 Kg.	;5' 1"	1.5254	43 - 52 Kg.
5' 2"	1.5508	48 - 59 Kg.	5' 2"	1.5508	45 - 55 Kg.
5' 3"	1.5762	50 - 61 Kg.	5' 3"	1.5762	47 - 57 Kg.
5' 4"	1.6016	53 - 65 Kg.	5' 4"	1.6016	49 - 60 Kg.
5' 5"	1.627	55 - 68 Kg.	5' 5"	1.627	51 - 62 Kg.
5' 6"	1.6524	58 - 70 Kg.	5' 6"	1.6524	53 - 65 Kg.
5' 7"	1.6778	60 - 74 Kg.	5' 7"	1.6778	55 - 67 Kg.
5' 8"	1.7032	63 - 76 Kg.	5' 8"	1.7032	57 - 70 Kg.
5' 9"	1.7286	65 - 80 Kg.	5' 9"	1.7286	59 - 72 Kg.
5' 10"	1.754	67 - 83 Kg.	5' 10"	1.754	61 - 75 Kg.
5' 11"	1.7794	70 - 85 Kg.	5' 11"	1.7794	63 - 77 Kg.
6' 0"	1.8	72 - 89 Kg.	6' 0"	1.8	65 - 80 Kg.

AIRWAY MANAGEMENT

P	If endotracheal intubation is not possible, Consider *(optional)*: ▪ Rapid Sequence Intubation
P	If unable to secure airway by any of the above methods and patient is in impending danger of cardio/respiratory arrest, consider: ▪ Percutaneous or Surgical Cricothyrotomy

Considerations:
- Any patient with suspected spinal trauma needs in-line stabilization with any airway procedure.
- Consider gastric tube placement if placing a supra-glottic or ET tube.
- Paramedics should NOT use the nasal route for ET tube placement if maxillofacial trauma is present.

RESPIRATORY

Purpose

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.

Signs/Symptoms

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.

Differential Considerations

- Asthma
- Anaphylaxis
- Aspiration/FBO
- COPD (Emphysema, Bronchitis)
- Pleural effusion
- Pneumonia
- Pulmonary embolus
- Pneumothorax
- Cardiac (MI or CHF)
- Pericardial tamponade
- Hyperventilation
- Inhaled toxin (CO, etc.)

E A P	Perform Initial Treatment / Universal Patient Care Protocol.
	Differentiate whether upper airway pathology is present as indicated by stridor or lower airway pathology is present as indicated by wheezing. Stridor is most common in acute upper airway swelling from angioedema, head/neck cancer, epiglottitis, croup, or allergic reactions. Wheezing may be more likely in patients with asthma, COPD, or smoking history but may occur in allergic reactions
	If patients Heart Rate >130, confirm that patient's tachycardia appears to be from respiratory distress and not from other causes.

TREATMENT PATHWAYS

Wheezing

E A P	Administer: **Albuterol** ▪ 5 mg *combined with* **Ipratropium Bromide** (Atrovent®) ▪ 0.5 mg ▪ If Ipratropium Bromide is contraindicated, administer Albuterol only.
	▪ Repeat dose if S/S persist
	Apply CPAP with in-line nebulizer if indicated.

A P	If no relief, administer: **Dexamethasone** ▪ 10 mg IV/IO/IM
	Consider: **Magnesium Sulfate** ▪ 2 grams IV/IO drip ▪ Mix in 100 ml of Normal Saline ▪ Administered over 20 min.

Stridor

A P	Administer: **Dexamethasone** ▪ 0.6 mg/kg IV/IO/IM to a max of 10mg X 1
E A P	If severe distress, Administer: **Nebulized Epinephrine** ▪ 3mL (1mg/ml) 1:1000. Do not dilute. ▪ Nebulize over 5 – 10 minutes at 6 – 8 L/min O2 flow.
	▪ Repeat Dose X 1 in 20 minutes if symptoms persist or worsen with MPC order

E A P	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.
	Contact Medical Command for additional treatment options.

TOC

RESPIRATORY

Purpose

Pediatric bronchospasm may be the manifestation of several disease processes. In children most common are reactive airway diseases. Physical examination reveals wheezing and prolonged expiratory phase of breathing.

Signs/Symptoms

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.

Differential Considerations

- Asthma
- Anaphylaxis
- Aspiration/FBO
- Viral Bronchiolitis
- Pneumonia
- Pulmonary embolus
- Pneumothorax
- Bronchopulmonary dysplasia
- Hyperventilation
- Inhaled toxin (CO, etc.)

EAP

Perform Initial Treatment / Universal Patient Care Protocol.

Differentiate whether upper airway pathology is present as indicated by stridor or lower airway pathology is present as indicated by wheezing. Stridor is most common in acute upper airway swelling from angioedema, head/neck cancer, epiglottitis, croup, or allergic reactions. Wheezing may be more likely in patients with asthma, COPD, or smoking history but may occur in allergic reactions

If patients Heart Rate >130, confirm that patient's tachycardia appears to be from respiratory distress and not from other causes.

TREATMENT PATHWAYS

Wheezing

EAP

Administer:
Albuterol
- Pediatric
  - 2.5 mg

combined with
Ipratropium Bromide (Atrovent®)
- Pediatric
  - 0.5 mg

- Repeat dose if S/S persist

AP

If no relief, administer:
Dexamethasone
- 0.6 mg/kg IV/IO/IM to a max of 10mg IV.
- IV formulation may be given PO

Consider:
Magnesium Sulfate
- 50 mg/kg IV/IO infusion to a max dose of 2 grams
- Mix in 100 ml of Normal Saline
- Administered over 20 min.

Stridor/Croup

AP

Administer:
Dexamethasone
- 0.6 mg/kg IV/IO/IM to a max of 10mg X 1
- IV formulation may be given PO

EAP

If severe distress or stridor at rest, Administer:
Nebulized Epinephrine
- 0.5 mL/kg to max of 3 mL, epi 1:1000. If < 3 mL, add 0.9% NaCl to mix total of 3 mL.
- Nebulize over 5 – 10 minutes at 6 – 8 L/min O2 flow.

- Repeat Dose X 1 in 20 minutes if symptoms persist or worsen with MPC order

EAP

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)
- <30kg - 0.15 mg IM.
- >30kg - 0.30 mg IM.

Contact Medical Command for additional treatment options.

TOC

RESPIRATORY

Purpose

Patients experiencing pulmonary edema will have rales or crackles on lung exam.
Patients in severe pulmonary edema may benefit from Positive Pressure Ventilation.

Signs/Symptoms

- JVD
- Peripheral Edema
- Frothy Sputum
- Anxiety/distress
- Dysrhythmia
- Orthopnea

Differential Considerations

- Respiratory Distress
- CHF
- Inhalation Injury
- HTN emergency
- Cardiac valve disease

EAP Perform Initial Treatment / Universal Patient Care Protocol

INITIAL TREATMENT

E A P

If patient is in severe respiratory distress, consider:
CPAP/BiPAP

If patient has rales and an initial blood pressure is > 110 systolic, administer:
Nitroglycerin
- 0.4 mg
- Repeat 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.

If patient has taken Sildenafil (*Viagra®*) or Vardenafil (*Levitra®*) within last 24 hours, or Tadalafil (*Cialis®*) within the last 72 hours, do not administer nitroglycerin.

CONTINUED TREATMENT PATHWAYS

BP >100 systolic with peripheral edema

Patient DOES NOT take Furosemide

A P Administer:
Furosemide (Lasix®)
- 40 mg IV/IO

Patient is taking Furosemide

A P Administer:
Furosemide (Lasix®)
- 80 mg IV/IO

E A P

If wheezing is present, administer:
Albuterol
- 2.5 mg

combined with
Ipratropium Bromide (Atrovent®)
- 0.5 mg

- Repeat doses per MCP order
- Contact MCP for additional treatment

BP <100 systolic with rales/JVD

E A P
- Monitor Vitals Closely and expedite Transport
- Contact MCP for additional treatment

- Lung infections with rales are not treated as edema with Furosemide.
- If an allergy exists or if a pediatric patient <1; Atrovent is contraindicated

TOC

RESPIRATORY

Purpose

This protocol is used when an inhalation injury may be caused by toxins or thermal burns.

Signs/Symptoms

- Singeing or soot in nares or oropharynx.
- Injuries to the upper, middle, and lower airways
- Respiratory Distress
- Carbonaceous sputum
- Respiratory Distress
- Cardiac compromise
- Change in voice/hoarseness

Differential Considerations

- Non-specific inhalation of smoke, heat, or chemical irritants.
- Carbon monoxide poisoning
- Cyanide toxicity

E A P	Perform Initial Treatment / Universal Patient Care Protocol.
	Assess for type and amount of toxin and duration of exposure, and LOC.
	Obtain Data Sheets for product and/or refer to the DOT Emergency Response Guide.
	Never place you or your crew in danger or attempt to remove patient from an immediately dangerous to life and health (IDLH) environment unless trained, certified, and properly equipped to do so.
	Decontamination should be done by appropriately certified personnel.

TREATMENT

E A P	Treat specific injuries per appropriate protocol.
	Rapid/early airway intervention (per level of training) on patients with respiratory tract involvement and severe respiratory distress.
	Contact Medical Command to consult with poison control or for further treatment options.

TOC

NON-INVASIVE VENTILATION

Purpose

CPAP and 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.

Signs/Symptoms

- Elevated CO2 Levels
- Hypoxia
- Respiratory distress
- Peripheral edema
- Retractions/accessory muscle use

Differential Considerations

- CHF
- Pulmonary edema
- Asthma
- COPD
- Pneumonia
- Respiratory Failure

E A P	Perform Initial Treatment / Universal Patient Care Protocol.
	Patients with chronic respiratory disease: oxygen therapy may reduce respiratory drive and worsen hypercapnia and thus outcomes, BiPAP can improve gas exchange and outcomes in these circumstances.
	Any patient who is in respiratory distress with hypoxia with S/S consistent with CHF, Pulmonary edema, asthma, COPD, or pneumonia must meet all 5 of the following criteria: ▪ Awake and oriented ▪ Patient >12 years old and fits mask ▪ Patient able to maintain airway ▪ Systolic BP >90 mm/Hg ▪ Two (2) or more signs of distress
	Mental Status Rules: ▪ Exception to rule is the provider MUST continuously monitor and trend ETCO2 values and waveform. ▪ If the ETCO2 and mental status improve with NIPPV, then the ALOC can likely be attributed to hypercapnia. ▪ IF the patient does not respond within 3-5 min, or CAN NOT tolerate CPAP, or worsens; disconnect and attempt another means of airway management.

TREATMENT PATHWAYS

CPAP

E A P	Apply device per manufacture directions and training explaining the procedure to the patient.
	Continuously monitor and document vital signs every five (5) minutes.
E A P	Call Medical Command as early as possible for patient receiving preparation.

BiPAP *(Optional)*

A P	Apply device per manufacture directions and training explaining the procedure to the patient.
	Ensure emergency equipment is immediately available and an alternative management plan has been established.
	Continuously monitor: ▪ Document vital signs every five (5) minutes. ▪ Monitor pulse oximeter and ETCO2 (nasal prong devices can be utilized as long as they do not compromise a good mask seal.
A P	Field Procedure: ▪ Start with EPAP at 5 cmH2O (max 8 cmH2O) • EPAP is increased in steps of 2 cmH2O every 10 minutes to max listed above as needed for an oxygen saturation >93%. ▪ Start IPAP at 10 cmH2O (max 15 cmH2O) • IPAP is increased in steps of 2 cmH2O every 10 minutes to the max listed above as needed till patient improvement.
	MCP order required to exceed established maximums.

NON-INVASIVE VENTILATION

EAP	CPAP and BiPAP should remain continuous and not be removed in the prehospital setting unless: ▪ Patient cannot tolerate the mask ▪ Patient begins to vomit. ▪ Patient's mental or respiratory status deteriorates. ▪ Patient becomes hypotensive (Systolic blood pressure < 90).

EAP	Contraindications for use: ▪ Respiratory Arrest ▪ Hypercapnic respiratory failure (see BiPAP) ▪ Is or becomes Hypotensive (BP<90 syst) ▪ Suspected pneumothorax ▪ Tracheostomy present ▪ FBAO ▪ Ill- fitting mask due to Facial deformity or trauma ▪ Active vomiting ▪ Recent facial, neurological, or gastric surgery ▪ Chest, head, or face trauma

Notes:

- 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.
- 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.
- Procedures may be performed on a patient with a *Do Not Resuscitate order*.
- 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).
- Do not delay other emergency interventions to establish BiPAP. BiPAP should be delivered as an adjunct to treatments indicated by the primary protocol.
- Most patients will improve in 5 - 10 minutes. If no improvement within this time, consider additional treatment options per primary protocol.
- 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.

RESPIRATORY

Purpose

RSI should only be performed prior to transporting when a rapid airway is indicated and benefits outweigh potential risks.

This protocol is **ONLY** for paramedics that are specifically trained and have approval from WVOEMS and the corresponding Squad Medical Director.

Signs/Symptoms

For patients that require intubation but are:
- awake
- continue to have respiratory effort
- an intact cough/gag reflex.
- Unable to maintain airway patency
- Unable to protect airway against aspiration
- Ventilatory compromised
- Failing to adequately oxygenate pulmonary capillary blood
- Anticipating deterioration that will lead to inability to maintain airway patency or protection.

Differential Considerations

Respiratory compromise into failure and Conscious

(OPTIONAL) RAPID SEQUENCE INTUBATION (RSI)

P	Perform Initial Treatment / Universal Patient Care Protocol
	For patients ≥12 whose airway cannot be controlled by any other means and meets one of the following criteria: ▪ Inability to maintain airway patency. ▪ Inability to protect the airway against aspiration. ▪ Ventilatory compromise. ▪ Failure to adequately oxygenate pulmonary capillary blood. ▪ Anticipation of a deteriorating course that will eventually lead to the inability to maintain airway patency or protection.
	Two (2) paramedics must be present, one (1) of which is an RSI trained Paramedic.
	This protocol is not for patients already presenting with cardiac arrest.

PRE-PROCEDURE CONSIDERATIONS

P	Pre-oxygenate the patient using 100% oxygen. ▪ Assure that you can assist ventilations with a bag-valve-mask prior to proceeding. ▪ Limit BVM ventilations unless necessary (this only causes increased gastric distention and the increased risk of aspiration).
	Apply: **Oxygen** ▪ 6 LPM nasal cannula. ▪ Nasal Cannula remains in place throughout entire procedure. ▪ Increase to 15 LPM at time of induction.
	Pre-procedure treatment: ▪ Cardiac monitor ▪ ETCO2 monitoring ▪ Initiate two (2) peripheral IV's (preferably large bore).
	Equipment readiness considerations: ▪ Suctioning ▪ BVM
	The paramedic must have a backup/rescue plan (Supraglottic Airway or Cricothyrotomy) in mind and immediately accessible for all patients under consideration for RSI.
	Ensure adequate resuscitation with aggressive treatment of hypotension and hypoxia prior to considering sedative or paralytic administration.
	Do not administer sedative or paralytic agents if patients BP remains below 100 systolic.

(OPTIONAL) RAPID SEQUENCE INTUBATION (RSI)

PROCEDURE

P	Difficult intubation and airway management may be enhanced utilizing the "BURP" maneuver. (Applying backward, upward, rightward, and posterior pressure on the larynx)
P	Administer sedative agent: **Etomidate* (Amidate®)** ▪ 0.3 mg/kg IV/IO ***OR*** **Ketamine* (Ketalar®)** ▪ 2 mg/kg IV/IO
	If concerns for sepsis exist, Ketamine is the preferred drug due to the actions of Etomidate causing adrenal suppression.
P	Administer paralytic agent: **Succinylcholine (Anectine®)** ▪ 1.5 mg/kg IV push. ▪ Contraindications include high intraocular pressure, high potassium (K > 5.5), burns and spinal cord injuries > 24 hours old, pseudocholinesterase deficiency. ***OR*** **Rocuronium (Zemuron®)** ▪ 1.5 mg/kg IV/IO.
	The use of Rocuronium (Zemuron®) does not produce fasciculations.
	▪ Paralysis is achieved when muscle fasciculation has stopped (30 - 45 seconds) ▪ Orally intubate ▪ Confirm tube placement with bilateral breath sounds, appropriate end-tidal carbon dioxide waveform, etc. ▪ Preferred order of auscultation is epigastric, left, then right.
P	If unable to intubate after two (2) attempts: ▪ Use BVM to ventilate between attempts, if needed. ▪ Insert a supraglottic airway and transport.
P	Sedation: **Ketamine (Ketalac®)** ▪ 2 mg/kg IV/IO ***OR*** **Midazolam (Versed®)**: ▪ 0.1 mg/kg IV/IO ▪ If not hypotensive
	▪ Apply soft wrist restraints immediately after sedation.
	Analgesia: **Ketamine (Ketalac®)** ▪ 2 mg/kg IV/IO **OR** **Fentanyl (Sublimaze®)** ▪ 1 microgram/kg slow IV/IO push
	If patient is not responding to sedation and is a risk of losing the airway, consider long term paralytic: **Rocuronium (Zemuron®)** ▪ 1.5 mg/kg IV/IO
	Provider must observe for signs of discomfort such as persistent or worsening tachycardia, HTN, and/or tearing.
	All patients given a long-term paralytic agent ***must*** also periodically be given sedation while they remain paralyzed.
P	Contact Medical Command once enroute to hospital with patient update for all patients requiring intubation.

PATIENT COMFORT/PAIN MANAGEMENT

Purpose

Pain management in the field may be indicated when a patient is experiencing severe pain. The degree of pain and the hemodynamic status of the patient will determine the urgency and extent of analgesic interventions.

Signs/Symptoms

- Stated Pain
- Grimacing
- Hypertension
- Tachycardia
- Tears
- Bony Deformity

Differential Considerations

Prehospital providers should provide analgesics to relieve pain in appropriate circumstances related to isolated trauma/burns if no contraindications exist, such as shock, pulmonary compromise, or allergies.

E	Perform Initial Treatment/Universal Patient Care
A	Identify and treat underlying causes for all patients
P	Follow the proper protocol for medical management based on clinical presentation
	Consider non-pharmacologic techniques such as positions of comfort, ice packs, splinting application, reassurance, distraction, and parental comforting for pediatric patients

TREATMENT PATHWAYS

Mild/Moderate Pain

A P

Administer:

Ketorolac

- Adults: 15 mg IM/IV. No repeat doses.
- Pediatric (2 – 12 years old): Administer 0.5 mg/kg IM/IV to a max dose of 15mg. No repeat doses.
- *NOTES:*
  - Should be considered for sprains, strains, chronic pain, and kidney stones
  - Should not be considered in patients with suspected intracranial/internal bleeding, active GI bleeding, renal failure, or on anticoagulants such as Xarelto and Eliquis.
  - Patients with bleeding risks should be treated with IV Acetaminophen as a non-narcotic agent and prefer Fentanyl as a narcotic agent and consider Ketamine for refractory pain.

Acetaminophen

- Adults: 15 mg/kg IV (maximum dose 1 g). No repeat doses
- Pediatric (2 - 12 years old) 15 mg/kg IV (maximum dose 1 g). No repeat doses.

Moderate/Severe Pain

P

- Pathway indicated for severe pain not responding to the Mild/Moderate pathway treatment modality.
- Choose Fentanyl or Morphine based upon clinical scenario, allergies, and vital signs
- Fentanyl has a safer hemodynamic profile for less stable patients.

Do not switch opiates without Medical Command Physician consultation.

P

Administer:

Fentanyl (*Sublimaze®*)

- Adults: 1 mcg/kg IN, IM, IV/IO (maximum initial dose 100 mcg).
  - Repeat dose in 15 minutes.
  - Additional doses administered at half the dose q 30 minutes PRN.
- Pediatric (2 – 12 years old): 1 mcg/kg IN, IM, IV/IO (maximum initial dose 100 mcg).
  - Repeat dose in 15 minutes.
  - Additional doses administered at half the dose q 30 minutes PRN.
- *NOTE*: In the cases of a MAP <65, decrease the dose of Fentanyl for the first dose to see how the patient tolerates it.

Morphine Sulfate

- Adults: 4 mg IM/IV/IO.
  - Repeat dose in 15 minutes
  - Additional doses administered at half the dose q 30 minutes PRN.
- Pediatric (2 - 12 years old): 0.1 mg/kg IM/IV/IO (maximum initial dose 4 mg).
  - Repeat dose in 15 minutes
  - Additional doses administered at half the dose q 30 minutes PRN.

PATIENT COMFORT/PAIN MANAGEMENT

P	If the provider feels it is clinically indicated, the pain is not cardiac related, and there has been an initial dose of Morphine or Fentanyl administered; Consider [one (1) dose only]: **Ketamine** ▪ Adults: 0.2 mg/kg • (max dose 25 mg) • Infusion mixed in 100 ml NS or slow IV push. ▪ Pediatric (2 – 12 years old): 0.2 mg/kg • (max dose 25 mg) • Infusion mixed in 100 ml NS or slow IV push.
P	If systolic BP drops below 90 mmHg discontinue use of opiate analgesics, administer an IV fluid bolus 250 ml of NS and contact Medical Command.
E A P	If discomfort persists, Contact Medical Command Physician to discuss further treatment and/or to request additional medication. Monitor blood pressure and respiratory effort.

NOTE: Administration of an opioid pain medications may not be tolerated well in patients over 65 years of age. Doses should be initiated at half the recommended dose and repeated as needed.

Purpose

Hypoperfusion is decreased effective circulation causing inadequate deliver of O2 to tissue. Can be caused by bleeding, vomiting, diarrhea, acute MI, CHF, sepsis, spinal cord injury, anaphylaxis.

Signs/Symptoms

- **Compensated**: tachycardia, poor skin color, cool/dry skin, delayed capillary refill, normal systolic pressure.
- **Decompensated**: perfusion is profoundly affected, low blood pressure, tachypnea, cool/clammy skin, agitation, and ALOC.

Differential Considerations

- **Hypovolemic**- loss of fluid; MOST COMMON
- **Distributive**- loss of vascular tone/sepsis, anaphylaxis, toxic chemicals, spinal cord injury
- **Cardiogenic**- heart pump failure, most common in adults with acute MI or CHF. Is rare in children.

E Perform Initial Treatment / Universal Patient Care Protocol.

A Manage airway, prevent heat loss, control bleeding, elevate extremities.

P Patients with Distributive shock from infection may also have hypovolemia from vomiting, diarrhea, and poor fluid intake.

TREATMENT PATHWAYS

Hypovolemic Shock

E P
- Monitor vital signs and Pulse oximeter.
- Expedite transport

A P Establish:
- Two (2) Large bore IV's

A P
- If systolic blood pressure <90 or patient has other signs and symptoms of shock; administer:
  - 20 ml/kg normal saline IV up to a maximum of 2 liters and reassess.
- Repeat bolus per Medical Command
- If after reassessment, BP is still <90 systolic or other S/S are still present, contact Medical Command and reconsider causes.

A P If BP is <90 systolic and S/S are resolved, administer:
- 100 ml/hr NS and monitor

Distributive Shock

E A P Initial treatment is the same as hypovolemic shock

Cardiogenic Shock

A P Establish:
- IV NS administer 250 ml bolus
- Assess for fluid overload.

A P If there is no rhythm disturbance but poor perfusion remains; Consider:
- Additional fluid bolus.

P

After confirming respective shock, Administer:

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 utilizing the Emergency Epinephrine Infusion Drip Charts.

OPTIONAL: **Push Dose Epinephrine** *(option during limited resources only)*
- mix 1 ml of Epi 1:10,000 in a syringe of 9 ml of NS = 10 mcg/ml. Administer 1-2 ml q 2 minutes PRN.

- Titrate Epinephrine using the smallest dose possible to maintain a heart rate >60 bpm and a SBP >90 mmHg or MAP >65 mmHg.

EPINEPHRINE INFUSION CHART

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

ADULT HYPOPERFUSION / SHOCK

TOC

Purpose

Hypoperfusion is decreased effective circulation causing inadequate deliver of O2 to tissue. Can be caused by bleeding, vomiting, diarrhea, acute MI, CHF, sepsis, spinal cord injury, anaphylaxis.

Signs/Symptoms

- **Compensated**: tachycardia, poor skin color, cool/dry skin, delayed capillary refill, normal systolic pressure.
- **Decompensated**: perfusion is profoundly affected, low blood pressure, tachypnea, cool/clammy skin, agitation, and ALOC.

Differential Considerations

- **Hypovolemic**- loss of fluid; MOST COMMON
- **Distributive**- loss of vascular tone/sepsis, anaphylaxis, toxic chemicals, spinal cord injury
- **Cardiogenic**- heart pump failure, most common in adults with acute MI or CHF. It's rare in children.

E Perform Initial Treatment / Universal Patient Care Protocol.

A Manage airway, prevent heat loss, control bleeding, elevate extremities.

P Patients with Distributive shock from infection may also have hypovolemia from vomiting, diarrhea, and poor fluid intake.

TREATMENT PATHWAYS

Hypovolemic Shock

E
- Monitor vital signs and pulse oximeter.
- Expedite transport

A
Establish:
- IV access

A
Compensated shock with s/s such as tachycardia and cool/dry skin and delayed capillary refill, administer:
- 20 ml/kg normal saline bolus IV/IO.
- Repeat bolus per Medical Command

A
Decompensated shock with s/s such as hypotension, tachypnea, cool/clammy skin, agitation, and ALOC, administer:
- 20 ml/kg normal saline bolus IV/IO.
- May repeat bolus X2 or a max of 60 ml/kg.

Distributive Shock

E
Initial treatment is the same as hypovolemic shock

P
Reassess shock is Distributive and Consider:

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.
- Titrate for SBP > 70 + 2 (age in years) mm/Hg.

E
Contact medical command for additional treatment options

Cardiogenic Shock

A
Administer:
- Normal Saline IV/IO
- 10 ml/kg bolus
- Assess for fluid overload.

P
If there is no rhythm disturbance but poor perfusion remains, consider:

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.
- Titrate for SBP > 70 + 2 (age in years) mm/Hg.

E
Contact medical command for additional treatment options

PEDIATRIC HYPOPERFUSION / SHOCK

P	Reassess shock is Hypovolemic. Only if volume replacement is sufficient, Consider: **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. ▪ Titrate for SBP > 70 + 2 (age in years) mm/Hg.
E A P	Contact medical command for additional treatment options

PEDIATRIC EPI INFUSION DOSING – 10 gtts/ml Solution Set					
Age	Wt.	Dose	Age	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	Wt.	Dose	Age	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

Purpose

CVA or stroke may have a variety of presentations. The EMS goal is to recognize, determine the severity, and give early notification to Medical Command and definitive care facilities.

Signs/Symptoms

- Altered Mental Status
- New onset of unilateral weakness (hemiparesis)
- Paralysis (hemiplegia)
- Difficulty speaking (aphasia) or combination of these.

Differential Considerations

- AMS (Altered Mental Status)
- Diabetic Crisis (hypoglycemia)
- Hypoxia

E A P	Perform Initial Treatment / Universal Patient Care Protocol.
	Check a serum glucose level.
	Determine and document when the patient was last known well (LKW) and the time of symptoms onset (TSO) if known.
	Determine the Cincinnati Pre-hospital Stroke Score (CPSS)
	Early notification to Medical Command and hospitals is essential for time-sensitive interventions and appropriate destination decisions

TREATMENT
Patient with positive CPSS

E A P	Perform FAST-ED to help determine the possibility of large vessel occlusion (LVO)
	If FAST-ED is POSITIVE, prepare transport directly to a Comprehensive Stroke Center (CSC) or Primary Stroke Center (PSC) with thrombectomy capability. Contact Medical Command for destination and mode of transport decision. ▪ A positive FAST-ED score is a score ≥4 which indicates a 60% – 85% possibility of an LVO.
	If LKW is <3.5 hours, transport to closest facility for TNK administration. ▪ If CSC or PSC is more than 45 min., transport in consultation with Medical Command.
	If the patient is taking any anticoagulants such as Coumadin (Warfarin), Eliquis (apixaban), Xarelto (rivaroxaban), and Pradaxa (dabigatran) they are not a candidate for thrombolysis with TNK. They should be transported to the nearest CSC or PSC-I for potential intervention.
	If the FAST-ED score is ≥4 transport with head at 0 degrees elevation, otherwise with head elevated to 30 degrees and in left lateral recumbent if AMS.
	Administer: **Oxygen** ▪ Deliver to maintain SPO2 ≥95%.
	Obtain 12 lead EKG while in transport

A P	Establish IV access: **Normal Saline** ▪ 0.9% KVO or saline lock ▪ If time permits, establish a second IV access

TREATMENT
S/S resolved or treated for hypoglycemia

EAP	Provide supportive care and transport to nearest appropriate facility.

- If possible, transport a witness or provide the receiving hospital with a cell phone number of a witness who can verify the LKW time.
- It is preferred that you bring the patient's medications to the receiving ED but if unable to do so, a list will suffice.
- The priority of transfer facilities for patient's determined to have a possible LVO should be CSC first, then a PSC-I, and lastly a PSC or ASR when no CSC or PSC-I meets the criteria.
- 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.

STROKE

TOC

ADULT SEIZURE

Purpose

A seizure is a sudden, uncontrolled burst of electrical activity in the brain. It can cause changes in behavior, movements, feelings and levels of consciousness.

Signs/Symptoms

- Altered level of consciousness
- Urinary/bowel incontinence
- Active Convulsions
- Grand mal Convulsions
- Tremors
- Petite mal tremors

Differential Considerations

- Can be related to
  - Trauma
  - Suspected Overdose
  - History of Seizures
- Patient may or may not be taking anti-seizure medications.

E A P

- Perform Initial Treatment / Universal Patient Care Protocol
- Determine origin of seizure:
  - Trauma
  - Overdose
  - History of seizures
- Assess Serum glucose and follow Diabetic Protocol if reading is <60mg/dl

TREATMENT PATHWAYS

Active Seizure

E A P

- Obtain key information and prepare for transport.
- Expedite transport, and contact Medical Command

AP

- Establish IV access for NS KVO.

P

- If seizure activity persists or two (2) or more episodes where the patient does not regain consciousness, administer:
  Midazolam (Versed®)
  - 0.1 mg/kg IV/IO to a max of 5mg
  - 0.2 mg/kg (IN/IM) to a max of 10 mg.
  - May repeat x1 q 5 min. if seizure persists.
- *NOTE: Administration of Midazolam may not be tolerated well in patients over 65 years of age. Doses should be initiated at half the recommended dose and repeated as needed.*
- If seizure is refractory to two doses of benzodiazepine, administer:
  Ketamine
  - 1 mg/kg IV/IO to a max of 100 mg
  - 2 mg/kg IM to a max of 200 mg
- Repeat Dose
  - 0.5 mg/kg IV/IO to a max of 50 mg
  - 1 mg/kg IM to a max of 100 mg

E A P

- If seizure continues, Medical Command Physician for additional treatment options.

No Seizure Activity

E A P

- Monitor Vitals
- Transport
- Perform remaining assessments
- Transport left lateral recumbent if decreased LOC

E A P

- Continually assess for recurrence of seizure activity

E A P

- Contact Medical Command and give report.

TOC

Purpose

A seizure is a sudden, uncontrolled burst of electrical activity in the brain. It can cause changes in behavior, movements, feelings and levels of consciousness.

Signs/Symptoms

- Altered Level of Consciousness
- Fever
- Active Convulsions/tremors
- Grand mal Convulsions/tremors
- Petite mal tremors/tremors

Differential Considerations

- Can be related to
  - Trauma
  - Suspected Overdose
  - History of Seizures
- Patient may or may not be taking anti-seizure medications.

E A P

- Perform Initial Treatment / Universal Patient Care Protocol
- Determine origin of seizure:
  - Trauma
  - Overdose
  - History of seizures
- Assess Serum glucose and follow Diabetic Protocol if reading is <60mg/dl
- If Febrile in nature (temperature ≥100.4°F/38°C), follow the appropriate protocol.

TREATMENT PATHWAYS

Active Seizure

E A P

- Obtain key information and prepare for transport.
- Expedite transport, and contact Medical Command

A P

If patient is prescribed DIASTAT and still Seizing, administer:

DIASTAT

- prescribed dose rectally.
- Patient must be transported.

P

If seizure activity persists or two (2) or more episodes where the patient does not regain consciousness, administer:

Midazolam (Versed®)

- 0.1 mg/kg IV/IO to a max of 5 mg.
- 0.2mg/kg IN/IM max dose 10 mg.
- Do not delay treatment to establish IV.

If seizure is refractory to two doses of benzodiazepine, administer:

Ketamine

- 1 mg/kg IV/IO to a max of 100 mg
- 2 mg/kg IM to a max of 200 mg

Repeat Dose

- 0.5 mg/kg IV/IO to a max of 50 mg
- 1 mg/kg IM to a max of 100 mg

E A P

If seizure continues, Medical Command Physician for additional treatment options.

No Seizure Activity

E A P

- Monitor Vitals
- Transport
- Perform remaining assessments
- Transport left lateral recumbent if decreased LOC

E A P

Continually assess for recurrence of seizure activity

E A P

Contact Medical Command and give report.

PEDIATRIC SEIZURE

TOC

Purpose

Diabetic patients may have various complaints and are at risk for multiple medical problems. They may be ill from hyperglycemia which can lead to diabetic ketoacidosis.

Signs/Symptoms

Hypoglycemia
- ALOC
- Confusion
- Malnourished
- HIV/AIDS
- Receives dialysis
- Known alcoholic

Hyperglycemia
- Ketoacidosis
- Kussmaul respiration
- Acetone breath
- Improper insulin administration
- Receives dialysis
- Known alcoholic

Differential Considerations

- Diabetic Crisis
- CVA/STROKE/TIA
- Hypoxia

E	Perform Initial Treatment / Universal Patient Care Protocol
A	Assess LOC and blood glucose level
P	Obtain 12 lead EKG and transmit

TREATMENT PATHWAYS

Hypoglycemic - BS <60mg/dL

E A P	If patient is awake and oriented, administer: **Oral Glucose** ▪ 15 gm oral.
E A P	If unable to establish a venous access, administer: **Glucagon** ▪ 1mg IM (> 25 kg). ▪ 0.5 mg IM (< 25 kg).
A P	Patient has altered mental status and blood glucose is < 60 mg/dl, administer: **Dextrose 50%** in water **(D50W)** ▪ 25 grams IVP. ▪ May be repeated once q five (5) minutes if patient remains hypoglycemic.

Hyperglycemic - BS >300mg/dL

A P	Blood glucose is > 300 mg/dl and patient has signs and symptoms of diabetic ketoacidosis, administer: **Normal Saline** ▪ 1 Liter bolus. ▪ Repeat once if glucose remains > 300 mg/dl.
	▪ 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. ▪ Reassess patient for signs of fluid overload.
P	▪ Assess for peaked "T" Waves
E A P	If blood glucose level remains < 60 mg/dl or > 300 mg/dl with associated signs and symptoms, contact Medical Command for additional treatment pathway.

OPTIONAL TREATMENT PATHWAY – D10

A P	Patient has ALOC and blood glucose is <60 mg/dl, administer: **Dextrose 10%** ▪ 50mL (5grams) boluses q one (1) minute IV/IO. ▪ Max dose of 250mL or 25 grams, until: • patient has a return to normal mental status, and • patient's blood glucose is at least 60 mg/dl.
	▪ Repeat dosing regimen if persistent altered mental status and blood glucose remains <60 mg/dl.
	D10 is prepared by mixing 40 ml of NS with 10 ml of D50W

TOC

Purpose

Diabetic patients may have various complaints and are at risk for multiple medical problems. They may be ill from hyperglycemia which can lead to diabetic ketoacidosis.

Signs/Symptoms

Hypoglycemia
- ALOC
- Confusion
- Malnourished
- HIV/AIDS
- Receives Dialysis
- Known alcoholic

Hyperglycemia
- Ketoacidosis
- Kussmaul respiration
- Acetone breath
- Improper insulin administration
- Receives dialysis
- Known alcoholic

Differential Considerations

- Diabetic Crisis
- CVA/STROKE/TIA
- Hypoxia

E Perform Initial Treatment / Universal Patient Care Protocol
A Assess LOC and blood glucose level
P Obtain 12 lead EKG and transmit

TREATMENT PATHWAYS

Hypoglycemic - BS <60mg/dL

E A P If patient is awake and oriented, administer:
Oral Glucose
- 15 gm oral.

E A P If unable to establish a venous access, administer:
Glucagon
- 1mg IM (> 25 kg).
- 0.5 mg IM (< 25 kg).

Hyperglycemic - BS >300mg/dL

A P Blood glucose is > 300 mg/dl and patient has signs and symptoms of diabetic ketoacidosis, administer:
Normal Saline
- 10 ml/kg bolus.
- Repeat once if glucose remains > 300 mg/dl.
- 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.
- Reassess patient for signs of fluid overload.

P
- Assess for peaked "T" Waves

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

A P Patient has altered mental status and blood glucose is < 60 mg/dl, administer as follows:
Patient 1 month of age or younger
Dextrose 10%
- 5 ml/kg IV/IO.
- Obtain medical consultation to administer a second dose.

Patient older than 1 month but younger than 2 years old – If blood glucose is < 60 mg/dl, administer:
Dextrose 25%
- 2 ml/kg of D25 IV/IO.
- Obtain medical consultation to administer a second dose.

Patient 2 years of age or older
Dextrose 50%
- 1 ml/kg IV/IO to a maximum dose of 25 grams.
- Obtain medical consultation to administer a second dose.

PEDIATRIC DIABETIC EMERGENCIES

OPTIONAL TREATMENT PATHWAY – D10

A P	Patient has ALOC and blood glucose is <60 mg/dl, administer: **Dextrose 10%** ▪ Patients 30 days (1 month) up to 4 years: • 2 ml/kg of 10% dextrose IV/IO to a maximum of 25 grams. • If blood glucose is less than 60 mg/dl, obtain medical consultation to administer second dose of D10W. ▪ Pediatric (5 – 12 years of age): • 1 ml/kg of 10% dextrose IV/IO to a maximum of 25 grams. • If blood glucose is less than 60 mg/dl, obtain medical consultation to administer second dose of D10W.

D10 is prepared by mixing 40 ml of NS with 10 ml of D50W
D25 Is prepared by mixing 25 ml NS with 25 ml D50W

UNCONSCIOUS / ALTERED MENTAL STATUS

Purpose

A medical condition in which an individual experiences a significant change in their level of consciousness or mental functioning without an apparent traumatic injury.

Signs and Symptoms

- Altered Level of Consciousness
- Speech Changes
- Motor Abnormalities
- Sensory Disturbances
- Memory Loss

Differential Considerations

- Hyper/Hypoglycemia
- Stroke
- Hyper/Hypotension
- Intracranial hemorrhage
- Shock
- Overdose
- Medication Side Effects
- Sepsis
- Seizure
- Electrolyte Imbalances
- Liver or Kidney Imbalances
- Psychological Conditions

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

E A P — Perform **Initial Treatment / Universal Patient Care Protocol**

If a readily treatable/reversable 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.

ASSESS BLOOD GLUCOSE

E A P — Blood glucose level <60 mg/dl Treat per **Diabetic Emergencies Protocol.**

E — Blood glucose level >60 mg/dl:
Naloxone (Narcan®)
- 2 mg IM *(Anterior Lateral Thigh).*
- **If unable to administer naloxone IM**, administer 2 mg intranasal (IN). (2 mg/2 mL, 1 mL in each nostril or optional prepackaged IN spray in a concentration not to exceed 1 ml per nostril. If patient does not show signs of improvement administer an additional 2 mg IN.

A P — Draw labs if available.

Blood glucose level >60 mg/dl, titrate:
Naloxone (Narcan ®)
- 0.4 mg/minute (max 2 mg total IV).
- If IV cannot be established, administer 2 mg IM (anterior lateral thigh) or IN. After 10 minutes if respiratory depression persists, repeat 2 mg IM.

Expedite transport and notify Medical Command.

TOC

Purpose

The purpose of this protocol refers to the unintentional or deliberate consumption of substances in quantities that can be harmful or fatal to the human body.

Signs and Symptoms

- Altered mental status
- GI symptoms
- Cardiovascular symptoms (Hypotension)
- Respiratory distress
- Neurological symptoms (seizures)
- Skin changes

Differential Considerations

- TCA
- Tylenol
- Depressants/Stimulants
- Anticholinergics
- Cardiac medications/abnormalities
- Solvents, alcohols, cleaning agents
- Insecticides
- Toxic plants/flora
- Medical cause (hyperthyroidism)
- Water intoxication
- Abuse
- Munchausen by proxy
- Psychiatric emergency

Toxic exposure poses a significant risk to both the rescuer and patient; appropriate scene management and decontamination are critical.
After decontamination procedures have been completed, do not delay transport.

E A P	Perform Initial Treatment / Universal Patient Care Protocol.
	Transport the patient with all containers, bottles, and labels from the substance, if safe to do so.
	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%.
	Routes: ▪ Ingested Poisons: Protect airway. Do not induce vomiting. ▪ Inhaled Poisons: Remove from IDLH environment. Maintain airway and support respirations. ▪ Absorbed Poisons: Remove the poison using proper procedures. ▪ Injected Poisons: See treatment guidelines for specific substance.

TREATMENTS

NARCOTICS

E A P	Defer advanced airway management until after naloxone, if BVM ventilation is adequate.
	Obtain blood glucose.
	Suspected overdose with respiratory depression: Blood glucose >60, administer: **Naloxone (Narcan®).**

E	▪ 2mg IM (anterior Lateral Thigh). ▪ If unable to administer IM, administer 2 mg intranasal (IN), (2 mg/2 mL, 1 mL in each nostril or optional prepackaged IN spray in a concentration not to exceed 1 ml per nostril. ▪ If respiratory depression persists after 10 minutes, repeat 2 mg IN and call for ALS back up.
A P	▪ Titrate 0.4 mg/minute (max 2 mg total IV). ▪ If IV cannot be established, administer 2 mg IM (anterior lateral thigh) or IN. After 10 minutes if respiratory depression persists, repeat 2 mg IM.

STIMULANTS

E A P

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

P

HR > 120 bpm, administer:
Midazolam (Versed®)
- 2 mg slow IV push, titrated to effect.

ALCOHOL

E A P

Perform rapid glucose determination.

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

P

Alcohol withdrawal with severe agitation, tachycardia, hypertension, or hallucinations:
Midazolam (Versed®)
- Age <65:
  - 2 mg IV/IO/IM or 5 mg (IN) via atomizer
- Age ≥65:
  - 1 mg IV/IO/IM or 5 mg (IN) via atomizer

BETA BLOCKERS

A P

Symptomatic (HR <60, SBP <90 mmHg, conduction delays, slurred speech, nausea/vomiting):
Infuse a 20 mL/kg bolus of Normal Saline.

If no improvement, repeat 20 mL/kg NS bolus. If fluid overload, slow the IV to KVO.

A

Glucagon
- 1 mg IV. (If available, Glucagon 2 mg IV as the initial dose.)
- Repeated at 2 mg IV in 10 minutes.

Consider transcutaneous pacing and contact MCP for additional direction.

P

Glucagon
- 1 mg IV. (If available, Glucagon 2 mg IV as the initial dose.)
- Repeated at 2 mg IV in 10 minutes.

Consider transcutaneous pacing and contact MCP for additional direction

CALCIUM CHANNEL BLOCKERS

A P

Symptomatic (HR <60, SBP <90 mmHg, slurred speech, nausea/vomiting), Administer:
Calcium Chloride:
- Adult: 1 gm (10ml of a 10% solution).
  - Mix in a 100 ml NS bag and administer wide open using gravity.
  - Slow the infusion if the patient complains of burning.
  - May repeat once q 30 min if EKG changes are noted.
- Pediatric: 20 mg/kg (0.2 ml/kg).
  - Mix in a 100 ml NS bag and administer wide open using gravity.
  - Slow the infusion if the patient complains of burning.
  - May repeat once q 30 min if EKG changes are noted.

A	Symptomatic (HR <60, SBP <90 mmHg, slurred speech, nausea/vomiting), Administer: **Atropine** ▪ 1 mg IV
	If no response after Atropine contact **MCP** for further treatment.

P	Symptomatic (HR <60, SBP <90 mmHg, slurred speech, nausea/vomiting), Administer: **Atropine** ▪ 1 mg IV
	If no response after Atropine contact MCP for further treatment.

TRICYCLIC ANTI-DEPRESSANTS

Examples of Tricyclic Anti-Depressants:
Amitriptyline (Elavil), Imipramine (Tofranil), Doxepin (Sinequan), Desipramine (Norpramin), Nortriptyline (Pamelor), Clomipramine (Surmontil), Amoxapine (Assendin)

A P	Symptomatic: Infuse a 20 mL/kg bolus NS. If no improvement after two 20 mL/kg boluses NS, assess for fluid overload during administration.
	If QRS > 120 ms, administer: **Sodium Bicarbonate** ▪ 50 mEq
	Contact Medical Command for further treatment options.

CHOLINERGIC

S-Salivation
L-Lacrimation
U-Urination
D-Defecation
G-Gastrointestinal Cramping
E-Emesis

Examples of Cholinergics:
Pesticides (Organophosphates, Carbamates), Chantix (Varenicline), Evoxac (Cevimeline), Tyrvaya (Vernicline), Salagen (Pilocarpine), and nerve gas agents (Sarin, Soman).

Symptomatic (respiratory distress, SLUDGE syndrome, seizures, or HR < 60 bpm); administer:

A	**Atropine** ▪ 2 mg IV

P	**Atropine** ▪ 2 mg IV ▪ If symptoms continue, repeat every 5 minutes

CYANIDE EXPOSURE (OPTIONAL)

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

P	If symptomatic Administer: **Cyanokit ®** ▪ Adult Dose: 5 g of Hydroxocobalamin, infused over 15 minutes ▪ Pediatric Dose: 70 mg/kg IV infused over 15 minutes
	Reconstitute Hydroxocobalamin with Normal Saline per manufacturer's directions.

OVERDOSE, TOXIC INGESTION, POISONING

TOC

BEHAVIORAL EMERGENCIES / PATIENT RESTRAINT

Purpose

The purpose is primarily focused on ensuring the safety of the patient, health care providers, and others in the vicinity. It's important to note that the use of restraints should be considered a last resort and should only be employed when less restrictive measures have been ineffective.

Signs/Symptoms

- Aggression
- Violence
- Extreme Agitation
- Intense Panic

Differential Considerations

- Shock
- Hypoxia
- Hypotension
- Stroke
- Intracranial Hemorrhage
- Sepsis
- Substance Abuse
- Medication Side Effects

Control environment factors: attempt to move patient to a private area free of family and bystanders. **MAINTAIN ESCAPE ROUTE.**

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

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.

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

E
A
P

Perform Initial Treatment/Universal Patient Care.

Perform rapid glucose for patients with altered mental status.

RESTRAINT OPTIONS

PHYSICAL RESTRAINT

E
A
P

Consider restraining patient as needed to protect life or prevent injury. Considerations:
- If the patient is an immediate danger to themselves or others, soft restraints may be placed prior to MCP contact.

- MCP **shall** be immediately notified.

- Restrain patient in the supine position or left lateral recumbent position only. **NEVER PRONE.**
- Ensure method of restraint does not affect breathing or circulation.
- Use the least restrictive or invasive method of restraint which will protect the patient and others.

E
A
P

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

CHEMICAL RESTRAINT

- Providers must choose Treatment Pathway 1 or 2
- Ketamine is only to be administered alone, not in combination with the agents listed in pathway 1, except per MCP order if the patient becomes a danger to themselves or others.
- The goal of either pathway is to make the patient manageable but not unresponsive.
- Patients receiving chemical sedation must have supplemental oxygen, pulse oximetry, ETCO2, and ECG monitoring applied as soon as they will tolerate it.

PATHWAY 1 BEHAVIORAL

P

If psychotic/behavioral agitation is suspected, administer:
Droperidol (Inapsine®)
- 5 mg IM

If dystonic reaction (dyskinesia) is noted, administer:
Diphenhydramine (Benadryl®)
- 25 mg IV or IM

Patient remains agitated or aggressive in five (5) minutes, administer:
Midazolam (Versed®)
- 5mg IV, IM or IN.

Immediately contact MCP.

PATHWAY 2 SEVERE AGITATION and/or IMMEDIATE THREAT

P

Consider possible Substance-Induced Psychosis.

If the patient is an immediate danger to themselves or others, administer:
Ketamine
- 2 mg/kg IM, max single dose of 150 mg or
- 1 mg/kg IV/IO to a max dose of 75 mg

Immediately contact MCP.

Midazolam may not be tolerated well in patients over 65 years of age. Doses should be initiated at 2 mg IV/IM or 5 mg (IN) via atomizer slow and repeated as needed.

P

If the patient is not manageable after 10 minutes following the first dose, request:

Ketamine

- 2 mg/kg IM, max dose of 150 mg (max total IM dose of 300 mg) or 1 mg/kg IV/IO max dose of 75 mg (max total IV/IO dose of 150 mg)

P

Patients may exhibit with sweating, tachypnea, increased pain tolerance, tactile hyperthermia, and unusual strength with a lack of tiring. Such patients are at an increased risk of associated severe metabolic acidosis and rapid decompensation. If symptoms present, administer:

- 1 liter of Normal Saline wide open

Additional fluids to be determined by discussion with MCP.

P

In rare instances Ketamine can cause hypersalivation. If this occurs, administer:

Atropine

- 0.25 mg IV/IO

E A P

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

E A P

Transport as soon as possible.

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

P

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

Purpose

Nausea/vomiting are symptoms of many different health conditions. Vomiting can lead to aspiration and/or dehydration.

Signs/Symptoms

- Nausea
- Vomiting
- Dry Heaves
- Respiratory infection
- Dehydration

Differential Considerations

- Food Poisoning
- Cardiac-related
- Head trauma
- Pregnancy
- Viruses
- Over-indulgence (food, drugs, alcohol)
- Migraines
- Heat-related illnesses

E Perform Initial Treatment / Universal Patient Care Protocol

A P Administration of Ondansetron (Zofran®) or Droperidol is contraindicated in prolonged QT interval.

TREATMENT PATHWAYS

A P Administer:
Normal Saline
- 20 ml/kg fluid bolus, as needed.

Nausea/Vomiting

Administer:
Ondansetron Hydrochloride (Zofran®)

E
- 4 mg undiluted IM.

A P
- 4 mg undiluted IV/IO/IM.
- Repeat doses require MCP order and EKG.

Persistent Vomiting

P Administer:
Droperidol (Inapsine®)
- 1.25 mg IV/IO or
- 2.5 mg IM

- Repeat doses require MCP order.
- If known pregnancy requires MCP order.

NAUSEA / VOMITING

TOC

Purpose

Nausea/vomiting are symptoms of many different health conditions. Vomiting can lead to aspiration and/or dehydration.

Signs/Symptoms

- Nausea
- Vomiting
- Dry Heaves
- Respiratory infection
- Dehydration

Differential Considerations

- Food Poisoning
- Cardiac-related
- Head trauma
- Pregnancy
- Viruses
- Over-indulgence (food, drugs, alcohol)
- Migraines
- Heat-related illnesses

E	Perform Initial Treatment / Universal Patient Care Protocol
A P	Administration of Ondansetron (Zofran®) or Droperidol is contraindicated in prolonged QT interval.

TREATMENT PATHWAYS

A P	Administer: **Normal Saline** ▪ 20 ml/kg fluid bolus, as needed.

Nausea/Vomiting

Administer:
Ondansetron Hydrochloride (Zofran®)

10 kg – 30 kg

E	▪ 2 mg undiluted IM.
A P	▪ 2 mg undiluted IV/IO/IM. ▪ Repeat doses require MCP order and EKG.

>30 kg

E	▪ 4 mg undiluted IM.
A P	▪ 4 mg undiluted IV/IO/IM. ▪ Repeat doses require MCP order and EKG.

TOC

ADULT FEVER

Purpose

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.

Signs/Symptoms

- Sweating
- Chills and shivering
- Headache
- Muscle aches
- Loss of appetite
- Irritability
- Dehydration
- General weakness

Differential Considerations

- Viral infections
- Bacterial infections
- Auto-immune disorders
- Sepsis

E	Perform Initial Treatment/Universal Patient Care
A	DO NOT submerge patient in water or use ice or rubbing alcohol
P	Follow the proper protocol for medical management based on clinical presentation

TREATMENT PATHWAYS

Body temperature 100.4° F - 105° F

E	Facilitate passive cooling by removing excess clothing and blankets.
A P	Administer: **Acetaminophen (Tylenol ®)** ▪ 15 mg/kg up to a max of 650 mg dose PO. ▪ Patient must meet the following conditions: • No known allergy to Acetaminophen • No history of hepatic disease • No other administrations of Acetaminophen in the last 4 hours • Additional medication would not exceed 4,000 mg or 150 mg/kg per day

Body temperature > 105° F

E	Facilitate active cooling by applying wet towels with tepid water to trunk and head.
A P	Administer: **Acetaminophen (Tylenol ®)** ▪ 15 mg/kg up to a max of 650 mg dose PO. ▪ Patient must meet the following conditions: • No known allergy to Acetaminophen • No history of hepatic disease • No other administrations of Acetaminophen in the last 4 hours • Additional medication would not exceed 4,000 mg or 150 mg/kg per day

A P	Consider IV Acetaminophen if unconscious or unable to tolerate PO. Administer: **Acetaminophen (Tylenol ®)** ▪ 15 mg/kg up to a max of dose 1 gram

E	Monitor vital signs closely and continue supportive care.
A P	Contact Medical Command physician to discuss further treatment and/or to request additional medication.

Calculation: Liquid Form

1. $\frac{\text{Patient's weight in pounds}}{2.2}$ = Patient weight in Kg

2. 15 mg/kg X Patient weight in Kg = Dose to be administered in mg

3. Dose to be administered in mg X $\frac{5\text{ ml}}{160\text{ mg}}$ = Dose to be administered in ml

TOC

PEDIATRIC FEVER

Purpose

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.

Signs/Symptoms

- Sweating
- Chills and shivering
- Headache
- Muscle aches
- Loss of appetite
- Irritability
- Dehydration
- General weakness

Differential Considerations

- Viral infections
- Bacterial infections
- Auto-immune disorders
- Sepsis

E A P	Perform Initial Treatment/Universal Patient Care
	DO NOT submerge patient in water or use ice or rubbing alcohol
	Follow the proper protocol for medical management based on clinical presentation

TREATMENT PATHWAYS

Body temperature -102° F -105° F

E A P	Facilitate passive cooling by removing excess clothing and blankets.
E	Administer: **Acetaminophen (Tylenol ®)** ▪ 15 mg/kg to a max of 650 mg ▪ Use liquid form ▪ Utilize assistance of the parent or legal guardian to calm child. ▪ No other administrations of Acetaminophen in the last 4 hours
A P	Administer: **Acetaminophen (Tylenol ®)** ▪ 15 mg/kg Liquid form ▪ No other administrations of Acetaminophen in the last 4 hours
	▪ Consider IV Acetaminophen for unconscious or unable to tolerate PO. ▪ 15 mg/kg max dose 1 gram.

Body temperature > 105° F

E A P	Facilitate active cooling by applying wet towels with tepid water to trunk and head.
E	Administer: **Acetaminophen (Tylenol ®)** ▪ 15 mg/kg to a max of 650 mg ▪ Use liquid form ▪ Utilize assistance of the parent or legal guardian to calm child. ▪ No other administrations of Acetaminophen in the last 4 hours
A P	Administer: **Acetaminophen (Tylenol ®)** ▪ 15 mg/kg Liquid form ▪ No other administrations of Acetaminophen in the last 4 hours
	▪ Consider IV Acetaminophen if unconscious or unable to tolerate PO. ▪ 15 mg/kg max dose 1 gram.

A P	If patient remains febrile and no other administration of Ibuprofen within 6 hours, Consider: **Ketorolac** ▪ Pediatric (2 – 12 years old): Administer 0.5 mg/kg IM/IV to a max dose of 15mg. ▪ No repeat doses.

E A P	Monitor vital signs closely and continue supportive care.
	Contact Medical Command to discuss further treatment and/or to request additional medication.

Calculation: Liquid Form

1. $\frac{\text{Patient's weight in pounds}}{2.2}$ = Patient weight in Kg

2. 15 mg/kg X Patient weight in Kg = Dose to be administered in mg

3. Dose to be administered in mg X $\frac{5 \text{ ml}}{160 \text{ mg}}$ = Dose to be administered in ml

TOC

ADULT SUSPECTED ABUSE/NEGLECT

Purpose

This protocol is to give guidance in the event an adult patient may present with suspected abuse, neglect, self-neglect, or financial exploitation.

Signs/Symptoms

- S/S may vary depending on the type of injury or event.
- Not all suspected abuse or neglect has outward or physical evidence.
- Fear/anxiety
- Excessive crying or development delay
- Depression
- Headaches
- Chronic abdominal pain
- Weight gain/loss
- Genital discomfort
- Abnormal bruising
- Poor hygiene

Differential Considerations

- Neglect/self-neglect
- Traumatic Injuries
- Sexual abuse
- Emotional abuse
- Financial exploitation

E A P	Perform Initial Treatment / Universal Patient Care Protocol
	Do not let emotions or prejudices interfere with appropriate patient care.
	Assure the scene safety
	Utilize resources including child, parent/caregiver, and other witnesses to obtain history.

TREATMENT PATHWAYS

Sexual Abuse

E A P	▪ Discourage patient from going to the bathroom. ▪ Do not allow washing or clothes changing. ▪ Give nothing by mouth.
	Transport and contact Medical Command by phone for additional treatment options.

Neglect/Self-Neglect

E A P	Treat with appropriate protocol and transport.
	Transport and contact Medical Command by phone for additional treatment options.

E A P	Document carefully and thoroughly.
	Upon arrival at destination, inform receiving medical personnel of findings or suspicions.
	Utilize the telephone to relay pertinent information to Medical Command.

WV Code §9-6-9. Mandatory reporting of incidences of abuse, neglect, financial exploitation, or emergency situation.(a) If any medical, dental, or mental health professional, Christian Science practitioner, religious healer, social service worker, law-enforcement officer, humane officer, any employee of any nursing home or other residential facility, has reasonable cause to believe that a vulnerable adult or facility resident is or has been neglected, abused, financially exploited or placed in an emergency situation, or if such person observes a vulnerable adult or facility resident being subjected to conditions that are likely to result in abuse, neglect, financial exploitation, or an emergency situation, the person shall immediately report the circumstances pursuant to the provisions of §9-6-11 of this code: *Provided*, That nothing in this article is intended to prevent individuals from reporting on their own behalf.
Visit https://dhhr.wv.gov/bcf/Services/Pages/Centralized-Intake-for-Abuse-andNeglect.aspx for more information.

West Virginia Department of Health and Human Resources Adult Protective Services Mandatory Reporting Form: https://dhhr.wv.gov/bcf/Services/Documents/APS%20Mandatory%20Reporting%20Form%20Rev%2008.2017.pdf

TOC

PEDIATRIC SUSPECTED CHILD ABUSE/NEGLECT

Purpose

This protocol is to give guidance in the event a pediatric patient may present with suspected abuse, neglect, self-neglect or sex trafficking or exploitation.

Signs/Symptoms

- S/S may vary depending on the type of injury or event.
- Not all suspected abuse or neglect has outward or physical evidence.
- Fear/anxiety
- Excessive crying or development delay
- Depression
- Headaches
- Chronic abdominal pain
- Weight gain/loss
- Genital discomfort
- Abnormal bruising
- Poor hygiene

Differential Considerations

- Neglect
- Traumatic Injuries
- Sexual abuse
- Emotional abuse
- Sexual exploitation

EAP

- Perform Initial Treatment / Universal Patient Care Protocol.
- Do not let emotions or prejudices interfere with appropriate patient care.
- Assure the scene safety.
- Utilize resources including child, parent/caregiver, and other witnesses to obtain history.

TREATMENT PATHWAYS

Sexual Abuse

EAP

- Discourage patient from going to the bathroom.
- Do not allow washing or clothes changing.
- Give nothing by mouth.

Transport and contact Medical Command by phone for additional treatment options.

Neglect

EAP

- Treat with appropriate protocol and transport.
- Transport and contact Medical Command by phone for additional treatment options.

EAP

- Document carefully and thoroughly.
- Upon arrival at destination, inform receiving medical personnel of findings or suspicions.
- Utilize the telephone to relay pertinent information to Medical Command.

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-andNeglect.aspx 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).

TOC

Purpose

This Protocol is applicable for known or suspected hyperkalemia.
The treatment goal is to prevent lethal dysrhythmias by reducing cardiac membrane excitability and stimulating intracellular uptake of potassium.

Signs/Symptoms

MILD-Fatigue, Weakness, Nausea/Vomiting

MODERATE- Small Broad P Waves, Wide QRS Complex, Tall Peaked T Waves

SEVERE- Bradycardia, Sinusoidal Pattern, VT/VF

Differential Considerations

- Cardiac Dysrhythmias
- Nausea/Vomiting
- Diarrhea
- Neurological issues
- Muscle weakness
- Respiratory issues
- Chest Pain
- Kidney Disease
- Dehydration

A P	Perform Initial Treatment/Universal Patient Care
A P	Patient exhibits with: ▪ Renal failure/hemodialysis. ▪ Severe dehydration/acute kidney injury. ▪ Potassium overdose. ▪ Signs and symptoms consistent with mild, moderate, or severe hyperkalemia.

TREATMENT

A P	Initiate: **Albuterol** ▪ 10 mg continuous nebulizer treatment. ▪ May repeat if completed prior to destination.
A P	Administer**:** **Calcium Chloride:** ▪ Adult: 1 gm (10ml of a 10% solution). ▪ Mix in a 100 ml NS bag and administer wide open using gravity. ▪ Slow the infusion if the patient complains of burning. ▪ May repeat once q 30 min if EKG changes are noted.
A P	Administer: **Sodium Bicarbonate** ▪ 1 mEq/kg IV/IO to a max of 100 mEq after flushing the IV line with 50 ml of NS following the administration of Calcium Chloride.
AP	Consider consultation with Medical Command for additional treatment options

ADULT HYPERKALEMIA

TOC

PEDIATRIC HYPERKALEMIA

Purpose

This Protocol is applicable for known or suspected hyperkalemia.
The treatment goal is to prevent lethal dysrhythmias by reducing cardiac membrane excitability and stimulating intracellular uptake of potassium.

Signs/Symptoms

MILD-Fatigue, Weakness, Nausea/Vomiting

MODERATE- Small Broad P waves, Wide QRS Complex, Tall Peaked T Waves

SEVERE- Bradycardia, Sinusoidal Pattern, VT/VF

Differential Considerations

- Cardiac Dysrhythmias
- Nausea/Vomiting
- Diarrhea
- Neurological issues
- Muscle weakness
- Respiratory issues
- Chest Pain
- Kidney Disease
- Dehydration

A P	Perform Initial Treatment/Universal Patient Care
A P	Patient exhibits with: ▪ Renal failure/hemodialysis. ▪ Severe dehydration/acute kidney injury. ▪ Potassium overdose. ▪ Signs and symptoms consistent with mild, moderate, or severe hyperkalemia.

TREATMENT

A P	Initiate: **Albuterol** ▪ 10 mg continuous nebulizer treatment. ▪ May repeat if completed prior to destination.
A P	Administer**:** **Calcium Chloride:** ▪ Pediatric: 20 mg/kg (0.2 ml/kg). ▪ Mix in a 100 ml NS bag and administer wide open using gravity. ▪ Slow the infusion if the patient complains of burning. ▪ May repeat once q 30 min if EKG changes are noted.
A P	Administer: **Sodium Bicarbonate** ▪ 1 mEq/kg IV/IO after flushing the IV line with 50 ml of NS following the administration of Calcium Chloride.
AP	Consider consultation with Medical Command for additional treatment options

TOC

SUDDEN INFANT DEATH SYNDROME

Purpose

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

Signs/Symptoms

- Loss of consciousness
- Apneic or agonal gasps
- Becomes unresponsive
- Fever with/without possible seizure-like activity prior to LOC
- Pulseless and apneic upon presentation

Differential Considerations

- Undiagnosed heart disease
- Hypertrophic Cardiomyopathy
- Coronary artery anomalies
- Arrhythmia etiologies
- SIDS
- CA

E	Perform Initial Treatment / Universal Patient Care Protocol
A	Do not begin immediate resuscitation efforts with evidence of rigor mortis, severe lividity, or tissue breakdown.
P	

TREATMENT PATHWAYS

Initiate Resuscitation

E	Initiate Pediatric Cardiac Arrest Protocol if immediate resuscitation is indicated.
A	Contact Medical Command for further treatment options and reporting.
P	

No Resuscitative Efforts

E	Contact Medical Command immediately for consultation with MCP.
A	Initiate Death in the Field guideline.
P	

- Note the position, condition, and surroundings of the victim.
- Do not let emotions or prejudices interfere with carrying out appropriate patient care or family support.
- Remember; people react differently in stressful situations.
- Do not pass judgement/add to parent's guilt or helplessness.

TOC

ENVIRONMENTAL

Purpose

Anaphylaxis is an acute allergic reaction characterized by varying degrees of respiratory distress.

It may be precipitated by a bite or a sting or from exposure to certain drugs or allergens.

Signs/Symptoms

- Hypotension
- Wheezing
- Hives
- Nontraumatic edema
- Tachycardia

Differential Considerations

- **Minimal Distress-** A slight increase in the work of breathing with hives or itching no wheezing or stridor evident.
- **Moderate Distress-** A considerable increase in the work of breathing with wheezing and/or abnormal breath sounds evident, and severe hives.
- **Severe Distress**- Extreme work of breathing (retractions) with decreased level of consciousness.

EAP Perform Initial Treatment / Universal Patient Care Protocol

If reaction is secondary to a sting, remove injection mechanism

TREATMENT PATHWAYS

Minimal Distress

EAP

Minimal to no respiratory distress, administer:

Diphenhydramine (Benadryl®)

- 25 mg IM or slow IV/IO
- repeated in 30 minutes if symptoms persist.
- Reassess for improvement or worsening reaction.

EMT route is IM only

EAP Contact Medical Command for additional treatment options.

Moderate Distress

EAP

If patient exhibits S/S of anaphylaxis (airway swelling, hypotension, moderate respiratory distress), treat as in minimal distress and administer:

Epinephrine 1:1000

- 0.5 mg IM
- Reassess for improvement or worsening reaction.
- May repeat dose per MCP if patient remains in moderate distress.

EAP

If patient is wheezing or has continued respiratory distress, administer:

Albuterol

- 2.5 mg

combined with

Ipratropium Bromide (Atrovent®)

- 0.5 mg

EAP Contact Medical Command for additional treatment options.

Severe Distress

AP

If symptoms persist following treatment outlined in moderate distress, administer:

Dexamethasone

- 0.1 mg/kg IM/IV/IO
- Max dose of 10mg.

AP

If patient remains in severe distress with decreased LOC and /or s/s of shock, administer:

Normal Saline

- 20 ml/kg bolus

P

Consider:

Epinephrine infusion

- (mix 1 mg of Epinephrine 1:1,000 in 1 L of normal saline producing a concentration of 1 mcg/ml)
- Adults: titrate from 1 mcg/min to 10 mcg/min for a SBP > 90 mmHg or a MAP > 65 mmHg
- Titrate for a SBP > 70 + 2(age in years)/mmHg per MCP order.

OPTIONAL: **Push Dose Epinephrine** *(option during limited resources only)*

- mix 1 ml of Epi 1:10,000 in a syringe of 9 ml of NS = 10 mcg/ml. Administer 1-2 ml q 2 minutes PRN.

EAP Contact Medical Command for additional treatment

EPINEPHRINE INFUSION CHART

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

TOC

PEDIATRIC ALLERGIC REACTION / ANAPHYLAXIS

Purpose

Anaphylaxis is an acute allergic reaction characterized by varying degrees of respiratory distress.

It may be precipitated by a bite or a sting or from exposure to certain drugs or allergens.

Signs/Symptoms

- Hypotension
- Wheezing
- Hives
- Nontraumatic edema
- Tachycardia

Differential Considerations

- **Minimal Distress-** A slight increase in the work of breathing with hives or itching no wheezing or stridor evident.
- **Moderate Distress-** A considerable increase in the work of breathing with wheezing and/or abnormal breath sounds evident, and severe hives.
- **Severe Distress**- Extreme work of breathing (retractions) with decreased level of consciousness.

EAP

Perform Initial Treatment / Universal Patient Care Protocol

If reaction is secondary to a sting, remove injection mechanism

TREATMENT PATHWAYS

Minimal Distress

EAP

Minimal to no respiratory distress, administer:

Diphenhydramine (Benadryl®)

- 1 mg/kg IM or slow IV/IO
- Max dose of 25 mg
- Reassess for improvement or worsening reaction.

EMT route is IM only

EAP

Contact Medical Command for additional treatment options.

Moderate Distress

EAP

If patient exhibits S/S of anaphylaxis (airway swelling, hypotension, or moderate respiratory distress) treat as in minimal distress and administer:

Epinephrine 1:1000

- Patients > 30 kg
  - 0.3 mg IM
- Patients < 30 kg
  - 0.15 mg IM
- Reassess for improvement or worsening reaction.

- May repeat dose per MCP if patient remains in moderate distress.

EAP

If patient is wheezing or has continued respiratory distress, administer:

Albuterol

- 2.5 mg

Severe Distress

AP

If symptoms persist following treatment outlined in moderate distress, administer:

Dexamethasone

- 0.1 mg/kg IM/IV/IO
- Max dose of 6mg.

AP

If patient remains in severe distress with decreased LOC and /or s/s of shock, administer:

Normal Saline

- 20 ml/kg

P

Consider:

Epinephrine infusion

- (mix 1 mg of Epinephrine 1:1,000 in 1 L of normal saline producing a concentration of 1 mcg/ml)
- Pediatric: titrate from 0.02 mcg/kg/min to 0.3 mcg/kg/min utilizing the Emergency Epinephrine Infusion Drip Charts.
- Titrate for a SBP > 70 + 2(age in years)/mmHg per MCP order.

EAP

Contact Medical Command for additional treatment options.

PEDIATRIC EPI INFUSION DOSING – 10 gtts/ml Solution Set

Age	Wt.	Dose	Age	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	Wt.	Dose	Age	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 - 54** 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

TOC

Purpose

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.

Signs/Symptoms

- **Heat Cramps**: Painful muscle cramps and spasms usually in legs and abdomen and heavy sweating
- **Heat Exhaustion**: Weakness or tiredness, cool, pale, clammy skin; fast, weak pulse, dizziness, nausea or vomiting, headache, fainting.
- **Heat Stroke:** High body temperature, hot, red, dry, or damp skin, fast, strong pulse, headache, confusion, or loss of consciousness.

Differential Considerations

- prolonged exposure to heat or high humidity
- physical exertion in high temperatures
- inadequate fluid intake during exertion

E A P

- Perform Initial Treatment / Universal Patient Care Protocol
- Remove patient from hot environment and place in cool environment.
- Consider:
  - Loosen or remove clothing.
  - Cooling by fanning without chilling the patient.
  - Stop all cooling procedures if the patient begins to shiver.
- Monitor temperature closely.

TREATMENT PATHWAYS

Heat Exhaustion

E A P

Patient exhibits a normal level of consciousness and not nauseated:
- Encourage patient to drink oral fluids (cool water or an electrolyte replenisher).

A P

Patient exhibits with nausea and or vomiting, Administer:
- Normal saline IV 250 ml bolus.
- Then run normal saline at 250 ml/hour.

Heat Stroke

E A P

Patients with altered level of consciousness:
- If possible, initiate cooling immediately. *Transport can be delayed up to 20 minutes for an attempt to cool the patient to ≤ 39°C using cold immersion in either a tub or body bag of ice and water, with the face/head exposed per GL011.*
- Once at or near the target temp; initiate transport.
- Cover the patient with moist sheets.
- Apply ice packs to axilla, neck, ankles, and wrists.

A P

Administer:
- Normal saline IV 250 ml bolus.
- Then run normal saline at 250 ml/hour.

E A P

If symptoms persist, Contact Medical Command Physician to discuss further treatment Options

HEAT EXPOSURE

TOC

ENVIRONMENTAL

Purpose

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.

Signs/Symptoms

Frost bite most commonly affects the ears, nose, face, hands, feet and toes. You may find:

- AMS
- Dizziness
- Cool/cold skin
- Bradycardia
- Uncontrolled shivering
- Slurred Speech
- Loss of coordination

Differential Considerations

Suspect in patients with:

- Prolonged exposure to cold
- Low wind chill factors
- Cold water immersion
- Alcohol/drug use
- Anorexia
- Hypothyroidism
- Malnutrition
- Sepsis

E
Perform Initial Treatment / Universal Patient Care Protocol
Remove patient from cold environment and place in warm environment.
Handle patient gently.
A
Monitor temperature closely.
P

TREATMENT PATHWAYS

Hypothermic / Alert

E
Patients exhibits a normal level of consciousness:
- Actively Rewarm with heat applied to neck, chest, and abdomen.
- Encourage patient to drink warm fluids (no stimulants).

A
Administer:
Oxygen
- High flow warm and humidified

P
Administer:
- Normal saline IV warmed at KVO.

Suspected Frostbite

E
- Remove constrictive clothing and jewelry and cover with dry dressing.
- Do not rub, massage area or break blisters.
- Do not apply direct heat.

A
P

Hypothermic / ALOC

E
Patients with altered level of consciousness:
- NPO.
- Passively rewarm with insulated blankets.

A
Administer:
Oxygen
- High flow warm and humidified

P
Check pulses for a minimum of 60 seconds.

A
Administer:
- Normal saline IV 250 ml bolus.
- Then run normal saline at 250 ml/hour.

P
- Withhold IV medications until patient is rewarmed to core temperature >86° F.
- If defibrillation is indicated, defibrillate VF/VT at max joules.

E
Contact medical command:
- To establish mode (ground vs. air) and destination of transport.

A
- If symptoms persist, to discuss further treatment options.

P

COLD EXPOSURE

TOC

SNAKE BITE / ENVENOMATION

Purpose

West Virginia has two native venomous snakes: Timber Rattlesnake and Copperhead.

West Virginia venomous snakes are hemotoxic and not all snake bites involve envenomation.

Signs/Symptoms

Envenomed patients will have one or more fang marks with:

- Ecchymosis
- progressive edema
- severe burning
- and/or non-clotting oozing blood.

Differential Considerations

- Do not bring a live snake to emergency room.
- If able to safely do so, take a picture of the snake.
- Patients previously envenomated are at risk of anaphylactic reaction.

E	Perform Initial Treatment / Universal Patient Care Protocol
A	Handle patient gently.
P	Remove constrictive clothing/jewelry.

TREATMENT

E	Locate fang puncture(s) and mark the progression of erythema (redness around bite mark) at the initial assessment and every five (5) minutes thereafter.
A	If an extremity bite, immobilize the extremity at the level of the heart.
P	Contact Medical Command for additional treatment options.

A P	Do Not Place an I.V. into a bitten extremity.

TOC

Purpose

Near drowning/drowning always look for associated problems such as airway obstructions, cardiac arrest, heart attack, hypothermia, or substance abuse.

Signs/Symptoms

- Known water submersion/immersion
- Respiratory impairment
- Cardiac arrest
- Hypoxia
- Hypothermia
- Alcohol/drugs
- Abuse

Differential Considerations

- Do not attempt a rescue in which you must enter deep water or swim unless trained to do so.
- If patient is unconscious, assume spinal injury: apply C-Collar and perform inline sliding transfers to protect the spine.

E	Perform Initial Treatment / Universal Patient Care Protocol
A	If able and properly trained, remove patient from water as rapidly as possible while protecting c-spine.
P	

↓

E	Evaluate and treat per appropriate protocol.
A	Contact Medical Command for additional treatment options.
P	If cold water drowning (< 70° F at recovery depth), refer to Cold Exposure Protocol

DROWNING

TOC

OB EMERGENCIES

OB001

Purpose

The purpose of managing obstetrical and gynecologic emergencies is to provide prompt and effective care to ensure the best possible outcomes for the patient's health and, if applicable, the health of the unborn child, while minimizing pain, suffering, and long-term complications.

Signs/Symptoms

- Stated pregnancy
- Pregnant appearing abdomen
- Vaginal bleeding/drainage
- Abdominal pain
- Pelvic pain
- Severe cramps
- Seizure
- Fever
- Nausea/Vomiting
- HTN
- Decreased fetal movement

Differential Considerations

- Bowel obstruction
- Ischemic bowel
- Sepsis
- Appendicitis
- GI bleed
- Diverticulitis
- Hepatic failure
- Kidney stone
- Kidney infection
- Pancreatitis

EAP Perform Initial Treatment / Universal Patient Care Protocol

NORMAL DELIVERY

EAP

- Determine timing and duration of contractions and observe for crowning.
- If not in active labor, transport on left side, if possible.
- If delivery is imminent:
  - Proceed with delivery prior to transport (if transport already initiated then crew should pull over to safe location for delivery then resume transport):
    - Prevent explosive delivery by supporting head and perineum.
    - Suction only if there is believed to be an airway obstruction while being cognizant of bradycardia and hypoxia.
    - If cord is around the neck and loose, slip over head out of way. If cord is tight, place two clamps and cut in between and unwind.
    - Hold and support infant during delivery. Attempt to keep the baby level with the placenta until the cord is clamped.

EAP

- APGAR score at one (1) and five (5) minutes
- When cord ceases pulsating, clamp at 6 and 8 inches from navel, cut cord between clamps
- Refer to Neonatal Resuscitation Protocol OB002
- Refer to Postpartum Hemorrhage Protocol OB005

EAP Notify Medical Command

BREECH DELIVERY

EAP

- Allow spontaneous delivery with support of presenting part at the perineum.
- After body has delivered, if the head has not delivered within four (4) minutes, insert a gloved hand into the vagina to form a "V" airway around the infant's nose and mouth.

PROLAPSED CORD

EAP

- Place mother in knee-chest position.
- Coach mother to practice controlled breathing during contractions and to not bear down.
- 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.

EAP Expedite transport and contact Medical Command

OB EMERGENCIES

OB001

LIMB PRESENTATION

E	Rapid transport.
A	
P	Contact Medical Command

Indicator		0 Points	1 Point	2 Points
A	Activity (muscle tone)	Absent	Flexed arms and legs	Active
P	Pulse	Absent	Below 100 bpm	Over 100 bpm
G	Grimace (reflex irritability)	Floppy	Minimal response to stimulation	Prompt response to stimulation
A	Appearance (skin color)	Blue; pale	Pink body, Blue extremeties	Pink
R	Respiration	Absent	Slow and irregular	Vigorous cry

www.abclawcenters.com

OB EMERGENCIES

Purpose

This protocol is guidance for EMS personnel when a neonatal delivery occurs in the field.

Signs/Symptoms

- Recent delivery of a neonate

Differential Considerations

Distinguish between normal and abnormal physiological differences.

- Healthy Neonate
- Compromised Neonate

Considerations:

- Determine if neonate is low risk and healthy or compromised and requiring resuscitation.
- Request basic information from mother such as prenatal care and gestational age.
- If you are unsure if the baby presents stable enough to be with mother, separate and begin evaluation.

EAP Perform Initial Treatment / Universal Patient Care Protocol

ASSESMENT CONSIDERATIONS

Patient: ≥37 weeks gestation crying/breathing with good tone

YES → Remain with Mother
- Skin to skin contact
- Cover with warm blanket

NO → Begin Resuscitation
- Initiate on scene
- Airway secured prior to transport

TREATMENT CONSIDERATIONS

Temperature Control

E
- Dry infants if ≥32 weeks, <32 weeks should be placed in polyethylene plastic bag with airway exposed

A
- Stimulate with rubs to the back, sides, and extremities

P
- Cover head and body with dry warm blankets
- Assess temp q 15 min. Normal axillary temp 97° F.

Airway/Breathing

E
- Position supine in the sniffing position

A
- Assess Respiratory Rate (30 – 60 per minute)

P
- Considerations:
  - Initiate PPV at 40 – 60 BPM on room air if indicated
  - Ventilate to see chest rise and fall
- Suction only if airway obstruction present
- Attach ECG monitor and pulse oximeter on right wrist (preductal saturation)

Circulation

E
- Assess heart rate via auscultation, EKG, and palpation

A
- **HR ≥100** – Monitor vitals
  HR <100 – Start PPV
  - Neonatal BVM
  - PIP of 20
  - PEEP of 5mmHg
  - FiO2 at 21% (room air)
- Considerations:
  - Ventilate at 40 – 60 BPM
  - Ventilate to see chest rise and fall

P
- Reassess HR q 30 seconds.

E
- **HR remains <100**
  Consider: MR.SOPA
  - **M**ask Fit
  - **R**eposition Airway
  - **S**uction Airway
  - **O**pen mouth
  - **P**ressure: increase to PIP of 35 cmH2O max
  - **A**irway: EA -iGel
    P -ETT

A

P

E
- **HR <60** after 30 seconds of effective PPV adequate ventilation, initiate:
  - CPR

A

P

NEONATAL RESUSCITATION/NEWBORN INFANT CARE

E A P	Increase FiO2 to 100% 3:1 ratio (3 compressions:1 breath) Reassess HR q 60 seconds ▪ HR ≥60 but <100, continue PPV
A P	▪ HR <60 • Continue CPR and PPV Administer: • Epinephrine - 0.02 mg/kg IV/IO - Subsequent doses administered at 0.03mg/kg IV/IO
P	If all attempts at IO access have failed Administer: • Epinephrine - 0.1 mg/kg via ETT every 3 to 5 minutes

NOTES:
- Ventilation is the most important part of neonatal resuscitation
- Neonates with HR < 60 are considered in cardiac arrest
  - The first treatment is rapid optimization of ventilation via PPV. Consider respiratory etiology as the driving force for cardiac dysfunction in a neonate.
- Targeted Oxygen Saturation below. Titrate FiO2 accordingly.

Targeted Preductal SpO_2 After Birth	
1 min	60% - 65%
2 min	65% - 70%
3 min	70% - 75%
4 min	75% - 80%
5 min	80% - 85%
10 min	85% - 95%

OB EMERGENCIES

Purpose

This protocol is designed to guide providers in the management of pregnancy related hypertension. Hypertension in pregnancy can indicate severe disease that can result in maternal and fetal morbidity and mortality.

Signs/Symptoms

- Severe Headache
- Blurred Vision
- RUQ or epigastric pain

Differential Considerations

- Preeclampsia altered mental status
- Substance use/abuse
- Thyroid disease

NOTES:

- Elevated BP after 20 weeks gestation and up to 6 weeks post-partum requires special attention and treatment.
- An elevated BP may be the only abnormal vital sign. Do not ignore asymptomatic hypertension in these patients.
- This is a time-critical disease. Provide treatment within 30-60 minutes. This includes ALS intercept assistance for BLS teams, even if BLS initiates therapy.
- In situations where antihypertensives and magnesium sulfate are indicated, antihypertensive medications are the highest priority.
- Target BP: SBP 130-150 and DPB 80-100 mmHg. During monitoring, if the BP elevates back to severe levels (SBP ≥ 160 or DBP ≥ 110 mmHg: with or without symptoms) consider repeating the antihypertensive at the previous dose that was effective.
- Although nitroglycerine is available there is no evidence to support its use in lowering the BP of pregnant or postpartum patients.

E A P

- Perform Initial Treatment / Universal Patient Care Protocol
- Be prepared for airway management, provide supplemental oxygen for maternal oxygen saturations ≤ 94% and assist ventilations as indicated.
- Monitor vitals closely, repeating/document BP at least every 15 minutes.
- If seizure occurs refer to the Eclampsia protocol.
- All pregnant patients with these symptoms should be transported in a left lateral decubitus position. If they must be placed supine for airway management or vascular access, manually displace the uterus leftward to keep its weight off the inferior vena cava.

TREATMENT CONSIDERATIONS

SBP 140-159 or DBP 90-109 mmHg

E A P

- Abnormal, possible preeclampsia
- Monitor vitals closely for increasing BP or the development of S/S per the next category.

SBP 140-159 or DBP 90-109 mmHg with headache, blurred vision, or RUQ/epigastric pain

E

If ALS intercept is unavailable or greater than 15 minutes out, Administer:

Magnesium sulfate

- 8 grams IM (500mg/ml)
  - 4 ml in the left ventrogluteal site
  - 4 ml in the right ventrogluteal site
  - 4 ml in the left anterolateral thigh
  - 4 ml in the right anterolateral thigh
- Transport to ALS intercept or appropriate facility.

A P

Administer:

Magnesium sulfate

- 4 grams IV loading dose over 20 minutes
- Following loading dose, initiate a maintenance infusion at 2 grams/hour.

SBP ≥ 160 or DBP ≥110 mmHg with or without symptoms.

E

If ALS intercept is unavailable or greater than 15 minutes out, Administer:

Hydralazine

- 5 mg IM
- If BP remains severely elevated (SBP ≥ 160 or DBP ≥ 110 mmHg) after 20 minutes, repeat **Hydralazine** at 10 mg IM.

Magnesium sulfate

- 8 grams IM (500mg/ml)
  - 4 ml left ventrogluteal site
  - 4 ml right ventrogluteal site
  - 4 ml anterolateral thigh
  - 4 ml right anterolateral thigh

HYPERTENSION IN THE PREGNANT OR POSTPARTUM PATIENT

A P	Administer: **Hydralazine** ▪ 5 mg slow IV push over 2 minutes or 5 mg IM ▪ If BP remains severely elevated (SBP ≥ 160 or DBP ≥ 110 mmHg) after 20 minutes, repeat **Hydralazine** at 10 mg IV/IM (IV preferred). **Magnesium sulfate** ▪ 4 grams IV loading dose over 20 minutes ▪ Following loading dose, initiate a maintenance infusion at 2 grams/hour. ▪ If unable to obtain an IV administer: 8 grams IM (500mg/ml) • 4 ml left ventrogluteal site • 4 ml right ventrogluteal site • 4 ml anterolateral thigh • 4 ml right anterolateral thigh

REFERENCE:
Chronic Hypertension in pregnancy. ACOG Practice Bulletin No. 203 American College of Obstetricians and Gynecologists, Obstet Gynecol 2019;133:e26-50.

OB EMERGENCIES

ECLAMPSIA

Purpose

Eclampsia is the new-onset of tonic-clonic, focal, or multifocal seizures in the absence of other causes such as hypoglycemia, drug or alcohol withdrawal, or prior seizure history. Eclampsia can occur during pregnancy or up to 6 weeks postpartum.

Signs/Symptoms

- New onset of clonic-tonic, focal, or multifocal seizures in the absence of another cause during pregnancy or up to 6 weeks post-partum.

Differential Considerations

- Underlying seizure disorder
- Medication non-compliance
- Hypoglycemia
- Substance abuse/withdrawal
- Malignancy/brain lesion or hemorrhage

NOTES:

- Hypertension may or may not be present. If present, the treatment for hypertension should be initiated first.
- This is a time-critical condition. Treatment should be initiated with magnesium and anti-hypertensives (if indicated, SBP ≥ 160 or DBP ≥ 110 mmHg) as quickly as possible.
- Transport to a hospital with obstetric services or the most appropriate facility if no such obstetrics facility is available and the patient's condition indicates emergent intervention.
- Notify the receiving facility as early as possible.

E A P	Perform Initial Treatment / Universal Patient Care Protocol
	Be prepared for airway management, provide supplemental oxygen for maternal oxygen saturations ≤ 94% and assist ventilations as indicated.
	Monitor vitals closely, repeat/document BP at least every 15 minutes.
	All pregnant patients with these symptoms should be transported in a left lateral decubitus position. If they must be placed supine for airway management or vascular access, manually displace the uterus leftward to keep its weight off the inferior vena cava.
	Monitor vitals closely, repeat/document BP at least every 15 minutes. **If severe-range BP (SBP ≥ 160 or DBP ≥ 110 mmHg) is present, refer to the Hypertension in the Pregnant or Early Postpartum Patient protocol.**

TREATMENT CONSIDERATIONS

E

If ALS intercept is unavailable or greater than 15 minutes out, Administer:

Magnesium sulfate

- 8 grams IM (500mg/ml)
  - 4 ml in the left ventrogluteal site
  - 4 ml in the right ventrogluteal site
  - 4 ml in the left anterolateral thigh
  - 4 ml in the right anterolateral thigh
- Transport to ALS intercept or appropriate facility.

A P

Administer:

Magnesium sulfate

- 4 grams IV loading dose over 20 minutes
- Following loading dose, initiate a maintenance infusion at 2 grams/hour.
- If unable to obtain an IV, administer 8 grams IM administered as listed above.

P

If seizure activity lasts longer than 5 minutes despite the treatment with Magnesium sulfate, Administer:

Midazolam (Versed®)

- 0.1 mg/kg IV/IO to a max of 5mg
- 0.2 mg/kg (IN/IM) to a max of 10 mg
- May repeat x1 q 5 min. if seizure persists

E A P

If seizure continues, contact Medical Command Physician for additional treatment options.

REFERENCE:
Chronic Hypertension in pregnancy. ACOG Practice Bulletin No. 203 American College of Obstetricians and Gynecologists, Obstet Gynecol 2019;133:e26-50.

TOC

OB EMERGENCIES

Purpose

This protocol pertains to excessive vaginal bleeding following delivery and not secondary to trauma.

Signs/Symptoms

- Immediate or delayed postpartum hemorrhage

Differential Considerations

- Postpartum uterine atony and uterine rupture (vaginal delivery post prior c-section as an example).

NOTES:

- **Immediate postpartum hemorrhage** is significant persistent bleeding after delivery and is defined as loss of more than 1,000 ml of blood up to 24 hours post-delivery. The following steps can be taken during and immediately after delivery that can help decrease the risk of post-partum hemorrhage:
  - Administration of Oxytocin as soon as possible after delivery of the baby
  - Only controlled gentle umbilical cord traction until the placenta delivers
  - Firm massage of the uterus after the placenta is delivered

- **Delayed postpartum hemorrhage** is excessive bleeding from 24-hours after delivery up to 12-weeks postpartum. The causes are likely different from those of immediate post-partum hemorrhage, but the initial treatment is similar:
  - Administration of Oxytocin as soon as possible
  - Firm uterine massage

Patients with life-threatening hemorrhage should receive tranexamic acid (TXA) and may require the administration of blood products. TXA or blood products may require requesting an intercept with other resources capable of providing such interventions. Evidence-based recommendations for this patient population are similar to the pediatric protocol and call for two separate 1gm doses rather than for a single 2 gm bolus that may be indicated for other situations.

Transport to a hospital with obstetric services or the most appropriate facility. Notify the receiving facility as early as possible.

E A P	Perform Initial Treatment / Universal Patient Care Protocol
	Firmly massage the uterine fundus
	If perineal lacerations are present (unlikely in delayed postpartum hemorrhage), apply direct pressure to the perineum with a sterile dressing. **Do not place packing inside the vagina.**
	Be prepared to manage the patient's airway, provide supplemental oxygen for maximal oxygen saturation ≤94% and assist ventilations as indicated.
	Consider intercepting with additional resources carrying blood products and TXA if not available and indicated.

TREATMENT CONSIDERATIONS

E	Administer: **Oxytocin** ▪ 10 units IM
	Request intercept with ALS for TXA and Blood products if available and indicated

A P	Administer: **Oxytocin** ▪ 10 units IM unless IV access is already established ▪ Upon establishing large bore IV access, add 20 units of Oxytocin to 1 L of normal saline and run open to gravity (via macro-drip tubing) until arriving at the hospital or a significant decrease in bleeding is identified.
	Consider: **Whole Blood** ▪ Utilize Guideline GL022 upon identifying one or more of the following: • Estimated blood loss of 1,500 ml or more • Abnormal vitals (tachycardia/hypotension) • Persistent blood loss not controlled by the above measures

IMMEDIATE POSTPARTUM HEMORRHAGE TREATMENT

A P	Administer: **Tranexamic Acid (TXA)** ▪ 1 gram bolus ▪ If bleeding continues after 30 minutes, administer a second 1 gram bolus ▪ Notify the receiving facility of TXA administration including the amount administered

REFERENCE:
Postpartum Hemorrhage. Practice Bulletin No. 183 American College of Obstetricians and Gynecologists, Obstet Gynecol 2017;130:e168-86.

Vogel JP, Oladapo OT, Dowswell T, Gulmezoglu AM. Update WHO recommendations on intravenous transexamic Acid for the treatment of post-partum hemorrhage. The Lancet 2018;6:e19.

DEATH IN THE FIELD

Purpose

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** has been performed.

EAP	Perform Initial Treatment/Universal Patient Care.
	Determine history.

TREATMENT PATHWAYS

DO NOT BEGIN RESUSCITATIVE EFFORTS

EAP

- Pulseless and apneic trauma patients.
- Blunt trauma patients who become pulseless and apneic, cannot be extricated quickly, and the entrapment precludes medically effective resuscitation efforts.
- Beginning or continuing resuscitation is not medically appropriate as determined by EMS personnel.
- Indications of prolonged postmortem interval.
- Injuries incompatible with life.
- Multiple casualty situations where resources are required to maintain living patients.
- "Do Not Resuscitate" documentation has been discovered or clarified by family, Medical Command Electronic Registry (End of Life Registry), or power of attorney.
- Resuscitation efforts pose a danger to the health and/or safety of the rescuers.

PROCEDURE

EAP

- Protect and preserve the scene until jurisdictional authority has been determined.
- Notify the Chief Medical Examiner's Office on all out-of-hospital deaths Including hospice care patients (304-558-6921 or 1-877-563- 0426).
- Ensure that law enforcement has been notified.
- 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.
- Document the signs, symptoms, and vital signs which confirmed and allowed the declaration of death.
- A 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.
- Reports to Medical Command should be given by landline phone if possible. If landline is unavailable, a cell phone may be utilized. Personal information is **NOT** to be transmitted over radio communications.

INFORMATION COLLECTION PRIOR TO CONTACTING THE MEDICAL EXAMINER

- Decedent's first and last name
- Decedent's date of birth *(if available)*
- Decedent's social security number *(if available)*
- Decedent's gender
- Decedent's Primary Care Physician *(if available)*
- Decedent's next of kin name and contact phone number (if available)
- Time of Death
- Pronouncing physician's name
- Place of death *(physical address or location of death at the time of pronouncement)*
- Primary Provider's first and last name
- Primary Provider's certification number

TOC

Purpose

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.

E A P	Perform Initial Treatment/Universal Patient Care.
	Determine history.

CRITERIA TO CEASE FIELD RESUSCITATIVE EFFORTS

E A P	▪ Resuscitation initially started by first responders, family members, etc. and is determined to have been medically inappropriate. ▪ EtCO2 < 10 mmHg with high quality CPR for greater than ten (10) minutes (if available). ▪ "Do Not Resuscitate" documentation has been discovered or clarified by family, Medical Command Electronic Registry (End of Life Registry), or power of attorney. ▪ Physical exhaustion of available providers to provide care. ▪ Resuscitation efforts pose a danger to the health and/or safety of the rescuers. ▪ Extremely remote areas where evacuation may require hours or days. ▪ BLS resuscitation has proved unsuccessful, and no ALS is available > thirty (30) minutes. ▪ 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.
A P	▪ If CPR has been started prior to EMS arrival, a full cycle of ALS treatment has been unsuccessful, and the patient remains in PEA or Asystole > 20 minutes with no rhythm change confirmed in two (2) leads. ▪ If no CPR has been initiated, downtime is unknown, and the patient is in asystole.

PROCEDURE

E A P	▪ EMS personnel will contact Medical Command and speak directly to the MCP. ▪ Immediately utilize the Death in the Field Protocol.

EXCEPTIONS

- Situations may necessitate transport of patients and continued resuscitation efforts.
- Volatile or potentially dangerous situations where movement of the patient and exit from the scene is required for the safety of the rescuers.
- Pediatric patients <12 years of age.
- Hypothermic patients: Treat per **Cold Exposure Protocol.**
- **Note:** If patient is removed from scene and resuscitation continued, the resuscitation efforts should be continued until arrival at the hospital.

TOC

Purpose

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 RED and YELLOW criteria recommended by the State Trauma and Emergency Medical System. Patients meeting RED or YELLOW criteria should generally be transported to the highest-level trauma center within 30 minutes transport time using the algorithm below:

E	Perform Initial Treatment/Universal Patient Care.
A	Determine history.
P	Enroute to scene, consider aeromedical standby alert as per Field Aeromedical Protocol.

RED CRITERIA
High Risk for Serious Injury

Patients meeting any one of the RED criteria should be transported to the highest-level trauma center available within the geographic constraints of the regional trauma system.

INJURY PATTERNS

- Penetrating injuries to head, neck, torso, and proximal extremities
- Skull deformity, suspected skull fracture
- Suspected spinal injury with new motor or sensory loss
- Chest wall instability, deformity, or suspected flail chest
- Unstable pelvis with hypotension
- Suspected fracture of two or more proximal long bones
- Crushed, degloved, mangled, or pulseless extremity
- Amputation proximal to wrist or ankle
- Continued active bleeding following tourniquet placement and continuous pressure failing to control bleeding

MENTAL STATUS and VITALS

All Patients
- Unable to follow commands (motor GCS < 6)
- RR < 10 or > 29 breaths/min
- Respiratory distress or need for respiratory support
- Room-air pulse oximetry < 90%

Age 0–9 years
- SBP < 70mm Hg + (2 x age in years)

Age 10–64 years
- SBP < 90 mmHg or
- HR > SBP

Age ≥ 65 years
- SBP < 110 mmHg or
- HR > SBP

YELLOW CRITERIA
Moderate Risk for Serious Injury

Patients meeting any one of the YELLOW criteria and do not meet any of the RED criteria; should be preferentially transported to the nearest trauma center within the geographic constraints of the regional trauma system.

FIELD TRIAGE

FIELD TRIAGE

MECHANISM of INJURY

- High-Risk Auto Crash
  - Partial or complete ejection
  - Significant intrusion >12 inches occupant site or >18 inches at any site
  - Extrication required for entrapped patient
  - Death in the passenger compartment
  - Child unrestrained or in unsecured child safety seat
  - Vehicle telemetry data consistent with severe injury
- Rider separated from transport vehicle with significant impact (e.g., motorcycle, ATV, horse, etc.)
- Pedestrian/bicycle rider thrown, run over, or with significant impact
- Fall from height > 10 feet (all ages)

EMS JUDGEMENT

Consider Risk Factors:

- Low-level falls in young children (age ≤ 5 years) or older adults (age ≥ 65 years) with significant head impact
- Anticoagulant use
- Suspicion of child abuse
- Special, high-resource healthcare needs
- Pregnancy > 20 weeks
- Burns in conjunction with trauma
- Children should be triaged preferentially to pediatric capable centers

Any concerns following patient assessment should result in transport to a trauma center.

Purpose

Establish common 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.

ALERT SYSTEM STATUS

RED Alert

Hospital has identified a strain in operational ability due to any two (2) of the criteria listed, 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.

YELLOW Alert

Hospital has identified a temporary lack of ability to provide a particular type of service or specialty support that they 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.

MINI-DISASTER Alert

Hospital notification that a physical incapacitation of a necessary functional component has occurred making further patient care untenable (i.e. fire, flood, gas leak, bomb scare, etc). The facility has 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.

DIVERSION CRITERIA

- 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.
- No monitored beds are available in the emergency department.
- No monitored beds available in the entire facility.
- Facility is at capacity with no beds available.
- A particular service is on yellow alert and Medical Command has determined that the patient in question may require the specific service on an urgent basis.

RED ALERT OVERRIDE PROCEDURE

EAP

- Diversion of the patient would add an additional 15 minutes to the transport time. This may frequently occur in the more rural areas.
- Patient is unstable and requires immediate stabilization as determined by EMS personnel in consultation with Medical Command.
- The patient or patient's family, after explanation of risks and consultation with Medical Command, insist on transport to the red alert facility, and the MCP has determined that this decision poses no immediate danger to the patient.

AMBULANCE DIVERSION

TOC

Purpose

Establish appropriate guidelines for utilization of aeromedical services.

AEROMEDICAL REQUESTS

EAP

- All requests for scene helicopter responses SHALL be made through Medical Command.
- Medical Command shall deny inappropriate requests for a helicopter.

- 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.

Air Medical Rule:
- If an in-state air medical asset is not available within 20 nautical miles of the scene requesting air medical assistance, an out-of-state asset may be utilized as a substitute for the in-state asset. This ensures timely and efficient medical response and patient care, while adhering to the established legal framework.

CRITERIA

TRAUMA

- Patient meets Field Trauma Triage Protocol Immediate Transport: *OR*
- Patient meets Field Trauma Triage Protocol (P1 Criteria); *OR*
- Patient meets Field Trauma Triage Protocol (P2 Criteria).

MEDICAL

- Acute stroke patients within the window of opportunity for thrombolytic or endovascular intervention at an appropriate hospital.
- Acute myocardial infarction patients needing thrombolytics or angioplasty.
- Major overdose patients with coma.
- Major burns > 20% TBSA (second or third degree) needing flown directly to a burn center.

ENVIRONMENTAL

- Patients in remote locations inaccessible by ground EMS.
- Mass casualty incidents that totally overwhelm local agency capabilities (industrial accidents, multi-vehicle crashes, hazmat incidents, etc.).

PROCEDURE

EAP

- Contact Medical Command. Discuss the need for the helicopter based on the above criteria.
- Identify agency, unit number, incident location, description of incident, and any other information requested.
- Request a 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.
- Describe the incident and give GPS coordinates if available, or an accurate location, including names of roadways, cross streets, and other pertinent landmarks.
- Advise Medical Command of the agency and radio frequency of the ground contact for the helicopter.
- Medical Command will coordinate dispatch of the closest appropriate helicopter based on location of incident and will coordinate destination notification.

LANDING ZONE PREPARATION

E A P

- Secure a level 100' X 100' area clear of power lines, trees, debris, and other obstructions.
- Ensure all bystanders and personnel remain at least 100 feet from aircraft at all times.
- At night, use of flashing blue, green, or amber lights is encouraged to mark the landing area. Red lights of an emergency vehicle may be used; (**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.
- After landing, do not approach the aircraft.

USE OF HOSPITAL BASED LANDING SITES

E A P

- 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.
- Hospitals shall be contacted prior to use of their landing sites and permission SHALL be 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.
- 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 Department.
- EMS shall not be required to enter the emergency room when simply utilizing the landing site for EMS field operations subject to the following:
  - Medical Command has been contacted and given a detailed patient assessment.
  - The hospital has been contacted and permission granted to utilize the facility.
  - The patient has been determined to be stable with a perfusing cardiac rhythm, vascular access, and secured airway and does not show signs of decompensation while waiting.

AEROMEDICAL COMMUNICATION

E A P

- 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.**
- Establish radio and visual contact with the aircraft and give a quick update of any LZ changes, hazards, and patient update information.
- 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 and follow any directions given by the pilot.

MEDICAL COMMAND COMMUNICATIONS

Purpose

EMS personnel are required to contact Medical Command for on-line or off-line medical direction, when transporting to an emergency department, or anytime additional consultation is needed by the provider. This action facilitates the opportunity for early hospital notification, provides legal protection, and affords 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.

INITIAL CONTACT

E A P

- EMS should contact the designated Medical Command Center if appropriate during initial patient care. *(This should be based on ETA, needs assessment, patient presentation, etc.)*
- Medical Command Centers should document the initial information and contact the receiving facility to relay pre-arrival instructions, ETA, patient report, etc.
  - If the Medical Command Center does not have the ability to relay information to the receiving facility, and EMS does not have an immediate need, the Medical Command Center shall immediately request EMS to contact the receiving facility directly prior to taking the report.
  - If EMS has an identified immediate need, the Medical Command Center shall prioritize the call.
  - EMS shall contact the Medical Command Center within six (6) hours to provide an "after the fact" report.

INITIAL CALL REQUIREMENTS

Call 9 and Channel "C" Charlie are the initial call frequencies

E A P

- Squad and Unit Number
- Destination and ETA
- Situation: *(What you have/What you need)*
  - BLS, ALS, Trauma, Stroke, STEMI, Aeromedical request, MCP orders request, MCP conference request

DETAILED CALL REQUIREMENTS

Utilized assigned med channel for this report

E A P

- Age and sex of patient
- Chief complaint/mechanism of injury brief history of present illness
- Orders requested (if applicable)
- Pertinent past medical history
- Pertinent medications
- Allergies (only if requesting medications)
- Vital signs
- GCS (if applicable)
- Stroke score (if applicable)
- ECG findings
- Assessment/treatment administered
- Updated ETA and destination (if it has changed since initial call)

- It is understood that not all information may be available in every situation.
- If the patient's condition changes or new complaints develop, Medical Command and the MCP are resources for additional treatment options.

METHODS FOR CONTACTING MEDICAL COMMAND

E A P

- **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.
- **Phone (landline or cellular):** Should be used whenever the patient's location and condition permit. Phones are not a substitute for radio contact if the coverage is available.

INABILITY TO CONTACT MEDICAL COMMAND / AFTER-THE-FACT PROCEDURES

E	▪ EMS personnel may continue to follow the appropriate protocol(s) in the best interest of the patient.
A P	▪ Upon arrival at the receiving facility, EMS SHALL contact Medical Command by phone and provide a patient report and the method, time, and location of the unsuccessful efforts to reach Medical Command. ▪ If Medical Command is not contacted within six (6) hours of leaving the receiving facility, by law, the provider must submit a report (Appendix F) 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. ▪ Situations may arise when call volume or specific emergency circumstances prevent contact within the designated six (6) hours. Medical Command contact is still required, when appropriate, based on the conclusion of situation causing the delayed contact. ▪ Medical Command shall receive the EMS report no matter the time frame.

PERFORMANCE IMPROVEMENT

E A P	▪ EMS providers may request a call to be flagged for review. The Medical Command operator will do so. ▪ Anytime a requested order is denied, the call will be automatically flagged for review. ▪ The Medical Command operator may flag a call for review. ▪ In all instances, follow up will be provided to the EMS provider, administrator, and squad medical director.

Purpose

Transferring patient care involves the transfer of patient rights and duty to provide care, from one person, or team, to another. This guideline applies to all transfer of care situations to include: higher-level provider to a lower-level provider, lower-level provider to a higher level, or between the same levels of provider.

PATIENT HAND OFF / TRANSFER OF CARE REPORT

EAP

- **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.
- 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.
- Care may **NEVER** be transferred to an EMR level provider.

MIST REPORT

M - MECHANISM

- Name, age, sex
- Location of patient when found
- Onset of injury/symptoms (for Stroke last time known normal)
- Description/cause of injury
- Details of injury

I - INJURY/ILLNESSS

- Pain, deformities, Injury patterns, new disabilities (loss of airway, movement, sensory, speech, sight)
- Results of assessment: ECG, Stroke neuro assessment, blood glucose (BG)

S - SIGNS/SYMPTOMS

- Duration of symptoms, location of symptoms, any modifiers of the symptoms (movement, eating, medications taken).
- 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).

T - TREATMENT

- Tubes, lines (location and size), fluids (type and amount), oxygen.
- Medications administered, stabilization applied, dressings applied, tourniquet applied, etc.
- Defibrillation, pacing, and other treatments.
- Response to treatments

PROCEDURE FOR PATIENT TRANSFER/HANDOFF

PRE-HOSPITAL PROVIDER TO PRE-HOSPITAL PROVIDER

- Transfer of care decision shall be a joint decision reached by all involved providers.
- If transfer to lower-level provider, the higher-level provider will determine who remains in the patient compartment, drives, or allows a lower certified crew to transport the patient.

PRE-HOSPITAL PROVIDER TO TERTIARY CARE

- 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 report does **NOT** take the place of the EPCR.

PATIENT TRANSFER of CARE

PATIENT TRANSFER of CARE

PRE-HOSPITAL PROVIDER TO PRE-HOSPITAL PROVIDER

E A P

- The lower-level provider must agree to accept
- 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.
- The higher certified provider must perform Initial Treatment/Universal Patient Care evaluation, document, and sign the EPCR. If the higher certified provider responds from another agency, they SHALL complete an EPCR of the response from that respective agency.
- 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
- Transfer of care between EMS providers must be documented in the patient care record.

- If any ALS intervention has been initiated by the ALS provider, the patient shall remain in the care of the ALS level provider.

- 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.

- Pre-hospital providers shall assure a completed EPCR is available to the WVOEMS within 72 hours.

PRE-HOSPITAL PROVIDER TO TERTIARY CARE

E A P

- The minimal data that must be provided is as follows:
  - Agency name and name of care providers
  - Patient's name
  - Chief complaint and history of the chief complaint
  - Vital signs, level of consciousness, and pertinent physical findings
  - Pertinent past medical history, medications, and allergies
  - Treatment rendered

- Pre-hospital providers shall assure a completed EPCR is available to the WVOEMS within 72 hours.

NERVE AGENT - OPTIONAL

Purpose

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.

E	Remove patient from environment only if properly trained and equipped.
A	Perform Initial Treatment/Universal Patient Care.
P	Secure airway.

TREATMENT PATHWAYS

Mild to Moderate Signs and Symptoms

E A P	Administer: **MARK I Kit** ▪ IM X 1
A P	*OR* **Atropine** ▪ Adult: 2 mg IM/IV/IO ▪ Peds: 0.02mg/kg) ▪ repeated q five (5) minutes until improvement is noted. *AND* **Pralidoxime** ▪ Adult: 600 mg IM/IV/IO ▪ Peds: 25 - 50 mg/kg).

Severe Signs and Symptoms

E A P	Administer: **MARK I Kit** ▪ IM X 1
A P	*OR* **Atropine** ▪ Adult: 6 mg IM/IV/IO ▪ Repeat at 2 mg IM/IV/IO q five (5) minutes until: • Secretions diminish, *OR* • Airway resistance is less or is normal. *AND* **Pralidoxime** ▪ Adult: 1800 mg IM/IV/IO ▪ May be infused as a 2 gram IV drip over 20 minutes.

E A P	▪ Decisions regarding the transportation of patients should be made in consultation with Medical Command and the on-scene incident management system.
	▪ If an MCI is declared as a result of multiple victims and MARK 1 kits are needed on the scene or for delivery to the hospital: • Contact Medical Command and declare the MCI due to nerve agent exposure. Incident Command should do this by phone, if possible, to the Medical Coordination Center at 1-304-765-4500. • Be prepared to advise Medical Command of the exact location of the MCI, number of victims, number of patients being transported and what hospital(s) they are going to. Medical Command will provide specific information on delivery of the requested medication(s).

EXCEPTIONS

- EMT-B's 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.
- Note: Medical Command consultation is not required in these situation

TOC

Purpose

This protocol is utilized as a quick reference tool for the patient identified with a Left Ventricular Assist Device (LVAD). Additional educational material for LVAD patients can be found in the appendix.

E	Perform Initial Treatment/Universal Patient Care.
A	Determine history and implantation of Left Ventricular Assist Device.
P	Determine the identified primary complaint is LVAD related. Unrelated complaints should be treated per respective protocol.

ASSESSING THE LVAD PATIENT

E A P	▪ Mental status and skin color must be used to determine patient stability. ▪ Call the Emergency Contact Number located on the LVAD control unit. ▪ The use of pulse and blood pressure to assess stability can be unreliable in an LVAD patient. ▪ Quantitative Continuous Waveform Capnography will remain accurate in LVAD patients. ▪ LVAD patients can remain stable and experience a range of ECG rhythms that could be dangerous or fatal in another patient. ▪ Temperature: Infection and sepsis are common in LVAD patients.

SPECIAL TREATMENT CONSIDERATIONS

E A P	▪ The best medical resource available to you for LVAD related problems is the patient's VAD coordinator. ▪ Sepsis and stroke are leading causes of death in the LVAD patient. ▪ Follow standard AHA and protocol guidelines, as appropriate. ▪ Minor appearing chest or abdominal trauma could be serious in the LVAD patient due to anticoagulant medications. ▪ CPR should only be initiated when confirmation that the LVAD pump has stopped working and all other clinical indicators indicate CPR is required.

TRANSPORT CONSIDERATIONS

E A P	▪ Transport to the closest appropriate facility in consultation with Medical Command. ▪ Transport the patients resource bag with them. ▪ Transport fresh batteries and power unit with you if available.

NOTES

E A P	▪ CPR should rarely be performed on an LVAD patient. ▪ Patients with an LVAD should almost never be pronounced dead at the scene. ▪ The patient and their family are well educated on the device. ▪ Blood sugar and stroke assessment shall be evaluated, particularly for an altered mental status LVAD patient. ▪ Use of external pacing or defibrillation is appropriate for the LVAD patient if needed.

TOC

Purpose

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.

E A P	Perform Initial Treatment/Universal Patient Care.
	Determine history.

WAVEFORM READINGS

- Confirm breathing is present.
- Confirm the airway is open and patent.
- Confirm the physiology of ventilation is normal or abnormal.

NON-INTUBATED PATIENTS

- Rapid assessment of the patient's respiratory status.
- Monitor critically ill patients to alert providers to impending respiratory arrest.
- Assist in managing patients with ICP by verifying and maintaining levels of EtCO2 at 35 mm/hg normal or abnormal.

INTUBATED PATIENTS

- Verification of tube placement.
- Proper titration of respiratory assistance to maintain proper EtCO2.
- Evaluate cardiac output during CPR (perfusion efforts and early detection of ROSC).
- Assist in managing patients with ICP by verifying and maintaining levels of EtCO2 at 35 mm/hg.

TREATMENT REFERENCE CHART

	EVENT	EVIDENCE	TREATMENT
E A P	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	Increased 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 35 mm/hg

TOC

Purpose

High school sporting venues are high profile community events with an inherent risk of sports trauma or spectator illness or injury. These guidelines provide a rationale and structure for EMS entry to the sports trauma arena and provide procedures for catastrophic injury recognition and response.
The Medical Time Out (MTO) promotes direct participation and venue awareness with EMS positioning to provide 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. Medical Time Out education and checklist should be monitored by the Squad Training Officer and Squad Medical Director

PRE-GAME CHECKLIST

E A P

- Includes the following:
  - cell phone contacts for EMS, police, team medical staff, and school administration
  - hand signals for EMS response to field of play
  - AED locations
  - Review of head/neck injury treatment to include face mask removal and boarding technique
  - Consideration of additional responses to include cheerleading/band injuries
  - Landing zone for aeromedical response

SPORTS CONCUSSIONS

E A P

- 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.
- During transport a symptom checklist should be recorded and provided to the receiving Emergency Department. (Sports Concussion Checklist Tools can be found online).

SUDDEN CARDIAC ARREST

- 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.
- 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.

HEAT RELATED ILLNESS

The West Virginia Secondary School Activities Commission (WVSSAC) requires “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:

- Headache
- Confusion
- Disorientation
- Dizziness
- ALOC
- Nausea/Vomiting
- Diarrhea
- Hot moist skin

Anyone with exertional heat stroke must be COOLED FIRST and then transported by EMS.

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

SPORTS MEDICINE

A cooling zone must be designated at each practice site. Treatment must include a minimum:
- Remove excess clothing
- 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
- Placing an ice-cold towel over the head/neck and rewetting/replacing every 2 minutes while in the tub."

TREATMENT

EAP	Perform Initial Treatment/Universal Patient Care
EAP	If Cold Water Immersion (CWI) has been initiated: ▪ Assess the patient in the tub [(Cold Water Immersion – (CWI)] and review the ongoing treatment. ▪ If the patient begins to shiver, take the patient's hands out of the water and gently warm them. ▪ Document the patient's temperature prior to CWI and Q5 minutes during CWI. ▪ Remove patient from CWI once patient's temp is ≤ 102°F.
EAP	▪ If no rectal temperatures have been taken after 15 minutes of CWI, reassess the patient, contact Medical Command, and consider transferring the patient at this time.
EAP	If Cold Water Immersion (CWI) has **NOT** been initiated but is available: ▪ If CWI set up cannot be accomplished in < 5 minutes, transport the patient. Cool the patient per protocol while waiting.
EAP	▪ Once CWI has been established, treat for 15 minutes then contact Medical Command.
EAP	▪ If CWI capability is not available, transport the patient to the closest appropriate facility.
AP	▪ 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 >102° F degrees, check the patient's rectal temperature 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. ▪ Consider IV bolus 250ml NS.

Purpose

This protocol applies specifically to Basic Life Support 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.

E	Perform Initial Treatment/Universal Patient Care. Assure the patient has been provided discharge information that details how to utilize the device when they are home.

JACKSON PRATT (JP) DRAINS

E	▪ 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. ▪ Note the length of exposed tubing outside the patient and take caution not to manipulate the patient in a manner to pull on this device. ▪ The length noted initially should **NOT** change during transport. ▪ Monitor any patient complaint that is related to the area the JP drain is located.
	If new discomfort occurs or the tube becomes dislodged contact Medical Command.

CHEST TUBES

E	BLS transport of chest tubes only applies only to static chest tubes that are not reliant on continuous suction or pleur-evac devices.
	▪ Chest tubes vary in diameter and are inserted through the chest wall to remove air, fluid, or discharge from the intrathoracic space. ▪ Note the length of the exposed chest tube outside the patient and take caution not to manipulate the patient in a manner to pull on this device. ▪ The length noted initially should **NOT** change during transport.
	If new discomfort occurs or the tube becomes dislodged contact Medical Command.

NEGATIVE PRESSURE WOUND THERAPY SYSTEMS

E	Examine the site for the following: dressing is sealed, predominately clear fluids, no foul odors.
	If the unit alarms: ▪ Check the following: canister level, dressing sealed, tubing kinked, pump working?
	If the system becomes disconnected: ▪ Apply a sterile bandage to the wound and assist the patient to contact their clinician.
	If active bleeding is noted or develops suddenly, immediately stop the NPWT, take measures to stop bleeding, and consult with Medical Command.

DISQUALIFYING ELEMENTS

- Fever ≥ 101°
- Vomiting / Diarrhea
- Headache
- Sore throat
- Confusion
- Dizziness
- Redness / Rash
- Puss and/or swollen area

BLS PRE-ESTABLISHED TREATMENT

IV FLUIDS

E	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.

REQUIREMENTS

E	▪ IV monitoring applies to ADULTS ONLY (>12 years old). ▪ IV fluids shall **NOT** be flowing more than 100 ml/hour. ▪ The patient must be considered stable for a period of one (1) hour with an IV drip rate ≤100 ml/hour prior to transport. ▪ IV fluids shall be clear non-medicated Normal Saline 0.9% or Lactated Ringers. ▪ IV fluid must be gravity fed ONLY. IV pumps are not allowed for BLS transport. ▪ The IV must be established by the initiating facility staff - venous peripheral only - arm or hand only.

MONITORING

E	▪ Monitor flow rate every 15 minutes during transport. ▪ Check site for infiltrations (fluid leaking into surrounding soft tissue), pain at IV site, inflammation, and/or tightness of skin at site. • Should you note infiltration has occurred: stop the flow, gently remove the IV catheter, elevate the extremity, and apply a bandage to the site. ▪ Document the procedures and have the receiving facility evaluate the site upon arrival.

Purpose

The WCD is an external device capable of automatic detection and defibrillation of ventricular tachycardia (VT) or ventricular fibrillation (VF). This guideline serves to assist the EMS provider in treatment and management of the patient with a WCD. Additional educational material for WCD patients can be found in the appendix.

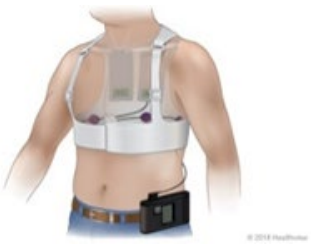
E A P	Perform Initial Treatment/Universal Patient Care.
	Determine history of WCD use.
	Determine the identified primary complaint is WCD related. Unrelated complaints should be treated per respective protocol.

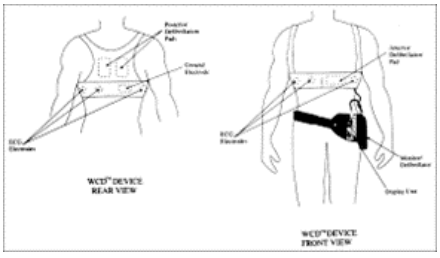
SPECIAL TREATMENT CONSIDERATIONS

E A P	▪ If the patient is unresponsive and requires treatment, the device will warn bystanders prior to administering a shock. ▪ Once the WCD device has administered treatment, the provider should do the following: • Reassess patient • Secure the airway • Check pulses • Obtain vitals ▪ If the heart rate does not return to normal and the WCD treatment cycles repeat, follow protocol for treatment of cardiac arrest.
	If the patient regains consciousness and refuses care; contact Medical Command, document the refusal, and ask that they follow up with their primary care physician.
	In the event the vest has not administered treatment and the patient exhibits with chest pain, the vest can be removed, and the patient treated per protocol including obtaining a 12 lead EKG.

TRANSPORT CONSIDERATIONS

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





TOC

Purpose

IO placement is intended only for patients needing immediate vascular access when peripheral access cannot be established. IO placement shall not be performed simply for prophylactic access.

Signs/Symptoms

- Altered mental status
- Respiratory Compromise SPO2<90% after O2 therapy, and RR <10 or >40.
- BP <90 systolic

Differential Considerations

IO placement may be considered prior to doubtful peripheral IV access in the following situations:

- Cardiac arrest
- Profound hypovolemia and altered mental status
- Extremis condition with need for medication or IV fluid.

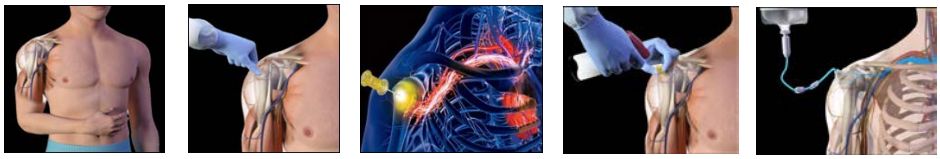
AP Perform Initial Treatment / Universal Patient Care Protocol

A P Unless Contra-indicated, select insertion site in following order:
- Adult: proximal humerus, proximal tibia, then distal tibia.
- Peds: proximal tibia then distal tibia.

ADULT

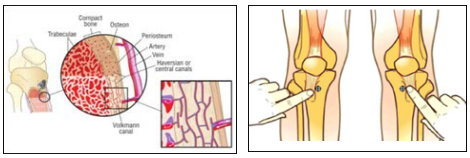
Proximal Humerus

A P
- Greater tubercle just anterior to midline.



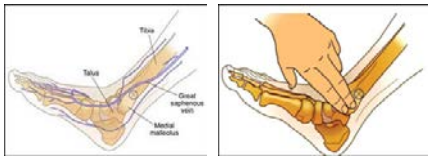
Proximal Tibia

A P
- Measure one (1) finger width medial to the tibial tuberosity, along the flat aspect of the medial tibia as shown below.



Distal Tibia

A P
- Measure two (2) finger widths proximal to the medial malleolus and midline on the medial shaft.



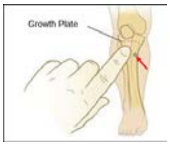
INTRAOSSEOUS PLACEMENT

INTRAOSSEOUS PLACEMENT

PEDIATRIC

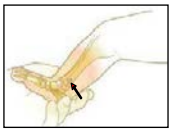
Proximal Tibia

A P	▪ Measure one (1) finger width distal to the tibial tuberosity. If unable to palpate the tuberosity, measure two (2) finger widths below the patella along the flat aspect of the medial tibia.



Distal Tibia

A P	▪ Measure one (1) finger width proximal to the medial malleolus along the flat aspect of the medial distal tibia.



PROCEDURE

A P	▪ Prepare the skin with antiseptic and prepare the IO drill and needle set. ▪ Load the appropriate size needle. ▪ Hold the IO drill in one hand and stabilize the extremity near the insertion site with the opposite hand. ▪ Position the drill at the insertion site with the needle at a 90° angle to the surface of the bone. ▪ Insert the IO and stabilize the needle. ▪ Flush to ensure proper infusion. • Administer a rapid syringe bolus of 10 ml NS and repeat if necessary. • If no soft tissue infiltration is noted, 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. ▪ Notify the receiving facility of the presence of the IO device prior to moving to the hospital stretcher.
	Analgesia in the conscious/awake patient, consider: **Lidocaine 2%** [100mg/5ml (20mg/ml)] ▪ Adults: 40 mg (2 ml) slow IO. ▪ Pediatric: 0.5 mg/kg slow IO.

Contraindications:
- Fracture of the bone selected of IO infusion.
- Absence of anatomic landmarks at selected site.
- Previous significant orthopedic procedure.
- Infection at the selected site

PERIPHERALLY INSERTED CENTRAL CATHETER (PICC LINE) ACCESS

Purpose

- PICC lines are a common method of maintaining long-term venous access.
- EMS providers use when immediate vascular access in life-threatening emergencies, urgently needed and peripheral IV access cannot be established.

Signs/Symptoms

PICC line patients must have at least one of the following in order to gain access to the central line.

- AMS
- Respiratory Compromise SPO2<90% after O2 therapy, and RR <10 or >40.
- BP <90 systolic

Differential Considerations

Access may be considered prior to IV attempts:

- Cardiac Arrest- medical or trauma
- Profound Hypovolemia **and** AMS
- Extremis condition with need for medication or IV fluid.
- Patient or caregiver requests use of PICC line and accepts risks involved. (infection/embolus/catheter damage.

P

Perform Initial Treatment / Universal Patient Care Protocol

Considerations:

- PICC line access shall NOT be performed simply for prophylactic access.
- Avoid contamination of ports and connections while accessing due to high risk of infection.
- Never use a smaller than 10 ml syringe.
- It is imperative to aspirate 5 ml of blood from the line prior to use.

PROCEDURE

P

PRIOR TO MEDICATION DELIVERY:

- Scrub the entry point/cap with an alcohol pad for at least 15 seconds and allow drying for at least 5 seconds
- Never allow a central line to be open to air.
- Attach an empty 10 ml syringe to the entry point and unclamp the line if a clamp is present.
- Attempt to aspirate at least 5 ml of blood.
  - Blood should draw freely, re-clamp the catheter.
- If blood does not draw freely:
  - remove the syringe, re-clamp
  - Do not use the catheter.
- Once patency is determined, attach 10 ml of NS and gently flush the line, then re-clamp the catheter.
- Remove the syringe and attach the PICC line to the end of the NS infusion.
- Unclamp and adjust the rate within limits of the catheter size.
- Medications should be administered through the IV tubing port.
- Maintenance fluids must be administered during transport to keep the line open once accessed.

MEDICATION PRECAUTIONS:

Adenosine

- Pressurized, rapid infusion may rupture the line.

Dextrose 50%

- The viscosity of the product and pressure can damage the catheter

CAUTIONS:

- The max flow rate for a PICC line is 125 ml/hr for a less than 2.0 French cath or 250 ml/hr over 2.0 French cath.
- Keep patient's arm straight to avoiding kinking or obstructing flow.
- Ensure all line connections are secure.

CONTRAINDICATIONS:

- Inability to aspirate or infuse the catheter.
- Catheter located in any place other than the patient's upper arm.
- Need for rapid fluid resuscitation.

TOC

Purpose

The Morgan Lens is a device to provide irrigation to one eye. It is indicated for chemical or thermal burns, foreign body sensation with no visible foreign body, and to remove non-embedded foreign materials.

Signs/Symptoms

- Eye irritations
- Redness
- Obvious foreign body
- Non-obvious foreign body
- Burns

Differential Considerations

- Burns
- Foreign Body Sensation
- Foreign Body obvious/non-obvious.

EAP Perform Initial Treatment / Universal Patient Care Protocol

SETTING UP THE MORGAN LENS

E
A
P

- Inspect all equipment.
- Prepare Normal Saline and IV tubing.
- Attach IV tubing to Morgan Lens and flush.
- Inspect for any leaks prior to flushing eye.

APPLICATION PROCEDURE

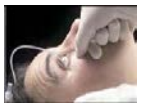
E
A
P

- Administer:
  Tetracaine
  - 2 drops per eye being irrigated.
- Place patient supine and instruct patient to look down towards their feet.
- Retract upper eyelid and insert Morgan Lens under the upper lid.
- Release upper eyelid.
- Instruct patient to look up and repeat the process with the lower lid.
- Open IV line and begin irrigation.
- Tape tubing to the patient's forehead to prevent dislodging the lens.

REMOVAL PROCEDURE

E
A
P

- Continue the flow of fluid.
- Instruct patient to look up and retract lower lid.
- Slide the lens out.
- Terminate the flow of saline.



- Fluid must continuously flow when irrigating the eye. Never allow lens to run dry.
- Tetracaine is a single use medication. Repeated doses will predispose the cornea to ulceration and destruction of the superficial layer of the cornea.

(OPTIONAL) MORGAN LENS

TOC

Purpose

This protocol is utilized when a patient has a suspected tension pneumothorax.

Signs/Symptoms

- Closed or Penetrating chest trauma with respiratory distress.
- Absent breath sounds on the side of the injury.
- SBP <90 mm/Hg in adults or SBP <80 mm/Hg in children with signs of shock.

Differential Considerations

- Tension Pneumothorax
- Trauma-associated chest injury
- Hemopneumothorax
- Hemodynamically unstable with respiratory distress and suspected tension pneumothorax

AP Perform Initial Treatment / Universal Patient Care Protocol

PROCEDURE

Adult

A P

- Identify 2nd intercostal space above the 3rd rib midclavicular, 4th ICS anterior axillary line, or 4th ICS mid-axillary line on the appropriate side.
- Advance a 14 or 16 gauge, 3 ¼ inch IV catheter above the 3rd rib. As you enter the pleural space, you will feel a pop and note a rush of air.
- Withdraw the needle once advanced into the chest being careful not to kink the sheath.
- Attach a one-way flutter valve to the catheter.

Pediatric

A P

- Identify 2nd intercostal space above the 3rd rib midclavicular, 4th ICS anterior axillary line, or 4th ICS mid-axillary line on the appropriate side.
- Advance a 16 gauge, 1¼ inch IV catheter above the 3rd rib. As you enter the pleural space, you will feel a pop and note a rush of air.
- Withdraw the needle once advanced into the chest being careful not to kink the sheath.
- Attach a one-way flutter valve to the catheter.

A P

Secure the catheter in place with tape, being careful not to block the port or kink the catheter.

If signs or symptoms are not relieved by the initial chest decompression or signs and symptoms recur; decompress the chest again with additional catheters adjacent to the original catheter.

- A sealed pneumothorax may result in a tension pneumothorax. If so, 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 and allow the trapped air to escape.
- The following locations are also approved for needle decompression:
  - 4th intercostal space, anterior axillary line
  - 4th intercostal space, mid-axillary line

CHEST DECOMPRESSION

TOC

Purpose

Any clinical situation where a definitive airway is necessary and ALL other methods have failed or are not indicated.

Signs/Symptoms

Complete airway obstruction
Severe Upper Airway edema
Inability to Intubate due to:
- Hemorrhage
- Anatomic variants
- Massive regurgitation and/or aspiration
- Severe maxillofacial trauma

Differential Considerations

- FBAO
- Mass/lesion/Anatomical variants
- Anaphylaxis
- Thermal/Inhalation injury
- Caustic ingestion
- Angioedema
- Epiglottitis
- Airway Hemorrhage
- Severe Maxillofacial trauma

P	Perform Initial Treatment/Universal Patient Care

CONTRAINDICATIONS:
- Child < 12 years of age
- Inability to locate landmarks required for the procedure
- Lack of training in surgical airway interventions
- Tracheal transection
- Direct laryngeal injury
- Known laryngeal pathology -stricture or tumor

PRECAUTIONS:
- Success of procedure is dependent on correct identification of cricothyroid membrane.
- Bleeding will occur, even with correct technique. Straying from the midline is dangerous and likely to cause hemorrhage.

PROCEDURE

P	Preparation: ▪ Prepare skin using aseptic solution. ▪ Position the patient in a supine position, with in-line spinal immobilization, if indicated. If cervical spine injury, neck extension will improve anatomic view.

P	**Surgical Cricothyrotomy Procedure:** ▪ Stabilize the larynx and locate the following landmarks: thyroid cartilage (Adam's apple) and cricoid cartilage. The membrane lies between these. ▪ Using a #11 surgical blade, cut approximately 3 cm vertically and 0.5 cm deep through the skin and fascia over the cricothyroid membrane. ▪ Cut an approx. 1.5 cm horizontal incision, cross sectioning the previous cut. ▪ Using your finger or other suitable object, bluntly dilate the opening through the membrane. ▪ Once the hole is established, hold it open until the ETT is placed. ▪ Insert a bougie curved tip first into the hole, angled caudally and advance the bougie into the trachea noticing "clicks" of tracheal rings until resistance is met. This confirms tracheal position. ▪ Place an ETT over the bougie and inflate with 5-10 ml of air and secure. • 5.0-6.0 ETT for pocket bougie • 5.5-6.0 ETT for regular bougie.

CRICOTHYROTOMY

CRICOTHYROTOMY

P	Confirm and document tube placement by: ▪ ETCO2 ▪ Breath Sounds ▪ Rising Pulse Oximetry ▪ Other means, as needed
	Ventilate with BVM assessing adequacy of ventilation.
	Observe for subcutaneous air, which may indicate tracheal injury or extra-tracheal tube position.
	Secure tube with ties or appropriate device.
	Continually reassess ventilation, oxygenation, tube placement, and waveform EtCO2

POST PROCEDURE MANAGEMENT

P	Assess for increases in heart rate, BP, and restlessness as indicators for additional sedation and analgesia.
	If procedure is successful and patient shows evidence of need for sedation and/or pain management to facilitate tolerating the procedure, administer: **Midazolam** ▪ 2 mg IM/IV/IO every 5 min. to a max dose of 10 mg ▪ Withhold medication if BP <90 mm/Hg. *AND/OR* **Fentanyl** (Sublimaze) ▪ 1 mcg/kg up to 100 mcg max single dose, slow IM/IV/IO.
	Repeat doses require MCP order.

P	If patient remains restless and/or combative, contact Medical Command Physician for additional treatment options.

ADULT SPECIAL HEALTHCARE NEEDS

Purpose

These guidelines apply specifically to adults with special healthcare needs and devices already in place that may malfunction and require EMS treatment and transport.

EAP	Perform Initial Treatment/Universal Patient Care
	Assure the caregiver has the "Go Bag", medical records, and additional supplies.

TUBES

EAP	**CSF Shunt** ▪ A catheter to drain CSF from the brain. ▪ The tube lies under the skin from the skull to the chest or abdomen allowing CSF to be absorbed. ▪ Tubes may become obstructed. ▪ Assess for ICP, Fever, ALOC ▪ Elevate the head and keep midline during transport.
AP	▪ Assess and treat dysrhythmias appropriately.

EAP	**Feeding Tube** ▪ Usually placed in the stomach or jejunum through the nose, mouth, or abdomen. ▪ Access may be an open tube or percutaneous site. ▪ Leakage or blockage is the most likely reasons for an encounter. ▪ Stabilize the tube in place. ▪ Stop any infusing fluids. ▪ Have caretaker flush with water. ▪ Clamp tube.
AP	▪ Treat dysrhythmias appropriately.

EAP	**Central Venous Line** ▪ Implanted vascular access ports for complex medical issues. ▪ Typically terminates in the superior/inferior vena cava or right atrium. ▪ Commonly known as PICC, CVL, or VAP ▪ Assess for shock, altered mental status, or cardiac compromises. ▪ Assess the insertion site and the device for damage, infection, or edema.
AP	▪ Assess need for vascular access

AIRWAY / AIRWAY DEVICES

EAP	**Apnea Monitor** ▪ Device to monitor periods of absent breaths. ▪ These devices should be transported in place with the patient. ▪ Provide immediate resuscitation as needed ▪ Suction through the nose, mouth, or tracheostomy tube as needed.

EAP	**Ventilator Support** ▪ Assess for breathing adequacy. ▪ Disconnect ventilator from the patient and manually ventilate with BVM if device is malfunctioning. ▪ Assess airway tubing for obstruction ▪ Assist caretaker with troubleshooting the equipment.
AP	▪ Treat dysrhythmias appropriately.

ADULT SPECIAL HEALTHCARE NEEDS

E A P	**BiPaP** ▪ Device used to augment breathing. ▪ Assess for breathing adequacy. ▪ Disconnect ventilator from the patient and manually ventilate with BVM if device is malfunctioning. ▪ Assess airway tubing for obstruction ▪ Assist caretaker with troubleshooting the equipment.
AP	▪ Treat dysrhythmias appropriately.

E A P	**Stoma / Tracheostomy** ▪ Do not wait for late signs/symptoms to develop before intervening, reestablish airway patency and support oxygenation/ventilation. ▪ Assemble equipment and prepare suction device. ▪ Instill a small volume of sterile saline into tracheostomy tube if needed. ▪ Gently insert catheter into the tracheal tube without applying suction to appropriate depth. ▪ Place thumb over opening in catheter and use a twirling motion while withdrawing. ▪ Suction normal saline from a container if needed to clear mucus. ▪ Allow patient to rest and breathe for 30 seconds, then repeat if needed until clear. ▪ Oxygenate/Ventilate as needed. ▪ If tracheostomy tubes are cuffed, deflate the cuff periodically for suctioning to prevent pooling of secretions above the cuff.
	Tracheal damage can be caused by suctioning, use appropriately sized suction catheter within the tracheostomy tube.
	Determine the depth prior to insertion by estimating the length of the patient's spare tracheostomy tube.
	Limit duration of the suction to 5-10 seconds at 50-100 mm/Hg (children) 100-120 mmHg (adults).
	Using 1-2 ml of sterile saline may thin secretions during suctioning.
	Suction depth is determined by the estimated length of the tracheostomy tube.

TRACH SIZE	*CATHETER SIZE*
00 – 3.5	*5 – 6 French*
4.0 – 4.5	*8 – 10 French*
5.0 – 5.5	*10 – 12 French*
6.0 – 7.0	*14 French*
7.0 – 8.0	*16 French*
8.0 – 9.0	*18 French*

CARDIAC

E A P	**Internal Pacemaker** ▪ A medical device placed under the skin and connected to the heart to regulate the rate. ▪ Assess for pulse and treat accordingly.
A P	▪ Treat dysrhythmias appropriately. ▪ Assess need for IV access.

E A P	**Internal Defibrillator** ▪ A medical device implanted near the clavicle to monitor heart rhythm and deliver shocks to treat VT or VF. ▪ Assess for pulse and treat accordingly.
A P	▪ Treat dysrhythmias appropriately. ▪ Assess need for IV access.

E A P	**Wearable Cardioverter Defibrillator** ▪ A medical device capable of automatic detection of VT and VF. ▪ Determine history of WCD use ▪ Determine the identified primary complaint is WCD related. Unrelated complaints should be treated per respective protocol.

SPECIAL TREATMENT CONSIDERATIONS

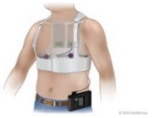
If the patient regains consciousness and refuses care; contact Medical Command, document the refusal, and ask that they follow up with their primary care physician.

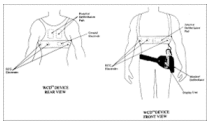
If the vest has not administered treatment and the patient exhibits with chest pain, the vest can be removed, and the patient treated per protocol including obtaining a 12 lead EKG.

TRANSPORT CONSIDERATIONS

E A P

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





E A P

Left Ventricular Assist Device - LVAD

- A medical device capable of pumping blood mechanically.
- Determine history of LVAD placement.
- Determine the identified primary complaint is LVAD related. Unrelated complaints should be treated per respective protocol.

ASSESSING THE LVAD PATIENT

E A P

- Mental status and skin color must be used to determine patient stability.
- Call the Emergency Contact Number located on the LVAD control unit
- The use of pulse and blood pressure to assess stability can be unreliable in an LVAD patient.
- Quantitative Continuous Waveform Capnography will remain accurate in LVAD patients.
- LVAD patients can remain stable and experience a range of ECG rhythms that could be dangerous or fatal in another patient.
- Temperature: Infection and sepsis are common in LVAD patients.

SPECIAL TREATMENT CONSIDERATIONS

E A P

- The best medical resource available to you for LVAD related problems is the patient's VAD coordinator.
- Sepsis and stroke are leading causes of death in the LVAD patient.
- Follow standard AHA and protocol guidelines, as appropriate.
- Minor appearing chest or abdominal trauma could be serious in the LVAD patient due to anticoagulant medications.
- CPR should only be initiated when confirmation that the LVAD pump has stopped working and all other clinical indicators indicate CPR is required.

TRANSPORT CONSIDERATIONS

E A P

- Transport the patients resource bag with them.
- Transport fresh batteries and power unit with you if available.
- Transport to the closest appropriate facility in consultation with Medical Command

- CPR should rarely be performed on an LVAD patient.
- Patients with an LVAD should almost never be pronounced dead at the scene.
- The patient and their family are well educated on the device.
- Blood sugar and stroke assessment shall be evaluated, particularly for an altered mental status LVAD patient.
- Use of external pacing or defibrillation is appropriate for the LVAD patient if needed.

Purpose

These guidelines apply specifically to Children with Special Healthcare Needs and devices already in place that may malfunction and require EMS treatment and transport.

E	Perform Initial Treatment/Universal Patient Care
A	Assure the caregiver has the "Go Bag", medical records, and additional supplies.
P	Reassess children every 3-5 minutes

TUBES

E A P	**CSF Shunt** ▪ A catheter to drain CSF from the brain. ▪ The tube lies under the skin from the skull to the chest or abdomen allowing CSF to be absorbed. ▪ Tubes may become obstructed. ▪ Assess for ICP, Fever, ALOC ▪ Elevate the head and keep midline during transport.
AP	▪ Assess and treat dysrhythmias appropriately.

E A P	**Feeding Tube** ▪ Usually placed in the stomach or jejunum through the nose, mouth, or abdomen. ▪ Access may be an open tube or percutaneous site. ▪ Leakage or blockage is the most likely reasons for an encounter. ▪ Stabilize the tube in place. ▪ Stop any infusing fluids. ▪ Have caretaker flush with water. ▪ Clamp tube.
AP	▪ Treat dysrhythmias appropriately.

E A P	**Central Venous Line** ▪ Implanted vascular access ports for complex medical issues. ▪ Typically terminates in the superior/inferior vena cava or right atrium. ▪ Commonly known as PICC, CVL, or VAP ▪ Assess for shock, altered mental status, or cardiac compromises. ▪ Assess the insertion site and the device for damage, infection, or edema.
AP	▪ Assess need for vascular access

AIRWAY / AIRWAY DEVICES

E A P	**Apnea Monitor** ▪ Device to monitor periods of absent breaths. ▪ These devices should be transported in place with the patient. ▪ Provide immediate resuscitation as needed ▪ Suction through the nose, mouth, or tracheostomy tube as needed.

E A P	**Ventilator Support** ▪ Assess for breathing adequacy. ▪ Disconnect ventilator from the patient and manually ventilate with BVM if device is malfunctioning. ▪ Assess airway tubing for obstruction ▪ Assist caretaker with troubleshooting the equipment.
AP	▪ Treat dysrhythmias appropriately.

CARDIAC

E A P	**Internal Pacemaker** ▪ A medical device placed under the skin and connected to the heart to regulate the rate. ▪ Assess for pulse and treat accordingly.
A P	▪ Treat dysrhythmias appropriately. ▪ Assess need for IV access.

E A P	**Internal Defibrillator** ▪ A medical device implanted near the clavicle to monitor heart rhythm and deliver shocks to treat VT or VF. ▪ Assess for pulse and treat accordingly.
A P	▪ Treat dysrhythmias appropriately. ▪ Assess need for IV access.

Purpose

This program applies to patients that may be effectively treated and monitored on-scene for certain conditions without the need of an emergency room visit. Utilization of this protocol shall be limited to patient with the following conditions: Diabetes – Hypoglycemia, Asthma/COPD, Seizure Disorders, and patients meeting the requirements of the Cease Efforts protocol.
This protocol is only applicable to patients > 12 years old and those 12 – 18 years of age (excluding emancipated minors) must be released with consent of their legal guardian.

EAP	Perform Initial Treatment/Universal Patient Care
	Follow the proper protocol for medical management based on clinical presentation.
	Completion of respective checklist with no exclusions shall be documented in the EPCR.
	Contact Medical Command Physician once the respective checklist has been completed.
	NOTE: Medical Command may review and direct EMS to transport if patient presentation is questionable

Diabetes - Hypoglycemia

EAP	Treat per Diabetic Emergencies Protocol.
	Following treatment and/or evaluation, the patient is alert and oriented and a candidate for treat and release; Complete the following checklist:

Diabetes – Hypoglycemia No Transport Checklist *(Any **NO** answer excludes the use of this protocol)*	**YES**	**NO**
Glucose > 70 mg/dl		
SpO2 > 94%		
Heart Rate: 50 – 100 bpm		
Respiratory Rate: 12 – 20/m		
Blood Pressure: 100/60 – 200/100		
Afebrile		
Patient can tolerate PO food/water		
No Nausea/Vomiting		
No Malaise/Chills		
Pt. has access to appropriate medications		
No history of inadvertent overdosing		
No history of Hypoglycemia requiring medical intervention within seven (7) days		
Responsible party available to stay with the patient		
Patient is agreeable to a follow up plan.		

ASTHMA / COPD

EAP	Treat per Respiratory Distress Protocol.
	Following treatment and/or evaluation, the patient is alert and oriented and has symptomatic relief after 1 – 2 Albuterol/Atrovent treatment(s) and/or steroid administration and is a candidate for treat and release; Complete the following checklist:

OPTIONAL: TREAMENT IN PLACE

OPTIONAL: TREAMENT IN PLACE

Asthma/COPD No Transport Checklist *(Any **NO** answer excludes the use of this protocol)*	YES	NO
Lung Sounds – clear and equal bilaterally		
SpO2 > 94%		
EtCO2 - 35 – 45 with normal waveform		
Heart Rate: 50 – 100 bpm		
Respiratory Rate: 12 – 20/m		
Blood Pressure: 100/60 – 200/100		
Afebrile		
Minimal – no dyspnea		
No chest pain		
No Malaise/Chills		
Pt. has access to inhalers / appropriate medications		
No history of CHF		
No cough or mild non-productive cough		
Patient is agreeable to a follow up plan.		

SEIZURE DISORDER

E	Treat per Seizure Protocol
A	Following treatment and/or evaluation, the patient is alert and oriented post seizure that did not require Benzodiazepine administration
P	and is a candidate for treat and release; Complete the following checklist:

Seizure No Transport Checklist *(Any **NO** answer excludes the use of this protocol)*	YES	NO
Prior History of Seizure – *(First time seizure patients require transport)*		
Glucose > 60 mg/dl		
SpO2 ≥ 94%		
Heart Rate: 50 – 100 bpm		
Respiratory Rate: 12 – 20/m		
Blood Pressure: 100/60 – 200/100		
Afebrile		
No trauma to head, neck, or face noted or other traumatic injury that may require ED evaluation		
Normal neurological exam		
No history of ETOH of drug use		
No Nausea/Vomiting		
No Malaise/Chills		
Pt. has access to appropriate medications		
No history of other seizure activity within the past seven (7) days		
Responsible party available to stay with the patient		
Patient is agreeable to a follow up plan.		

CEASE EFFORTS PATIENTS

E	Treat per Cease Efforts Guideline
A	Following treatment and/or evaluation, the patient has met the requirements of the Cease Efforts protocol and the MCP has issued a Time of Death; Complete the following checklist:
P	

Cease Efforts No Transport Checklist *(Any **NO** answer excludes the use of this protocol)*	**YES**	**NO**
Resuscitation initially started by first responders, family members, etc.		
EtCO2 < 10 mmHg with high quality CPR for > ten (10) minutes		
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		
EMS has contacted MCP and obtained a Time of Death		
EMS has initiated the Death in the Field protocol		
Patient is not hypothermic		
Patient was not removed from the scene		

OVERDOSE PATIENTS

E	Treat per Overdose/Toxic Ingestion/Poisoning protocol
A	Following treatment and/or evaluation, the patient is alert and oriented with a patent airway with no signs of respiratory compromise; Complete the following checklist:
P	

Overdose No Transport Checklist *(Any **NO** answer excludes the use of this protocol)*	**YES**	**NO**
Glucose > 60 mg/dl		
Heart Rate: 50 – 100 bpm		
Respiratory Rate: 12 – 20/m		
Blood Pressure: 100/60 – 200/100		
SPO2 > 94		
Patients' lung sounds are clear and equal bilaterally		
Afebrile		
Patient is alert and oriented X3 (Person, Place, Time)		
Patient has not received more than a single treatment of antagonist.		
No known additional toxic co-ingested agents such as aspirin, acetaminophen, tricyclics, beta blockers, etc.		
Patient is agreeable to a follow up plan.		
Responsible party available to stay with the patient		

OPTIONAL: TREAMENT IN PLACE

TOC

GUIDELINE

GL022

OPTIONAL: BLOOD/BLOOD PRODUCTS ADMINISTRATION

Purpose

Hemorrhagic shock is caused by a significant reduction in circulating blood volume. The administration of blood products may be utilized for any patient experiencing massive hemorrhage or obvious signs of blood loss.

Signs/Symptoms

- Hypovolemic Shock
- Altered Mental Status
- Traumatic Cardiac Arrest
- Delayed Capillary refill
- ETCO2 <25 mm/Hg

Differential Considerations

Penetrating trauma
Blunt force trauma
Post-partum hemorrhage
Lacerations
Eviscerations
Multi-system trauma
Traumatic CA
Uncontrollable hemorrhage
GSW
GI Bleeding
MVAs
Stabbings
Blast injuries
MVAs

ATTENTION:

- This protocol can only be used by providers who have completed the WVOEMS approved blood administration course and passed with a minimum of 90% and have the agency medical director approval.
- All agencies approved for the use of this protocol must utilize the same equipment for storage, transport, and warming:
  - Pelican Credo Series 4 2L cooler
  - Liquid-in-Glass Celsius Thermometer, -5-20C
  - TempStick sensor
  - Qin Flow Warrior Lite Blood Warming System
  - Generic Y Type Filtered Blood Tubing

In the event of waste for any reason, it is mandatory to report to the WVOEMS Medical Director and on the ePCR within 24 hours of the event.

CONTRAINDICATIONS:

- The only contraindication to blood product administration resulting from hemorrhagic shock is the patient's religious belief (primarily Jehovah's Witness) with refusal by verbal response or other informed refusal by patient with decision making capacity, otherwise continue with administration.

NOTES:

- Baseline vitals including temperature are to be obtained prior to administration and continuously monitored.
- TXA can be administered per WVOEMS protocol prior to or concurrently with blood product through a different IV access.
- Blood administration requires one (1) paramedic and one (1) EMT or higher to be initiated. Both providers must have completed the required Blood Administration authorization and remain with the patient throughout the infusion.
- The blood warming device must be used for every transfusion.
- Nothing is to be administered through blood tubing but NS and blood products. NO EXCEPTIONS!
- Agencies not approved for Blood Administration can request intercept from other approved agencies.

AP Perform Initial Treatment/Universal Patient Care

A P Preparation:

- At least 2 large bore IV access is preferred.
- Blood must be administered through 20g or larger IV/IO.
- Use NORMAL SALINE to prime the designated Y-set blood tubing with filter.

PROCEDURE

A P Adult Blood Administration Procedure:
Candidates must meet 2 or more of the following:

- SBP<90 mmHg
- MAP <65 mmHg
- HR > 120
- Shock Index > 1.0 *(Shock Index = HR÷SBP)*
- MAP= [(DBP x 2) + SBP]÷3
- Altered Mental Status (without TBI)
- Witnessed Traumatic Arrest
- Delayed Capillary Refill (>3 sec)
- ETCO2 <25 mmHg

A P Pediatric (<12) Blood Administration Procedure:
Candidates must meet 2 or more of the following:

- SBP <70 + (2 x age in years)
- Altered Mental Status (without TBI)
- Witnessed Traumatic Arrest
- HR > 130
- Delayed Capillary Refill (>3 sec)/mottling
- Shock Index > 1.0 *(Shock Index = HR÷SBP)*
- MAP= [(DBP x 2) + SBP]÷3

OPTIONAL: BLOOD/BLOOD PRODUCTS ADMINISTRATION

MCP shall be contacted immediately following patient stabilization and initiation of blood administration.

A P	**DOSING**: ▪ **Adults**: 1 unit whole blood/fresh never-frozen plasma/PRBC bolus, infuse second unit if s/s of shock persist; If using FNF plasma, it is to be administered prior to or concurrent with PRBCs. ▪ **Pediatrics:** 10cc/kg bolus whole blood/PRBCs; may repeat x 1 if s/s of shock persist
A P	Following administration of the first unit of whole blood or PRBCs, administer: **Calcium Chloride (CaCl)** Adult: ▪ 1 g IV is to be infused. ▪ CaCl 1 g is to be added to bag of 100 ml NS and infused via gravity only Pediatric: ▪ 20 mg/kg (0.2 ml/kg) ▪ Mix in a 100 ml NS bag and administer wide open using gravity

DOCUMENTATION

A P	Documentation must consist of: ▪ Blood Unit # ▪ Unit Blood Type (O-, O+, etc.) ▪ Vital Signs at the start of transfusion and then q 5 min ▪ Start and Stop times of the transfusion ▪ IV site and gauge ▪ Verification of two providers initiating the transfusion

POSSIBLE COMPLICATIONS

- Observe for s/s of transfusion reaction while infusing blood product.
- Temperature change > 1° C above baseline.
- Pain at the infusion site, chest, back, or abdomen, if able to assess.
- Acute changes in blood pressure.
- Respiratory changes, especially with hypoxemia.
- Flushing, itching, edema, and/or anaphylaxis.

If reaction is suspected, discontinue transfusion and blood tubing immediately and start NS infusion in same IV. Treat signs and symptoms. Document Vitals q 5 min until stable. Notify the receiving RN/MD upon arrival to the facility. Return remaining blood tubing to blood bank with explanation of reaction.

GUIDELINE

GL023

Purpose

Used by approved personnel when airways are unable to be managed by non-invasive methods and require insertion of any advanced airway device with a 15mm connector for prolonged ventilatory assistance.

Signs/Symptoms

Patients that have an advanced airway placed and will require prolonged assisted ventilation.

Differential Considerations

Any patient requiring an advanced airway from
- unresponsiveness
- ROSC
- Intubated COPD/Asthma

AP	Perform Initial Treatment/Universal Patient Care

INDICATIONS:
- Patients who were unable to be managed by non-invasive methods of airway management and required insertion of any invasive airway device with a 15mm connector (e.g.: ET tube, LMA/ILA, iGel, King LTD, etc.)
- Any invasive airway device with a 15mm connector (e.g.: ET tube, LMA/ILA, iGel, King LTD, etc.) requiring prolonged ventilatory assistance.

CONTRAINDICATIONS:
- Equipment and agency not explicitly approved by regional medical director.
- Patients who are in cardiac arrest and actively receiving CPR. May use for patients having achieved ROSC.

COMPLICATIONS:
- Tension pneumothorax
- Hypotension (SBP < 90 mmHg adult or SBP < age appropriate for peds)
- Aspiration
- Gastric Distention

CAUTIONS:
- TBI patients with evidence of impending herniation: aim for ETCO2 35mm/Hg. DO NOT routinely hyperventilate.
- Immediately disconnect alarming ventilator and use BVM if troubleshooting fails.

TREATMENT PATHWAYS

LUNG PROTECTIVE PATEINT PROCEDURE

AP

Set Up Ventilator and perform a circuit check.
- Select Mode: volume control/volume assist control
- Set VT (tidal volume) to 6mL/kg to start, keeping tidal volume at 4-8 mL/kg base off ideal body weight.
- Set initial FiO2 to 100%
- Set initial respiratory rate appropriate for patient's age, refer to flow chart.
- Set initial PEEP to 5 cm H2O.
- Set initial flow rate (if applicable) to 60ml/min
- Set inspiratory times: Child =1.0 s/Adult 1.5 s
- Set I:E Ratio (Adult and Peds I:E ration of 1:3) **Pulmonary Edema:** (Adult and Peds= I:E ratio of 1:1)
- Attach ETCO2 and SPO2 monitors

COPD/ASTHMA PATEINT PROCEDURE

AP

Set Up Ventilator and perform a circuit check.
- Select Mode: volume control/volume assist control
- Set VT (tidal volume) to 6 mL/kg to start, keeping tidal volume at 4-8 mL/kg base off ideal body wt.
- Set initial FiO2 to 100%
- Set initial respiratory rate appropriate for patient's age, refer to flow chart.
- Set initial PEEP to 5 cm H2O
- Set initial flow rate (if applicable) to 60ml/min
- Set inspiratory times: Child =1.0 s/Adult 1.5 s
- Set I:E Ratio (Adult and Peds I:E ratio of 1:4) **Severe Bronchospasm/Air Retention:** (Adult and Peds= I:E ratio of 1:6)
- Attach ETCO2 and SPO2 monitors

Alarming Ventilator and unsure how to troubleshoot…
- Immediately disconnect patient and use BVM

OPTIONAL: VENTILATOR USAGE

OPTIONAL: VENTILATOR USAGE

ONGOING VENTILATOR ADJUSTMENT

A P

- Adjust FiO2 to maintain patient SPO2 = 95-99%
- Adjust rate and/or Tidal Volume to achieve ETCO2 of 35-45 mm/Hg
  - Increasing Rate and or Tidal Volume will decrease EtCO2
  - Do not routinely hyperventilate TBI patients unless evidence for impending cerebral herniation. In this case aim for ETCO2 35 mmHg.
- Continually re-assess breath sounds and chest rise.
  - Adjust Tidal Volume to achieve adequate chest rise and fall.
- Suction when appropriate to maintain patent airway.

FiO_2 and PEEP ADJUSTMENTS

	FiO_2	PEEP
Step 3:	50%	8
Step 4:	50%	10
Step 5:	60%	10
Step 6:	70%	10
Step 7:	70%	12

A P

- If high Peak Inspiratory Pressure (PIP >35) then do the following if able:
  - Check Plateau Pressure: Goal pressure < 30 mmHg
  - Change ventilator mode to Pressure Control/Assist Control:
    -Set goal PIP to < 35 mmHg.
    -Monitor Tidal Volume (Vt) to ensure patient is not exceeding 8 mL/kg based on ideal body weight chart.
- If continued elevation of PIP and/or Plateau Pressure troubleshoot according to the respective charts below:

- It is not uncommon for peak inspiratory pressures to be much higher than plateau pressures during mechanical ventilation for asthma. An increased PIP-plateau pressure delta is reflective of increased airway resistance and a decrease in the delta serves as a useful marker for clinical improvement.
- Utilize albuterol neb 2.5mg in line with ventilator, as well as other medications outlined in asthma pathway as needed to improve the delta.

Hypoxia or Deterioration after Mechanical Ventilation DOPES	
D	Dislodged ETT or cuff leak
O	Obstruction of ETT or circuit
P	Pneumothorax, Pneumonia, Pulmonary embolism or edema, Plug (mucous)
E	Equipment problem
S	Stacked breaths, air trapping, or auto-PEEP

Response to Deterioration after Mechanical Ventilation DOTT	
D	Disconnect ventilator, squeeze chest if auto-PEEP, Decompress if pneumothorax
O	Oxygen 100% FiO2, BVM and check compliance
T	Tube position and function, check EtCO2
T	Tweak ventilator settings or equipment

Pressure Alarm Troubleshooting			Problem Location	Consider
High PIP	+	High Plateau > 30	Alveoli	Compliance problem: Pneumothorax, Pneumonia Pulmonary Edema or Embolism, CHF
High PIP	+	Normal Plateau < 30	Airway problem	Airway, ventilator, or circuit problem: DOPE, Right Main stem intubation, Air trapping or auto-PEEP, Mucous plug, Patient out of synchrony with ventilator

Purpose

PEEP is the pressure above atmospheric pressure measured in the alveoli at the point of end expiration. It is a ventilatory parameter that can be set on ventilators and adjusted on PEEP valves (**Image 1**) made for bag valve devices. This pressure serves to prevent collapse of the alveoli at end expiration to serve to promote gas exchange in alveoli, recruit already collapsed alveoli allowing them to participate in improved gas exchange and prevent the repeated opening and closing of alveoli thought to cause ventilator induced lung injury (VILI). Physiologic PEEP, that is the PEEP that naturally occurs in human airways is 3 – 5 cmH2O. Therefore, the minimum PEEP setting for a ventilator or PEEP valve on a BVM should be 5 cmH2O. The primary use is to improve oxygenation per the indications as listed below.

PEEP Indications

ARDS
Acute Respiratory Distress Syndrome

- ARDS patients have reduced aerated lung volumes
- It helps to set a high PEEP to increase lung aeration
- Caution as high PEEP can cause VILI
- There is no strict agreement as to how high. Start at 8cmH2O and titrate following the PEEP utilization instructions below.
- The ALVEOLI Trial by the ARDS Network randomized 549 patients to high vs low PEEP.
  - Same volumes and plateau pressures: No survival benefit.
  - The investigators recommend a trial of high PEEP ventilation, and if it improves the oxygenation, then hold with it. If it does not or if any side effects such as hypotension or peak pressures over 30 cmH20, then discontinue and return to physiologic PEEP.

Asthma

- Asthma patients have increased intrinsic PEEP and higher airway resistance.
- This high expiratory resistance can make it difficult to empty the lungs.
- This makes it less responsive to PEEP than COPD
- Too much extrinsic PEEP plus mucous plugging are likely blocking some airways making it immune to the benefits of PEEP.
- PEEP may actually cause worsening hyperinflation and gas trapping in asthma patients. Providers may need to disconnect from ventilatory support devices to apply a brief symmetric chest wall compression to assist in full exhalation. Resume ventilation.
- Some data suggests that low level PEEP is beneficial.

COPD

- COPD patients have increased intrinsic PEEP and higher airway resistance
- PEEP reduces the workload of respiratory muscles by counteracting both intrinsic PEEP and airway resistance
- It may also splint the airways, leading to improved emptying of the entrapped gas
- No trials to test whether PEEP is beneficial in COPD at all, but can be tried when there is hypoxia. Because COPD patients may be CO2 retainers, be happy with saturations of 88-92% and monitor ETCO2.

Pulmonary Edema

- The main problem here is negative intrathoracic pressure generated by decreased lung volume and compliance
- PEEP works directly on these problems
- Most agree that about 10 cmH2O or PEEP is standard for cardiogenic pulmonary edema

PEEP Contraindications

POSITIVE END EXPIRATORY PRESSURE (PEEP)

POSITIVE END EXPIRATORY PRESSURE (PEEP)

PEEP Contraindications

Tension Pneumothorax	▪ A pneumothorax is also a relative contraindication because positive pressure ventilation and PEEP will make them both worse.
Hypovolemic Shock	▪ PEEP will increase intrathoracic pressure and decrease venous return to the heart, thus decreasing cardiac output and worsen shock.
Bronchopleural Fistula	▪ Minimal to no benefit with PEEP.
High Intracranial Pressure	▪ High PEEP will cause it to increase.

PEEP Utilization

- Assess the patient's respiratory status and oxygenation levels prior to applying PEEP.
- Begin with physiologic PEEP levels (5 cmH20) and titrate based upon patient response to adjustments q 2 minutes.
- Increase as tolerated based on the patient's comfort, oxygenation, and hemodynamic status.
- Monitor hemodynamic status closely, as PEEP can decrease cardiac output.
- If the patient is mechanically ventilated, monitor plateau pressures closely to prevent barotrauma; maintain a plateau pressure below 30 cmH2O.
- Anytime your patient requires a PEEP >15 cmH2O, you must immediately **consult an MCP** to see if other interventions may be able to assist in lowering that PEEP setting.
- Use PEEP in patients with ARDS to improve oxygenation. These patients may require higher PEEP >12 cmH2O.
- Avoid excessive PEEP in patients with low lung compliance (asthma) to prevent barotrauma.
- Re-evaluate PEEP settings regularly based upon clinical changes and patient needs. Examples include decrease PEEP with if hypotension (MAP<65 mmHg) occurs, peak plateau pressures exceed 30 cmH2O, or the patient becomes more difficult to bag valve ventilate. Increase PEEP with worsening hypoxia or associated pulmonary edema.

Image 1

PEEP valve. User selects the desired level of PEEP. (Photo courtesy Ambu USA)

PEEP valve in place on bag-valve resuscitator. (Photo courtesy Ambu USA)

***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:	

DIVERSION ALERT STATUS FORM

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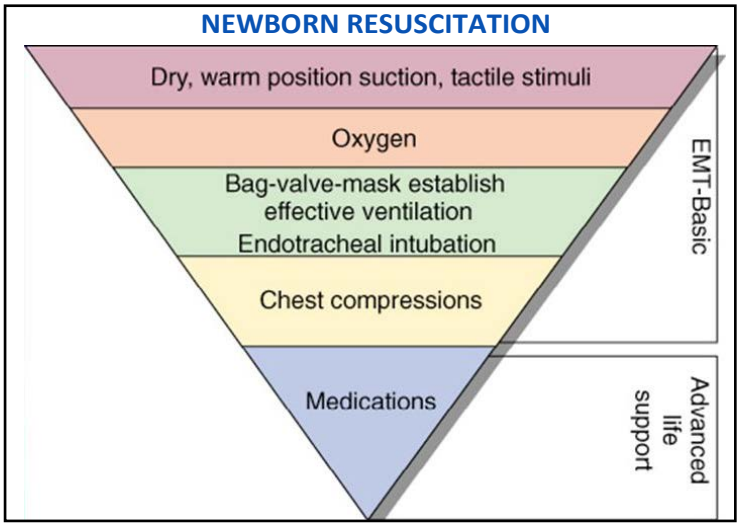
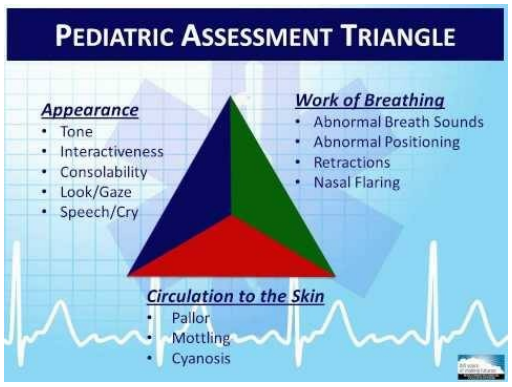
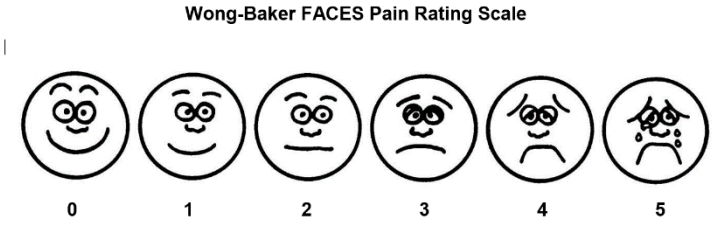
NORMAL VITAL SIGNS FOR CHILDREN OF VARIOUS AGE GROUPS			
Age Group	**Respiratory Rate**	**Heart Rate**	**Systolic B/P**
New Born	30-60	100-160	>60*
Infant (1 -1 2	30-60	100-160	>60*
Toddler (1 -3 yrs)	24-40	90-150	>70*
Preschooler (3-5 yrs)	22-34	80-140	>75
School Age (6-12 yrs)	18-30	70-120	>80
Adolescent (13 +yrs)	12-16	60-100	>90
*Infants & Children 3yrs or younger, evaluate the central pulses instead of measuring blood pressure.			

EQUIPMENT				
Age & Weight (kg)	**Airway/Breathing**			**Circulation**
	O_2 Mask	Oral Airways	Bag-Valve Mask	BP Cuff
Premie 1-1.5 kg	Premie Newborn	Infant	Infant	Premie Newborn
Newborn 0-6 mos 3.5-7.5 kg	Newborn	Infant Small	Infant	Newborn Infant
6-12 mos 7.5-10 kg	Pediatric	Small	Pediatric	Infant Child
1-3 yrs 10-15 kg	Pediatric	Small	Pediatric	Child
4-7 yrs 17.5-23 kg	Pediatric	Medium	Pediatric	Child
≥8 yrs ≥25 kg	Adult	Medium Large	Pediatric Adult	Child Adult

GLASGOW COMA SCALE		
	Infant	Child
Eye Opening	4-Spontaneously 3-To speech 2-To pain 1-No response	4-Spontaneously 3-To speech 2-To pain 1-No response
Best Verbal Response	5-Coos, babbles 4-Irritable, cries 3-Cries to pain 2-Moans, grunts 1-No response	5-Oriented 4-Confused 3-Inappropriate 2-Incomprehensible 1-No response
Best Motor Response	6-Spontaneous 5-Localizes pain 4-Withdraws from pain 3-Flexion 2-Extension 1-No response	6-Obeys command 5-Localizes pain 4-Withdraws from pain 3-Flexion 2-Extension 1-No response







PEDIATRIC AIRWAY MANAGEMENT

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 cuffed	10-10.5	6 Fr	8 Fr
Toddler **10-11 kg**	1 straight	4.0 cuffed	11-12	6 Fr	8-10 Fr
Small Child **12-14 kg**	2 straight	4.5 cuffed	12.5-13.5	6 Fr	10 Fr
Child **15-18 kg**	2 straight or curved	5.0 cuffed	14-15	6 Fr	10 Fr
Child **19-22 kg**	2 straight or curved	5.5 cuffed	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" **≥ 32 kg**	3 straight or curved	6.5 cuffed	18.5-19.5	14 Fr	12 Fr

Glasgow Coma Scale (GCS)	Score
Eye opening	
Spontaneous	4
Response to verbal command	3
Response to pain	2
No eye opening	1
Best verbal response	
Oriented	5
Confused	4
Inappropriate words	3
Incomprehensible sounds	2
No verbal response	1
Best motor response	
Obeys commands	6
Localizing response to pain	5
Withdrawal response to pain	4
Flexion to pain	3
Extension to pain	2
No motor response	1
Total	

The GCS is scored between 3 and 15, 3 being the worst and 15 the best. It is composed of three parameters:

- Best eye response (E)
- Best verbal response (V)
- Best motor response (M).

The components of the GCS should be recorded individually; for example, E2V3M4 results in a GCS score of 9.

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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.

FAST ED Stroke Scale *(circle the appropriate value)*	
Facial Palsy (droop): Have patient smile (look for asymmetry)	
▪ **Normal**: Both sides of face move equally or not at all	**0**
▪ **Abnormal**: One side of face droops	**1**
▪ **Untestable**: Patient unable to perform specific exam	**0**
Arm Weakness (drift): Have patient close eyes and extend arms palms up	
▪ **Normal**: Both arms remain up >10 seconds or slowly drifts down equally	**0**
▪ **Mild**: One arm drifts down in <10 seconds with some effort against gravity	**1**
▪ **Moderate**: One arm falls rapidly against gravity or no movement at all	**2**
▪ **Untestable**: Patient unable to perform specific exam	**0**
Speech Changes (expressive aphasia): Have patient repeat; "Mama, Hucklebery, and Baseball Player"	
▪ **Normal**: Repeats 2 – 3 items correctly	**0**
▪ **Abnormal**: Repeats 0 – 1 items correctly with clear abnormalities	**1**
▪ **Untestable**: Patient unable to perform specific exam	**0**
Speech Changes (receptive aphasia): Ask patient to show you two fingers (no visuals)	
▪ **Normal**: Patient shows two fingers correctly	**0**
▪ **Abnormal**: Patient does not understand or does not show two fingers	**1**
Untestable: Patient unable to perform specific exam	**0**
Eye Deviation (gaze deviation): Ask patient to follow your finger from left to right and back	
▪ **Normal**: Moves eyes to both sides equally	**0**
▪ **Gaze Preference**: Patient has clear difficulty looking to one side	**1**
▪ **Forced Deviation**: Eyes are deviated to one side and do not move	**2**
▪ **Untestable**: Patient unable to perform specific exam	**0**
Denial/Neglect (anosognosia): Ask patient "Are you weak anywhere?"	
▪ **Normal**: Patient clearly recognizes weakness or no weakness	**0**
▪ **Abnormal**: Patient does not recognize weak side	**1**
▪ **Untestable**: Patient unable to perform specific exam	**0**
Denial/Neglect (asomatognosia): Show the patient their weak arm and ask, "Whose arm is this?"	
▪ **Normal**: Patient clearly recognizes his/her weak arm	**0**
▪ **Abnormal**: Patient does not recognize his/her weak arm	**1**
▪ **Untestable**: Patient unable to perform specific exam	**0**
TOTAL SCORE (A Score ≥4 equals a 60-85% probability of LVO):	

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

ASAPPROVED 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

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

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

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

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

TOC

West Virginia Department of HEALTH
OFFICE OF EMERGENCY MEDICAL SERVICES

Report of EMS Patient Care Without Telecommunications

This report is for the purpose of documenting to the Medical Director of the Office of EMS the circumstances surrounding the administration of drugs or fluids or the application of advanced life support techniques to a patient or patients without direct voice contact with a medical command physician or designee or written order of a medical command physician or designee in accordance with Section 15, Article 4C, Chapter 16 of the Code of West Virginia as amended.

Date of Incident:_____

Pre-hospital Care Record Form Number (attach copy):_____

Patient Name(s):_____

_____

_____

EMS services provided (use additional sheets if necessary:_____

_____

_____

_____

Justification for providing services (radio failure, multiple patients, etc.- use additional sheets if necessary):

_____

_____

_____

EMS Agency:_____ County:_____

Person reporting incident:_____ _____ _____
(Last) *(First)* *(MI)*

EMSP Number:_____ Date of Expiration:_____

Signature:_____ Date:_____

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

EMS Without Telecommunications
1-01-2015

REPORT OF EMS PATIENT CARE WITHOUT TELECOMMUNICATIONS

TOC

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:

Adult	Administer 15 mg/kg (max of 650mg) oral with temperature > 102° F
Pediatric	Administer 15 mg/kg oral with temperature > 102° F

Supply: 160 mg in 5 mL UD solution

160 mg in 5 ml elixir

Notes:

TOC

ACETAMINOPHEN INTRAVENOUS

Scope	AEMT	PARAMEDIC

Generic Name: **Acetaminophen** (a-seet-a-**min**-oh-fen)

Trade Name: Acetaminophen injection

Chemical Class: phenol, 4-aminophenol

Therapeutic Class: Non-opioid analgesic/antipyretic

Actions: Cyclooxygenase 1, 2, and 3 inhibitor. It inhibits the synthesis of prostaglandins that serve as mediators of pain and fever, primarily in the CNS. It does not have anti-inflammatory properties or GI toxicity.

Pharmacokinetics: Onset of action: Oral: < 1 hours
IV: Analgesia: 5-10 minutes; Antipyretic: within 30 minutes

Peak effect: IV: Analgesic: 1 hour

Duration: IV, Oral: Analgesia: 4-6 hours.
IV Antipyretic: ≥ 6 hours.

Absorption: Well absorbed following oral administration. Rectal is variable.

Distribution: Widely distributed. Crosses the placenta; enters breast milk in low concentrations.

Protein binding: 10-25% at therapeutic concentrations and 8-43% at toxic concentrations.

Metabolism and excretion: 85-95% metabolized by the liver (CYP2E1 enzyme system). Metabolites may be toxic in overdose. Metabolites are excreted by the kidneys.

Half-life IV: 2.5-3.0 hours, may increase with severe renal insufficiency.

Indications: Treatment of fever and mild to moderate pain. As adjunctive therapy to augment opiate analgesics for severe pain.

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: Acetaminophen may cause hepatic toxicity with acute overdose. In addition, chronic daily dosing has resulted in liver damage at much lower doses in some adults. **Always be certain that patient has not taken a full dose of Acetaminophen (1g) within 4 hours of IV administration. Consider other products containing acetaminophen such as Percocet, Lortab, Norco, etc., as well.** Hypersensitivity and anaphylactic reactions have been reported. Rarely, acetaminophen may cause serious and potentially fatal skin reactions such as acute generalized exanthematous pustulosis, Stevens-Johnson syndrome (SJS), and toxic epidermal necrolysis (TEN). Discontinue use if hypersensitivity or severe skin reaction occurs. Use with caution in patients with G6PD deficiency. Disease related concerns: Use with caution in patients with known severe alcoholic liver disease.

Precautions: Presumed safety based on animal studies. Does cross the placental barrier, and is present in breast milk (0.14% of maternal dose)
Pregnancy Cat. B

Side Effects: Hypersensitivity, hepatotoxicity in patients with severe liver disease/cirrhosis, and skin reactions.

Interactions: Antiepileptics such as Dilantin, and Tegretol may decrease the serum concentration of Tylenol. Tylenol will also decrease the serum concentration of Lamictal. Will also reduce the effectiveness of vaccinations if given prophylactically. May enhance effects of warfarin if given regularly.

Administration: *Adult* >50 kg 1 g every 6 hours (max single dose 1,000 mg or 1 g)
Pediatric Any patient <50 kg, 15 mg/kg every 6 hours.

Supply: 10 mg/mL (100 mL)

Notes:

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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; $t_{1/2}$ = 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.

TOC

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:
Pregnancy Cat. C
- Hyperthyroidism.
- Diabetes mellitus.
- Convulsive disorders.

Side Effects: *CNS:* dizziness, headache, stimulation, tremors
CV: chest pain, dysrhythmias, hypertension, palpitations, tachycardia
GI: nausea, vomiting

Administration: Using a small volume nebulizer, adjust the oxygen flowmeter to 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.

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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: $t_{1/2}$ = 20 to 47 days

Indications:
- Shock refractory ventricular fibrillation and pulseless ventricular tachycardia
- Ventricular tachycardia
- Wide-complex tachycardia of unknown type (regular rhythm)
- Change to VF and pulseless or polymorphic VT

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:

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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:

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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:

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CALCIUM CHLORIDE

Scope	AEMT	PARAMEDIC

Generic Name: Calcium Chloride

Trade Name: Calciject (Canada)

Chemical Class: Calcium salt

Therapeutic Class: Electrolyte supplement

Actions: Electrolyte replacement and membrane stabilization. Moderates nerve and muscle performance via action potential excitation threshold regulation. In hydrofluoric acid exposure it acts as an exogenous source of calcium to bind fluoride ions as well as treat and prevent complications secondary to hypocalcemia; reducing the penetration of fluoride ion into tissues helping to prevent or reduce tissue destruction and pain.

Pharmacokinetics: Distribution: Primary in skeleton (99%). Protein binding: 40%, primarily to albumin.
Excretion: Primarily feces (80% as insoluble calcium salts); urine (20%).

Indications: Beta-blocker overdose, calcium channel blocker overdose, Calcium replacement especially after blood transfusion, cardiac arrest related to hypocalcemia, hyperkalemia, or hypermagnesemia, the treatment of severe/emergent hyperkalemia, and hydrofluoric acid exposure.

Contraindication: Patients with ventricular fibrillation, asystole, and PEA. There should also be no concomitant use of IV calcium chloride with Sodium bicarbonate, or ceftriaxone in neonates (≤ 28 days of age). Ceftriaxone binds to calcium forming an insoluble precipitate.

Precautions:
Pregnancy Cat. C
Extravasation may result in severe necrosis. Monitor the IV site closely. May potentiate acidosis, use with caution in patients with respiratory acidosis, renal impairment/failure, or respiratory failure. Use with caution in severe hypokalemia as it may worsen hypokalemia resulting in life-threatening cardiac arrhythmias.

Pregnancy Cat. C, calcium does cross the placenta and is homeostatically regulated in breast milk.

Side Effects: *Will diminish effects of calcium channel blockers, and dobutamine.*

Administration: Mix in a 100 ml NS bag and administer wide open using gravity. Slow the infusion if the patient complains of burning.

Adult: 1 gm (10ml of a 10% solution), May repeat once q 30 min if EKG changes are noted.

Pediatric: 20 mg/kg (0.2 ml/kg). May repeat once q 30 min if EKG changes are noted.

Supply: 10% (1g/10 mL)

Notes:

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CEFAZOLIN

Scope	AEMT	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.
3. Grossly contaminated wounds.

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): 30 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.

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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

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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 to a max of 20 mg. Repeat dose in 15 minutes if needed at 0.25 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:

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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.

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DIPHENHYDRAMINE (Benadryl®)

Scope: EMT | AEMT | 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.

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DROPERIDOL (Inapsine®)

Scope | **PARAMEDIC**

Generic Name: **Droperidol** [dro-PER-i-dol]

Trade Name: Inapsine®

Chemical Class: Dopamine-2 Receptor Antagonist

Therapeutic Class: First generation antipsychotic, antiemetic

Actions: Antiemetic effect is a result of blockade of dopamine stimulation of the chemoreceptor trigger zone. Other effects include alpha-adrenergic blockade, peripheral vascular dilation, and reduction of the pressor effect of epinephrine resulting in hypotension and decreased peripheral vascular resistance; may also reduce pulmonary artery pressure.

Pharmacokinetics: Onset of action: 3-10 min
Peak effect: 30 min
Duration: 2-45 hours

Indications: Treatment of acute undifferentiated agitation, as well as prevention/treatment of nausea and vomiting.

Contraindications: Hypersensitivity, known or suspected QT prolongation, including congenital long QT syndrome (prolonged QTc is defined as >470 msec in males and >470 msec in females) Not for use in children ≤2 years of age

Precautions:
Pregnancy Cat. C

CV: use caution in patients with bradycardia, cardiac disease, concurrent MAO inhibitor therapy, Class I and Class III antiarrhythmics or other drugs known to prolong QT interval, and electrolyte disturbances (hypokalemia or hypomagnesemia) as there is increased risk of arrythmia. May also cause orthostatic hypotension.
Use with caution in patients with severe hepatic impairment
Lowers seizure threshold, use with caution in patients at risk of seizures
Avoid in patients with parkinsonism, acute dystonic reactions, akathisia, and tardive dyskinesia.
Use may be associated with neuroleptic malignant syndrome (NMS); monitor for mental status changes, fever, muscle rigidity and/or autonomic instability.
Impaired core body temperature regulation may occur; caution with strenuous exercise, heat exposure, dehydration, and concomitant medication possessing anticholinergic effects.

Droperidol crosses the placenta, and should only be used if benefits outweigh the risks. Drug may also pass into breast milk, affecting breast-feeding.

Side Effects: CV: hypertension, orthostatic hypotension, prolonged QT, tachycardia, bradycardia
CNS: CNS depression, headache, lowered seizure threshold,
Extrapyramidal reactions: Diphenhydramine should be available.
GI : Nausea, vomiting, dry mouth, constipation, esophageal dysmotility
Endocrine: Hyperprolactinemia, Impaired core body temperature regulation

Administration:

Persistent Vomiting	1.25 mg IV/IO or 2.5 mg IM
Behavioral	5mg IM when utilizing pathway 1

Supply: 5 mg/2 mL

Notes:

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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/IV/IO. Repeat dose per MCP.
Pediatric Anaphylaxis:	Administer 0.3 mg for patients >30 kg. Administer 0.15 mg for patients <30 kg.
Adult Respiratory Distress / Bronchospasm:	Administer 0.3 mg IM/IV/IO. Repeat dose per MCP. Nebulized EPI - 3mL (1mg/ml) 1:1000. Do not dilute. Nebulize over 5 – 10 minutes at 6 – 8 L/min O2 flow.
Pediatric Respiratory Distress / Bronchospasm:	<30kg - 0.15 mg IM >30kg - 0.30 mg IM Nebulized EPI – 0.5 ml/kg to a max of 3mL (1mg/ml) 1:1000. Do not dilute. Nebulize over 5 -10 minutes at 6 - 8 L/min O2 flow.

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,

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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.

PARAMEDIC Administration:

Adult Respiratory Distress / Bronchospasm: Administer 0.3 mg IM/IM/IO

Nebulized EPI - 3mL (1mg/ml) 1:1000. Do not dilute. Nebulize over 5 – 10 minutes at 6 – 8 L/min O2 flow.

Pediatric Respiratory Distress / Bronchospasm:

<30kg - 0.15 mg IM

>30kg - 0.30 mg IM

Nebulized EPI – 0.5 ml/kg to a max of 3mL (1mg/ml) 1:1000. Do not dilute. Nebulize over 5 -10 minutes at 6 - 8 L/min O2 flow.

Pediatric Anaphylaxis:

Administer 0.3 mg for patients >30 kg.

Administer 0.15 mg for patients <30 kg.

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 0.15 mg IM for patients <30 kg.

Adult Respiratory Distress / Bronchospasm: Nebulized EPI - 3mL (1mg/ml) 1:1000. Do not dilute. Nebulize over 5 – 10 minutes at 6 – 8 L/min O2 flow.

Pediatric Respiratory Distress / Bronchospasm:

<30kg - 0.15 mg IM

>30kg - 0.30 mg IM

Nebulized EPI – 0.5 ml/kg to a max of 3mL (1mg/ml) 1:1000. Do not dilute. Nebulize over 5 -10 minutes at 6 - 8 L/min O2 flow.

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.

Infusion for hypotension or refractory anaphylaxis/asthma: 1 mg added to 1L of NS (1mcg/ml) infuse according to the following dosing 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

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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:

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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:

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ETOMIDATE

Scope | **PARAMEDIC**

Generic Name: Etomidate

Trade Name: Amidate®, Tomvi®

Chemical Class: Imidazole

Therapeutic Class: Cortisol Synthesis Inhibitor; General Anesthetic

Actions: Ultra-short-acting nonbarbiturate general anesthetic used for rapid induction of anesthesia. Decreases endogenous cortisol synthesis via inhibition of 11-beta-hydroxylase.

Pharmacokinetics: Onset of action: 30 to 60 seconds
Peak effect: 1 minute
Duration: Dose dependent: 2 to 3 minutes (0.15 mg/kg dose); 3 to 5 minutes (0.3 mg/kg dose)
Excretion: Urine ~75% (80% as metabolite; 2% as unchanged drug)

Indications: Rapid Sequence Intubation, very short procedural sedation

Contraindications: Hypersensitivity to the drug.

Precautions:
Pregnancy Cat. C

Adrenal suppression has been documented with etomidate use, even after a single dose. Cortisol concentrations decrease quickly after the induction dose, lasting up to 8 hours in healthy adults and up to 24 hours in pediatric, elderly and debilitated patients. It has also been determined to be an agent that may exacerbate underlying myocardial dysfunction. If concerns for sepsis exist, Ketamine is the preferred drug due to the actions of Etomidate causing adrenal suppression.

Use of etomidate for induction of anesthesia prior to cesarean delivery has been described, however, other agents are more commonly used. (Ketamine preferred) Etomidate does cross the placenta

Side Effects:
CNS: Myoclonus (33%)
CV: Bradycardia (<1%), hypotension
Pulm: laryngospasm
Endocrine: Adrenal suppression
GI: Nausea, vomiting (on emergence from anesthesia)
Ophthalmic: Nystagmus

Interactions: Metronidazole: A disulfiram-like reaction may occur

Administration: 0.3 mg/kg IV/IO over 30-60 sec

Supply: 2 mg/mL (10 mL, 20 mL)

Notes:

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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 >65 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.

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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.

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GLUCAGON (GlucaGen®)

Scope	EMT	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 (>25kg)
Pediatric	0.5 mg IM (<25kg)

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.

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HYDRALAZINE (Apresoline®)

Scope	EMT	AEMT	PARAMEDIC

Generic Name: **Hydralazine (hye-dral'-a-zeen)**

Trade Name: Apresoline, Bidil

Chemical Class: antihypertensive, vasodilator

Therapeutic Class: Antihypertensive agent

Actions: Lowers blood pressure – which lowers afterload - by directly relaxing vascular smooth muscle, primarily in arteries and arterioles thereby decreasing peripheral resistance. Little to no effect on venous system.

Pharmacokinetics: Hydralazine interferes with calcium transport to relax arteriolar smooth muscle and lower blood pressure. Hydralazine has a short duration of action of 2-6h. This drug has a wide therapeutic window with some patients tolerating doses of up to 300mg. Has been associated with development of systemic lupus erythematosus syndrome with chronic or prolonged use.

Indications:
- Acute or Accelerated Hypertension
- Eclampsia

Contraindications:
- Coronary Artery Disease
- Aortic Dissection
- Hypersensitivity to the drug

Precautions:
- Heart disease
- Mitral Valvular Rheumatic Heart Disease

Pregnancy Cat. C

Side Effects:
CNS: headache
CV: chest pain
GI: diarrhea, nausea, vomiting, decreased appetite

Administration Hypertension (ALS only):
- Initial (adult): 10 mg slow IV push over 2 minutes.
- Repeat (adult): after 20 minutes to a max dose of 20 mg if BP remains > 180/120 *and* symptoms remain.

Administration Elevated BP in Pregnancy/Post-partum:
- EMT:
  - 5 mg IM
  - If BP remains severely elevated (SBP ≥ 160 or DBP ≥ 110 mmHg) after 20 minutes, repeat hydralazine at 10 mg IM
- AEMT/Paramedic:
  - 5 mg slow IV push over 2 minutes or 5 mg IM
  - If BP remains severely elevated (SBP ≥ 160 or DBP ≥ 110 mmHg) after 20 minutes, repeat hydralazine at 10 mg IV/IM (IV preferred).

Supply:

Notes: Vial containing 20 mg in 1 mL

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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.

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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.

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KETAMINE (Ketalar®)

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. Severe agitation and/or immediate threat
2. Non-Cardiac related pain
3. Post Intubation
4. Refractory Seizures as a second line agent

Contraindications:
1. Hypersensitivity to the drug.
2. Marked hypertension with potential for increased intracranial pressure (ICP).

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: Adult Pain Augmentation (if pain persists after initial dose of first line analgesic is given): Administer 0.2 mg/kg IV/IO to a maximum single dose of 25 mg.

Adult: Adult: Severe Agitation and/or Immediate Threat: Administer 2 mg/kg IM max single dose 150 mg or 1 mg/kg IV/IO to a max single dose of 75 mg.

Adult: Post Intubation sedation: Administer 2mg/kg IV/IO

Adult: Refractory Seizures: Administer 1 mg/kg IV/IO (max dose 100 mg) or 2 mg/kg IM (max dose 200 mg).
Repeat dose: 0.5 mg/kg IV/IO (max dose 50 mg) or 1 mg/kg IM (max dose 100 mg)

Pediatric: Pain (2-12 years old): 0.2 mg/kg IV/IM to a maximum single dose of 25 mg.

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.

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KETOROLAC

Scope	AEMT	PARAMEDIC

Generic Name: **Ketorolac**

Trade Name: Toradol®

Chemical Class: Pyrrolidine

Therapeutic Class: Non-steroidal anti-inflammatory, analgesic

Actions: A potent non-steroidal anti-inflammatory (NSAID) agent with anti- inflammatory, analgesic, and antipyretic properties. Reversibly inhibits cyclooxygenase-1 and 2 (COX-1 and 2) enzymes, which results in decreased formation of prostaglandin precursors

Pharmacokinetics: *The absorption is rapid, between 20 and 60 minutes. The drug is extensively bound to plasma proteins, and has a bioavailability of 80 - 100%. The half-life elimination is between 4 - 6 hours.*

Indications:

- Sprains, strains, chronic pain, and kidney stones.
- Indicated for short-term therapy (up to 5 days) for moderately severe acute pain. Particularly effective for musculoskeletal pain and pain due to ureterolithiasis (renal colic). As adjunctive therapy to augment opioid analgesics in severe pain.
- Fever

Contraindications: Possible or suspected intracranial/internal bleeding, active GI bleeding, history of renal failure, or on anticoagulants such as Xarelto or Eliquis.
Serious: hypersensitivity, recent GI bleeding, active peptic ulcer disease, renal failure, chronic use of NSAIDs in particular COX-2 inhibitors such as Celebrex, anticoagulants such as coumadin, Eliquis, Xarelto or similar agents, and pregnancy. Avoid in patients with NSAID induced asthma/reactive airway disease.

Precautions: (D in the 3rd trimester due to increased risk of premature closure of the fetal ductus arteriosus)
Pregnancy Cat. C

Side Effects: Hypersensitivity, GI bleeding, nephrotoxicity, nausea, and dyspepsia. Enhances adverse/toxic effects of blood thinners including heparin, coumadin, Eliquis, Xarelto, Pradaxa, or similar agents. Increase the serum concentration of renally secreted medications including Digoxin, Lithium, Metformin, and certain antibiotics. May also reduce the effectiveness of beta blockers

Administration:

Adult
- Moderately severe, acute pain, single dose treatment 15 mg IM/IV/IO.

Pediatric
- Children 2 years old and up single dose treatment of 0.5 mg/kg up to 15 mg IM or IV/IO.

Supply: Preferred 15 mg/1 mL or optional 30 mg/1mL.

TOC

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

TOC

MAGNESIUM SULFATE

Scope	EMT	AEMT	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.

Pre-Eclampsia / 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 2 grams diluted in 10 ml NS over 5 minutes.

- **Eclampsia:** 4 grams IV (20% solution) IV over 20 minutes or 8 grams IM (500mg/ml)
  - 4 ml in the left ventrogluteal site
  - 4 ml in the right ventrogluteal site
  - 4 ml in the left anterolateral thigh
  - 4 ml in the right anterolateral thigh
- **Bronchodilation:** 2 g IV over 20 minutes

Supply: Vial containing 1 g in 2 mL

Notes:

TOC

METOPROLOL

Scope	AEMT	PARAMEDIC

Generic Name: **Metoprolol Tartrate, Metoprolol Succinate**

Trade Name: Lopressor, Toprol XL, Kapspargo Sprinkle

Chemical Class: Phenoxypropanolamine, aromatic ether, secondary alcohol, and secondary amine.

Therapeutic Class: Cardioselective beta-1 adrenergic blocker

Actions: Blocks response to beta-adrenergic stimulation; cardioselective for beta1 receptors at low doses, with little or no effect on beta2 receptors

Pharmacokinetics: Half-Life: Typically, 3-7 hours for immediate-release forms, but can be prolonged with liver impairment or in certain patient groups.

Clearance: Reduced in patients with liver cirrhosis.

Indication: Atrial Fib / Atrial Flutter. SVT

Contraindications: Hypersensitivity to the drug.

Decompensated heart failure. Severe bradycardia, second- or third-degree heart block, cardiogenic shock, Asthma or severe lung disease, cocaine induced chest pain, and sick sinus syndrome (without a pacemaker).

Precautions: Use cautiously in patients with diabetes, hyperthyroidism, peripheral vascular disease, and liver disease. Avoid combining with calcium channel blockers due to increased risk of bradycardia and hypotension.

Side Effects: *CNS:* fatigue, dizziness, headache, vertigo

CV: bradycardia, hypotension

EENT: blurred vision, dry mouth, runny nose

Other: nausea, vomiting

Administration Atrial Fib / Atrial Flutter: *Adult:* 15 mg in 100 ml NS, infuse at 1 mg/min. Hold for HR < 60 or MAP < 65.

Administration Supraventricular Tachycardia: *Adult* 15 mg in 100 ml NS, infuse at 1 mg/min. Hold for HR < 60 or MAP < 65.

Supply: 5mg/5ml vial

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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*	• 0.1 mg/kg IV/IO to a max of 5 mg or 0.2 mg/kg IN/IM to a max of 10 mg. • May repeat in x1 in 5 minutes if seizure persists.
	Pediatric	• 0.1 mg/kg IV/IO to a max of 5 mg or 0.2 mg/kg IN/IM to a max of 10 mg
Administration Behavioral:	*Adult*	• Administer 5 mg IV/IO/IM/IN. Repeated per MCP order. • Patients age 65 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

Supply: Vial containing 5 mg in 1 mL.

Notes:

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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.

TOC

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 optional prepackaged IN spray in a concentration not to exceed 1 ml per nostril. *IM:* Administer 2 mg lateral thigh.

Supply: Prefilled 1 mg/ml or optional prepackaged in a concentration not to exceed 1 ml per nostril.

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®.

TOC

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
- 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.

TOC

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. 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.
- Administer 4 mg IM.

Supply: Vial containing 4 mg in 2 mL
Single dose tablets

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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).

OXYTOCIN (Proventil®)

Scope	EMT	AEMT	PARAMEDIC

Generic Name: **Oxytocin (**ox-i-TOE-sin**)**

Trade Name: Pitocin, Syntocin

Chemical Class: peptide hormone and a neuropeptide

Therapeutic Class: Hormone (specifically, an exogenous or neurohypophyseal hormone), lactation stimulant, and uterine stimulant.

Actions: Oxytocin stimulates the smooth muscles of the uterus to contract, starting and augmenting labor. The process creates a positive feedback loop: contractions push the fetus's head against the cervix, which sends nerve impulses to the brain to release more oxytocin, leading to stronger and more frequent contractions until delivery.

Pharmacokinetics: Oxytocin is distributed throughout the extracellular fluid. Trace amounts of the hormone may cross the placenta and enter the fetal circulation, especially during labor. After parenteral administration, steady-state plasma concentrations are achieved in approximately 40 minutes.

After intravenous administration, uterine contractions begin within approximately 1 minute and persist for around 1 hour. When administered intramuscularly, uterine contractions commence within 3 to 5 minutes and last up to 3 hours. Intranasal administration (10 to 20 units) causes myometrial contractions that begin within minutes and last for around 20 minutes.

Indications:

- Preeclampsia
- Maternal diabetes
- Postpartum Hemorrhage

Contraindications:

- Hypersensitivity to the hormone
- Tachycardia (HR greater than 130 adult, HR greater than 150 child).
- Severe cardiac disease.
- Hypersensitivity to the drug.

Precautions:
Pregnancy Cat. C

- Oxytocin can be very useful in augmenting labor. However, there are certain risks with using it. Oxytocin causes contractions of the uterus. In women who are unusually sensitive to its effects, these contractions may become too strong. In rare cases, this may lead to tearing of the uterus. Also, if contractions are too strong, the supply of blood and oxygen to the fetus may be decreased.

Side Effects: *CNS:* confusion, convulsions, dizziness, SOB

CV: tachycardia, irregular heartbeat

GI: pain, cramping

Administration:

- EMT:
  - 10 units IM
  - Request intercept with ALS for TXA and Blood products if available and indicated

- AEMT/Paramedic:
  - 10 units IM unless IV access is already established
  - Upon establishing large bore IV access, add 20 units of Oxytocin to 1 L of normal saline and run open to gravity (via macro-drip tubing) until arriving at hospital or a significant decrease in bleeding is identified
  - Consider Whole Blood administration if blood loss > 1500 mL, abnormal vital signs indicative of shock (tachycardia/hypotension)

Supply Notes: Vial containing 10 units in 1 mL

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ROCURONIUM

Scope | **PARAMEDIC**

Generic Name: Rocuronium Bromide

Trade Name: Zemuron®, Esmeron®

Chemical Class: Opiate derivative

Therapeutic Class: Aminosteroid

Actions: Blocks acetylcholine from binding to receptors on motor endplate inhibiting depolarization

Pharmacokinetics: Onset of action : 45 sec-3 min (dose dependent)
Duration: Infants: 3 to 12 months: 40 minutes.
Children: 1 to 12 years: 26 to 30 minutes.
Adults: ~20 to 120 minutes
Half-life elimination: 1 to 2 minutes.
Hypothermia may prolong the duration of action.

Indication: Rapid Sequence Intubation

Contraindications:
- Known hypersensitivity
- Neuromuscular cross-sensitivity

Precautions:
Pregnancy Cat. B
- Prolonged paralysis: Some patients may experience prolonged recovery of neuromuscular function after administration. Cardiovascular disease: Use with caution in patients with cardiovascular disease (eg, heart failure); onset of action may be delayed and duration of action may be prolonged.
- Pregnancy Cat. B Rocuronium crosses the placenta, no data exists on rocuronium use and breast-feeding.

Side Effects: CV: arrythmia, hypertension, transient hypotension,
Anaphylactoid reaction, asthma, nausea/vomiting, pruritus, skin rash.

Interactions: **Conditions that may antagonize neuromuscular blockade (decreased paralysis) include:** Respiratory alkalosis, hypercalcemia, demyelinating lesions, peripheral neuropathies, denervation, and muscle trauma
Conditions that may potentiate neuromuscular blockade (increased paralysis) include: Electrolyte abnormalities (eg, severe hypocalcemia, severe hypokalemia, hypermagnesemia), cachexia, neuromuscular diseases, metabolic acidosis, respiratory acidosis, Eaton-Lambert syndrome, and myasthenia gravis may result in potentiation of neuromuscular blockade.

Administration: 1.5 mg/kg IV/IO rapid IV push

Supply: 50 mg/5 mL (5 mL); 100 mg/10 mL (10 mL)

Notes:

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SUCCINYLCHOLINE

Scope | **PARAMEDIC**

Generic Name:	Succinylcholine
Trade Name:	Anectine®, Quelicin®
Chemical Class:	Quaternary ammonium ion
Therapeutic Class:	Neuromuscular Blocker Agent, Depolarizing
Actions:	Produces depolarization of the motor endplate at the myoneural junction which causes sustained flaccid skeletal muscle paralysis produced by state of accommodation that develops in adjacent excitable muscle membranes
Pharmacokinetics:	Onset of action : IV : 30-60 sec, faster in children and infants than adults Duration: IV: 4-10 min, faster recovery in children and infants than adults
Indication:	Rapid Sequence Intubation
Contraindications:	Hypersensitivity, genetic susceptibility to malignant hyperthermia. Skeletal muscle myopathies including Duchenne muscular dystrophy have been linked to rhabdomyolysis and death within minutes of administration; Do not use in acute phase of injury following major burns, polysystem trauma, crush injury, extensive denervation of skeletal muscle, or upper motor neuron injury due to increased risk of hyperkalemia.
Precautions: ***Pregnancy Cat. B***	Bradycardia: Risk of bradycardia may be increased with second dose and is more common in children. May increase intraocular pressure (IOP). Use with caution in patients with fractures or muscle spasm; initial muscle fasciculations may cause additional trauma. Conditions that may potentiate neuromuscular blockade (increased paralysis): Electrolyte abnormalities (eg, severe hypocalcemia, severe hypokalemia, hypermagnesemia), neuromuscular diseases, metabolic acidosis, respiratory acidosis, Eaton-Lambert syndrome, and myasthenia gravis may result in potentiation of neuromuscular blockade. Increased effectiveness and duration of action noted in pregnancy and several days post partum due to decreased plasma cholinesterase. Succinylcholine crosses the placenta. Newborns of mothers with atypical plasma cholinesterase or those exposed to repeated or high doses of succinylcholine during cesarean delivery should be monitored for apnea and flaccidity. no data exists on Succinylcholine use and breast-feeding.
Side Effects:	CV: arrythmia, peaked T waves, hypertension, transient hypotension, CNS: Malignant hyperthermia
Interactions:	Conditions that may antagonize neuromuscular blockade (decreased paralysis) include: Beta-Blockers, Corticosteroids, Lithium Conditions that may potentiate neuromuscular blockade (increased paralysis) include: Acetylcholinesterase Inhibitors, myasthenia gravis (call medical command for dosing, may require 1.5-2.0 mg/kg dosing).
Administration:	1.5 mg/kg IV/IO rapid IV push
Supply:	100 mg/5 mL (5 mL,10ml)
Notes:	

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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 1 mEq/kg (max of 50 mEq) IV/IO per protocol for known or suspected:
Hyperkalemia
Tricyclic antidepressant OD
Crush syndrome

Pediatric Contact **[Medical Control]**.

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

Notes:

TOC

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:

TOC

TRANEXAMIC ACID

Scope	AEMT	PARAMEDIC

Generic Name: **Tranexamic Acid (tran-ex-am'-ik as-id)**

Trade Name: Cyklokapron®

Chemical Class: Amino acid derivative

Therapeutic Class: Antifibrinolytic

Actions: Inhibits plasminogen activation and plasmin activity.

Pharmacokinetics: *IV:* Onset 5-15 minutes. $t_{½}$ = 2 hours. Duration of action: approximately 3 hours.

Indications: Any trauma patient who is at high risk for ongoing internal hemorrhage meeting one or more of the following indications:

- Known or suspected significant hemorrhage after crush, blunt, or penetrating trauma.
- Time of injury < 3 hours from initiation of TXA.
- Adult and pediatric acute traumatic brain injury who are within 3 hours of injury and have a GCS score of 9-15 and are without major extracranial bleeding.
- 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:
Pregnancy Cat. B

- Excreted in breast milk.
- 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 2 gram diluted in 100 ml or 250 ml of NS infused over 10 minutes

Pediatric: 15mg/kg (max 2 gram) diluted in 100 ml or 250 ml NS infused over 10 minutes.

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).

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UNFRACTIONED HEPARIN

Scope	AEMT	PARAMEDIC

Generic Name: Heparin (unfractionated)

Trade Name: Heparin (unfractionated)

Chemical Class: Glycosaminoglycan

Therapeutic Class: Anticoagulant

Actions: Potentiates the action of antithrombin III and thereby inactivates thrombin (as well as other coagulation factors IXa, Xa, XIa, XIIa, and plasmin) and prevents the conversion of fibrinogen to fibrin; heparin also stimulates release of lipoprotein lipase (lipoprotein lipase hydrolyzes triglycerides to glycerol and free fatty acids)

Pharmacokinetics: Onset of action: IV: Immediate

Half-life elimination: 1- 2 hours; affected by obesity, renal function, malignancy, presence of pulmonary embolism, and infection. Elimination is also dose dependent, with higher doses taking longer. Shorter half-life in neonates.

Indications: ST-elevation myocardial infarction (STEMI)

Contraindications: Hypersensitivity, severe thrombocytopenia if known; history of heparin-induced thrombocytopenia (HIT); history of heparin-induced thrombocytopenia with thrombosis (HITT); uncontrolled active bleeding.

Precautions:
Pregnancy Cat. C

Use caution if patient has history of transaminitis post heparin administration in the past.

Heparin does not cross the placenta. Recommended by ACOG: Benefits likely outweigh risk in setting of STEMI.

Side Effects:
CV: Cardiac tamponade, vasospasm
Endocrine: Hyperkalemia, suppression of aldosterone synthesis
Genitourinary: Priapism
Hematologic: Hemorrhage (including adrenal hemorrhage, ovarian hemorrhage, retroperitoneal hemorrhage), heparin-induced thrombocytopenia (HIT), thrombocytopenia, heparin-induced thrombocytopenia and thrombosis (including AMI, CVA, PE/DVT, mesenteric thrombosis, peripheral gangrene, renal artery thrombosis, skin necrosis)
MSK: decreased bone mineral density and bone fracture

Interactions: Potentiates other blood thinners including coumadin, Eliquis, Xarelto, Pradaxa, or similar agents. Will also potentiate the effects of tissue plasminogen activator (TPA) and Tenecteplase (TNK).

Administration:

Adult STEMI	bolus at 60 units/kg to a max of 5,000 units administered slow IV push over 2-4 minutes.

Supply: 1000 units/mL (1 mL, 10 mL); 5000 units/mL (1 mL)

Notes:

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/POLICY

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

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 MNEUMONICS

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)

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

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

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

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

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)

This appendix is developed to give a quick overview of updated topics, address specific goals of updates, and to relay specific annotations. This section does not replace a full review of the protocols required annually. Protocols go into effect each year on May 1. All providers are required to be updated annually to remain certified.

2025 WVOEMS Protocol Updates:

- Cover updated to 2025
- Adult and Pediatric Universal Care Protocols UC001 and PUC001 were updated to state, “Pediatric patients are considered patients ≤12 years old and/or <40 kg.”
- Adult and Pediatric Severe Bleeding Protocols T001 and PT001 were updated to address the following:
  - TXA no longer an optional medication
  - TXA dosage is increased to 2 grams IV infusion over 10 minutes and the IV drip has been eliminated.
  - Tourniquet conversion has been modified to provide better direction and clarification to the provider.
  - Never attempt tourniquet takedown on a limb that has been amputated. The tourniquet should be placed as close to the amputation as possible but not over a joint.
- Patient Comfort Protocol M001 was updated to clarify the preferred Ketamine administration is an infusion mixed in 100 ml bag but still allows the provider to administer Ketamine slow IV push in situations that dictate.
- Airway Management R001 was updated to clarify the use of NG/OG tubes when utilizing a SGA or Intubating.
- Patient Comfort Protocol M001 was updated to clarify usage of Toradol utilizing a “NOTES” bullet point as follows:
  - Toradol should be considered for sprains, strains, chronic pain, and kidney stones.
  - Toradol should NOT be considered in patients with suspected intracranial/internal bleeding, active GI bleeding, renal failure, or on anticoagulants such as Xarelto and Eliquis.
  - Patients with bleeding risks should be treated with IV Acetaminophen as a non-narcotic agent and prefer Fentanyl as a narcotic agent and consider Ketamine for refractory pain.
- Patient Comfort Protocol M001 was updated to clarify usage of Fentanyl utilizing a “NOTES” bullet point stating; “In the cases of a MAP <65, decrease the dose of Fentanyl for the first dose to see how the patient tolerates it.”
- Unconscious Altered Mental Status Protocol M006 and Overdose Toxic Ingestion Protocol M007 were updated to clarify the use of Narcan:
  - Narcan is supplied in multiple concentrations and delivery devices. The focus is on administration of no more than 1ML per nostril when administering IN no matter the concentration or delivery method.
  - Corrected verbiage from the old protocol to clarify that 2 mg may be administered in the lateral thigh. *(This is the increase from the 1 mg for the EMTs under the old protocol.)*
- Field Triage GL003 was updated to remove the terminology P1 and P2 and replace with Red and Yellow. The update also clarifies signs and symptoms respective to each category.
- Patient Handoff GL007 guideline was updated to clarify the ALS provider that hands off a patient to a BLS provider is required to sign the EPCR, or, if they are from a different agency, they SHALL complete an EPCR of the response from that respective agency. In addition, if an ALS provider initiates any ALS intervention, they shall remain with the patient.
- Medication formularies were updated for Naloxone to maintain consistency with the updated protocols.
- Medication formularies were updated for Ketorolac to include more specific indications and contraindications.
- Medication formularies were updated for TXA to remove the optional designation.

ANNUAL PROTOCOL UPDATES

- WVOEMS Equipment Lists have been updated to reflect the 2025 EMS protocols.
  - TXA is no longer Optional
  - Surgical Cricothyrotomy kits are now required equipment. Percutaneous Cricothyrotomy kits such as QUICKTRACH® are no longer required. Agencies shall have until April 1, 2026 to make this change allowing agencies time to utilize current inventories.
- M003 Stroke/TIA protocol was updated to remove the reference to the JoinTriage© reference. This app will no longer be available after March 2025. Stroke Scales for EMS is an optional mobile app available for EMS to capture the FAST ED score. Appendix D of the protocols also contains a FAST ED stroke scale written version.
- M004 Adult Seizure protocol was updated to include a treatment pathway for suspected eclampsia (apparent pregnancy induced seizures).
  - Administration of Magnesium Sulfate 4 grams IV/IO repeated per MCP order.
- Updated GL004 Field Aeromedical to include the Air Medical Rule:
  - If an in-state air medical asset is not available within 20 nautical miles of the scene requesting air medical assistance, an out-of-state asset shall be utilized as a substitute for the in-state asset. This ensures timely and efficient medical response and patient care, while adhering to the established legal framework.

2026 WVOEMS Protocol Updates:

- Addition of an independent OB/GYN Emergencies section to include:
  - Emergency Childbirth
  - Neonatal Resuscitation
  - Hypertension in Pregnancy
  - Eclampsia
  - Postpartum Hemorrhage
- Table of Contents updated to include new OB/GYN Emergencies section.
- T010 Crush Syndrome updated and repetitive information removed.
- C002 Adult HTN updated to remove Labetalol and add Hydralazine as a first line medication. Morphine has been removed from this protocol.
- C003 Adult Cardiac Arrest updated to meet the new AHA standards.
  - Treatment now falls under VF/Pulseless or Polymorphic VT.
  - Defibrillation at 200J or maximum output
  - Polymorphic V-Tach (Torsades) will be treated like VF and is considered a shockable rhythm.
    - Regular VT can be synchronized cardioverted because the synchronization locks in on the regular R waves. In polymorphic VT, the R waves are too irregular for the device to synchronize on, thus not allowing it to capture.
    - Polymorphic VT (Torsades) should immediately undergo unsynchronized defibrillation at 200 J or maximum output.
    - If Polymorphic VT converts to a rhythm with a long QT interval (>450 ms) then recurs administer Magnesium Sulfate.
    - In the presence of polymorphic VT with a normal QT interval, Lidocaine and Amiodarone can be considered.
- PC003 Pediatric Cardiac Arrest has been updated meet the new AHA standards.
  - Polymorphic VT is not a consideration in the pediatric protocol.
  - Medication administration via ET tube for pediatrics has been removed.
- C004 Adult Tachycardia updated to meet the new AHA standards as well as better identify the treatment pathway to A-Fib/Flutter.

- PC004 Pediatric Tachycardia updated to identify more consistent heart rates for infants and children coupled with evidence of hemodynamic instability such as shock or decreased level of consciousness.
- C005 Adult Symptomatic Bradycardia updated to include:
  - Confirming TCP capture by identifying palpable pulses, electrical capture, pulse ox waveform, and trending ETCO2.
  - When utilizing TCP the provider shall also initiate an Epinephrine infusion. If the combination therapy is successful, attempt to discontinue TCP.
- PC005 Pediatric Symptomatic Bradycardia updated to include beginning CPR for persistent bradycardia when the heartrate is <60.
- C006 Right Ventricular AMI updated to allow Nitro to be administered with a BP >100.
- C007 ROSC updated to add optional Push Dose Epinephrine.
- M001 Patient Comfort/Pain Management clarified to read as follows: The administration of opioid pain medications may not be tolerated well in patients >65 years of age. Doses should be initiated at half the recommended dose and repeated as needed.
- M002 Adult Hypoperfusion updated to remove the requirement for MCP orders for EPI infusions/pushes at the paramedic level.
- PM002 Pediatric Hypoperfusion updated to remove the requirement for MCP orders for EPI infusions/pushes at the paramedic level.
- M004 Adult Seizure and PM004 Pediatric Seizure updated to include Ketamine as a second line medication for refractory status epilepticus.
- M005 Adult Diabetic Emergencies updated to remove Thiamine.
- M009 Nausea/Vomiting updated to remove OTD option. BLS will administer IM.
- PM009 Pediatric Nausea/Vomiting – Newly created protocol.
- M010 Adult Fever updated to remove Acetaminophen in tablet form and lower the maximum dose to 650mg.
- PM010 Pediatric Fever updated to include the administration of Ketorolac when the patient remains febrile with no other administration of Ibuprofen within 6 hours.
- M012 Adult Hyperkalemia updated to show Sodium Bicarbonate administration to max at a dose of 100 mEq.
- PM015 Newborn Infant Care removed and replaced with OB001 and OB002.
- E001 Adult Allergic Reaction updated to include optional Push Dose Epinephrine and to better define signs and symptoms of respiratory distress.
- PE001 Pediatric Allergic Reaction updated to better define signs and symptoms of respiratory distress.
- E001 updated initial dose of Epi to 0.5mg for the adult patient.
- E002 Heat Exposure updated as follows:
  - If possible initiate cooling immediately.
  - Transport can be delayed up to 20 minutes for an attempt to cool the patient to $\leq 39^{\circ}C$ using cold immersion in either a tub or body bag of ice and water, with the face/head exposed per GL011.
  - Once at or near the target temp initiate transport ASAP.
- R001 Airway Management updated to clarify sedation management medication use.
- R002 Adult Respiratory Distress updated to include the use of Nebulized Epinephrine.
- PR002 Pediatric Respiratory Distress updated to include the use of Nebulized Epinephrine.
- GL006 Medical Command Communications updated to clarify the initial contact and responsibilities of respective agencies.
- GL018 Surgical Cricothyrotomy has been updated to mandatory and no longer optional.
- GL022 Optional Blood/Blood Products Administration updated to include a pediatric dose of Calcium Chloride. Additionally, reworded to identify that an EMT with accepted education can serve as the second attendant.
- GL024 Positive End Expiratory Pressure (PEEP) – New informational guideline.
- Medication formularies updated to include all new medications and update existing medications.
- Appendix K – Post ROSC Checklist added.

EMSW

Post-ROSC Pause Checklist

Post-ROSC Pause → Prior to Scene Departure
○ DO NOT LEAVE the scene immediately unless indicated. Ensure all critical steps are completed.
○ Goal 3-5 minutes on scene. • Patients require time to clear toxic metabolites, settle irritable myocardium, etc. Risk of rearrest is higher if moved immediately after ROSC.
○ Maintain 4 lead (if space) and Maintain defibrillator pads.
○ Vitals documented every 2 min including ETCO2 for the first 10 minutes! • Attempt to maintain ETCO2 35 - 45 and watch closely for any decreasing trend of ETCO2, as this may be an early indicator of pending re-arrest.
○ Mix Epinephrine drip and prepare for infusion (no matter the etiology) • *Goal SBP: **100-140 mmHg**, with **target 120 mmHg** rather than 90 mmHg* ▪ *Caveat: be cautious with significant arrhythmia or PVC burden.* ▪ *Hypotension is DEVASTATING to the post-arrest patient.*
○ Strongly consider 500 mL to 1000 mL IVF bolus if not already done. • Caveat: be cautious if severe hypoxia or other findings consistent with pulmonary edema.
○ 12 Lead EKG ASAP. Please consider serial EKGs. • If BLS or AEMT → transmit to Med Com • STEMI alert to appropriate destination if STEMI present.
○ POCT Glucose.
○ Consider intubation; especially if suboptimal ventilation, oxygenation, large leak, etc. • If ventilation is adequate and pt comfortable → maintain iGel • Goal SpO2: 94-98%
○ Elevate Head of Bed 15-30%.
○ Attempt to secure second IV/IO access if not already done.
○ Consider anti-arrhythmic infusion if multiple shocks and high ectopy frequency. • QTc > 500? Consider lidocaine > amiodarone.
○ Consider analgesia if indicated.