Amerimed

Amerimed EMS Clinical Guidelines

MEMORANDUM

To: All Associates

From: A. Dixon Marlow II CEO

Date: 9/8/2026

Re: Adoption of the Amerimed EMS Official Medical Protocols

The attached document "Amerimed EMS Clinical Protocols" will serve as the official Clinical Protocols for Amerimed EMS in the State of Georgia.

Approved and attested by:

Medical Director, John Lloyd M.D. _____ Date 9/9/26

Amerimed Authorized Representative A. Dixon Marlow II CEO, _____ Date 9/9/26

5012 Bristol Industrial Way Suite 110 – Buford, GA 30518

800-902-3300

Medication	Quanity	Box
BLS Medication Box)		
10% dextrose 250 ml	1	BLS
acetominaphin 325 mg	1 Bottle	BLS
adreneline (epi 1:1,00)	2	BLS
albutorol 2.5	4	BLS
asprin 81 mg	1 Bottle	BLS
glucose gel	2	BLS
narcan 2 mg	2	BLS
nitro .4 mg	1 bottle	BLS
normal saline 1,000 ml	1	BLS
normal saline 500 ml	2	BLS
ALS Medication Box		
adenison (6 mg vial)	3	ALS
amodrine (150 mg vial)	3	ALS
atropine (1 mg prefill)	2	ALS
calcium chloride (10% prefill)	2	ALS
dexomethasone	1	ALS
diphenhydramine (50 mg vial)	2	ALS
dopamine (200mg 2 ml)	1	ALS
dropreidol 2.5 mg ml/2 ml)	1	ALS
epinephrine 1:10,000	4	ALS
ibuprofen (200 mg)	1 blister pack	ALS
ipratropine	4	ALS
ketorlec	1	ALS
lidocaine	4	ALS
mag sulfate	2	ALS
metoclopraine	1	ALS
metopralol		ALS
norepinephrine (4 mg/4ml)	1	ALS
ondansetron 4 mg vial		ALS
solu medrol	2	ALS
ALS Narcotic Medications		
Fentanyl (.05mg/2ml)	1	
Midazolam (Versed) 10 mg/2 ml	2	

The drug list for Amerimed EMS is correct.		
APPROVED BY:		
John Lloyd, MD		

Abdominal Pain

Assessment

Pediatric Pearls:

- Use pediatric dosing of medications or electrical therapy for a pediatric patient < 37 kg and as defined by the PEDIA Tape.
- DKA often presents with abdominal pain, nausea, and vomiting

Signs & Symptoms:

- Pain
- Nausea
- Vomiting
- Diarrhea
- Dysuria
- Constipation
- Vaginal bleeding / discharge
- Pregnancy
- Fever

Differential:

- Pneumonia or P.E.
- Hepatitis or Pancreatitis
- Gastroenteritis
- Peptic Ulcer Disease
- Myocardial Infarction or CHF
- Kidney Stone
- Aortic Aneurysms
- Appendicitis
- Bladder/Prostate Disorder
- Pelvic – Pregnancy, Ectopic, STI, PID, Ovarian Cyst
- Diverticulitis
- Bowel Obstruction

Clinical Management Options

EMT	AEMT	MEDIC	Follow General Prehospital Care Protocol. Nausea and Vomiting Guideline as needed Place 3-lead ECG If pain is above the umbilicus, then place 12-lead ECG
			IV / IO access as appropriate for patient condition IV fluid with isotonic crystalloid as needed for dehydration ECG Assessment Pain Management Guideline as needed

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- Abdominal pain in women of childbearing age should be treated as an ectopic pregnancy until proven otherwise.
- The diagnosis of abdominal aneurysm should be considered with abdominal pain in patients over the age of 50, especially those who have a smoking history.
- Mesenteric ischemia presents with severe pain and limited exam findings. Risk factors include age >60, atrial fibrillation, CHF, and atherosclerosis.
- For all female patients ask about last menstrual period.
- If available, use Ultrasound to determine free fluid in abdominal cavity & to determine possible pregnancy.

Advanced Airway Management & Intubation Checklist

Assessment

Pediatric Pearls:

Use pediatric dosing of medications per Broselow
Avoid intubation of the pediatric patient when possible. OPA/NPA is preferred.
Children compensate well initially but decompensate quickly with little warning.
Most pediatric cardiac arrests are due to respiratory compromise.

Signs & Symptoms:

Percentage of Glottic Opening
Neck mobility
Beard, may prevent mask seal
Facial trauma/instability
Foreign material in airway
Swelling/Edema
Respiratory effort
Thyromental distance

Differential:

Airway obstruction
Pulmonary edema
COPD/Asthma
Stroke
Drug overdose
Cardiac arrest
Head injury
Anaphylaxis

Clinical Management Options

EMT AEMT MEDIC

Follow General Prehospital Care Protocol
Place NPA and/or OPA and ventilate with BVM
Oxygen, including passive apneic oxygenation 25lpm via NC
Place Cardiac & $ETCO_2$ Monitor
If there is a foreign body obstruction, consider removal via direct visualization; never perform a blind sweep – if patient's airway is intact and not at immediate risk for decline, defer procedure to ED. See Foreign Body Airway Obstruction evaluation /removal.

- All advanced airway procedures will include passive apneic oxygenation when possible

AEMT MEDIC

- Supraglottic placement if airway not protected
- 12-lead ECG
- IV/IO access as appropriate for patient condition

MEDIC

- **Strongly prefer IGel as 1st line airway tool, unless contraindicated**
- For intubation, **Advanced Airway Management Checklist** (or see pg. 3 below)
  - Video laryngoscopy(VL) +/- Bougie for intubation; if no 1st pass success then must use Bougie for repeat attempts
  - Direct laryngoscopy intubation with Bougie
- Consider Epinephrine Push-Dose prior to intubation for hypotension
- Post-intubation medications:
  - Midazolam (2.5-5.0 mg IV/IO q5 minutes)
- Consider Needle Cricothyroidotomy

Consult Online Medical Control As Needed

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- Ask yourself if the patient needs the airway right now and if you are the right person to secure it. Expect failure so you can prepare for it.

- Patients showing fatigue, increasing ETCO2, slowing respirations, altered mental status, increased ventricular ectopy, and hypoxia may have impending respiratory failure. Manage aggressively and preemptively.
- Passive oxygen: High Flow Nasal Cannula (HFNC) at 25 LPM may be used with BVM, CPAP, or during supraglottic and intubation insertion attempts. Once airway device placement is confirmed discontinue HFNC.
- Have the tools available for your backup plans before the first intubation attempt.
- Positive pressure ventilation may worsen hypotension in the hemodynamically unstable patient, avoid in trauma patients and consider push dose Epinephrine or Norepinephrine in any potentially hemodynamically unstable patient getting intubated.

Alcohol Withdrawal

Assessment

Pediatric Pearls:

None; EtOH withdrawal is possible, but consider alternate diagnosis

Signs & Symptoms:

- Headache
- Nausea/Vomiting
- Diarrhea
- Restlessness or insomnia
- Tachycardia
- Hypertension
- Tremors
- Tongue Fasciculations
- Confusion

Differential:

- Hypoglycemia
- Head Trauma
- Heat exhaustion
- Stroke
- Toxin exposure
- Sepsis
- Hypoxia
- Dysrhythmias
- Seizure

Clinical Management Options

EMT / AEMT / MEDIC

- Follow General Prehospital Care Protocol
- Take a thorough history to include volume, quantity, and frequency of alcohol use
- Use "**Alcohol Withdrawal Syndrome Screen Tool"** in the section below as needed

AEMT / MEDIC

- Vascular access
  - Consider Isotonic Fluids
  - Nausea

MEDIC

- If patient meets indications for alcohol withdrawal syndrome in accordance to the screening checklist and has no exclusions, then give Midazolam

Consult Online Medical Control As Needed

Alcohol Withdrawal Syndrome Screening Tool

Inclusion Criteria – All Must Be Present

1. Intact verbal communication capabilities.
2. Sudden period of cessation of alcohol consumption within the past 3 days.
3. Presenting with 3 or more of the following signs/symptoms:
   a. Nausea or Vomiting
   b. Tremors
   c. Sweating
   d. Agitation
   e. Heart rate > 100 beats per minute
4. Eighteen (18) years of age or older

Exclusion Criteria

1. Signs and Symptoms likely due to underlying medical illness or injury.
2. Respiratory distress

Additional Considerations that Increase the Risk for Respiratory Depression

1. Opioid use
2. COPD
3. Obstructive sleep apnea

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- Be aware of AMS as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety.
- It is safer to assume hypoglycemia than hyperglycemia if doubt exists. Recheck BGL after intervention.
- Do not let alcohol confuse your clinical practice as alcoholics frequently develop hypoglycemia.
- Hyperglycemia is treated with fluids since these patients are volume depleted.

Altered Mental Status

Assessment

Pediatric Pearls:

Use Broselow Tape as necessary
Use volume control for Dextrose Infusions.
Upper limit BGL is 200

Signs & Symptoms:

Decrease mental status
Change in baseline mental status.
Bizarre behavior
Hypoglycemia (cool, diaphoretic skin)
Hyperglycemia (warm & dry skin, fruity breath, Kussmaul respirations, signs of dehydration)

Differential:

Hypoxia
CNS (Trauma Stroke, Tumor, Seizure, Infection)
Cardiac (MI, CHF)
Infection
Thyroid (hyper or hypo)
Shock (septic, metabolic, traumatic)
Toxicological / Carbon Monoxide / Cyanide
Acidosis / Alkalosis
Heart Stroke or Hypothermia
Electrolyte abnormality

Clinical Management Options

EMT AEMT MEDIC

- Follow General Prehospital Care Protocol
- Basic Airway Management as needed
- Assess for a Stroke, Hypoglycemia, and/or Toxicologic/Opioid overdose and treat accordingly
- Place $ETCO_2$ monitor
- Place cardiac monitor and 12-Lead ECG

AEMT MEDIC

- BGL Assessment, if BGL <60 and intact gag reflex then assist patient in self-administer of Oral Glucose source & consider turning off insulin pump if present
  - If hypoglycemic, recheck BGL every 5 minutes
- IV/IO Access as necessary; prefer oral glucose repletion if able.
- If Hyperglycemia present (BGL >250), then administer 1L NS (or 500cc in patients with renal failure or heart failure).
- Adult (>8 years old): If BGL <60 then can give 1 amp Dextrose (25g of D50), consider subsequent infusion titrated to patient condition and response
- Pediatric (<8 years old): If BGL <60 can bolus 5ml/kg of D10 OR 2ml/kg of D25 solutions
- If BGL <60 and unable to obtain IV/IO access, then give 1mg IM Glucagon
- If BGL > 300 in adults or > 200 in pediatrics or signs of dehydration, then infusion of Isotonic Fluids; reduce volume to 500cc bolus in patients with evidence of edema

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MEDIC

- Advanced Airway Management as needed

Consult Online Medical Control as Needed

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- Be aware of AMS as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety.

- It is safer to assume hypoglycemia than hyperglycemia if doubt exists. Recheck BGL after intervention.
- Do not let alcohol confuse your clinical practice as alcoholics frequently develop hypoglycemia.
- Hyperglycemia is treated with fluids since these patients are volume depleted.
- Patents on oral hypoglycemics or long-acting insulin are at risk for repeat episodes of hypoglycemia, monitor closely and strongly encourage transport.
- If hypoglycemic patients have returned to baseline and wish to refuse care make certain that the patient eats and that there is someone to observe them for repeat hypoglycemic episodes.

Anaphylaxis/Allergic Reaction

Assessment

Pediatric Pearls:

- Use pediatric dosing of medications see Broselow Tape
- Titrate meds and fluids for hypotension to maintain minimum SBP target per the following equation:
  70+(age x 2) = lowest SBP

Signs & Symptoms:

- Edema / Voice Changes
- Itching or Hives
- Coughing / Wheezing or Respiratory Distress
- Chest or Throat Constriction / Tightness
- Difficulty Swallowing
- Hypotension or Shock
- Vomiting / Diarrhea

Differential:

- Urticaria (rash only)
- Anaphylaxis (systemic effect)
- Shock (vascular effect)
- Angioedema (drug induced)
- Aspiration / Airway Obstruction
- Vasovagal event
- CHF
- Asthma or COPD
- Anxiety

Clinical Management Options

EMT

- Follow General Prehospital Care Protocol
- Consider assisting patient in administering their auto-injector.
- Determine source of exposure and decontaminate patient if possible; place cold pack to insect bite or sting site and remove stinger if present
- Basic airway management as needed
- Place cardiac monitor and 12-Lead ECG
- Assist patient with self-administration of IM Epinephrine
  - For non-Anaphylactic Reactions, Epinephrine is not necessary.

AEMT

- Administer Albuterol, consider CPAP if refractory response
- IV fluid therapy with Isotonic Fluids, titrated to Adult SBP ≥ 90 mmHg or MAP
- Consider 0.3-0.5 mg IM Epinephrine, up to 3x doses

MEDIC

- Give 25mg IV Diphenhydramine, and 125mg IV Methylprednisolone
- If refractory to the above medications, start Epinephrine infusion and titrate until the patient stabilizes
- Advanced Airway Management as needed

Pearls:

- Anaphylaxis is defined as acute multiorgan (≥2) system reaction. Common systems involved include respiratory, cardiovascular, cutaneous, and gastrointestinal (GI).
- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- Continuous reassessment for rebound reaction with need for additional epinephrine.
- Lung sounds should be assessed between each dose of Albuterol prior to additional nebulizers.
- Any patient with respiratory symptoms or extensive reaction should receive IV/IO or IM diphenhydramine.
- The shorter the onset from exposure to symptoms, the worse the reaction.

- Epinephrine is the single most important intervention in this setting and has small risk for high benefit.
- Anaphylaxis is undertreated in pediatric patients and aggressive treatment is encouraged.

Behavioral Health & Violent Emergency

Assessment

Pediatric Pearls:
- Consider using Broselow tape

Signs & Symptoms:
- Anxiety, agitation, confusion
- Affect change, hallucinations
- Delusional thoughts, bizarre behavior
- Expression of suicidal homicidal thoughts
- Tachycardia, diaphoresis, tachypnea, hyperthermia
- Struggles violently despite appropriate restraint
- Combative / violent

Differential:
- Hypoxia
- Alcohol intoxication
- Medication effect / overdose
- Withdrawal syndromes
- Bipolar (manic-depressive)
- Schizophrenia, anxiety disorders, etc.
- Hypertensive emergency
- Seizure / Postictal
- Domestic Violence or Abuse

Clinical Management Options

EMT / AEMT / MEDIC

- Follow General Prehospital Care Protocol
- See Pearls below regarding Law Enforcement.
- Basic Airway Management as needed
- Physical restraint if needed, and use Restraint Checklist
- Cooling measures if needed
- Place cardiac monitor and 12-Lead ECG
- Place ETCO2 monitor if sedated

AEMT / MEDIC

- Vascular access as appropriate for patient condition
- Fluid therapy as needed with Isotonic Fluids, preferred cooled fluids if Excited Delirium
- BGL Assessment
- If the patient is suspected of excited delirium and suffers cardiac arrest, then consider a fluid bolus and 50mEq IV Sodium Bicarbonate early

MEDIC

- Advanced Airway Management as needed
- Use Restraint Checklist with all chemical restraint
- Assess Mental Status: if treating RASS ≥2, then you *must* consult OLMC
  - RASS +2 or +3, aggressive behaviors requiring chemical restraint, use 5mg IV/IM Midazolam or Droperidol, this dose may be repeated once
  - RASS +1 or +2, uncontrolled anxiety, use 2.5mg IV/IM Midazolam or Droperidol
- If suspecting Hyperkalemia, consider 1g IV Calcium Chloride and 50mEq Sodium Bicarbonate

Consult Online Medical Control for management of ALL Pediatric patients

Richmond Agitation Sedation Scale (RASS)

+4	Combative: Overly combative or violent and an immediate danger to provider
+3	Very Agitated: Aggressive, non-combative or pulls on or removes tube(s) or catheter(s)

+2	Agitated: Frequent, non-purposeful movement or patient/ventilation desynchrony
+1	Restless: Anxious or apprehensive, movements not aggressive or vigorous
0	Alert and Calm: Spontaneously pays attention to provider

Pearls:

- Respect the dignity of every patient
- For patients experiencing substance withdrawal (alcohol) and post-ictal state, consider benzodiazepines (Midazolam) as a first line medication.
- Consider your safety first. Physical restraint should be performed or assisted by Law Enforcement. Law Enforcement presence should be requested in any patient whom the EMS Provider deems a threat or potential threat to the safety of themselves or public bystanders.
- Treat conditions such as hypoglycemia, hypoxia, or poisoning as per appropriate protocol.
- Patients experiencing behavioral health emergencies should be transported for treatment if they have any of the following:
    - Can be reasonably expected to intentionally or unintentionally physically injure themselves/others or has engaged in acts or made threats to support the expectation.
    - Are unable to attend to basic physical needs.
    - Have judgement that is so impaired that individual is unable to understand the need for treatment and whose behavior will cause significant physical harm.
    - Have weakened mental processes because of age, epilepsy, alcohol, or drug dependence which impairs their ability to make treatment decisions.
- SAVE Mnemonic for De-Escalation:
    - Support - "Let's work together…"
    - Acknowledge - "I see this has been hard for you…"
    - Validate - "I would probably be reacting the same way if I was in your shoes…"
    - Emotion naming - "You seem upset…"
- Make every effort to use the minimum amount of sedatives required in order to adequately address the behavioral health and violent emergency.
- All patients who receive either physical or chemical restraints must be continuously monitored by ALS personnel on scene or immediately upon their arrival. Monitoring must include: Cardiac, pulse oximetry, and $ETCO_2$ monitoring. This does not apply if the patient is simply restrained for law enforcement purposes and law enforcement is immediately available e.g. the transport of a prisoner in law enforcement custody who is not a behavioral/excited delirium patient.
- Any transported patient who is handcuffed or restrained by Law Enforcement should be accompanied by an officer whenever possible and, if not, law enforcement must be immediately available.
- Restrained patients must NEVER be maintained or transported in a prone position.
- Consider cold isotonic crystalloid boluses up to 30 ml/kg in patients with a temperature $\geq$ 104F.
- Blood samples for performing glucose analysis should be obtained through a finger-stick (heel for infants).
- Be sure to consider all possible medical and/or trauma causes for behavior.
- Excited Delirium (EXD) is interchangeable with Excited Delirium Syndrome (ExDS), both refer to a condition where the patient continues to struggle violently despite appropriate restraint that results from a combination of delirium, psychomotor agitation, anxiety, hallucinations, speech disturbances, disorientation, violent and bizarre behavior, insensitivity to

pain, elevated body temperature, and superhuman strength. Therefore, underlying etiologies of EXD/ExDS must be considered:

- Metabolic / Endocrine - hypoxia, electrolyte abnormalities, hepatic encephalopathy, hypercarbia, hyper/hypoglycemia, thyrotoxicosis, uremia
- Neurologic - dementia, head injury, encephalitis, post-ictal state/seizure
- Psychiatric - acute psychosis, mania, medication stoppage, personality disorder, schizophrenia
- Infectious/Inflammatory - autoimmune encephalitis, herpes encephalitis, meningitis, sepsis
- Toxicologic - alcohol, amphetamines, cocaine, neuroleptic malignant syndrome, PCP, polypharmacy, serotonin syndrome, synthetic cannabinoids, synthetic cathinones

Bites and Envenomation

Assessment

Pediatric Pearls:
- Use Broselow tape as needed

Signs & Symptoms:
Rash, skin break, wound pain, soft tissue swelling, redness
Blood oozing from the bite wound
Evidence of infection
Shortness of breath, wheezing
Allergic reaction, hives, itching
Hypotension or shock

Differential:
Animal bite
Human bite
Snake bite (poisonous)
Spider bite (poisonous)
Insect sting / bite (bee, wasp, ant, tick)
Infection risk
Rabies risk
Tetanus risk

Clinical Management Options

EMT / AEMT / MEDIC

- Follow General Prehospital Care Protocol
- NEVER attempt to collect/capture an animal that's alive or dead. Picture taking is preferred but not at the risk of anyone's safety.
- Observe for Anaphylaxis/Allergic Reaction
- For all, minimize movement and remove constricting items
- If Insect Bite, remove stinger & apply ice pack
- If Snake Bite, bandage & consider Splinting
- Pain Management Guideline as needed

Consult Online Medical Control As Needed

Pearls:
- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- Human bites have a very high risk of infection due to oral bacteria.
- Animal bites are much more likely to become infected and all have risk of Rabies exposure. Bats, skunks, foxes, and raccoons are the most common rabies vectors. Dogs have been eliminated as reservoirs of rabies unless; known contact with a high-risk animal.
- Cat bites may rapidly progress to infection due to a specific bacterium (Pasteurella multocida).
- Venomous snakes in this area are generally of the pit viper family: rattlesnake, copperhead, and water moccasin – many snake bites are "dry bites," envenomation can present as swelling, bruising, duskiness, or skin stretching. May not always seen fang marks.
  - Coral snake bites are rare: Very little pain but very toxic.
  - **DO NOT** to take the snake to the ED with the patient. Take Picture if possible.
- Black Widow spider bites have minimal pain initially but may develop muscular pain and severe abdominal pain (spider is black with red hourglass on belly).
- Brown Recluse spider bites are minimally painful to painless. Little reaction is noted initially but tissue necrosis at the site of the bite develops over the next few days (brown spider with fiddle shape on back). OK to use ice pack for this bite. Most are uncomplicated.
- Evidence of infection: swelling, redness, drainage, fever, red streaks proximal to wound.
- Immunocompromised patients are at an increased risk for infection.
- May use soap and water to clean wounds if time and patient condition allows.
- Consider contacting the nearest Poison Control Center for guidance at 1-800-222-1222.

- See this link for Georgia specific venomous snake species: https://georgiawildlife.com/sites/default/files/wrd/pdf/brochures/Venomous%20Snakes%20of%20Georgia_2019_singlepages.pdf

Brief Unresolved Unexplained Event (BRUE) and Active Events in Infants

Assessment

Pediatric Pearls:

Use Broselow Tape as necessary
Use volume control for Dextrose Infusions.
Upper limit BGL is 200

Signs & Symptoms:

Decrease mental status
Change in baseline mental status.
Bizarre behavior
Hypoglycemia (cool, diaphoretic skin)
Hyperglycemia (warm & dry skin, fruity breath, Kussmaul respirations, signs of dehydration)

Differential:

Hypoxia
CNS (Trauma Stroke, Tumor, Seizure, Infection)
Cardiac (MI, CHF)
Infection
Thyroid (hyper or hypo)
Shock (septic, metabolic, traumatic)
Toxicological / Carbon Monoxide / Cyanide
Acidosis / Alkalosis
Heart Stroke or Hypothermia
Electrolyte abnormality

Clinical Management Options

EMT / AEMT / MEDIC

- Follow General Prehospital Care Protocol
- Basic Airway Management as needed
- Assess for a Stroke, Hypoglycemia, and/or Toxicologic/Opioid overdose and treat accordingly
- Place $ETCO_2$ monitor
- Place cardiac monitor and 12-Lead ECG

- BGL Assessment, if BGL <60 and intact gag reflex then assist patient in self-administer of Oral Glucose source & consider turning off insulin pump if present
  - If hypoglycemic, recheck BGL every 5 minutes
- IV/IO Access as necessary; prefer oral glucose repletion if able.
- If Hyperglycemia present (BGL >250), then administer 1L NS (or 500cc in patients with renal failure or heart failure).
- Adult (>8 years old): If BGL <60 then can give 1 amp Dextrose (25g of D50), consider subsequent infusion titrated to patient condition and response
- Pediatric (<8 years old): If BGL <60 can bolus 5ml/kg of D10 OR 2ml/kg of D25 solutions
- If BGL <60 and unable to obtain IV/IO access, then give 1mg IM Glucagon
- If BGL > 300 in adults or > 200 in pediatrics or signs of dehydration, then infusion of Isotonic Fluids; reduce volume to 500cc bolus in patients with evidence of edema

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- Advanced Airway Management as needed

Suspected BRUE: An event in an infant less than 1 year old reported by a bystander as sudden, brief (less than 1 minute), unexplained, and completely resolved upon EMS arrival that includes one or more of the following: a. Breathing change (absent, decreased, or irregular)
b. Color change (central cyanosis or pallor)

c. Marked change in muscle tone (hyper- or hypotonia)
d. Altered level of responsiveness (increased, irritability, or decreased)

History a. History of circumstances and symptoms before, during, and after the event, including duration, interventions done, as well as patient color, tone, breathing, feeding, position, location, activity, and level of consciousness
b. Other concurrent symptoms (e.g., fever, congestion, cough, rhinorrhea, vomiting, diarrhea, rash, labored breathing, fussy, less active, poor sleep, poor feeding)
c. Prior history of BRUE (ever, including past 24 hours)
d. Past medical history (e.g., prematurity, prenatal/birth complications, gastric reflux, congenital heart disease, developmental delay, airway abnormalities, breathing problems, prior hospitalizations, surgeries, or injuries)
e. Family history of sudden unexplained death or cardiac arrhythmia in other children or young adults
f. Social history: those living at home, recent household stressors, exposures to toxins/drugs, sick contacts
g. Considerations for possible child abuse (i.e., multiple/changing versions of the story or reported mechanism of injury does not seem plausible, especially for child's developmental stage) [See Abuse and Maltreatment Guideline]

2. Exam a. Full set of vital signs (pulse, blood pressure, respiratory rate, neurologic status assessment)
b. General assessment:

i. Signs of respiratory distress or increased work of breathing (e.g., tachypnea, grunting or other abnormal breath sounds, nasal flaring, retracting, or head bobbing)
ii. Color, both central and peripheral (pallor, cyanosis, redness, or normal), capillary refill
iii. Mental status (alert, tired, lethargic, unresponsive, or irritable) c. Head to toe exam, including:

i. Physical exam for signs of trauma or neglect
ii. Pupillary response and anterior fontanelle

Treatment and Interventions

1. Monitoring (all patients with possible BRUE) a. Continuous cardiac monitor
b. Continuous pulse oximetry
c. Serial observations during transport for change in condition
d. Check point-of-care (POC) blood glucose and treat symptomatic hypoglycemia [See Hypoglycemia Guideline]

2. Airway a. Give supplemental oxygen for signs of respiratory distress or hypoxemia — escalate from a nasal cannula to a simple face mask to a non-rebreather mask as needed [See Airway Management Guideline]
b. Suction excessive secretions from the nose and/or mouth (using bulb syringe or suction catheter) [See Pediatric Respiratory Distress (Bronchiolitis) Guideline]

3. Utility of IV placement and fluids a. Routine IVs should **not** be placed on all suspected BRUE patients
b. IVs should be placed only for clinical concerns of shock or to administer IV medications

1. BRUE is a group of symptoms, not a disease process
2. If the infant is not completely well upon EMS arrival, this excludes possible BRUE event: a. Treat and transport according to local guidelines

3. Avoid using “BRUE”, “ALTE”, “SIDS” (sudden infant death syndrome), or “near-miss SIDS” terminology with parent/guardian
4. EMS clinicians play a unique and important role in obtaining an accurate history soon after the event and in observing, documenting, and reporting environmental, scene and social indicators that may point to an alternate diagnosis
5. High-risk patients with a possible BRUE have worse outcomes and may require emergency department (ED) or inpatient testing, intervention, and/or follow-up
6. The determination of a BRUE is made only after hospital evaluation, not in the field: a. A few of these infants will die even after hospital evaluation and treatment
7. All patients should be transported to an ED
8. Contact medical direction if parent/guardian is refusing medical care and/or transport, especially if any high-risk criteria are present

Consult Online Medical Control as Needed

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- Be aware of AMS as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety.
- It is safer to assume hypoglycemia than hyperglycemia if doubt exists. Recheck BGL after intervention.
- Do not let alcohol confuse your clinical practice as alcoholics frequently develop hypoglycemia.
- Hyperglycemia is treated with fluids since these patients are volume depleted.
- Patents on oral hypoglycemics or long-acting insulin are at risk for repeat episodes of hypoglycemia, monitor closely and strongly encourage transport.
- If hypoglycemic patients have returned to baseline and wish to refuse care make certain that the patient eats and that there is someone to observe them for repeat hypoglycemic episodes.

Burns – Thermal, Chemical, & Electrical

Assessment

Pediatric Pearls:

Use Broselow tape as needed

Titrate meds and fluids for hypotension to maintain minimum SBP target per the following equation:

70 + (age x 2) = lowest SBP

Signs & Symptoms:

Burns, pain, swelling

Dizziness

Loss of consciousness

Hypotension / shock

Airway compromise / distress, singed facial or nasal hair, hoarseness / wheezing / stridor

Differential:

1st degree – red and painful

2nd degree - blistering

3rd degree - painless and charred or leathery skin

Chemical

Thermal

Electrical

Radiation

Clinical Management Options

E A M
M E E
T M D
T I
C

- Maintain high alertness for safety for all electrical injuries as to not expose providers
- Follow General Prehospital Care Protocol and see Pain Management Guideline
- Administer 100% O2 to all patients rescued from a confined space fire regardless of pulse oximetry reading
- Consider Carbon Monoxide and Cyanide Protocol.
- Notify receiving hospital if there's potential for chemical exposure or "off-gassing"
- General Rules:
  - Avoid hypothermia
  - Remove rings, bracelets, or other constricting items
  - Place $ETCO_2$ monitor for any airway involvement/edema
  - For all, consider secondary contamination (methamphetamine)
  - Determine burn extent: establish BSA, location(s), and type of burn

WOUND CARE:

- Thermal/Electrical burn: < 10% body surface area then cool down the wound with Isotonic Fluids or sterile water; after cooling cover burn with a damp dressing (warmed NS soaked 4x4 gauze is ideal).
- Chemical burn: Remove clothing or expose area, brush off any dry chemicals or powder, then flush area with **large** amount of water or isotonic crystalloid

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- Continuous ECG monitoring
- Vascular Access as appropriate for patient condition
- Advanced Airway Management as needed

FLUIDS:

- Burns with hypotension: treat w/ 1L NS bolus for adults, or 20cc/kg for pediatrics
- Burns without hypotension: for burns with a visibly large area then->
  - Age >14 years: 1L NS per hour; 500ml per hour if edema present
  - Age 6-14 years: 250ml NS per hour
  - Age <6: 125ml NS per hour

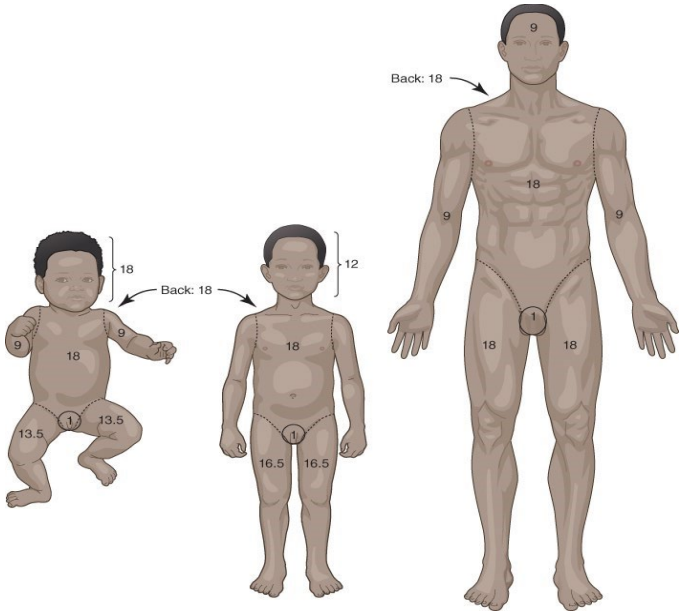
- If airway burn: Nebulized 2mg (1:1,000) Epinephrine for Respiratory Distress
- 1g IV Calcium Chloride for hydrofluoric acid burns with unstable vital signs, such as hypotension, tachy/bradycardia, ectopic beats, and/or ECG changes.

Consult Online Medical Control As Needed

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- Consider nebulized epinephrine for respiratory distress early in airway burns when hoarse/muffled voice, stridor, etc. are presenting.
- Evaluate BSA: Use chart or use palm side of patient's hand = 1% BSA
- Non-critical burns (<5% BSA 2nd and 3rd) not complicated by airway compromise or trauma do not require transport to a trauma center.
- **Critical Burns:** (Consider transport to *Burn Care Center*)
  - >20% 2° and 3° body surface area (BSA) age > 10;
  - >10% BSA age <10 or >50;
  - 3° burns >5% BSA;
  - 2° and 3° burns to face, eyes, hands or feet or genitalia; electrical burns; respiratory burns; deep chemical burns;
  - Burns with extremes of age or chronic disease; and burns with associated major traumatic injury.
- Potential CO exposure should be treated with 100% oxygen.
- Circumferential burns to extremities are dangerous due to potential vascular compromise 2° to soft tissue swelling.
- Burn patients are prone to hypothermia - Never apply ice or cool burns that involve >10% body surface area.
- Do not overlook the possibility of multiple system trauma or child abuse with burn injuries. Hydrofluoric acid burns of 3% BSA may be fatal and may have little to no external signs

"Rule of 9's" for BSA



Carbon Monoxide

Assessment

Pediatric Pearls:

Use pediatric dosing of medications per Broselow
Most pediatric cardiac arrests are due to respiratory compromise.

Signs & Symptoms:

Altered mental status/dizziness
• Headache, Nausea/Vomiting
Chest pain/Respiratory distress
Neurological impairments
Vision problems/Reddened eyes
Tachycardia/Tachypnea

Differential:

Effects of other toxic fire byproduct (ie. Cyanide)
Acute cardiac event
Acute neurological event
Flu/GI illness
Acute intoxication
Diabetic Ketoacidosis
Headache of non-toxic origin

Clinical Management Options

EMT / AEMT / MEDIC

- Follow General Prehospital Care Protocol
- If CO poisoning is suspected, remove patient from the source, provide airway/ventilation management with 100% supplemental oxygen, and transport to an appropriate facility.
  - Red flag symptoms include: Pregnancy*; any cardiac or pulmonary complaint; Neurological changes such as altered mental status, seizure activity, or focal deficits. A headache alone is not considered a neurological change or red flag symptom.
- Place $ETCO_2$ and ECG monitoring
- Place 12-Lead ECG

AEMT / MEDIC

- Monitor $ETCO_2$
- Vascular access as appropriate for patient condition
- IV fluid with Isotonic Fluids as needed

MEDIC

- Fire victims with AMS, lethargic, or cardiac arrest, consider Cyanide Protocol.

Consult Online Medical Control As Needed

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- **F**etal hemoglobin has a stronger affinity to CO than maternal hemoglobin. Therefore, transport to an ED of a known/suspected female patient should occur for this reason.
- The absence (or low detected levels of) of COHgb is not a reliable predictor of firefighter or victim exposure to other toxic byproducts of fire.
- The differential list for CO Toxicity is extensive. Attempt to evaluate other correctable causes when possible.
- Chronic CO exposure is significant; therefore, advice on smoking cessation is important medical instruction and; recommend evaluation of their home/work environment for presence of CO.

Cardiac-Bradycardia with Pulse

Assessment

Pediatric Pearls:

Use pediatric for a patient <37 kg and as defined by the Broselow Tape.
Focus on rapid and early BLS airway and ventilation.
Intubation may not be the best option for these patients.
Pediatric pads should be used in children < 10 Kg or Broselow tape color purple.

Signs & Symptoms:

HR < 60 min with hypotension
Acute altered LOC
CHF
Seizure, syncope or shock secondary to bradycardia.
Altered LOC
Shock / Hypotension
Syncope

Differential:

Respiratory obstruction
Beta blocker / Digoxin
Calcium Channel Blocker
Organophosphate
Hypovolemia
Hypothermia
Hypoxia
Infection / Sepsis
Medication or Toxin
Trauma
Arrhythmia / Acute MI

Clinical Management Options

EMT
- Follow General Prehospital Care Protocol

AEMT
- Basic airway management

MEDIC
- If pediatric and HR <60 with poor perfusion despite oxygenation & ventilation, begin Pit Crew CPR
- Place 4 lead and 12-Lead ECG
- Place waveform $EtCO_2$

- Vascular access
- Isotonic Fluids PRN titrated to SBP ≥ 90 mmHg or MAP ≥ 65
- Glucagon in setting of Beta Blocker OD or Calcium Channel Blocker OD

- Monitor and interpret ECG
- Advanced airway management as needed
- Atropine
- Transcutaneous Cardiac Pacing
  - Consider sedation as necessary: Midazolam
- If Adult: Dopamine or Epinephrine infusion titrated to MAP ≥ 65
- If Pediatric: Epinephrine infusion titrated to patient presentation

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Consult Online Medical Control As Needed

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- The use of lidocaine or amiodarone in heart block can worsen bradycardia and lead to asystole and death.
- Treatment of bradycardia is based on presence of symptoms. If asymptomatic, monitor only.
- The use of atropine for bradycardia in the presence of an MI may worsen ischemia.
- Consider treatable causes for bradycardia (Beta blocker OD, Calcium channel blocker OD, etc.) – treat appropriately.
- Assure patient is adequately oxygenated.
- If wide complex bradycardia, consider hyperkalemia.
- Glucagon = Emesis
-

Cardiac-Narrow Complex Tachycardia with a Pulse

Assessment

Pediatric Pearls:

- Use pediatric therapy for a patient <37 kg and as defined by the Broselow Tape.
- Focus on rapid and early BLS airway and ventilation tools. Intubation may not be the best option for these patients.
- Pediatric pads should be used in children <10 Kg or Broselow tape color purple.

Signs & Symptoms:

- QRS ≤ 0.12 sec
- Pale or Cyanosis
- Diaphoresis
- Tachypnea
- Vomiting
- Hypotension
- Altered Level of Consciousness
- Pulmonary Congestion
- Syncope

Differential:

- Heart disease (WPW, Valvular)
- Myocardial infarction
- Electrolyte imbalance
- Fever
- Hypoxia or Anemia
- Hypovolemia
- Drug effect / Overdose
- Hyperthyroidism
- Pulmonary embolus
- Alcohol withdrawal

Clinical Management Options

EMT / AEMT / MEDIC

- Follow General Prehospital Care Protocol
- Place cardiac monitor and 12-Lead ECG
- Place waveform $EtCO_2$
- Valsalva Maneuver (Adults only)
- Consider dehydration or sepsis as primary cause, and not necessarily an arrythmia

AEMT / MEDIC

- Vascular access
- Isotonic Crystalloid PRN titrated to SBP ≥ 90 mmHg or MAP ≥ 65

MEDIC

- Monitor and interpret of ECG
- If stable:
  - Attempt Vagal maneuvers – do NOT use Carotid Massage
  - Consider Isotonic Crystalloid
- **If SVT:**
  - Perform vagal maneuvers
  - Adenosine as needed for SVT
  - Continuous 12-lead ECG during Adenosine administration, if possible
  - 12-lead ECG post conversion
- **If Atrial Fibrillation with RVR:**
  - Normal or High Blood pressure: Diltiazem (Adults only) – DO NOT give if history or 12-lead shows WPW
  - Low or "Soft" Blood Pressure (within 10mmhg of hypotension either systolic or diastolic): use Amiodarone infusion
- **If unstable vital signs:**
  - Consider sedation: Midazolam, Fentanyl as appropriate
  - Adult Synchronized Cardioversion at maximum joules if unstable
  - Pediatric Synchronized Cardioversion 0.5-1.0 j/kg, repeat as needed at 2 j/kg

Consult Online Medical Control As Needed

Pediatric Dosing Chart		3 kg	4 kg	5 kg	6-7 kgs	8-9 kgs	10-11 kgs	12-14 kgs	15-18 kgs	19-23 kgs	24-29 kgs	30-36 kgs
		6.6 lbs	8.8 lbs	11 lbs	13-15 lbs	17-20 lbs	22-24 lbs	26-30 lbs	33-40 lbs	42-50 lbs	53-64 lbs	66-80 lbs
		in18.25-20.25	in20.25-21.5	in21.5-23.25	in23.25-26.25	in26.25-29.25	in29.25-33	in33-37.5	in37.5-42.5	in42.5-47.75	in47.75-51.25	in41.25-56.25
Synchronized Cardioversion	0.5 j	1	2	2	3	4	5	7	8	10	15	15
	1.0 j	3	4	5	6	8	10	15	15	20	30	30
	2.0 j	6	8	10	15	15	20	30	30	50	50	70

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- Use caution in patient currently on antihypertensive medication
- Adenosine may not be effective in identifiable atrial flutter / fibrillation but is not harmful.
- Document all rhythm changes with monitor strips and obtain monitor strips with each therapeutic intervention.
- Continuous pulse oximetry is required for all atrial fibrillation patients.
- Narrow complex tachycardia in setting of alcohol withdrawal should be treated aggressively with midazolam, not diltiazem. If SVT is "exquisitely regular", any heart rate variability should lead you to consider sinus tachycardia or atrial fibrillation.
- Consider a change of vector of initial cardioversion is unsuccessful to anterior/posterior pad placement.
- Sinus tachycardia may be misinterpreted as SVT or A-fib. Sinus tach >150 (adult) or >180 (pediatric) may be seen in the septic patient.

Cardiac-Post-Arrest: ROSC

Assessment

Pediatric Pearls:

Use pediatric dosing for a patient <37 kg and as defined by the Broselow Tape.
Focus on rapid and early BLS airway and ventilation tools.
Intubation may not be the best option for these patients.

Signs & Symptoms:

- Return of pulse from a Non-Traumatic Cardiac Arrest

Differential:

- Continue to address specific differentials associated with original dysrhythmia.

Clinical Management Options

EMT / AEMT / MEDIC

- Follow General Prehospital Care Protocol
- Targeted Temperature Management: If patient is hyperthermic (Temp >37.5^{0}C or 99.5^{0}F), expose patient and apply ice packs to axilla, neck, and groin
- Use Post-Resuscitation Checklist as indicated
- Place 12-lead ECG

AEMT / MEDIC

- Vascular access above the diaphragm if patient ≥ 12 months; if patient < 12 months and not large enough for access above the diaphragm, distal femur IO is preferred
- Cold Isotonic Fluids bolus to max of 2 liters

MEDIC

- Monitor and interpret ECG
- Advanced Airway Management as needed
- STEMI activation if appropriate and transmit 12-lead
- Procedural Sedation as needed
- Norepinephrine, Dopamine, or Epinephrine infusion titrated to MAP of 65mmHg

Consult Online Medical Control As Needed

Pearls:

- **Providers should NOT hasten departure after obtaining ROSC unless STEMI is present. Instead, focus on stabilizing the patient and ensuring that airway status and hemodynamics are appropriately secured/stabilized. If rearrest occurs, it will likely be in the first few minutes.**
- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- If patient is hypotensive do not administer sedative. Initiate volume replacement with cold saline.
- When exposing patient for purpose of cooling undergarments may remain in place to preserve the patient's modesty.
- Reassess airway frequently and with every patient move.
- Patients develop metabolic alkalosis with cooling. Do not hyperventilate.
- These patients should only be transported to designated STEMI receiving centers.
- Notify destination ASAP when this Guideline is utilized so that the receiving unit can prepare to receive patient.
- Providers should have a controlled urgency to begin transport due to the possibility of re-arrest soon after ROSC.
- Targeted Temperature Management should not interfere with resuscitation.

Cardiac-STEMI/ACS/Acute Myocardial Infarction

Assessment

Pediatric Pearls:

Use pediatric dosing of medications or electrical therapy for a pediatric patient < 37 kg and as defined by the Broselow Tape.
Focus on rapid and early BLS airway and ventilation tools.
Intubation may not be the best option for these patients.
STEMI is possible in al

Signs & Symptoms:

Pain or pressure between navel and jaw
"Heart racing", "palpitations", or "heart too slow"
CHF signs of symptoms
Syncope
Severe weakness if > 45 years old
Difficulty breathing (no obvious respiratory cause)

Differential:

Angina vs Myocardial infarction
Pericarditis
Pulmonary embolism
Asthma / COPD
Pneumothorax
Aortic dissection
Esophageal spasm
Chest wall injury or pain
Pleuritic pain
Overdose (sympathomimetic)

Clinical Management Options

EMT / AEMT / MEDIC

- Follow General Prehospital Care Protocol
- Perform bilateral blood pressures, if difference between R & L arm SBP is ≥ 20mmHg then consider aortic dissection and withhold Aspirin and Nitro
- Basic airway management
- Place cardiac monitor and 12-Lead ECG

AEMT / MEDIC

- Monitor and interpret ECG within 5 minutes of patient contact for all suspected STEMI
- Declaration of "STEMI Alert" to destination hospital and minimize scene time to <10 minutes if possible
- Obtain Vascular access
- Administer:
  - Aspirin
  - *DO NOT USE IF INFERIOR WALL MI, but consider* Nitroglycerin if SBP ≥ 180 mmHg and/or DBP ≥ 110mmHg **AFTER** Fentanyl's given
- Isotonic Crystalloid PRN titrated to SBP ≥ 100 mmHg or MAP ≥ 65
- ***Inferior Wall MI***: consider Isotonic Crystalloid

MEDIC

- Administer:
  - Heparin 60 u/kg IV bolus (max 5,000u)
  - Ticagrelor (Brilinta) 180mg crushed
- Symptom management: Fentanyl, Odansetron
- If hypersympathetic state from stimulant abuse (cocaine, methamphetamine), consider Midazolam (usually presents with sustained HR > 120 bpm and significant HTN)

Consult Online Medical Control As Needed

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- Primary pain management medication for all chest pain / ACS patients is Fentanyl.
- Do not administer Nitroglycerin in any patient who used Viagra (sildenafil) or Levitra (vardenafil) in the past 24 hours or Cialis (tadalafil) in the past 48 hours or other PDE erectile dysfunction medications due to potential severe hypotension.
- Refer to STEMI Alert or ACS Consultation Criterion.

- If patient has STEMI, or is going directly to cardiac cath lab, attempt to establish a second IV but do not delay transport. Transport providers need to minimize scene time to < 15 minutes whenever possible.
- Monitor for hypotension and respiratory distress after administration of nitroglycerin, fentanyl, or midazolam.
- Diabetics, females, and geriatric patients often have atypical pain, or generalized complaints.
- $EtCO_2$ if multiple doses of Fentanyl or Midazolam medication administered.

STEMI Alert Criteria:

1. A *STEMI Alert* should be called when a patient is currently symptomatic for an acute coronary syndrome event, *and*
2. Has new or presumably new ST segment elevation >1 mm in two anatomically contiguous leads, *and*
3. Does not have exclusion criterion listed below.
4. If a patient meets *STEMI Alert* criteria and none of the exclusion & ACS consult criteria, then a *STEMI Alert* should 1st be declared to communications. As soon as possible a 12-lead ECG should be transmitted and whenever possible the patient's name and date of birth should accompany the 12-lead ECG.
    a If there is an inability to transmit, then email the ECG to: **Carepoint.1@nghs.com**
5. The transport hospital should be notified of the *STEMI Alert* as soon as practical, and the alert must include the transport radio report to the hospital with the patient condition information.

STEMI Alert Exclusions & ACS Consult Criteria:

1. Patients that are currently *asymptomatic* for an acute coronary syndrome event yet still have ECG readings consistent with the above *STEMI Alert* criteria, or
2. Patients who are *symptomatic* for an acute coronary syndrome event but have evidence of LBBB or LVH, Early repolarization, Ventricular/Ventricular Paced, or Non-specific ST changes or other abnormal ECG findings including poor ECG tracing.

If exclusion criteria are present, the EMS provider should not declare a *STEMI Alert* and should consult with the anticipated receiving hospital prior to transport and transmit a 12 lead ECG.

The declaration of the *STEMI Alert* or use of the ACS Consult option should be based upon the patient's current condition and the provider's judgement.

Cardiac-Wide Complex Tachycardia with Pulse

Assessment

Pediatric Pearls:

- Use pediatric dosing of patient < 37 kg and as defined by the Broselow Tape.
- Focus on rapid and early BLS airway and ventilation tools. Intubation may not be the best option for these patients.
- Pediatric pads should be used in children < 10 Kg or Broselow tape color purple.

Signs & Symptoms:

- QRS > 0.12 sec
- Ventricular tachycardia on ECG (runs or sustained)
- Conscious, rapid pulse
- Chest pain
- Shortness of breath
- Dizziness
- Rate usually 150-180 bpm for sustained V-tach

Differential:

- Artifact / Device failure
- Cardiac history
- Endocrine / Electrolyte
- Hyperkalemia
- Drugs / Toxic exposure
- Pulmonary disease
- Tricyclic overdose

Clinical Management Options

EMT / AEMT / MEDIC

- Follow General Prehospital Care Protocol
- Basic airway management
- Place on cardiac monitor and 12-lead ECG
- Place $EtCO_2$

AEMT / MEDIC

- Vascular access
- Isotonic Crystalloid PRN titrated to SBP ≥ 90 mmHg or MAP ≥ 65

MEDIC

- Monitor and interpret ECG; *consider LBBB as the cause!*
- If a treatable cause is identified, move that treatment up in priority
- As necessary, Procedural Sedation
- **Ventricular Tachycardia**:
  - **Stable**: Amiodarone infusion
  - **Unstable**: Cardioversion with/without Amiodarone infusion
  - If refractory to Amiodarone, then give Lidocaine
- **If Torsade's:** Magnesium Sulfate & Defibrillate at maximum joules for Adult
- **If Hyperkalemia or Tricyclic OD:** consider Sodium Bicarbonate early
- If unstable or uncertain of etiology, consider:
  - Synchronize cardioversion at maximum Joules for Adult
  - For Pediatric Cardioversion 0.5 – 1.0 j/kg, repeat at 2 j/kg as needed
- 12-lead ECG post conversion

Consult Online Medical Control As Needed

Pediatric Dosing Chart		3 kg	4 kg	5 kg	6-7 kgs	8-9 kgs	10-11 kgs	12-14 kgs	15-18 kgs	19-23 kgs	24-29 kgs	30-36 kgs
		6.6 lbs	8.8 lbs	11 lbs	13-15 lbs	17-20 lbs	22-24 lbs	26-30 lbs	33-40 lbs	42-50 lbs	53-64 lbs	66-80 lbs
		in18.25-20.25	in20.25-21.5	in21.5-23.25	in23.25-26.25	in26.25-29.25	in29.25-33	in33-37.5	in37.5-42.5	in42.5-47.75	in47.75-51.25	in41.25-56.25
Synchronized Cardioversion	0.5 j	1	2	2	3	4	5	7	8	10	15	15
	1.0 j	3	4	5	6	8	10	15	15	20	30	30
	2.0 j	6	8	10	15	15	20	30	30	50	50	70

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- For witnessed / monitor ventricular tachycardia, try having patient cough while preparing other therapies.
- Slow wide complex, consider Hyperkalemia.
- Maximum dose of antiarrhythmic should be given before changing antiarrhythmic.
- Amiodarone: allow 10 minutes after each dose completed before next dose.
- Pediatric pads should be used in children < 10 kg or Broselow tape color purple.
- Consider a change of vector if initial Cardioversion is unsuccessful to anterior/posterior pad placement.

Sinus tachycardia may be misinterpreted as SVT or A-Fib. Sinus tachycardia rate > 150 bpm in the adult patient or > 180 in the pediatric patient may be seen in the septic patient.

Cardiac Arrest

Assessment

Pediatric Pearls:

Use Broselow tape for every resuscitation
Respiratory arrest is most likely cause, address this first.
Focus on rapid and early BLS airway and ventilation tools.
Intubation may not be the best option for these patients.
Pediatric pads should be used in children < 10 Kg

Signs & Symptoms:

Unresponsive
Abnormal breathing (gasps)
Pulseless
Absent heart sounds
Obvious death

Differential:

Respiratory failure
Airway obstruction
Hyperkalemia
Hypovolemia
Trauma
Tension pneumothorax
Hypothermia
Toxins or Overdose
Hypoglycemia
Acidosis
Acute MI or PE

Pediatric Dosing Chart		3 kg	4 kg	5 kg	6-7 kgs	8-9 kgs	10-11 kgs	12-14 kgs	15-18 kgs	19-23 kgs	24-29 kgs	30-36 kgs
		6.6 lbs	8.8 lbs	11 lbs	13-15 lbs	17-20 lbs	22-24 lbs	26-30 lbs	33-40 lbs	42-50 lbs	53-64 lbs	66-80 lbs
		in18.25-20.25	in20.25-21.5	in21.5-23.25	in23.25-26.25	in26.25-29.25	in29.25-33	in33-37.5	in37.5-42.5	in42.5-47.75	in47.75-51.25	in41.25-56.25
Synchronized	0.5 j	1	2	2	3	4	5	7	8	10	15	15
Cardioversion	1.0 j	3	4	5	6	8	10	15	15	20	30	30
Sync or Defib	2.0 j	6	8	10	15	15	20	30	30	50	50	70
Defibrilation	4.0 j	10	15	20	30	30	50	50	70	85	100	120

Clinical Management Options

EMT AEMT MEDIC

- Follow General Prehospital Care Protocol
- Refer to Imminent Care Delivery Protocol
- Assess for unresponsiveness, absence of normal breathing, and pulselessness
- Assess for obvious death criteria
- Begin Pit Crew CPR
- BLS Airway Management and BVM with Oxygen as available
- Passive oxygenation with nasal cannula at 25 LPM
- Place $ETCO_2$ monitor
  - If ETCO2 is <10mmhg, improve CPR quality & confirm airway ventilation
- Utilize AED if no paramedic on-scene
- See Termination of Resuscitation, or quick reference below, if applicable

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- Vascular access via IV/IO; humeral->femoral->tibial IO preference order
- Advanced Airway placement as needed (intubation is not required if supraglottic airway device is functioning appropriately with continuous waveform capnography on paramedic interpretation)
- Epinephrine
  - If refractory, consider Amiodarone, if still refractory consider Lidocaine
- If Torsades de Points or polymorphic pVT, then Magnesium Sulfate
- Fluid bolus with Isotonic Fluids as needed
- If treatable cause is identified, move that treatment up in priority

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- Monitor and interpret ECG
- Manual Defibrillation for pVT or VF
  - Adult: Maximum Joules
  - Pediatric: Initial 2 joules/kg then repeat 4 joules/kg
- For refractory VF, use Double Sequential Defibrillation at maximum Joules for Adults
- If ROSC, then use Post-Resuscitation Reference.

- If patient is Hyperthermic (Temp >37.5^{0}C or 99.5^{0}F), initiate cooling measures

Reversible Cause Treatments (With A Pulse)

EMT / AEMT / MEDIC

- Hypoxia:
  - Adult & Pediatric - Airway Management and Oxygen
- Hypothermia:
  - Adult & Pediatric - Active warming strategies

AEMT / MEDIC

- Hypovolemia:
  - Adult & Pediatric - Fluid bolus with Isotonic Solution as needed
- Hypoglycemia:
  - Adult & Pediatric - Dextrose infusion
- Calcium Channel / Beta Blocker Overdose
  - Adult & Pediatric - Glucagon
- Anaphylaxis:
  - Adult & Pediatric - Epinephrine

MEDIC

- Calcium Channel / Beta Blocker Overdose
  - Pediatric – Epinephrine infusion
- Tension Pneumothorax:
  - Adult & Pediatric - Needle Decompression
- Acidosis:
  - Adult & Pediatric - Sodium Bicarbonate
- Hyperkalemia
  - Adult – Calcium Chloride, Sodium Bicarbonate, and Albuterol
  - Pediatric – Sodium Bicarbonate
- Calcium Channel / Beta Blocker Overdose
  - Adult – Calcium Chloride

Consult Online Medical Control as Needed

Termination of Resuscitation for Cardiac Arrest

Only if all the Inclusion and Exclusion criteria below are satisfied may the EMS Provider contact OLMC for orders to terminate resuscitation.

1. Inclusion Criteria:
   a. Resuscitation efforts have been ongoing for >30 minutes;
      i. At the discretion of the on-scene EMS Provider, OLMC may be contacted prior to 30 minutes for early termination.
   b. Adequate CPR has been administered;
   c. Airway has been successfully managed with verification of device placement;
      i. Acceptable airway devices include supraglottic's, endotracheal intubation, or cricothyrotomy.

   d. IV and/or IO access has been achieved;
   e. Appropriate medications and defibrillations have been administered according to the current Clinical Guidelines;
   f. All on-scene providers agree with the decision to cease efforts;
   g. Ultrasound use, when available, confirms the absence of cardiac motion.
2. Exclusion Criteria (if any present, must immediately transport patient):
   a. Presence of a "shockable rhythm" (ventricular fibrillation and/or pulseless tachycardia) at any point in time or Rhythm of PEA with rate of >40
   b. ROSC at any time during the resuscitation
   c. Cause of arrest is due to suspected hypothermia
   d. Pregnancy
   e. Ultrasound, if available, demonstrates cardiac motion.

Obvious Signs of Death – Criteria to Discontinue Resuscitation

Resuscitation efforts should not be initiated or continued by an EMS Provider if they patient is pulseless and apneic, and one or more of the following is present.

1. Any below signs of obvious death:
   a. Traumatic arrest while entrapped
   b. Unwitnessed traumatic arrest without organized electrical activity (asystolic or PEA with rate <40)
   c. Rigor mortis and/or dependent lividity
   d. Decomposition
   e. Decapitation or obvious traumatic brain matter extrusion
   f. Incinerated or frozen body
   g. Submersion greater than 1 hour documented by the EMS Provider after scene arrival
   h. Fetal death with a fetus <20 weeks by best dating/age determination available at scene.
   i. In cases of mass casualty incidents, where the number of patients exceeds the providers and resources to care for them, any patient who is pulseless and apneic may be triaged as deceased

Pearls:

- Respiratory arrest is a common cause of pediatric cardiac arrest. Unlike adult's early oxygenation and ventilation is critical.
  - In most cases pediatric airways can be managed by basic interventions.
- Providers should not hasten departure after obtaining ROSC. Instead, focus on stabilizing the patient and ensuring that the airway is appropriately managed. If rearrest occurs, it will be in the first few minutes.
- Effective CPR is critical: 1) Push hard and fast at appropriate rate 2) Ensure full chest recoil 3) Minimize interruptions in CPR. Pause CPR< 10 seconds only.
- Effective CPR and prompt defibrillation are the keys to successful resuscitation.
- Prolonged cardiac arrests may lead to tired providers and decreased compression quality. Ensure compressor rotation, summon additional resources as needed, and ensure provider rest and rehab during and post-event.
- Always quickly confirm asystole in more than one lead.
- Trouble shoot for Equipment settings/ problems
- EMT and AEMT may only use automated defibrillation (AED).

- Reassess and document ETT/Supraglottic placement continuously after every move and at transfer of patient care.
- Continuous ETCO2 should be initiated as soon as practicable.
- Calcium and sodium bicarbonate should be given early if hyperkalemia is suspected (renal failure, dialysis)
- Adult treatment priorities: uninterrupted compressions, defibrillation, ventilation, then IV/IO and airway management if needed.
- Polymorphic VT (Torsades) may benefit from Magnesium Sulfate.
- Prior to any external shocks providers should verify that defibrillation pads are well-adhered to the patient and that they do not touch.
- Continue to use primary monitor for all event recording and data capture.
- Once criteria for DSED are met subsequent shocks should be delivered as DSED
- If available, use Ultrasound to determine cardiac wall motion at pulse check; DO NOT interrupt compressions for ultrasound.

Cardiac - Implanted LVAD

Assessment

Pediatric Pearls:

Use pediatric for a patient <37 kg and as defined by the Broselow Tape.
Focus on rapid and early BLS airway and ventilation.
Intubation may not be the best option for these patients.
Pediatric pads should be used in children < 10 Kg or Broselow tape color purple.

Signs & Symptoms:

HR < 60 min with hypotension
Acute altered LOC
CHF
Seizure, syncope or shock secondary to bradycardia.
Altered LOC
Shock / Hypotension
Syncope

Differential:

Respiratory obstruction
Beta blocker / Digoxin
Calcium Channel Blocker
Organophosphate
Hypovolemia
Hypothermia
Hypoxia
Infection / Sepsis
Medication or Toxin
Trauma
Arrhythmia / Acute MI

Clinical Management Options

EMT / AEMT / MEDIC

- Follow General Prehospital Care Protocol
- Basic airway management
- If pediatric and HR <60 with poor perfusion despite oxygenation & ventilation, begin Pit Crew CPR
- Place 4 lead and 12-Lead ECG
- Place waveform $EtCO_2$

AEMT / MEDIC

- Vascular access
- Isotonic Fluids PRN titrated to SBP ≥ 90 mmHg or MAP ≥ 65
- Glucagon in setting of Beta Blocker OD or Calcium Channel Blocker OD

MEDIC

- Monitor and interpret ECG
- Advanced airway management as needed
- Atropine
- Transcutaneous Cardiac Pacing
  - Consider sedation as necessary: Midazolam
- If Adult: Dopamine or Epinephrine infusion titrated to MAP ≥ 65
- If Pediatric: Epinephrine infusion titrated to patient presentation

Consult Online Medical Control As Needed

Pearls: Amerimed EMS protocols for LVAD patients follow a structured approach: rapid identification of the device, targeted assessment, avoidance of standard pulse/BP methods, and transport to a facility capable of LVAD care

1. Recognition and Initial Actions
   - Identify the LVAD: Look for the implanted pump, driveline, and external control unit (battery, monitor)
   - Do not attempt standard pulse or Korotkoff BP readings — LVADs are non-pulsatile and mask heart sounds
   - Contact the patient's VAD coordinator or family for device model, settings, and recent issues
   - Check for alarms on the control unit and note any malfunction indicators
2. Assessment
   - Perfusion status: Assess skin color, temperature, capillary refill, and level of consciousness

- Mean Arterial Pressure (MAP): Target 70–90 mmHg; obtain via non-invasive or invasive monitoring if available
- Device sounds: Constant high-pitched whirring is normal; "ice in a blender" crackles suggest thrombus.
- No palpable pulse: This is expected; document in the EMS report

3. Common Emergencies
   - Thromboembolism: Suspect if new crackles, hypotension, or device alarms.
   - Device malfunction: Check for alarms, driveline issues, or control unit errors
   - Cardiac arrest: Manage per ALS protocols; LVAD may not support spontaneous circulation.
4. Transport and Handoff
   - Transport to a facility with LVAD expertise — in Georgia, this is typically a tertiary care center with cardiac surgery/ICU capability
   - Provide a concise handoff: Include device type, current settings, alarms, perfusion status, and any interventions

5. Amerimed EMS Context Key takeaway: In Amerimed EMS, LVAD patients are managed with a focus on perfusion, device status, and avoiding standard pulse/BP methods, with rapid transport to an LVAD-capable facility

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- The use of lidocaine or amiodarone in heart block can worsen bradycardia and lead to asystole and death.
- Treatment of bradycardia is based on presence of symptoms. If asymptomatic, monitor only.
- The use of atropine for bradycardia in the presence of an MI may worsen ischemia.
- Consider treatable causes for bradycardia (Beta blocker OD, Calcium channel blocker OD, etc.) – treat appropriately.
- Assure patients are adequately oxygenated.
- If wide complex bradycardia, consider hyperkalemia.
- Glucagon = Emesis

Crush Injury

Assessment

Pediatric Pearls:	Signs & Symptoms:	Differential:
Use Broselow Tape as necessary	Compartment Syndrome: Pain on passive stretch, Paresthesia, Paralysis, Pallor, Pulselessness Hypoperfusion Hypotension	Skin irritant exposure Dust concentrations in airway Hypo/Hyperthermia Hyperkalemia Dehydration Additional trauma

Clinical Management Options

EMT / AEMT / MEDIC

- Confined space treatment should be done only by appropriately trained personnel.
- Air quality monitoring should be conducted and documented prior to entry into confined space. Continuous air quality monitoring must be maintained once contact is made with victim and when any rescuer is in a confined space. Document air quality measurement at patient location on PCR.
- Remove rings, bracelets, and other constricting items
- N95 mask PRN for dust environment
- Consider placing a loose tourniquet on the crushed extremity, if possible, and if an arrythmia develops then deploy/tighten tourniquet.
- Follow General Prehospital Care Protocol

AEMT / MEDIC

- Vascular access at 1.5 L/hr of Isotonic Fluids during extrication. If adequate hemodynamics, then reduce to 500 mL/hr.
- Continuous $ETCO_2$ and ECG monitoring once practical.

MEDIC

- If cardiac arrest, then treat for *Hyperkalemia* with both Calcium Chloride and Sodium Bicarbonate in conjunction with cardiac arrest guidelines.
- Push Sodium Bicarbonate immediately prior to release
- Add Sodium Bicarbonate to each liter of Isotonic Crystalloid
- Pain Management:
  - If MAP $\geq$ 65 and no respiratory failure, then Fentanyl for pain

Consult Online Medical Control As Needed

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- Hydration should begin prior to extrication whenever possible. Large volume resuscitation prior to removal of the crush object and extrication is critical to preventing secondary renal failure and death.
- Crush injury is usually seen with compression of 4-6 hrs. but may occur in as little as 20 min.
- If possible, monitor patient for signs of compartment syndrome.
- Crush injury victims can 3rd space > 12L in the first 48 hours.
- Elderly patients should be monitored closely for volume overload but do NOT withhold fluids unless clinical signs/symptoms of volume overload.
- The larger the mass crushed (ie more limbs) the greater the likelihood of severe rhabdomyolysis and renal failure.

- Crush injury may cause profound electrolyte disturbances resulting in dysrhythmias. Monitor as soon as practically possible.
- Do not overlook treatment of additional injuries, airway compromise, hypothermia/ hyperthermia.
- ETCO2 if multiple doses of Narcotic Medication administered.

Dive (SCUBA) Injury/Accident

Assessment

Pediatric Pearls:

Use pediatric dosing for a pediatric patient <37 kg and as defined by the Broselow Tape.

Pediatric hypotension is defined as SBP < 70 + (age in years x 2) mmHg

If the patient does not fit on the tape, then they are considered to be an adult.

Signs & Symptoms:

Location
Onset
Precipitating Event(s)
Quality
Radiation
Severity
Time/Duration
Aggravating/Alleviating
Associated Symptoms
Prior history of same/similar

Differential:

Vascular
Infectious/Inflammatory
Trauma/Toxins
Autoimmune
Metabolic
Idiopathic
Neoplastic
Congenital

Clinical Management Options

EMT / AEMT / MEDIC

1. Rapid assessment and management of life-threatening injuries
2. Rescue from the water-based environment
3. Transport patients suffering from self-contained underwater breathing apparatus (SCUBA) diving injury/illness for hospital evaluation and consideration of repressurization/hyperbaric oxygen therapy (HBOT)
4. History should include circumstances leading to the complaint, details of mechanism of injury, time under water, depth of dive, compliance with dive tables/decompression stops, gas mixture used, and water temperature (if available)
5. Be alert for signs of barotrauma (pulmonary barotrauma, arterial gas embolism, pneumothorax, pneumomediastinum, ear/sinus/dental barotrauma, dysrhythmias, skin mottling or erythema, neurologic signs and symptoms etc.) and/or decompression sickness (joint pain, mental status change, other neurologic symptoms including paralysis) or nitrogen narcosis (confusion, intoxication).
6. Assess for other associated injury such as injury to the head or spine (if mechanism and symptoms suggest), marine envenomation, hypothermia, or other injury

AEMT / MEDIC

1. If a SCUBA accident includes associated drowning/near-drowning [See Drowning Guideline]
2. Manage airway as indicated and provide 100% oxygen
3. If air embolism suspected, place in left lateral recumbent position (patient lying with the left side down, knees drawn upward, and flat) a. Trendelenburg position is sometimes recommended to help trap the air in the dependent right ventricle, and may be useful if a central venous catheter is being used to withdraw the air, but this position may increase cerebral edema
4. Monitor vital signs including oxygen saturations and cardiac rhythm (if possible)
5. Administer oxygen as appropriate with a target of achieving 94–98% saturation
a. Use positive pressure ventilation (e.g., CPAP) carefully in patients for whom pulmonary barotrauma is a consideration [See Airway Management Guideline] and if signs or symptoms of tension pneumothorax are present perform needle decompression

6. Patients with symptoms suspicious for decompression illness, should be placed on supplemental oxygen regardless of saturations to enhance washout of inert gasses
7. Assess for hypothermia, treat per Hypothermia/Cold Exposure Guideline
8. Consider contacting medical direction and discussing need for hyperbaric treatment and primary transport to facility with hyperbaric oxygen therapy (HBOT) capability — include discussion regarding factors such as submersion time, greatest depth achieved, ascent rate, and gas mix
9. Establish IV access
10. Fluid bolus as indicated

- Obtain blood glucose level as appropriate
- Patients may be referred to a BLS transporting agency in accordance with the Transport Decision Process; if pre-established within the regional EMS system.

Consult Online Medical Control As Needed

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.

1. Rescue efforts should be coordinated between all responding agencies to ensure that the patient is rapidly accessed and safely removed from the water if diver unable to do so themselves
2. If air medical transport is necessary, the patient should be transported with the cabin pressurized to lowest possible altitude. If an unpressurized aircraft is used (i.e., most helicopter emergency medical services (HEMS)), patient should be flown at the lowest safe altitude possible
3. Decompression illness may have a variety of presentations depending on system affected (e.g., skin, joint(s), pulmonary, neurologic)
4. SCUBA accidents/incidents can result in a variety of issues, including barotrauma, air embolism and decompression illness
5. Decompression illness may have a variety of presentations depending on system affected (e.g., skin, joint(s), pulmonary, neurologic), and can occur even when a diver does not exceed dive table limits
6. Do not attempt to disassemble, turn off, or modify any of the dive equipment. The dive computer may provide a clue about the patient's exposure to depth

Drowning

Assessment

Pediatric Pearls:

Use pediatric dosing for a pediatric patient <37 kg and as defined by the Broselow Tape.

Pediatric hypotension is defined as SBP < 70 + (age in years x 2) mmHg

If the patient does not fit on the tape, then they are considered to be an adult.

Signs & Symptoms:

Location
Onset
Precipitating Event(s)
Quality
Radiation
Severity
Time/Duration
Aggravating/Alleviating
Associated Symptoms
Prior history of same/similar

Differential:

Vascular
Infectious/Inflammatory
Trauma/Toxins
Autoimmune
Metabolic
Idiopathic
Neoplastic
Congenital

Clinical Management Options

EMT / AEMT / MEDIC

- Demonstrate professionalism and courtesy; Scene/Crew Safety/PPE; with appropriate and fully-stocked equipment
- Use close looped communication and crew resource management with all on scene providers
- 1. Rapid assessment and management of life-threatening injuries
- 2. Rescue from the water-based environment
- 3. Transport patients suffering from drowning for
- Obtain vital signs: BP, pulse rate, respiratory rate, and body temperature
- Oxygen as needed to maintain SpO_2 92 – 96% or as indicated by signs of hypoxia
- Perform medication cross check for all medication administrations
- Place and monitor $EtCO_2$ as indicated
- 12 lead ECG acquisition and 4 lead ECG placement

AEMT / MEDIC

- IV/IO Access as necessary for patient condition
- Monitor and interpret ECG
- Obtain blood glucose level as appropriate

MEDIC

- Use Ultrasound for specific conditions as indicated, available, and credentialed
- Patients may be referred to a BLS transporting agency in accordance with the Transport Decision Process; if pre-established within the regional EMS system.

Consult Online Medical Control As Needed

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- Minimum exam for all patients includes vital signs, mental status including GCS, location of injury or complaint, and pain scale.
- Maintain all appropriate medications and procedures that have been initiated at the referral agency or institution.
-

1. The World Health Organization definition of drowning is " the process of experiencing respiratory impairment from submersion/immersion in liquid"
2. Drowning is further defined in the following categories:

a. Non-fatal drowning: patients rescued from drowning
b. Fatal drowning: any death, acutely or sub acutely, resulting from drowning

3. Submersion refers to situations in which the patient's airway is underwater. Immersion refers to situations in which the patient's body is in water, but the patient's airway remains out of the water
4. Pediatric Considerations:
a. Drowning is a common cause of death in children
b. Risk factors for drowning include male gender, age less than 14 years old, alcohol use, lack of supervision, and risky behavior
5. Rescue efforts should be coordinated between all responding agencies to ensure patient is rapidly accessed and removed from the water
6. Initiation of in-water ventilations may increase survival. In-water chest compressions are futile
7. The European Resuscitation Council recommends five initial breaths be provided to the drowning victim
a. The initial ventilations may be more difficult to achieve as water in the airways may impede alveolar expansion
b. If cardiac arrest after 5 rescue breaths, refer to Cardiac Arrest Guideline. Active efforts to expel water from the airway (by abdominal thrusts or other means) should be avoided as they delay resuscitative efforts and increase the potential for vomiting and aspiration
9. Long-standing teaching has suggested that rescuers should always assume c-spine injury in victims of drowning
a. The 2010 American Heart Association update on special circumstances in cardiac arrest notes that routine c-spine precautions in all victims of drowning is likely unnecessary unless the mechanism or injury, history, or physical exam suggests a cervical spine injury
b. Mechanisms of injury highly suggestive of cervical spine injury include diving, water skiing, surfing, or watercraft accidents
10. Uncertainty exists regarding survival in cold water drowning; however, recent literature suggests the following:
a. If water temperature is less than 43°F (6°C) and the patient is submerged with evidence of cardiac arrest:
i. Survival is possible for submersion time less than 90 minutes and resuscitative efforts should be initiated
ii. Survival is not likely for submersion time greater than 90 minutes and clinicians may consider not initiating resuscitation or termination of resuscitation on scene
b. If water temperature is greater than 43°F (6°C) and the patient is submerged with evidence of cardiac arrest:
i. Survival is possible for submersion time less than 30 minutes and resuscitative efforts should be initiated
ii. Survival is not likely for submersion time greater than 30 minutes and clinicians may consider not initiating resuscitation or termination of resuscitation on scene
11. Patients may develop subacute respiratory difficulty after drowning and therefore all victims of drowning should be transported for observation
12. Decompression illness may have a variety of presentations depending on system affected (e.g., skin, joint(s), pulmonary, neurologic), and can occur even when a diver does not exceed dive table limits

Electrical Injury

Assessment

Pediatric Pearls:

Use pediatric dosing for a pediatric patient <37 kg and as defined by the Broselow Tape.
Pediatric hypotension is defined as SBP < 70 + (age in years x 2) mmHg

Signs & Symptoms:

Mental status changes
Extremity pain or sensory abnormality
Bradycardia
Hypotension or shock

Differential:

Metabolic disorder (hypoglycemia, hypothyroidism)
Toxins
Environmental exposure
Shock
Sepsis

Clinical Management Options

EMT / AEMT / MEDIC

- Follow General Prehospital Care Protocol
- 1. Verify scene is secure. The electrical source must be disabled prior to assessment
- 2. Perform primary survey with specific focus on dysrhythmias or cardiac arrest—apply a continuous cardiac monitor and obtain 12-lead EKG as soon as feasible
- 3. Identify all sites of burn injury. If the patient became part of the circuit, there will be an additional site near the contact with ground. Electrical burns are often full thickness and involve significant deep tissue damage, and there may be multiple burn sites
- 4. Assess for potential associated trauma and note if the patient was thrown from contact point. If patient has altered mental status, assume trauma was involved and treat accordingly
- 5. Assess for potential compartment syndrome from significant extremity tissue damage
- 6. Determine characteristics of source if possible (AC or DC, voltage, amperage, time of injury)
- Place 12-lead ECG
- Place $ETCO_2$

AEMT / MEDIC

- IV/IO Access as necessary
- BGL assessment
- Increase temperature of transport compartment
- Monitor ECG
- If in arrest, perform up to 3 defibrillations for shockable rhythms, also withhold epinephrine until core temperature is ≥30C

MEDIC

1. Identify dysrhythmias or cardiac arrest — even patients who appear dead (particularly dilated pupils) may have good outcomes with prompt intervention [see appropriate guideline for additional information and patient assessment/treatment]
2. Apply spinal motion restriction if associated trauma suspected [See Trauma Section]
3. Apply dry dressing to any wounds
4. Remove constricting clothing and jewelry since additional swelling is possible
5. Administer IV fluid resuscitation. Remember that external appearance will underestimate the degree of tissue injury but that electrical injuries do not generally require as much fluid as thermal burn injuries

6. Electrical injuries may be associated with significant pain, treat per Pain Management Guideline
7. Electrical injury patients should be taken to a burn center whenever possible since these injuries can involve considerable tissue damage
8. When there is significant associated trauma, this takes priority, if local trauma resources and burn resources are not in the same facility

- Advanced Airway Management as needed

Consult Online Medical Control As Needed

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.

1. Electrical current causes injury through three main mechanisms: a. Direct tissue damage, altering cell membrane resting potential, and eliciting tetany in skeletal and/or cardiac muscles
b. Conversion of electrical energy into thermal energy, causing massive tissue destruction and coagulative necrosis, Mechanical injury with direct trauma resulting from falls or violent muscle contraction
2. Anticipate atrial and/or ventricular dysrhythmias as well as cardiac arrest
3. The mortality related to electrical injuries is impacted by several factors: a. Route current takes through the body- current traversing the heart has higher mortality
b. Type of current (AC vs. DC) i. AC is more likely to cause cardiac dysrhythmias while DC is more likely to cause deep tissue burns however either type of current can cause any injury
ii. DC typically causes one muscle contraction while AC can cause repeated contractions
iii. Both types of current can cause involuntary muscle contractions that do not allow the victim to let go of the electrical source
iv. AC is more likely to cause ventricular fibrillation while DC is more likely to cause asystole
c. The amount of current impacts mortality more than the voltage

Current level (Milliamperes)	Probable Effect on Human Body of 120 V, 60 Hz AC for 1 second
1mA	Perception level. Slight tingling sensation. Still dangerous if wet conditions.
5mA	Slight shock felt; not painful but disturbing. Average individual can let go. However, strong involuntary reactions to shocks in this range may lead to injuries.
6mA–16mA	Painful shock, begin to lose muscular control. Commonly referred to as the freezing current or "let-go" range.
17mA–99mA	Extreme pain, respiratory arrest, severe muscular contractions. Individual cannot let go. Death is possible.
100mA–2000mA	Ventricular fibrillation (uneven, uncoordinated pumping of the heart). Muscular contraction and nerve damage begins to occur. Death is likely.
> 2,000mA	Cardiac arrest, internal organ damage, and severe burns. Death is probable.

Source: *https://www.osha.gov/SLTC/etools/construction/electrica!_incidents/eleccurrent.html*

Electrical Conducted Weapon Injury (i.e., TASER®)

Assessment		
Pediatric Pearls:	**Signs & Symptoms:**	**Differential:**

Use pediatric dosing for a pediatric patient <37 kg and as defined by the Broselow Tape. Pediatric hypotension is defined as SBP < 70 + (age in years x 2) mmHg	Once patient has been appropriately secured or restrained with assistance of law enforcement, perform primary and secondary assessment	Metabolic disorder (hypoglycemia, hypothyroidism) Toxins Environmental exposure Shock Sepsis

Clinical Management Options

EMT / AEMT / MEDIC

- Follow General Prehospital Care Protocol

1. Manage the condition that triggered the application of the conducted electrical weapon with special attention to patients meeting criterion for delirium with agitated behavior [See Agitated or Violent Patient/Behavioral Emergency Guideline]
2. Ensure patient is appropriately secured or restrained with assistance of law enforcement to protect the patient and clinicians [See Agitated or Violent Patient/Behavioral Emergency Guideline]
3. Perform comprehensive trauma and medical assessment for injuries (e.g., from falls or altercations or concomitant medical issues)
4. If discharged from a distance, up to two single barbed darts (13 mm length) should be located a. Do not remove barbed dart from sensitive areas (head, neck, hands, feet, or genitals) \\
5. Evaluate patient for evidence of delirium with agitated behavior manifested by varied combination of agitation, reduced pain sensitivity, elevated temperature, persistent struggling, or hallucinosis
6. Thoroughly assess the patient for trauma as the patient may have fallen from standing or higher
7.. Ascertain if more than one TASER® cartridge was used (by one or more officers, in effort to identify total number of possible darts and contacts)

- Place 12-lead ECG
- Place $ETCO_2$

AEMT / MEDIC

- IV/IO Access as necessary
- BGL assessment
- Monitor ECG
- Advanced Airway Management as needed

MEDIC

1. Make sure patient is appropriately secured with assistance of law enforcement to protect the patient and staff. Consider psychologic management medications if patient struggling against physical devices and may harm themselves or others
2. Some EMS agencies treat all barbed darts as a foreign body and leave them for physician removal while others allow EMS or law enforcement to remove barbed darts except for sensitive areas (head, neck, hands, feet, or genitals). Follow local protocols, including those of law enforcement for evidence collection and retention.
3. Treat medical and traumatic injury

Consult Online Medical Control As Needed

Pearls:

Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
1. Conducted electrical weapon can be discharged in three fashions: a. Direct contact without the use of the darts
b. A single dart with addition contact by direct contact of weapon
c. From a distance up to 35 feet with two darts
2. The device delivers 19 pulses per second with an average current per pulse of 2.1 milliamps which, in combination with toxins/drugs, patient's underlying diseases, excessive physical exertion, and trauma, may precipitate arrhythmias. Thus, consider cardiac monitoring and 12-lead EKG assessment
3. Drive Stun is a direct weapon two-point contact which is designed to generate pain and not incapacitate the subject. Only local muscle groups are stimulated with the Drive Stun technique

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General Prehospital Care

Assessment		
Pediatric Pearls:	**Signs & Symptoms:**	**Differential:**

Use pediatric dosing for a pediatric patient <37 kg and as defined by the Broselow Tape.
Pediatric hypotension is defined as SBP < 70 + (age in years x 2) mmHg
If the patient does not fit on the tape, then they are considered to be an adult.

Location
Onset
Precipitating Event(s)
Quality
Radiation
Severity
Time/Duration
Aggravating/Alleviating
Associated Symptoms
Prior history of same/similar

Vascular
Infectious/Inflammatory
Trauma/Toxins
Autoimmune
Metabolic
Idiopathic
Neoplastic
Congenital

Clinical Management Options	
EMT AEMT MEDIC	Demonstrate professionalism and courtesy; Scene/Crew Safety/PPE; with appropriate and fully-stocked equipment
EMT AEMT MEDIC	Use close looped communication and crew resource management with all on scene providers
EMT AEMT MEDIC	Perform an initial assessment and physical exam
EMT AEMT MEDIC	Consider 3-lead ECG monitoring (cardiac monitor)
EMT AEMT MEDIC	Obtain vital signs: BP, pulse rate, respiratory rate, and body temperature
EMT AEMT MEDIC	Oxygen as needed to maintain SpO_2 92 – 96% or as indicated by signs of hypoxia
EMT AEMT MEDIC	Perform medication cross check for all medication administrations
EMT AEMT MEDIC	Place and monitor $EtCO_2$ as indicated
EMT AEMT MEDIC	12 lead ECG acquisition and 4 lead ECG placement
AEMT MEDIC	IV/IO Access as necessary for patient condition
AEMT MEDIC	Monitor and interpret ECG
AEMT MEDIC	Obtain blood glucose level as appropriate
MEDIC	Use Ultrasound for specific conditions as indicated, available, and credentialed
MEDIC	Patients may be referred to a BLS transporting agency in accordance with the Transport Decision Process; if pre-established within the regional EMS system.

Consult Online Medical Control As Needed

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- Minimum exam for all patients includes vital signs, mental status including GCS, location of injury or complaint, and pain scale.
- Maintain all appropriate medications and procedures that have been initiated at the referral agency or institution.

Hyperthermia

Assessment		
Pediatric Pearls:	**Signs & Symptoms:**	**Differential:**

Use pediatric dosing for a pediatric patient <37 kg and as defined by the Broselow Tape. Pediatric hypotension is defined as SBP < 70 + (age in years x 2) mmHg

Weakness
Nausea & vomiting
Cramping
Syncope
Diaphoresis & anhidrosis
Altered Mental Status
Bizarre behavior
Hypotension
Tachycardia

CVA
Dehydration
Encephalopathy
Meningitis / Sepsis
Head Trauma
Overdose / Toxin
Hypoglycemia
Excited delirium
Alcohol withdrawal

Clinical Management Options

EMT
- Follow General Prehospital Care Protocol
- Age-appropriate core body temperature assessment
- Move to shaded/cool environment, discontinue physical activity, PO fluids if tolerated
- Consider activating a Stroke Alert if focal neurologic deficits are also found
- If AMS and/or body temperature > 102.2 F, then active cooling measures per patient condition:
  - Ice packs to neck, axilla and groin, wet patient, and increased airflow
- If body temperature ≥105.8 F, then cold water immersion if immediately available

AEMT
- Vascular access
- BGL assessment
- Infuse Isotonic Fluids titrated to effect
- Ondansetron if nauseated
- If Altered Mental Status, then may infuse cold Isotonic Fluids if available up to 30 mL/kg or titrated to effect

MEDIC
- If shivering develops, Midazolam for sedation
- Advanced Airway Management as needed

Consult Online Medical Control As Needed

Pearls:

- Signs of improvement to help titrate to effect include: improved heart rate, decrease body temperature, resolution of thirst, feeling the need to urinate and/or increased urination, improvement in mental status, improvement in skin conditions, etc.
- If increased temperature, utilize passive cooling by removing excessive clothing or covers.
- NSAIDS should not be used in the setting of environmental heat emergencies.
- Exertional heat stroke should be suspected in anyone with a history of recent exertion and bizarre behavior, seizure, or syncope.
- Any AMS should have blood glucose performed.
- Cold water immersion is the most effective means of cooling.
- Active cooling should be removed when body temperature reaches 102.2 F.

Hypothermia & Frostbite

Assessment

Pediatric Pearls:	**Signs & Symptoms:**	**Differential:**

Use pediatric dosing for a pediatric patient <37 kg and as defined by the Broselow Tape. Pediatric hypotension is defined as SBP < 70 + (age in years x 2) mmHg	Cold, clammy Shivering Mental status changes Extremity pain or sensory abnormality Bradycardia Hypotension or shock	Metabolic disorder (hypoglycemia, hypothyroidism) Toxins Environmental exposure Shock Sepsis

Clinical Management Options			
EMT	AEMT	MEDIC	Follow General Prehospital Care Protocol
			Assess Core Temperature; consider Cardiac Arrest protocol if applicable
			Temperature less than 95 F (<35 C): Remove wet clothing, blankets as needed
			Handle very gently if <88 F (<30 C)
			Use heat packs
			Place 12-lead ECG
			Place $ETCO_2$
			IV/IO Access as necessary
			BGL assessment
			Increase temperature of transport compartment
			Monitor ECG
			If in arrest, perform up to 3 defibrillations for shockable rhythms, also withhold epinephrine until core temperature is ≥30C
		•	Warmed IV Isotonic Fluids, if available
		•	Advanced Airway Management as needed

Consult Online Medical Control As Needed

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- Extremes of age are more susceptible (young and old)
- < 34 C (93.2 F), shivering may diminish at < 31 C (87.8 F) shivering may stop.
- With temperature less than 30 C (88 F) ventricular fibrillation is common cause of death. Handle patients gently to reduce the risk. Transport immediately for re-warming.
- If the temperature is unable to be measured, treat the patient based on the suspected temperature.
- Hypothermia may produce severe physiologic bradycardia. Do not treat unless profound hypotension unresponsive to fluids.
- Hypothermia:
  - Mild: 89.6 – 95 F (32 – 35 C)
  - Moderate: 82.4 – 89.6 F (28 – 32 C)
  - Severe: < 82.4 F (< 28 C)
- During warming, cold blood may re-enter central circulation causing a subsequent decrease in body temperature.

Lighting – Lightening Strike

Assessment		
Pediatric Pearls:	**Signs & Symptoms:**	**Differential:**

Use pediatric dosing for a pediatric patient <37 kg and as defined by the Broselow Tape.
Pediatric hypotension is defined as SBP < 70 + (age in years x 2) mmHg
If the patient does not fit on the tape, then they are considered to be an adult.

Location
Onset
Precipitating Event(s)
Quality
Radiation
Severity
Time/Duration
Aggravating/Alleviating
Associated Symptoms
Prior history of same/similar

Vascular
Infectious/Inflammatory
Trauma/Toxins
Autoimmune
Metabolic
Idiopathic
Neoplastic
Congenital

Clinical Management Options			
E M T	A E M T	M E D I	Demonstrate professionalism and courtesy; Scene/Crew Safety/PPE; with appropriate and fully stocked equipment
			Use close-looped communication and crew resource management with all on-scene providers. Rapid assessment of and management of life-threatening injuries
			1. Identify patient(s) as lightning strike victim(s)
			2. Move to safe area
			3. Initiate immediate resuscitation of cardiac arrest victim(s), within limits of mass casualty care, also known as "reverse triage"
			4. Cardiac monitoring during transport
			5. Treat associated traumatic injuries3. Transport patients suffering from drowning for
			Obtain vital signs: BP, pulse rate, respiratory rate, and body temperature
			Oxygen as needed to maintain SpO_2 92 – 96% or as indicated by signs of hypoxia
			Perform medication cross check for all medication administrations
			Place and monitor $EtCO_2$ as indicated
			12 lead ECG acquisition and 4 lead ECG placement
			IV/IO Access as necessary for patient condition
			Monitor and interpret ECG
			Obtain blood glucose level as appropriate
			1. Respiratory a. Apnea
			b. Agonal respirations
			c. Respiratory paralysis
			2. Cardiovascular a. Dysrhythmias
			b. Transient hypertension
			3. Neurologic a. Seizures
			b. Confusion
			c. Paralysis
			d. Paraplegia
			e. Vertigo/dizziness
			f. Paresthesias
			g. Amnesia
			h. Memory deficits
			i. Anxiety

- j. Fixed/dilated pupils possible (autonomic dysfunction)
- a. Ferning or fern-like superficial skin burn ("Lichtenberg figures")
- b. Vascular instability may result in cool, mottled extremities
- c. Frequent first and/or second-degree burns
- d. Third degree burns less common
- 4. Skin
- 5. Patient may be in full cardiopulmonary arrest or have only respiratory arrest, as injury is a result of DC current
- 6. May have stroke-like findings as a result of neurologic insult
- 7. May have secondary traumatic injury as a result of overpressurization, blast or missile injury
- 8. Fixed/dilated pupils may be a sign of neurologic insult, rather than a sign of death/impending death. Should not be used as a solitary, independent sign of death for the purpose of discontinuing resuscitation in this patient population

Consult Online Medical Control As Needed

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- Minimum exam for all patients includes vital signs, mental status including GCS, location of injury or complaint, and pain scale.
- Maintain all appropriate medications and procedures that have been initiated at the referral agency or institution.

1. Lightning strike cardiopulmonary arrest patients have a high rate of successful resuscitation, if initiated early, in contrast to general cardiac arrest statistics
2. There may be multiple victims
3. If multiple victims, cardiac arrest patients whose injury was witnessed or thought to be recent should be treated first and aggressively (reverse from traditional triage practices)

a. Patients suffering cardiac arrest from lightning strike initially suffer a combined cardiac and respiratory arrest

b. Return of spontaneous circulation may precede resolution of respiratory arrest

c. Patients may be successfully resuscitated if provided proper cardiac and respiratory support, highlighting the value of "reverse triage"

4. It may not be immediately apparent that the patient is a lightning strike victim
5. Injury pattern and secondary physical exam findings may be key in identifying patient as a victim of lightning strike
6. Lightning strike is a result of very high voltage, very short duration DC current exposure

Nausea & Vomiting

Assessment		
Pediatric Pearls:	**Signs & Symptoms:**	**Differential:**

Use pediatric dosing for a pediatric patient <37 kg and as defined by the Broselow Tape. Pediatric hypotension is defined as SBP < 70 + (age in years x 2) mmHg	Pain Constipation Diarrhea Anorexia Hematemesis	Diabetes/Hyperglycemia CNS (Increased ICP, headache, stroke, CNS lesions, Trauma or hemorrhage) Vestibular AMI Drugs/Toxic Infections (pneumonia, influenza) Electrolyte abnormalities Pregnancy

Clinical Management Options	
EMT AEMT MEDIC	Follow General Prehospital Care Protocol Inhaled (sniff) *Isopropyl Alcohol Wipe* to help control nausea. Identify cause Place ECC monitor
AEMT MEDIC	IV/IO Access as necessary BGL assessment ECG interpretation Adult: Diphenhydramine if patient allergic to Ondansetron **and** Metoclopramide Isotonic Fluids as needed
MEDIC	*Caution for all anti-emetic use if patient has Prolonged QT on ECG.* Adult & Pediatric: Ondansetron Adult: Metoclopramide and Diphenhydramine if N/V refractory to Ondansetron Hematemesis in Adult: Tranexamic acid (TXA) with confirmed upper and/or lower GI bleeding AND hypotension if <3 hours since bleeding onset Advanced Airway Management as needed

Consult Online Medical Control As Needed

Pearls:

- If patient is conscious, place alcohol wipe under patient's nose and allow them to breathe it in to help control nausea.
- Assess number of times of emesis
- Appearance of emesis: bloody, coffee ground, bilious +/- green bile.
- Heart rate: One of the first clinical signs of dehydration, almost always increased heart rate, tachycardia increases as dehydration becomes more severe, very unlikely to be significantly dehydrated if heart rate is close to normal.
- CAUTION: all antiemetics can cause Extrapyramidal Syndrome and **Prolonged QT syndrome**.

Neonatal and Newborn Care

Assessment		
Pediatric Pearls:	**Signs & Symptoms:**	**Differential:**

Due date and gestational age	Respiratory distress	Airway failure,
Multiple gestation (twins, etc.)	Normal peripheral cyanosis or mottling	Respiratory drive
Meconium	Abnormal central cyanosis	Infection
Delivery difficulties	Altered level of responsiveness	Maternal medication effect
Congenital disease	Bradycardia	Hypovolemia
Maternal medications		Hypoglycemia
Maternal risk factors:		Congenital heart disease
Substance misuse, Smoking		Hypothermia

Clinical Management Options			
EMT	AEMT	MEDIC	Follow General Prehospital Care Protocol
			See procedure reference Newborn Delivery and Labor Complications
			Wipe nose and mouth with sterile gauze
			Suction if meconium or airway obstruction
			Vigorously dry and stimulate infant
			Keep warm.
			APGAR Score @ 1 and 5 minutes
			If stable, allow to nurse and skin to skin contact for mother and baby
			If just after birth pulse is <100, BVM on "room air" for 30 seconds @ rate of 40-60 BPM
			If after initial ventilations pulse continues at < 60, Begin **CPR: 120 compressions with asynchronous ventilations at 30 per minute. Begin with room air and progress to Oxygen**
			If after initial ventilations pulse continues at 60–100, BVM only on "room air" add Oxygen as needed to increase SpO_2 if <95%
			If after initial ventilations pulse improves and maintains >100, monitor and reassess
	AEMT	MEDIC	Vascular access – if cardiac arrest of critical condition
			Isotonic Fluids titrated to perfusion (10-20cc/kg bolus)
			BGL heel stick
		MEDIC	Advanced Airway Management as needed
			Naloxone if mother received narcotics just prior or during childbirth and signs & symptoms of opioid overdose are present
			Dextrose infusion if BGL <40mg/dL

Consult Online Medical Control As Needed

Pearls:

- Non-vigorous infant: poor muscle tone, poor/absent respiration and heart rate < 100 bpm
- **If power suction is used, negative pressure must not exceed 100mmHg.**
- It is extremely important to keep infant warm
- Maternal sedation or narcotics will sedate infant (Naloxone effective but may precipitate seizures if given because of mother's addiction during pregnancy but, not if medications were given by EMS just prior to childbirth).

Hypoglycemia is not uncommon in preterm infants, use syringe for dextrose infusion.

Obstetrical Emergency

Assessment		
History:	**Signs & Symptoms:**	**Differential:**

Hypertension meds Due date or LMP If known high risk pregnancy Prenatal care Prior pregnancies / births Gravida / Para Consider in ANY female >8 years of age	Vaginal bleeding Abdominal pain Seizures Hypertension Severe headache Visual changes Edema of the hands and face	Pre-eclampsia/ Eclampsia Placenta previa Placenta abruptio Spontaneous abortion

Clinical Management Options	
EMT AEMT MEDIC	Follow General Prehospital Care Protocol, in addition to vital signs, ***determine contraction frequency and duration***
EMT AEMT MEDIC	If low BP, place patient in left lateral recumbent position (displaces weight off of IVC).
EMT AEMT MEDIC	Obtain full OB/GYN history and identify their OB care provider, if available
EMT AEMT MEDIC	Determine whether to transport or remain at scene due to imminent delivery o If patient is actively delivering (fetal parts visible or imminent), consider delivery on-scene if transport inhibits ability to provide emergent care.
EMT AEMT MEDIC	Consider appropriate destination if newborn requires NICU or specialty care – consult OLMC as necessary.
EMT AEMT MEDIC	See Procedure Newborn Delivery & Complications
EMT AEMT MEDIC	Place ECG monitor
AEMT MEDIC	Vascular access with Isotonic Fluids max 1L bolus; consider need for blood products if hypotension persists
MEDIC	Suspected Eclampsia: Magnesium Sulfate; any seizure in a patient who is pregnant in second trimester or later has Eclampsia until proven otherwise.
MEDIC	If seizure refractory to Magnesium Sulfate, refer to Seizure protocol.

Consult Online Medical Control as Needed

Pearls:

- **Eclamptic seizures may occur up to 2 months post-partum. Always consider in pregnant/recently pregnant seizing patient.**
- Severe headache, vision changes, edema, or RUQ pain may indicate preeclampsia.
- In the setting of pregnancy, hypertension is defined as a SBP greater than >140 or a DBP >90, or relative increase of 30 systolic and 20 diastolic from the patient's normal (pre-pregnancy) blood pressure.
- Ask patient to quantify bleeding - number of pads used per hour.
- Any pregnant patient involved in a MVC should be seen immediately by a physician for evaluation and fetal monitoring in a Trauma Center.
- Magnesium may cause hypotension and decreased respiratory drive, monitor closely.
- If > 20 weeks, consider left lateral position.
- Use Ultrasound, if available, for fetal heart tones and movement.

Obstetrical Labor & Childbirth

Assessment		
Pediatric Pearls:	**Signs & Symptoms:**	**Differential:**

Due date of LMP
Time contractions started & how often
Rupture membranes
Time/amount of any bleeding
Sensation of fetal activity
PMH & delivery history
Gravida / Para status
Medications
If known high risk pregnancy

Episodic pain
Vaginal discharge or bleeding
Crowning of urge to push
Meconium
Urge to defecate

Abnormal presentation:
- ○ Buttock ○ Foot ○ Hand
- Prolapsed cord
- Placenta previa
- Abruptio placenta
- Premature labor

Clinical Management Options	
EMT AEMT MEDIC	Follow General Prehospital Care Protocol When the newborn's mouth appears over the perineum, immediately bulb suction mouth then nose. If post-partum hemorrhage, then fundal massage and encourage infant to breast feed. See Procedure for Newborn Delivery and Labor Complications and APGAR Scoring If maternal hypotension, place in ***Left Lateral Decubitus position***.
AEMT MEDIC	IV/IO Access as necessary Vascular access with Isotonic Crystalloid titrated to effect for vaginal hemorrhage
MEDIC	• Tranexamic Acid for hypotension due to significant hemorrhage following delivery or delayed placenta delivery • Blood Product Transfusion and Calcium Chloride for severe postpartum hemorrhage, if available

Consult Online Medical Control As Needed

Pearls:

- If stable, skin to skin contact between mother and baby is very important for healthy development. Delay clamping of umbilical cord for 3-5 minutes.
- **Contact OLMC with all indicated Complications of Labor**
- Document all times (delivery, contraction frequency, and length). Record APGAR at 1 minute and 5 minutes after birth.
- If maternal seizures: refer to the Obstetrical Emergencies Guideline. Eclampsia can occur up to 2 months post-partum.
- After delivery, allowing child to nurse and massaging the uterus (lower abdomen) will promote uterine contraction and help to control postpartum bleeding.
- Post-partum hemorrhage defined as blood loss > 1000mL or > 500mL with signs/symptoms of hypotension. The perineum should be checked for bleeding from vaginal tears. Bleeding should be controlled by direct pressure over the laceration.
- The most common cause of post-partum hemorrhage is uterine atony due to prolonged labor, or multiple gestations

Obstetrical Emergency- Shoulder Dystocia – Prolapsed Umbilical Cord – Breach Presentation

Assessment		
History:	**Signs & Symptoms:**	**Differential:**

Hypertension meds	Vaginal bleeding	Pre-eclampsia/
Due date or LMP	Abdominal pain	Eclampsia
If known high risk pregnancy	Seizures	Placenta previa
Prenatal care	Hypertension	Placenta abruptio
Prior pregnancies / births	Severe headache	Spontaneous
Gravida / Para	Visual changes	abortion
Consider in ANY female >8 years of age	Edema of the hands and face	

Clinical Management Options	
EMT AEMT MEDIC	Follow General Prehospital Care Protocol, in addition to vital signs, ***determine contraction frequency and duration***
EMT AEMT MEDIC	If low BP, place patient in left lateral recumbent position (displaces weight off of IVC).
EMT AEMT MEDIC	Obtain full OB/GYN history and identify their OB care provider, if available
EMT AEMT MEDIC	Determine whether to transport or remain at scene due to imminent delivery o If patient is actively delivering (fetal parts visible or imminent), consider delivery on-scene if transport inhibits ability to provide emergent care.
EMT AEMT MEDIC	Consider appropriate destination if newborn requires NICU or specialty care – consult OLMC as necessary.
EMT AEMT MEDIC	See Procedure Newborn Delivery & Complications
EMT AEMT MEDIC	Place ECG monitor
AEMT MEDIC	Vascular access with Isotonic Fluids max 1L bolus; consider need for blood products if hypotension persists
MEDIC	Suspected Eclampsia: Magnesium Sulfate; any seizure in a patient who is pregnant in second trimester or later has Eclampsia until proven otherwise.
MEDIC	If seizure refractory to Magnesium Sulfate, refer to Seizure protocol.

a. Shoulder dystocia – if delivery fails to progress after head delivers, quickly attempt the following

i. Hyperflex mother's hips to severe supine knee-chest position (i.e., McRoberts' maneuver)

ii. Apply firm suprapubic pressure to attempt to dislodge shoulder. This often requires two EMS clinicians to perform and allows for delivery in up to 75% of cases

iii. Attempt to angle baby's head as posteriorly as possible but NEVER pull

iv. Continue with delivery as normal once the anterior shoulder is delivered

b. Prolapsed umbilical cord

i. Placed gloved hand into vagina and gently lift head/body off the cord

1. Assess for pulsations in cord, if no pulses are felt, lift the presenting part off the cord
2. Wrap the prolapsed cord in moist sterile gauze
3. Maintain until relieved by hospital staff

ii. If previous techniques are not successful, mother should be placed in prone knee-chest position or extreme Trendelenburg with hips elevated

c. Breech birth

i. Place mother supine, allow the buttocks, feet, and trunk to deliver spontaneously, then support the body while the head is delivered

ii. If needed, put the mother in a kneeling position which may assist in the delivery of the newborn

iii. Assess for presence of prolapsed cord and treat as above

iv. If head fails to deliver, place gloved hand into vagina with fingers between infant's face and uterine wall to create an open airway. Place your index and ring fingers on the baby's cheeks forming a "V" taking care not to block the mouth and allowing the chin to be tilted toward the chest flexing the neck
v. When delivering breech, you may need to rotate the baby's trunk clockwise; or sweep the legs from the vagina
vi. Once the legs are delivered support the body to avoid hyperextension of the head; keep the fetus elevated off the umbilical cord
vii. NEVER pull on the body, especially a preterm or previable baby – just support the baby's body while mother pushes when she feels the urge to
d. The presentation of an arm or leg through the vagina is an indication for immediate transport to hospital
e. Nuchal cord
i. After the head has been delivered, palpate the neck for a nuchal cord, if present, slip over the head
ii. If the loop is too tight to slip over the head, attempt to slip the cord over the shoulders and deliver the body through the loop
iii. The cord can be doubly clamped and cut between the clamps; the newborn should be delivered promptly
f. Excessive bleeding during active labor may occur with placenta previa or placental abruption
i. Obtain history from patient – known previa, recent pre-eclampsia symptoms, hypertension history, recent trauma, drug use especially cocaine
ii. Placenta previa most likely will prevent delivery of infant vaginally
iii. Place large bore IV and administer IV fluids as indicated
iv. If available, transfusion or the administration of whole blood as indicated
v. C-Section most likely needed – transport emergently
g. Postpartum hemorrhage
i. Obtain history from patient – history of prenatal or delivery complications, recent trauma, prescription anticoagulants, drug use especially cocaine
ii. Perform fundal massage

Consult Online Medical Control as Needed

Pearls:

- **Eclamptic seizures may occur up to 2 months post-partum. Always consider in pregnant/recently pregnant seizing patient.**
- Severe headache, vision changes, edema, or RUQ pain may indicate preeclampsia.
- In the setting of pregnancy, hypertension is defined as a SBP greater than >140 or a DBP >90, or relative increase of 30 systolic and 20 diastolic from the patient's normal (pre-pregnancy) blood pressure.
- Ask patient to quantify bleeding - number of pads used per hour.
- Any pregnant patient involved in a MVC should be seen immediately by a physician for evaluation and fetal monitoring in a Trauma Center.
- Magnesium may cause hypotension and decreased respiratory drive, monitor closely.
- If > 20 weeks, consider left lateral position.
- Use Ultrasound, if available, for fetal heart tones and movement.

Overdose

Assessment		
Pediatric Pearls:	**Signs & Symptoms:**	**Differential:**

Use pediatric dosing for a pediatric patient <37 kg and as defined by the Broselow Tape. Pediatric hypotension is defined as SBP < 70 + (age in years x 2) mmHg

Salivation
Lacrimation
Urination
Defecation
GI distress
Emesis
Bronchospasm
Bronchorrhea
Bradycardia
Seizure

Stroke
MI
Asthma / COPD
Other chemical agent/weapon
Biologic agent / weapon
Overdose
Food borne illness
Airborne irritant (hydrogen sulfide, chlorine, etc.)

Clinical Management Options	
EMT AEMT MEDIC	Follow General Prehospital Care Protocol
EMT AEMT MEDIC	Scene Safety and PPE.
EMT AEMT MEDIC	Attempt immediate decontamination if possible; consider risk of "off-gassing"
EMT AEMT MEDIC	If prolonged transport time, consult OLMC and/or Poison Control Center at 1-800-222-1222.
EMT AEMT MEDIC	Place ECG & $EtCO_2$
EMT AEMT MEDIC	**Suspect Opiate OD**: Naloxone if respirations are depressed
AEMT MEDIC	IV/IO Access as necessary
AEMT MEDIC	Interpretation of 12-lead ECG
MEDIC	Advanced Airway Management as needed
MEDIC	**Opiate OD**: Naloxone if respirations are depressed
MEDIC	**Stimulant OD** (Methamphetamine, Cocaine): consider Midazolam
MEDIC	**Calcium Channel/Beta Blocker** OD: Calcium Chloride, Epinephrine Infusion & Glucagon (Beta blocker OD only)
MEDIC	**Tricyclic or Phenobarbital** OD: Sodium Bicarbonate
MEDIC	**Acute wide QRS**: Sodium Bicarbonate, consider STEMI also
MEDIC	**Cholinergic Crisis**: Atropine for secretions, Midazolam for seizures (see *Organophosphate Exposure* protocol)
MEDIC	**Hydrofluoric acid** (topical/skin): make gel from 3.5g Calcium Gluconate (water soluble) and jelly/lubricant, then apply paste to affected area
MEDIC	**Insulin OD:** Glucose and/or Glucagon

Consult Online Medical Control As Needed

Pearls:

- Give Narcan in ALL cases of overdose with airway compromise.
- Novel opioids, such as fentanyl and carfentanyl, may require very high doses of naloxone (10-20mg)
- Do not rely on patient history of ingestion, especially in suicide attempts.
- Tricyclic: 4 major areas of toxicity: seizures, dysrhythmias, hypotension, decreased mental status or coma, rapid progression from AMS to death.
- Depressants: decreased HR, BP, body temperature, and respirations; non-specific pupils.
- Stimulants: increased HR, BP, body temperature; dilated pupils, seizures.
- Anticholinergic: increased HR, body temperature; dilated pupils, mental status changes.
- Cardiac meds: dysrhythmias and mental status changes.
- Solvents: nausea, vomiting, and mental status changes.

- Insecticides: increased or decreased HR, increased HR, nausea / vomiting, diarrhea, pinpoint pupils
- Consider contacting Poison Control for Guidance on a recorded line – 1-800-222-1222
- Decon or Haz-Mat patients should be performed by trained personnel prior to initial patient contact or transport.

Pain Management

Assessment

Pediatric Pearls:

Use pediatric dosing for a pediatric patient <37 kg and as defined by the Broselow Tape. Pediatric hypotension is defined as SBP < 70 + (age in years x 2) mmHg

Signs & Symptoms:

Severity (Pain scale)
Quality
Radiation
Relation to movement
Respirations
Reproduceable
Increased upon palpation

Differential:

Per the specific protocol
Musculoskeletal
Visceral (abdominal)
Cardiac
Pleural / Respiratory
Neurogenic
Kidney stone

Clinical Management Options	
EMT AEMT MEDIC	Follow General Prehospital Care Protocol
EMT AEMT MEDIC	Bleeding Control
EMT AEMT MEDIC	Pain scale assessment 0-10, Wong-Baker faces for pediatrics, FLACC for infants
EMT AEMT MEDIC	SMR Evaluation, Bandaging, & Splinting as needed
EMT AEMT MEDIC	Ice packs and ace bandages as needed
EMT AEMT MEDIC	Bilateral BP measurements if suspecting Aortic Dissection
EMT AEMT MEDIC	Place ECG and $ETCO_2$
AEMT MEDIC	IV/IO Access as necessary
AEMT MEDIC	Isotonic Fluids as needed
MEDIC	Acetaminophen – Adult PO or IV
MEDIC	Ibuprofen – Adult PO only
MEDIC	Fentanyl

Consult Online Medical Control As Needed

Pearls:

- Pain severity is a vital sign to record pre and post intervention, especially medications.
- Vital signs should be obtained pre and 5-minutes post all medications.
- Monitor patient closely for over sedation, refer to Overdose protocol if needed
- Sedating medications should be administered cautiously in head injury patients to avoid obscuring mental status exam
- Do not administer Acetaminophen to patients with history of liver disease, suicidal attempt, or known to have consumed large amounts of ETOH.
- Fentanyl should be reserved for acute and severe pain.
- Abdominal aneurysms may present as back pain and are a concern in patients >50 years old.
- Any new bowel or bladder incontinence is a significant finding which requires immediate medical evaluation.
- In patient with history of IV drug abuse or pain management injections, an epidural abscess should be considered.
- Controlled substances are discouraged for non-traumatic back pain and chronic pain complaints. Sedating medications should be administered with caution in patients already taking sedating medications

Riot Control Agents

Assessment		
Pediatric Pearls:	**Signs & Symptoms:**	**Differential:**

Use pediatric dosing for a pediatric patient <37 kg and as defined by the Broselow Tape. Pediatric hypotension is defined as SBP < 70 + (age in years x 2) mmHg	1. Assess scene safety: evaluate for hazards to EMS personnel, patient, bystanders a. Determine riot control agent being used b. Don appropriate PPE c. Determine number of patients 2. Note symptoms exhibited by the exposed individual 3. Examine as appropriate to complaints	Metabolic disorder (hypoglycemia, hypothyroidism) Toxins Environmental exposure Shock Sepsis

Clinical Management Options

EMT	AEMT	MEDIC
		Follow General Prehospital Care Protocol
		1. Move affected individuals from contaminated environment into fresh air if possible
		2. Remove contaminated clothing as able
		3. Have patient remove contact lenses if appropriate
		4. Irrigation with water or saline may facilitate resolution of symptoms and is recommended for decontamination of dermal and ocular exposure
		5. If patient is in respiratory distress, go to Respiratory Section
		6. If patient is wheezing, go to Bronchospasm Guideline
		7. 8. Exposed individuals who are persistently warrant further evaluation and treatment per local standards
		Place 12-lead ECG
		Place $ETCO_2$
		IV/IO Access as necessary
		BGL assessment
		Monitor ECG
		Advanced Airway Management as needed
		1. Toxicity is related to duration of exposure and concentration of agent used (exposure in non-ventilated space)
		2. Patients with pre-existing pulmonary conditions (e.g., asthma, COPD) may be prone to more severe respiratory effects
		3. Traumatic injury may result when exposed individuals are in proximity to the device used to disperse the riot control agent (e.g., hose/stream under pressure, riot control agent projectile, grenade)

Consult Online Medical Control As Needed

Pearls:

Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.

1. CN, CS, and OC are the most encountered riot control agents
2. CN, CS, and OC have a high safety ratio. All three have a high median lethal concentration (LCt50) and a low median effective concentration (ECt50)
3. Toxicity is related to time of exposure and concentration of agent used (exposure in nonventilated space)
4. Symptoms that may be experienced after exposure:

a. **Eyes**: tearing, pain, conjunctivitis, blurred vision

b. **Nose/mouth/throat**: rhinorrhea, burning/pain, trouble swallowing, drooling
c. **Lungs**: chest tightness, coughing, choking sensation, wheezing, dyspnea
d. **Skin**: burning, redness, dermatitis
e. GI: nausea and vomiting are rare and may be posttussive
5. Symptoms begin within seconds of exposure, are self-limited and are best treated by removing patient from ongoing exposure. Symptoms frequently decrease over time (15–45 minutes) after exposure ends

Respiratory Distress includes Bronchospasm, Pulmonary Edema

Assessment		
Pediatric Pearls:	**Signs & Symptoms:**	**Differential:**

Use pediatric dosing for a pediatric patient <37 kg and as defined by the Broselow Tape. Pediatric hypotension is defined as SBP < 70 + (age in years x 2) mmHg

Shortness of breath
Pursed lip breathing
Decreased ability to speak
Increased respiratory rate and effort
Wheezing, rhonchi, rales, stridor
Use of accessory muscles
Fever, cough
Tachycardia
Anxious appearance

Asthma/COPD/CHF
Anaphylaxis
Aspiration
Pleural effusion
Pneumonia
Pulmonary embolus
Pneumothorax
Pericardial tamponade
Hyperventilation
Inhaled toxin (CO, etc.)
Croup / Epiglottitis
Trauma
Hydrocarbon ingestion

Clinical Management Options			
E M T	A E M T	M E D I C	Follow General Prehospital Care Protocol
			Position of comfort, upright is best – *positioning is critical*
			Determine cause and type of respiratory problem
			BLS airway management, consider upper airway suctioning
			Place 12-lead ECG & consider ACS Chest Pain
			Place $ETCO_2$ monitor
			IV/IO Access as necessary
			If wheezing, then assist with patient's MDI 2 puffs PRN -or- Albuterol with Ipratropium
			Monitoring and interpretation of ECG & $EtCO_2$
			For the following, in addition to Albuterol with Ipratropium, consider:
			Pulmonary Edema (Diffuse crackles + Bilateral Pedal Edema):
			o Consider CPAP with PEEP with rales/rhonchi indicating wet lung sounds
			o Nitroglycerin q 5 minutes if SBP ≥ 100mmHg
			Suspected Bronchospasm/Asthma/COPD (Wheezing):
			o CPAP with PEEP if refractory to NEB
			o Methylprednisolone
			o Epinephrine (0.3mg IM dose)
			o Magnesium Sulfate
			Upper Airway Cause (Stridor – pediatric):
			o Nebulized Epinephrine
			o Methylprednisolone
			Pneumothorax (Absent/Asymmetric breath sounds):
			o If evidence of tension pneumothorax, consider Pleural Decompression
			o CPAP with PEEP if refractory to NEB
			o Methylprednisolone
			o Epinephrine (0.3mg IM dose)
			o Magnesium Sulfate
			Advanced Airway Management as needed
			Norepinephrine (Levophed) infusion, titrated to MAP ≥ 65
			If severe bronchospasm refractory to other medications

Consult Online Medical Control As Needed

Pearls:

Pulmonary Edema/CHF:

- Avoid Nitroglycerin in any patient who has used Viagra or Levitra in the past 24 hours or Cialis in the past 48 hours or other PDE erectile dysfunction medications due to potential severe hypotension.
- Careful monitoring of level of consciousness, BP, and respiratory status with above interventions is essential.
- Consider myocardial infarction in all these patients. If suspected give aspirin.
- Allow the patient to be in their position of comfort to maximize their breathing effort.
- Connect CPAP to o2 source and select liter flow setting to generate appropriate PEEP for patient condition per guideline.
- Patient BP may drop with CPAP, if CPAP is necessary for oxygenation/ventilation, may move to add pressor.

Asthma/COPD/Stridor

- $EtCO_2$ and SpO_2 must be monitored continuously if either are abnormal or decline in patient's mental status/condition.
- A silent chest in respiratory distress is a sign for pre-respiratory arrest.
- Chronic COPD may have elevated CO2 at baseline. Patient respiratory status must be reassessed after each nebulizer/medication to determine need for additional dosing.
- CPAP if continued respiratory distress and if adequate mask seal can be established.
- Immediately assess for pneumothorax in asthmatics who develop a sudden decrease in blood pressure, increase in heart rate, or other signs of pneumothorax during an exacerbation.
- Development of bradycardia in respiratory distress in an ominous sign

Seizure

Assessment		
Pediatric Pearls:	**Signs & Symptoms:**	**Differential:**

Use pediatric dosing for a pediatric patient <37 kg and as defined by the Broselow Tape.
Pediatric hypotension is defined as SBP < 70 + (age in years x 2) mmHg

Altered mental status
Drowsiness
Incontinence
Observed seizure activity
Evidence of trauma
Unconscious
Fever
Seizure activity
Tongue trauma
Rash
Nuchal rigidity

CNS/Head trauma
Tumor
Renal failure
Electrolyte abnormality
Medication non-compliance
Infection / Fever
Alcohol withdrawal
Eclampsia
Stroke
Hyperthermia
Hypoglycemia

Clinical Management Options	
EMT	Follow General Prehospital Care
EMT	CPSS assessments
EMT	SMR assessment and consider Trauma cause
EMT	BLS airway management
MEDIC	For any seizure in a pregnant or recently post-partum patient, consider eclampsia and consult the Obstetrical Emergencies protocol.
MEDIC	Place ECG and $ETCO_2$
MEDIC	If patient is post-ictal or confused, refer to Altered Mental Status
AEMT	IV/IO Access as necessary
AEMT	BGL assessment
AEMT	Isotonic Fluids fluid challenge at 10-20 ml/kg
AEMT	Monitoring and interpretation of ECG & $EtCO_2$
MEDIC	**General Seizure Treatment:** Midazolam
MEDIC	**Hypoglycemic Seizure**: Glucose
MEDIC	**Pediatric Febrile Seizure:** if Temp >100.4 F, then Acetaminophen
MEDIC	**Eclampsia**: Magnesium, consider adjunct Midazolam
MEDIC	Advanced Airway Management as needed
MEDIC	Patient assist: Vagus Nerve Stimulator (VNS) q 60 seconds, may repeat x3

Consult Online Medical Control As Needed

Pearls:

- Hypoglycemia is the 2nd most common cause of seizure.
- Status epilepticus is defined as 2 or more successive seizures or a continuous seizure lasting 5 minutes without a period of consciousness or recovery. This is a true emergency.
- Grand mal seizure (generalized) are associated with LOC, incontinence, and tongue trauma.
- Focal seizures (petit mal) effect only a part of the body and are not usually associated with LOC.
- Assess possibility of occult trauma and substance abuse.
- Be prepared to assist ventilations, especially if Midazolam is used.
- Addressing the ABCs and verifying blood glucose is more important than stopping the seizure.
- Avoiding hypoxemia is extremely important. In an infant, a seizure may be the only evidence of a closed head injury.

Shock/Hypotension, Non-Traumatic

Assessment		
Pediatric Pearls:	**Signs & Symptoms:**	**Differential:**

Use pediatric dosing for a pediatric patient <37 kg and as defined by the Broselow Tape. Pediatric hypotension is defined as SBP < 70 + (age in years x 2) mmHg	Restlessness, confusion, weakness Syncope Tachycardia Diaphoresis Pale, cool, clammy skin Delayed capillary refill Coffee-ground emesis Tarry stools	Infection/Sepsis Dehydration Vomiting Diarrhea Congenital heart disease Medication/Toxin Anaphylaxis Cardiac Failure (myocarditis)

Clinical Management Options	
EMT AEMT MEDIC	Follow General Prehospital Care Place in supine position, keep patient warm; consider lower extremity elevation above the level of the heart Identify cause of hypotension, if febrile then assume Sepsis
AEMT MEDIC	IV/IO Access as necessary These fluid boluses are for volume depletion – NOT for active bleeding. Pediatric: Isotonic Fluids bolus 20 ml/kg may repeat 10ml/kg bolus x 2 PRN Adult: Isotonic Fluids 500-1000 ml bolus every 5-10 minutes, may repeat up to 2L o If CHF or ESRD/Dialysis then limit fluids to 250-500ml bolus; 1L total
MEDIC	Advanced Airway Management as needed If pregnant, place in Left Lateral Decubitus position Large bore IV; prefer proximal and avoid distal extremity placement if possible Adult: Norepinephrine (preferred medication) infusion, titrated to MAP ≥ 65 following fluid resuscitation, **or** Epinephrine **or** Dopamine Consider push dose Epinephrine Pediatric: Epinephrine infusion titrated to effect Tranexamic acid (TXA) for hypotension due to hemorrhage Blood products as necessary for hemorrhage, including Calcium Chloride

Consult Online Medical Control As Needed

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- Adult hypotension can be defined as a systolic blood pressure of <90 mmHg or MAP <65 and signs or symptoms of hypoperfusion – altered mental status, increased respirations, tachycardia, poor pulses, skin changes.
- Consider all possible causes of shock and treat per appropriate COG.
- Patients should always have adequate intravascular fluid load prior to the use of vasopressors.
  - Isotonic Crystalloid's (LR or NS) should be avoided in patients in whom hemorrhage is suspected.

Stroke

Assessment		
Pediatric Pearls:	**Signs & Symptoms:**	**Differential:**

Use pediatric dosing for a pediatric patient <37 kg and as defined by the Broselow Tape. Pediatric hypotension is defined as SBP < 70 + (age in years x 2) mmHg	Altered mental status Weak / Paralysis Blindness or other sensory loss Aphasia / Dysarthria Syncope Vertigo / Dizziness Vomiting Headache Seizures Hyper-/Hypotension	Altered mental status Transient Ischemic Attack Seizure Hypoglycemia Hypoxia / Hypercarbia Stroke Thrombotic / Embolic (85% Hemorrhagic (15%) Tumor Trauma Atypical migraine

Clinical Management Options

EMT / AEMT / MEDIC

- Follow General Prehospital Care
- Rule out stroke mimics (Bell's Palsy, Sepsis, Todd's Paralysis, intoxication, hypoglycemia)
- Complete Stroke Screening Checklist; consider the "AHORA" scale for Spanish-speaking population if translation not available (see below)
  - Complete ***BE FAST***, if yes to any then calculate ***FAST-ED*** (references below)
- Positive ***BE FAST*** and Glucose >60 and last known well ≤24 hours, then declare a "Stroke Alert" to the nearest designated Stroke Center
  - Identify Last Known Well, identify anticoagulation medications, history of head trauma/recent surgeries.
- Place 3-lead and 12-lead ECG
- Place $EtCO_2$

AEMT / MEDIC

- BGL assessment
- Vascular access, 2nd vascular access if time and patient conditions permit

MEDIC

- Advanced Airway Management as needed
- Monitoring and interpretation of ECG & $EtCO_2$

Consult Online Medical Control As Needed

Pearls:

- A patient may have a positive BE FAST without weakness, which is still a Stroke Alert.
- Stroke patients are transported per Stroke Alert to designated Stroke Center
- Last known well (LKW) is defined as the last time the patient was seen symptom free; example: Awakening with stroke symptoms would be defined as an onset time of the previous night when the patient went to bed symptom free. Also, obtain patients baseline functional status. If LKW is uncertain, obtain Time of Symptom Delivery (TSD).
- Whenever possible, a family member should accompany the patient to the hospital to provide a detailed history or provide the hospital with the name and contact information of someone who can.
- The differential list on the Altered Mental Status guideline should be considered.
- Be alert for airway problems (swallowing difficulty, vomiting).
- Hypoglycemia can present as a localized neurological deficit, especially in the elderly.
- Blood samples for performing glucose analysis should be obtained through a finger-stick (heel for infants). Venous blood samples may produce artificially high glucose values and should be avoided.
- IV access is preferred sizes 20g or 18g with AC placement.

BE FAST (Yes/No)

START HERE ↓ Is the patient having a stroke?	✓ Check if yes	
Balance • *Perform bilateral index finger-to-nose test and bilateral heel-to-shin test* • Does the patient have sudden loss of balance or coordination, trouble walking or dizziness?		**B**
Eyes • *Assess 4 quadrants of visual field by having patient locate your index finger.* • Does the patient have trouble seeing out of one or both eyes or sudden double vision?		**E**
Face • *Ask the patient to smile or show their teeth.* • Does the patient's face look uneven, have sudden drooping or numbness on one side?		**F**
Arms • *Ask the patient to raise and extend both arms with their palms up.* • Does one arm drift downward? • Does the patient have sudden numbness or weakness of the arm on one side of the body?		**A**
Speech • *Ask the patient to say, "You can't teach an old dog new tricks".* • Does the patient have slurred speech, trouble speaking, understanding or seem confused?		**S**
Time • What time did the symptoms start? ____:____ • What time was the patient last known well (last appear normal)? ____:____		**T**
Glucose level = _____		

FAST-ED (Calculate Score)

Ask if the patient is on any anticoagulant medications, such as:

- Coumadin/Warfarin
- Pradaxa/Dabigatran
- Eliquis/Apixaban
- Xarelto/Rivaroxaban
- Savaysa/Edoxaban
- Heparin/Enoxaparin

Time anticoagulant last taken:

- Any other anticoagulants? (please list):

F	**Facial Palsy** *(ask the patient to show their teeth or smile)* • Both sides of the face move equally or not at all • One side of the face droops or is clearly asymmetric	**Score:** 0 1
A	**Arm Weakness** *(with eyes closed, ask patient to hold arms out with their palms up and hold them there for 10 seconds)* • Both arms remain up for > seconds or slowly move down equally • Patient can raise arms but one arm drifts down in < 10 seconds • One or both arms fall rapidly, can't be lifted, or no movement occurs at all	**Score:** 0 1 2
S	**Speech Changes** *Expressive Aphasia* - ask the patient to name 3 common items • Names 2 to 3 items correctly • Names 0 to 1 item correctly *Receptive Aphasia* - ask the patient to perform a simple command (Example: "show me two fingers") • Normal - patient can follow the simple command • Unable to follow the simple command	**Score:** 0 1 0 1
T	**Time** • What time did the symptoms start? → • What time was the patient last known well (last appear normal)?	____:____ ____:____
E	**Eye Deviation** • No deviation; eyes move equally to both sides • Patient has clear difficulty when looking to one side (left or right) • Eyes are deviated to one side and do not move to the other side	**Score:** 0 1 2
D	**Denial/Neglect** *Denial* - show the patient their affected arm and ask, "Do you feel weakness in this arm?" • Patient **recognizes** the weakness in their weak arm • Patient **does NOT recognize** the weakness in their weak arm *Neglect* - show the patient their affected arm and ask, "Whose arm is this?" • Patient **recognizes** their weak arm • Patient **does NOT recognize** their weak arm	**Score:** 0 1 0 1

Spanish Assessment Tool


Reconocer un ataque cerebral AHORA
???
???
A
ANDAR
Tiene dificultad para andar?
Tiene problemas con el equilibrio?
H
HABLAR
Tiene dificultad para hablar o entender?
Usa palabras que no tienen sentido?
O
OJOS
Tiene algún cambio de vista?
Tiene visión doble?
Tiene dificultad para ver con ambos ojos?
R
ROSTRO
Tiene la mitad del rostro caído?
Tiene un repentino dolor de cabeza como nunca se ha sentido?
A
AMBOS BRAZOS
Tiene dificultad para levantar un brazo o una pierna?
Tiene debilidad en un brazo o una pierna?
911
Si la respuesta es SÍ a cualquiera de estas preguntas,
llame 9-1-1 ¡AHORA!
y diga “stroke”

Syncope

Assessment

Pediatric Pearls:

Use pediatric dosing for a pediatric patient <37 kg and as defined by the Broselow Tape.

Pediatric hypotension is defined as SBP < 70 + (age in years x 2) mmHg

Signs & Symptoms:

- Loss of consciousness with recovery
- Lightheadedness, dizziness
- Palpitations, slow or rapid pulse
- Pulse irregularity
- Decreased blood pressure

Differential:

- Vasovagal
- Hypotension / Hypoperfusion
- Cardiac or PE
- Micturition / Defecation syncope
- Stroke
- AAA
- Hypoglycemia
- Seizure
- Toxicological
- Medication effect
- Aortic stenosis

Clinical Management Options

EMT	AEMT	MEDIC	
			Follow General Prehospital Care
			Assess for a Stroke and follow Stroke Protocol accordingly
			Basic airway management
			Spinal Motion Restriction assessment
			Place 12-lead ECG
			Place $EtCO_2$
			IV/IO Access as necessary
			BGL assessment
			Isotonic Fluids as needed for dehydration or hypotension not caused by hemorrhage
			Advanced Airway Management as needed
			Monitoring and interpretation of ECG & $EtCO_2$

Consult Online Medical Control As Needed

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- Assess for signs and symptoms of trauma if associated or questionable fall with syncope.
- Consider dysrhythmias, GI bleed, ectopic pregnancy, and seizure as possible cause of syncope.
- More than 25% of geriatric syncope is cardiac dysrhythmia based.
- Anyone > 65 years old with syncope should have continuous cardiac monitoring.

Toxins and Environmental Poisoning/Overdose Universal Care

Assessment

Pediatric Pearls:

Use pediatric dosing for a pediatric patient <37 kg and as defined by the Broselow Tape.

Pediatric hypotension is defined as SBP < 70 + (age in years x 2) mmHg

If the patient does not fit on the tape, then they are considered to be an adult.

Signs & Symptoms:

Location
Onset
Precipitating Event(s)
Quality
Radiation
Severity
Time/Duration
Aggravating/Alleviating
Associated Symptoms
Prior history of same/similar

Differential:

Vascular
Infectious/Inflammatory
Trauma/Toxins
Autoimmune
Metabolic
Idiopathic
Neoplastic
Congenital

Clinical Management Options

EMT / AEMT / MEDIC

- Demonstrate professionalism and courtesy; Scene/Crew Safety/PPE; with appropriate and fully-stocked equipment
- Use close looped communication and crew resource management with all on scene providers
- Perform an initial assessment and physical exam

Patient Care Goals

1. Remove patient from hazardous environment. Decontaminate to remove continued sources of absorption, ingestion, inhalation, or injection
2. Identify intoxicating agent by toxidrome or appropriate environmental testing
3. Assess risk for organ impairments (heart, brain, kidney)
4. Identify antidote or mitigating agent
5. Treat signs and symptoms in effort to stabilize patient

AEMT / MEDIC

- IV/IO Access as necessary for patient condition
- Monitor and interpret ECG
- Obtain blood glucose level as appropriate

MEDIC

- Use Ultrasound for specific conditions as indicated, available, and credentialed
- Patients may be referred to a BLS transporting agency in accordance with the Transport Decision Process; if pre-established within the regional EMS system.

Treatment and Interventions

1. Assure a patent airway
2. Administer oxygen as appropriate with a target of achieving 94–98% saturation, and if there is hypoventilation noted, support breathing
3. Initiate IV access for infusion of treatment medication and/or lactated Ringer's or normal saline if indicated, and obtain blood samples if EMS management might change based upon the value (e.g., glucose, lactate, cyanide)
4. The regional poison center should be engaged as early as reasonably possible to aid in appropriate therapy and to track patient outcomes to improve knowledge of toxic effects. The **national 24-hour toll-free telephone number to poison control centers is (800) 222- 1222**, and it is a resource for free, confidential expert advice from anywhere in the United States

5. Consider fluid bolus (20 mL/kg) if evidence of hypoperfusion
6. Administration of appropriate antidote or mitigating medication (refer to specific agent guideline if not listed below)

a. Acetaminophen overdose: i. Consider activated charcoal without sorbitol (1 g/kg) PO only if within the first hour of ingestion *and* prolonged transport to definitive care

ii. Based on suspected quantity and timing, consider acetylcysteine (pediatric and adult), if available 1. Loading dose is acetylcysteine 150 mg/kg IV; mix in 200 mL of dextrose 5% in water (D5W) and infuse over 1 hr
2. After loading dose, give acetylcysteine 50 mg/kg IV in 500 mL D5W over 4 hrs.
3. If IV is not available, acetylcysteine 140 mg/kg PO

b. Aspirin overdose: i. Consider activated charcoal without sorbitol (1 gm/kg) PO only if within the first hour of ingestion 1. As ASA is erratically absorbed, charcoal is highly recommended to be administered early 2. If altered mental status or risk of rapid decreasing mental status from polypharmacy, do not administer oral agents including activated charcoal

ii. In salicylate poisonings, let the patient breathe on their own, even if tachypneic, until there is evidence of decompensation or dropping oxygen saturation. Acid/base disturbances and outcomes worsen when the patient is manually ventilated

c. Benzodiazepine overdose: i. Respiratory support

ii. Consider fluid challenge (20 mL/kg) for hypotension

iii. Consider vasopressors after adequate fluid resuscitation (1–2 liters of crystalloid in adult) for the hypotensive patient

d. Caustic substances ingestion (i.e., acids and alkali): i. Evaluate for airway compromise secondary to spasm or direct injury associated with oropharyngeal burns

e. Dystonia (symptomatic), extrapyramidal signs or symptoms, or mild allergic reactions i. Consider administration of diphenhydramine
1. **Adult**: diphenhydramine 25–50 mg IV or IM
2. **Pediatric**: diphenhydramine 1–1.25 mg/kg IVP/IO or IM (maximum single dose of 25 mg)

—

f. Monoamine oxidase inhibitor overdose (symptomatic, e.g., MAOI; isocarboxazid, phenelzine, selegiline, tranylcypromine) i. Consider administration of midazolam for temperature control

— ii. **Adult and Pediatric**: Midazolam 0.1 mg/kg in 2 mg increments slow IV push over one to two minutes per increment with maximum single dose 5 mg — reduce by 50% for patients 69 years old or older

g. Opiate overdose, treat per the Opioid Poisoning/Overdose Guideline

h. Oral ingestion unknown poisoning: i. If there is a risk of rapidly decreasing mental status or for petroleum-based ingestions, do not administer oral agents

ii. Consider administration of activated charcoal without sorbitol (1 g/kg)

iii. If risk of rapidly decreasing mental status, do not administer oral agents

Consult Online Medical Control As Needed

Pearls:

Inclusion (suspect exposure) Criteria Presentation may vary depending on the concentration and duration of exposure. Signs and symptoms vary, and may include, but are not limited to, the following: Absorptions; Ingestion; Inhalation; Injections.

Anticholinergic b. Cholinergic (**DUMBELS**) i. Diarrhea

— c. Opioids

DUMBELS is a mnemonic used to describe the signs and symptoms of acetylcholinesterase inhibitor agent poisoning. All patient age groups are included where the signs and symptoms exhibited are consistent with the toxidrome of DUMBELS

Sedative Hypnotic

i Toxidromes (constellations of signs and symptoms that add in the identification of certain classes of medications and their toxic manifestations). These toxidrome constellations may be masked or obscured in poly pharmacy events due to counteracting effects of the toxins

Pearls:

1. Each toxin or overdose has unique characteristics which must be considered in individual protocols
2. Activated charcoal (which does not bind to all medications or agents) is still a useful adjunct in the serious-agent, enterohepatic, or extended-release agent poisoning if the patient does not have the potential for rapid alteration of mental status or airway/aspiration risk. Precautions should be taken to avoid or reduce the risk of aspiration
3. Ipecac is not recommended for any poisoning or toxic ingestion — the manufacturer has stopped production of this medication
4. Flumazenil is not indicated in a suspected benzodiazepine overdose as it can precipitate

- .

Trauma: General

Assessment

Pediatric Pearls:

Use pediatric dosing for a pediatric patient <37 kg and as defined by the Broselow Tape. Pediatric hypotension is defined as SBP < 70 + (age in years x 2) mmHg

Signs & Symptoms:

Massive Hemorrhage
Airway
Respirations (decompression)
Circulation (IV, TXA)
Hypothermia/Head Injury

Pain
Antibiotics
Wound care
Splinting

Differential:

Respiratory failure
Foreign body airway obstruction
Hypovolemia
Trauma
Tension PTX
Hypothermia
Toxins or Overdose
Hypoglycemia
Acidosis
Acute MI or PE

Clinical Management Options

EMT / AEMT / MEDIC

- Follow General Prehospital Care
- See Adult Trauma Triage or Pediatric Trauma Triage system guideline(s).
- Control external hemorrhage and apply Tourniquet(s) as necessary, including junctional tourniquets if needed and available.
- Wound Care (junctional/extremity) with pressure dressing as appropriate and apply Quick Clot Combat Gauze if available
- Place occlusive dressing/chest seal over open pneumothorax
- Evaluate for Spinal Motion Restriction
- Assess GCS score
- Apply Pelvic Binder if appropriate
- Keep patient supine and warm
- See Mass Casualty Incidents, if applicable.
- See Orthopedic and Soft Tissue Injury if applicable.
- Bandage/Splinting injuries as appropriate for patient condition
  - Sucking Chest Wound: cover with an FDA approved occlusive seal device, or improvised occlusive dressing and release/"burp" dressing as needed for dyspnea or signs of tension pneumothorax
  - Evisceration: cover area with a sterile dressing moistened with sterile saline/water
- Pre-alert facility of inbound trauma patient per regional trauma guidelines.
- Place 12-Lead ECG
- Place $EtCO_2$

AEMT / MEDIC

- Vascular access
- Adult: Isotonic Fluid IV bolus 250 mL if patient shows signs of shock and blood products not available
- Pediatric: Isotonic Fluid IV 20 ml/kg as needed and blood products not available

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MEDIC

- Advanced Airway Management as needed
- Pain Management as needed

Needle decompression of the chest as indicated
If Adult Spinal Shock – Norepinephrine or Epinephrine infusion titrated to MAP ≥ 65
Blood Product Transfusion and Calcium Chloride
TXA for **HR ≥120** or **SBP ≤90** or **HR≥SBP**

Ultrasound for EFAST exam if available and credentialed.

Consult Online Medical Control As Needed

GCS Score

Eyes Open	Best Verbal	Best Motor
4 – Eyes Open	5 – Oriented	6 – Obeys Commands
3 – To Voice	4 – Confused	5 – Localizes Pain
2 – To Pain	3 – Inappropriate	4 – Withdraws from Pain
1 - None	2 – Incomprehensible	3 – Pain-Flexion
	1 - None	2 – Pain-Extended
		1 - None

Pearls:

- Consider Chest Decompression with signs of shock and diminished/absent breath sounds. If patient arrests, then immediately perform bilateral decompression.
- See Regional Trauma Guidelines for criteria when declaring trauma alert; record "Trauma Alert" in ePCR.
- **Minimize on-scene time**. If patient meets Trauma Alert criteria, then interventions should be performed enroute.
- Severe bleeding from an extremity not rapidly controlled by direct pressure may necessitate the application of a tourniquet.
- Permissive hypotension (target fluid resuscitation to MAP 55-65) should be used in the absence of neurologic injury, pregnancy, hypertensive history, and age $\leq$ 45 years old. If suspected neurologic injury maintain Adult SBP $\geq$ 90mmHg.
- Hypotension and hypoxia are devastating to neurologic injury and should be aggressively treated.
- **MAP calculation** [(2 x diastolic) + systolic] divided by 3
- Peripheral neurovascular status should be document on all extremity injuries and before and after splinting procedures. Same for neuro status before and after extrication, placement for LSB and before/after transport.
- In amputations, time is critical. Transport and notify medical control immediately, so that the appropriate destination can be determined.
- Hip dislocations and knee and elbow fracture/dislocations have a high incidence of neuro-vascular compromise.
- Urgently transport any injury with vascular compromise.
- Blood loss may be concealed or not apparent with extremity injuries; note phrase "what's on the floor times 4" for total estimated blood loss.
- Lacerations should be evaluated for repair as soon as possible after injury.
- Increased intracranial pressure (ICP) may cause hypertension and bradycardia (Cushing's Response).
- If hypotension, consider spinal shock or additional occult injury as source.
- Consider Altered Mental Status guideline.
- The most important item to monitor/document is a change in level of consciousness and GCS.
- Consider Restraints if necessary for patient's and/or personnel's protection per the Restraining Procedure.
- Any documented loss of consciousness, prolonged confusion, or mental status abnormality should be evaluated by a physician ASAP.

Trauma-Blast Injuries

Assessment

Pediatric Pearls:
Use Broselow Tape as necessary

Signs & Symptoms:
Compartment Syndrome: Pain on passive stretch, Paresthesia, Paralysis, Pallor, Pulselessness
Hypoperfusion
Hypotension

Differential:
Skin irritant exposure
Dust concentrations in airway
Hypo/Hyperthermia
Hyperkalemia
Dehydration
Additional trauma

Clinical Management Options

EMT AEMT MEDIC

Maintain patient and clinician safety by identifying ongoing threats at the scene of an explosion
Identify multi-system injuries which may result from a blast, including possible toxic contamination
Prioritize treatment of multi-system injuries to minimize patient morbidity
Follow General Prehospital Care Protocol
Patients exposed to explosive force. Injuries may include any or all the following:
a. Blunt trauma
b. Penetrating trauma
c. Burns
d. Pressure-related injuries (barotrauma)
e. Toxic chemical contamination
f. Chemical, biological, radiological, nuclear, and explosive devices, or agents

Hemorrhage Control a. Assess for and stop severe hemorrhage [See Extremity Trauma/External Hemorrhage Management Guideline]

2. Airway a. Assess airway patency
b. Consider possible thermal or chemical burns to the airway

3. Breathing a. Evaluate the adequacy of respiratory effort, oxygenation, quality of lung sounds, and chest wall integrity
b. Consider possible pneumothorax or tension pneumothorax (because of penetrating/blunt trauma or barotrauma)
c. Continually reassess for blast lung injury

4. Circulation a. Look for evidence of hemorrhage
b. Assess BP, pulse, skin color/character, and distal capillary refill for signs of shock

5. Disability a. Assess patient responsiveness (e.g., **AVPU**) and level of consciousness (e.g., **GCS**) [See Appendix VII: Neurologic Status Assessment]
b. Assess pupils
c. Assess gross motor movement of extremities

6. Exposure a. Rapid evaluation of entire skin surface, including back (log roll), to identify blunt or penetrating injuries

See Trauma for treatment algorithm

- Vascular access at 1.5 L/hr of Isotonic Fluids during extrication. If adequate hemodynamics, then reduce to 500 mL/hr.
- Continuous $ETCO_2$ and ECG monitoring once practical.

- If cardiac arrest, then treat for *Hyperkalemia* with both Calcium Chloride and Sodium Bicarbonate in conjunction with cardiac arrest guidelines.
- Push Sodium Bicarbonate immediately prior to release
- Add Sodium Bicarbonate to each liter of Isotonic Crystalloid
- Pain Management:
  - If MAP ≥ 65 and no respiratory failure, then Fentanyl for pain

Consult Online Medical Control As Needed

Pearls:

- Scene safety is of paramount importance when responding to an explosion or blast injury
- 2. Patients sustaining blast injury may sustain complex, multi-system injuries, including blunt and penetrating trauma, shrapnel, barotrauma, burns, and toxic chemical exposure
- 3. Consideration of airway injury, particularly airway burns, should prompt early and aggressive airway management
- 4. Minimize IV fluid resuscitation in patients without signs of shock. Consider injuries due to barotrauma

Trauma-Facial/Dental

Assessment

Pediatric Pearls:
Use Broselow Tape as necessary

Signs & Symptoms:
Compartment Syndrome: Pain on passive stretch, Paresthesia, Paralysis, Pallor, Pulselessness
Hypoperfusion
Hypotension

Differential:
Skin irritant exposure
Dust concentrations in airway
Hypo/Hyperthermia
Hyperkalemia
Dehydration
Additional trauma

Clinical Management Options

EMT AEMT MEDIC

Overall trauma assessment
2. **ABC**s (**A**irway, **B**reathing, **C**irculation) with particular focus on ability to keep airway patent a. Stable midface
b. Stable mandible
c. Stable dentition (poorly anchored teeth require vigilance for possible aspiration)

3. Bleeding (which may be severe – epistaxis, oral trauma, facial lacerations)
4. Patient medications with focus on blood thinners/anti-platelet agents
5. Cervical spine pain or tenderness [See Spinal Care Guideline]
6. Mental status assessment for possible traumatic brain injury [See Head Injury Guideline]
7. Gross vision assessment
8. Dental avulsions
9. Any tissue or teeth avulsed should be collected, if possible
10. Specific re-examination geared toward airway and ability to ventilate adequately

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AEMT MEDIC

- Vascular access at 1.5 L/hr of Isotonic Fluids. If adequate hemodynamics, then reduce to 500 mL/hr.

Continuous $ETCO_2$ and ECG monitoring once practical.

1.Administer oxygen as appropriate with a target of achieving 94–98% saturation. Use $EtCO_2$ to help monitor for hypoventilation and apnea
2. IV access, as needed, for fluid or medication administration
3. Pain medication per the Pain Management Guideline
4. Avulsed tooth: a. Avoid touching the root of the avulsed tooth. Do not wipe off tooth
b. Pick up at crown end. If dirty, rinse off under cold water for 10 seconds
c. Place in milk or saline as the storage medium. Alternatively, an alert and cooperative patient can hold tooth in mouth using own saliva as storage medium
Eye trauma:
a. Place eye shield for any significant eye trauma
b. If globe is avulsed or enucleated, do not put back into socket. Cover eye socket with moist saline dressings and then place eye shield over it
a. Expect patient cannot spit/swallow effectively and have suction readily available

b. Preferentially transport sitting up with emesis basin/suction available (in the absence of a suspected spinal injury.) [See Spinal Care Guideline]
a. Recover tissue, if possible
b. Transport with tissue wrapped in dry sterile gauze in a plastic bag placed on ice
c. Severe ear and nose lacerations can be addressed with a protective moist sterile dressing
6. Mandible unstable:
7. Epistaxis: squeeze nose (or have patient do so) for 10–15 minutes continuously
8. Nose/ear avulsion:

- If cardiac arrest, then treat for *Hyperkalemia* with both Calcium Chloride and Sodium Bicarbonate in conjunction with cardiac arrest guidelines.
- Push Sodium Bicarbonate immediately prior to release
- Add Sodium Bicarbonate to each liter of Isotonic Crystalloid
- Pain Management:
  - If MAP ≥ 65 and no respiratory failure, then Fentanyl for pain

Consult Online Medical Control As Needed

Pearls:

1. Airway may be compromised because of fractures or bleeding
2. Lost teeth not recovered on scene may be in the airway
3. After nasal fractures, epistaxis may be posterior and may not respond to direct pressure over the nares with bleeding running down posterior pharynx, potentially compromising airway
4. Protect avulsed tissue and teeth a. Avulsed teeth may be successfully re-implanted if doneso in a very short period after injury
b. Use moist sterile dressing for ear and nose cartilage

5. For penetrating eye injuries, do not remove foreign bodies. Splint in place. Cover uninjured eye or ask patient to close eye to prevent conjugate movement of injured eye
6. Consider administration of antiemetics to prevent increases in intraocular pressure due to nausea and vomiting in penetrating and blunt trauma to the eye

Trauma-Mass Casualty + High Threat / Active Shooter

Assessment

Pediatric Pearls:

- Use Broselow as necessary
- Focus on rapid and early BLS airway and ventilation tools. Intubation may not be the best option for these patients.
- Pediatric pads should be used in children <10 Kg or Broselow tape color Purple.

Signs & Symptoms:

- Traumatic Mechanism
- Apnea
- Pulseless
- PEA

Differential:

- Medical Cardiac Arrest
- Exsanguination
- Tension Pneumothorax
- Pelvic fracture(s)
- Hypoventilation
- Hypovolemia
- Hemorrhage
- Tamponade

Clinical Management Options

EMT / AEMT / MEDIC

- Follow General Prehospital Care Protocol
- Place Tourniquets prior to or concurrent with CPR for major hemorrhagic injuries as indicated.
- Pelvic Binder if blunt trauma involving the abdomen/pelvis.
- Perform Pit Crew CPR for Trauma with basic airway management until ALS arrives, then pause CPR as necessary for correctable traumatic causes of death (reference end of this document)
- Co-manage with Trauma & Cardiac Arrest Guidelines.
- Pull all extremities out to anatomical length/position.
- Place $EtCO_2$
- Place 3-lead ECG

AEMT / MEDIC

- Vascular access above the diaphragm if patient ≥ 12 months with Isotonic Fluids bolus until ROSC or up to 1 liter. If patient < 12 months, distal femur IO acceptable.

MEDIC

- Perform Needle Decompression
- If available, *Ultrasound*: EFAST and/or Cardiac Motion
- If available, administer Blood Product and Calcium Chloride if (1) Witnessed traumatic arrest and (2) Exsanguination is a likely cause of arrest, reasonable bleeding control has been achieved, and provider judgement that one unit of blood products will significantly improve patient outcome.

Georgia EMS integrates federal ASPR TRACIE guidance with local fire/EMS operational guides to ensure rapid, safe, and coordinated response to mass casualty incidents involving active threats.

- Pre Event Preparation

Collaborative planning: EMS, fire, law enforcement, and public health agencies must pre position resources for mass gatherings and conduct joint drills so Incident Command can shift to MCI mode quickly

- Stop the Bleed readiness: All EMS vehicles and roaming personnel must carry tourniquets, pressure dressings, and gloves; supplies should also be available for bystanders
- Rescue Task Forces (RTFs): Medically trained fire/EMS/law enforcement teams secure "corridors" to access the warm zone in active threat scenarios
- Body armor & cover: First response vehicles should be equipped with body armor and use fire engines or barriers for cover
- Training: All personnel must be trained in MCI threat assessment, responder safety, and bystander "Stop the Bleed" instruction

Initial Response
- Scene safety: Establish a safe perimeter; use law enforcement to neutralize the threat before EMS entry

Echo calls: Be alert to multiple 911 calls from different locations that may indicate separate active shooter events
RTF deployment: Medically trained teams enter the warm zone under police protection to triage and treat
Unified command: EMS operates under the Incident Command System (ICS) with law enforcement and fire; clear communication channels are essential
Mass Casualty & Trauma Care
- Triage: Use modified trauma triage for MCI; prioritize life threatening injuries and rapid transport

Hemorrhage control: Apply tourniquets and pressure dressings immediately; train bystanders to assist
Patient surge: Expand hospital triage and intake capacity; coordinate with trauma centers for bed availability
Fatality management: Follow ASPR TRACIE protocols for identifying, documenting, and supporting families
High Threat / Active Shooter Considerations
- Responder safety: Maintain situational awareness; avoid direct confrontation; use cover and concealment

Integrated response: Pre establish relationships between EMS, fire, and law enforcement; use joint training to improve coordination
Bystander engagement: Encourage community "Stop the Bleed" training to improve survival rates
Key Georgia Relevant Resources
- ASPR TRACIE "Mass Violence/Active Shooter Incidents: EMS Considerations" – pre event, initial response, and hospital surge guidance.
- IAFC Fire/EMS Operational Guide for Active Shooter/MCI – operational considerations for integrated response
- NFPA 3000 (ASHER Program) – model active shooter/hostile event response standard

In practice: Amerimed EMS should align with ASPR TRACIE's MCI/active shooter tip sheets, integrate local fire/EMS operational guides, and ensure all personnel are trained in responder safety, hemorrhage control, and unified command. This ensures rapid, safe, and effective care in high threat mass casualty events.

Consult Online Medical Control as Needed

Care may be terminated immediately if:

1) If the patient is pulseless, apneic, and fulfills ALL of the following criteria:
   a) Adequate CPR has been administered;
   b) Airway has been successfully managed with verification of device placement;
      i) Acceptable airway devices include supraglottic's, endotracheal intubation, or needle cricothyrotomy.
   c) IV/IO access has been achieved;
   d) No shockable rhythms present at any point in time;
   e) Bilateral needle thoracostomy has been performed successfully;
   f) All on-scene providers agree with the decision to cease efforts.

i) For unique circumstances as determined by the on-scene EMS Provider, the patient may be immediately transported to the nearest appropriate facility.

2) Any "**Obvious Signs of Death**" criteria in the following section below are met.

Obvious Signs of Death:
Resuscitation efforts should not be initiated or continued by an EMS Provider if they patient is pulseless and apneic, and one or more of the following is present.

1. Any below signs of obvious death:
   a. Traumatic arrest while entrapped (prolonged extrication unavoidable)
   b. Unwitnessed traumatic arrest without organized electrical activity (asystolic or PEA with rate <40)
   c. Rigor mortis and/or dependent lividity
   d. Decomposition
   e. Decapitation or obvious traumatic brain matter extrusion
   f. Incinerated or frozen body
   g. Submersion greater than 1 hour documented by the EMS Provider after scene arrival
   h. Fetal death with a fetus <20 weeks by best dating/age determination available at scene.
   i. In cases of mass casualty incidents, where the number of patients exceeds the providers and resources to care for them, any patient who is pulseless and apneic may be triaged as deceased

Consult Online Medical Control as Needed

Pearls:
- Emphasis is to be placed on correcting traumatic causes of death (hemorrhage control, application of pelvic binder, ventilation, decompression of the chest, reduction of grossly deformed extremities, volume resuscitation, etc.) prior to or concurrent with initiating CPR.
- Chest decompression should not be delayed for any other medical procedure or intervention to be accomplished, including CPR.
- Traumatic arrest patients with short downtime and close proximity to an appropriate trauma facility can be considered for transport after reasonable lifesaving interventions are first performed.
- In multi-patient events, traumatic arrests should not receive intervention until there are sufficient responders present to meet the needs of the living patients.
  - Except for lightning strikes, then perform reverse triage by giving higher priority to cardiac/respiratory arrests.

Traumatic Arrest

Assessment

Pediatric Pearls:

- Use Broselow as necessary
- Focus on rapid and early BLS airway and ventilation tools. Intubation may not be the best option for these patients.
- Pediatric pads should be used in children <10 Kg or Broselow tape color Purple.

Signs & Symptoms:

- Traumatic Mechanism
- Apnea
- Pulseless
- PEA

Differential:

- Medical Cardiac Arrest
- Exsanguination
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- Pelvic fracture(s)
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Clinical Management Options

EMT / AEMT / MEDIC

- Follow General Prehospital Care Protocol
- Place Tourniquets prior to or concurrent with CPR for major hemorrhagic injuries as indicated.
- Pelvic Binder if blunt trauma involving the abdomen/pelvis.
- Perform Pit Crew CPR for Trauma with basic airway management until ALS arrives, then pause CPR as necessary for correctable traumatic causes of death (reference end of this document)
- Co-manage with Trauma & Cardiac Arrest Guidelines.
- Pull all extremities out to anatomical length/position.
- Place $EtCO_2$
- Place 3-lead ECG

AEMT / MEDIC

- Vascular access above the diaphragm if patient ≥ 12 months with Isotonic Fluids bolus until ROSC or up to 1 liter. If patient < 12 months, distal femur IO acceptable.

MEDIC

- Perform Needle Decompression
- Tranexamic Acid (TXA)
- If available, *Ultrasound*: EFAST and/or Cardiac Motion
- If available, administer Blood Product and Calcium Chloride if (1) Witnessed traumatic arrest and (2) Exsanguination is a likely cause of arrest, reasonable bleeding control has been achieved, and provider judgement that one unit of blood products will significantly improve patient outcome.

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   c) IV/IO access has been achieved;
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   c. Rigor mortis and/or dependent lividity
   d. Decomposition
   e. Decapitation or obvious traumatic brain matter extrusion
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   g. Submersion greater than 1 hour documented by the EMS Provider after scene arrival
   h. Fetal death with a fetus <20 weeks by best dating/age determination available at scene.
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- In multi-patient events, traumatic arrests should not receive intervention until there are sufficient responders present to meet the needs of the living patients.
  - Except for lightning strikes, then perform reverse triage by giving higher priority to cardiac/respiratory arrests.

Reversible Cause Treatments (With A Pulse)			
EMT	AEMT	MEDIC	• Hypoxia: ○ Adult & Pediatric - Airway Management and Oxygen • Hypothermia: ○ Adult & Pediatric - Active warming strategies
			• Hypovolemia: ○ Adult & Pediatric - Fluid bolus with Isotonic Fluids as needed • Hypoglycemia: ○ Adult & Pediatric – Dextrose infusion

- Calcium Channel / Beta Blocker Overdose
  - Adult & Pediatric - Glucagon (if on formulary)
- Anaphylaxis:
  - Adult & Pediatric - Epinephrine

- Calcium Channel / Beta Blocker Overdose
  - Pediatric – Epinephrine infusion
- Tension Pneumothorax:
  - Adult & Pediatric - Needle Decompression
- Acidosis:
  - Adult & Pediatric - Sodium Bicarbonate
- Hyperkalemia
  - Adult – Calcium Chloride, Sodium Bicarbonate, and Albuterol
  - Pediatric – Sodium Bicarbonate
- Calcium Channel / Beta Blocker Overdose
  - Adult – Calcium Chloride

Patient Refusal

Assessment		
Pediatric Pearls:	**Signs & Symptoms:**	**Differential:**
• Use Broselow as necessary • Focus on rapid and early BLS airway and ventilation tools.	• Traumatic Mechanism • Medical Issues • Mental Health Issues	• Medical • Hypoventilation • Hypovolemia • Hemorrhage • Trauma

SECTION: Patient Refusal
Protocol Amerimed EMS
TITLE: Patient Refusal and Documentation
REVISED: September 2026
Purpose: This document provides direction for patient care refusal documentation Amerimed EMS LLC
Definitions:
• Against Medical Advice (AMA) – Any refusal for assessment, treatment or transport deemed necessary by any provider.
• Assessment – Physical, visual or verbal assessment of an illness or injury in order to create a treatment plan (e.g., palpation, auscultation, visualization, focused questioning about chief complaint).
• Consent – A Patients' authorization or agreement to undergo specific medical assessment, treatment or transport. This can be in the form of actual permission (informed consent) or in the form of an assumption that authorization would be given by an incapacitated patient or a minor's legal guardian (implied consent).
• Emergency Health Record (EHR) – ESO medical documentation that includes patient information, patient history, vital signs, care provided, final disposition, etc.
• Informed Refusal – A patient with good mental capacity must be informed of the risks of refusing medical treatment and/or transport using descriptive language that can be understood by the patient. All specific risks that were discussed should be documented thoroughly and a witness should be present.
• Refusal – incidence where the patient no longer desires assessment, treatment or transport once an assessment (including visual/verbal assessment) has begun. Patients may accept parts of the offered services while refusing others (document denials). If the patient's accepts transport but refuses some individual interventions, a written refusal does not need to be completed. Specific refusals of interventions should be thoroughly documented in the narrative.
PATIENT REFUSAL AND DOCUMENTATION
• Refusal Form – Legal documentation of a patient who refused initial or on-going medical assessment, treatment, or transport. The patient should be informed of all assessment findings, transport recommendations and interventions recommended by the Medical Provider In-Charge of Patient Care. In addition to completion of this electronic refusal form, a refusing

patient shall be offered a physical copy of the 'Notice of Privacy Practices' document.

Patient: *

A patient is an individual that:

• has contacted EMS and requested evaluation for a possible injury and/or illness

• has been assessed or examined by another System provider

• Law Enforcement personnel have requested be evaluated by EMS.

Consent to physical assessment or treatment must still be granted by the individual. In the event the individual is in custody, the Officer or Deputy may consent to or refuse evaluation, treatment, and/or transport in-behalf of the individual in custody has requested transport. Approved courtesy transports and hospital transports of non-injured relatives or friends are excluded from refusal documentation.

• is a minor (< 18 years old or emancipated minor) who is experiencing some type of illness or injury

o The following person(s) may consent to or refuse the assessment, treatment, and/or transport of a minor:

▪ Minor's Parent or Legal Guardian

▪ Law Enforcement if in custody

• is ill/injured and mentally disabled or incapacitated where their mental status cannot be verified as normal by someone familiar with the individual

• is not fully conscious, alert, and oriented that presents with illness or injury needing EMS attention

• is a possible victim of intimate partner violence/domestic violence, sexual assault, strangulation or any other form of battery

Protocol

* These criteria are to be considered in the widest, most inclusive sense. If there is any question or doubt, the individual should be treated as a patient in every respect (assessment, treatment, transport and documentation).

Refusals

Once patient care has begun (assessment or treatment), a patient deemed capable can allow or refuse further care at any point. If a patient refuses care or continuation of care, an informed refusal process shall be conducted or at least attempted by the Medical Provider In-Charge of Patient Care and thoroughly documented.

Patient dispositions that require refusal documentation:

• Patient Treated, Released (AMA) – provider recommends further treatment and/or transport and patient refuses further care.

• Patient Refused Evaluation/Care (without transport) – patient refused to give consent to assess/treat or withdrew consent for further assessment/treatment/transport. This may be a consensual decision that further care is not warranted.

• Patient Treated, Transported by Private Vehicle – Patient was evaluated and or treatment was provided by your EMS unit however patient or guardian refused ambulance transport in lieu of providing their own transport.

Since refusal charts are the highest liability to provider and agency, a Refusal and/or Treat and Release EHR should be thoroughly documented and with an

understanding that each appropriate portion of the chart must be completed with greater detail. Refusals can be written by any ACCESS provider as long as the assessment and care provided are within their scope of practice.
Elements of an informed refusal that should be included in EHR:
• Pertinent denials – what the patient denied or refused
• Offer of transport (witness present)
• Outline of the discussion about the patient's refusal (witness present)

Consult Online Medical Control as Needed

o Was the decision mutual or against medical advice (AMA)?
o Was Medical Direction contacted?
▪ Any Medical Control contact should be documented and include the name of the MD, facility contacted, and summary of the discussion
o Was the patient offered other transportation/assistance options?
o What were the circumstances of the refusal?
o What were the risks of refusal that were discussed (witness present)?
o Was the patient offered further assistance by calling 911 again?
o Document mental status of the patient
o Signature of the patient and witness (who was present during above discussions) on the refusal paperwork
o Thoroughly documented explanation of any refusal to sign

PATIENT REFUSAL AND DOCUMENTATION

Refusal Procedure: (see Refusal Form in EHR under signatures)
Refusal documentation and signatures shall be obtained on the tablet of the Medical Provider In-Charge of Patient Care. This will be the provider who completes the refusal chart.
The patient assessment is the foundation for treatment and other considerations. However, not all individuals desire assessment, treatment or transport to a medical facility. An assessment can be done visually. Therefore, the assessment will always serve as the basis for determining medical capacity as it relates to that patient's ability to refuse care.
To provide appropriate care, providers shall attempt to determine:
• Legal capacity – patient is > 18yrs old and/or has the legal capacity to make their own decisions (emancipated, been pregnant, married, military)
• Mental capacity – patient is in a good mental state and has acceptable decision-making ability
• In order to determine good mental capacity, at a minimum, a patient must be alert and oriented to person, place, time and purpose; must not be a danger to themselves or others; understands risks presented; have no signs of mental incapacity, drug/alcohol intoxication, unsteady gait, slurred speech, etc.
• Medical capacity – patient must be free from any medical conditions that may impair their ability to make informed decisions for themselves.
• Rule-out: head injury, hypoxia, head trauma, metabolic issues (ie: diabetes), environmental issues (ie: heat/cold injury), or any other mind altering emergencies or recent unexplained loss of consciousness.
All patients deemed alert and oriented and who have capacity for decision

making, will receive a comprehensive assessment (including a complete set of vitals). In the event a comprehensive assessment is refused or is not possible, this will be explained in detail in the narrative.
• **Medical Direction** (called Medical Command in EHR) shall be contacted for any question arising outside normal operational standards.
If Medical Direction is contacted, details including physician contacted, orders received, and time of contact will be recorded in the Refusal Form in the EHR.
Protocol
• **Patients/Guardians** shall be informed of assessment findings and provided with recommendations that include treatment and transport options (i.e. ACP, personal vehicle, etc.).
• **Patients** are to be advised of the risks and possible consequences of refusing care which could include the risk of death (if appropriate). In the case of a refusal on behalf of a minor, the parent or guardian must take responsibility for care of that patient. Conversation details should be clearly articulated in written narrative section of Narrative tab on the EHR.
• The Patient or Guardian must sign the refusal form. Refusal to sign must be detailed in the written narrative of the chart.
• The refusal shall be signed by a witness that was present during the discussion of treatment/transport options and witnessed the patient or guardian refuse further care. In order of preference, witness signatures may be obtained from:
o a patient's family member or someone with the patient
o law enforcement
o crew member of another agency
o crew member of same agency
o provider cannot sign refusal as witness
• If a patient refuses to sign the refusal form, a witness signature should be obtained, if possible.
• The provider should advise the patient they may re-request assistance at any time. In the event a confirmed guardian is not on location (ie: at a school), a verbal/phone refusal may be considered if all parties are in agreement. Details must be thoroughly documented in the written narrative.
This protocols is not intended to support not replace good judgment that will inevitably be required given the wide variety of situations that may be encountered.

Field providers are directed to always hold a potential patient's best interest in mind regardless of considerations for cost, insurance, childcare, or any other patient-perceived obstacle which would prevent that patient being evaluated at a definitive care facility.