



**MEMORANDUM**

To: All Associates  
From: Rick Huskey, VP Southeast Region  
Date: 8-29-2023  
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: [Signature] Date: 9/21/23  
Medical Director, John Lloyd M.D.

Amerimed Authorized Representative, Rick Huskey, VP [Signature] Date 9-27-23

[Type here]

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5012 Bristol Industrial Way Suite 110 – Buford, GA 30518  
800-902-3300

**Amerimed EMS and MFR Drug List 8-10-2023**

**EMS**

<b>BLS Medication Box</b>	<b>Quantity</b>
Acetaminophen (Tylenol) 325mg	1 bottle
Albuterol 2.5 / Combivent	4
Aspirin 81 mg	1 bottle
Atrovent .5mg or Combivent	4
Dextrose D10 25G	2
Epinephrine 1:1000 1mg	2
Narcan 2mg	2
Nitroglycerine .4	1 bottle
Oral Glucose	2
<b>Fluids</b>	
Normal Saline 500cc	2
Normal Saline 100cc / 250cc	1 each
Normal Saline Flush	5

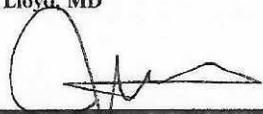
<b>ALS Medications Box</b>	<b>Quantity</b>
Adenosine (6 mg vial)	3
Amiodarone (150 mg vial)	3
Atropine (1mg prefill)	2
Calcium Chloride (10% prefill)	2
Diphenhydramine (50mg vial)	2
Dopamine (200 mg 250cc)	1
Droperidol (2.5mg/ml 2ml)	1
Epinephrine 1mg (1:10,000)	4
Glucagon 1mg	1
Ibuprofen (200mg)	1 bottle
Ketorolac (30mg)	1
Lidocaine (100mg/5ml)	4
Magnesium Sulfate (2g vial)	2
Methylprednisolone (40mg/ml 5ml)	1
Metoclopramide (10mg/2ml)	1
Norepinephrine 4mg/4m	1
Ondansetron (4mg vial)	2
Sodium Bicarbonate (50mEq prefill)	2

<b>ALS Narcotic Medications</b>	<b>Quantity</b>
Midazolam (Versed) (10mg/2ml)	2
Fentanyl (.05mg/2ml)	1

The Drug list for Amerimed EMS and MFR's is correct.

APPROVED BY:

John Lloyd, MD



Signature

9/21/23

Date

Due to RX shortages how RX is supplied may vary

**MFR (Mobile Integrated Healthcare)**

<b>AMERIMED REGISTERED MFR</b>	<b>SUPPLIED</b>
Adenocard	12mg vials
Afluria/quadrivalent flu vaccine	PFS .5cc
Albuterol	2.5 mg
Amiodarone	150mg
Azithromycin	250mg
Calcium Chloride	1g/10ml 100mg/ml
Ceftriaxone	1g
Cetirizine	10mg
Clindamycin	150mg
Ciprofloxacin	250 mg
Covid Vaccine Moderna	MDV 11/.5ml
Covid Vaccine J & J	MDV 5/.3ml
Covid Vaccine Pfizer	MDV 5/.5ml
Dopamine	200mg/5ml
Furosemide	40mg/40mg/4ml vial
Humulin R	100 units/10ml
Ipratropium Bromide	2.5% & 0.02%
Ipratropium and Albuterol	.5mg and 3.0mg
Dextrose 10	10% & 250cc
Ketorolac	30mg & 60 mg
Levofloxacin	500mg
Lidocaine	1% 200mg/20ml MDV
Macrobid	100mg
Magnesium tablets	500mg
Neosporine	.9 grams
Ondansetron	4mg
Pancreatic enzymes	1000mg
Potassium Chloride	20mEq
Prednisone	10mg
Pseudoephedrine	240 mg
Solumedrol	125 mg
Sterile Water	500 cc
Sulfamethaxazole/trimethoprim	800mg/160mg

**Other Drugs carried on MFR consistent with EMS**

Albuterol	.083% 2.5mg/3ml
ASA	81mg
Atropine	1mg/10ml PFS
Dextrose 50	50% & 25g
Diphenhydramine	50mg/ml/50mg cap
Epinephrine	1:10,000/10ml
Epinephrine	1:1000/ml
Glucagon	1 mg
Narcan 2mg	2
Nitroglycerin	.4 mg
<b>Fluids</b>	
Normal Saline multiple quan.	100-1,000 cc .9%
Normal Saline Flush	PFS 10ml 0.9%



## **Amerimed EMS Clinical Guidelines**

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#### **Clinical Guidelines**

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## Clinical Guidelines 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

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- 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.

## Clinical Guidelines

# 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

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|---|---|---|--|
| E | A | M | • Follow <a href="#">General Prehospital Care Protocol</a>   |
| M | E | E | • Place NPA and/or OPA and ventilate with <a href="#">BVM</a>  |
| T | M | D | • <a href="#">Oxygen</a> , including passive apneic oxygenation 25lpm via NC   |
|   | T | I | • Place Cardiac & <a href="#">ETCO<sub>2</sub></a> Monitor   |
|   | C |   | • 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 <a href="#">Foreign Body Airway Obstruction evaluation /removal</a> .   |
|   |   |   | • All advanced airway procedures will include passive apneic oxygenation when possible   |
|   |   |   | • Supraglottic placement if airway not protected   |
|   |   |   | • <a href="#">12-lead ECG</a>  |
|   |   |   | • IV/IO access as appropriate for patient condition  |
|   |   |   | • <b>Strongly prefer IGel as 1<sup>st</sup> line airway tool, unless contraindicated</b>   |
|   |   |   | • For intubation, <a href="#">Advanced Airway Management Checklist</a> (or see pg. 3 below) <ul style="list-style-type: none"> <li>◦ <a href="#">Video laryngoscopy(VL)</a> +/- Bougie for intubation; if no 1<sup>st</sup> pass success then must use Bougie for repeat attempts</li> <li>◦ <a href="#">Direct laryngoscopy</a> intubation with Bougie</li> </ul> |
|   |   |   | • Consider <a href="#">Epinephrine Push-Dose</a> prior to intubation for hypotension   |
|   |   |   | • Post-intubation: <ul style="list-style-type: none"> <li>◦ Intubated patients should be provided appropriate sedation with sedative or opioid medications, and sedation titrated to an appropriate target level using RASS score or similar scale.</li> <li>◦ <a href="#">Fentanyl</a></li> <li>◦ <a href="#">Midazolam</a></li> </ul>                            |
|   |   |   | • Consider <a href="#">Needle Cricothyroidotomy</a>  |

**Consult Online Medical Control As Needed**

#### Pearls:

## Clinical Guidelines

# Advanced Airway Management & Intubation Checklist

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- 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 ETCO<sub>2</sub>, 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.

## Clinical Guidelines

# Advanced Airway Management & Intubation Checklist

1 <sup>st</sup> READY EQUIPMENT AND TEAM		2 <sup>nd</sup> SET FOR PROCEDURE	
<b>ALS or BLS Provider</b>	<input type="checkbox"/> Position Patient <i>Ear 2 Notch</i>	<b>ALS Provider</b>	<input type="checkbox"/> Identify signs of a difficult airway
	<input type="checkbox"/> C-Spine PRN		<input type="checkbox"/> Crew Briefed on Plan
	<input type="checkbox"/> Head Up 30°		<input type="checkbox"/> Verify Patient IV/IO Access
	<input type="checkbox"/> 360° Patient Access		<input type="checkbox"/> Consider 2 <sup>nd</sup> Vascular Access PRN
	<input type="checkbox"/> Apply ETCO <sub>2</sub> & Prepare ETI ETCO <sub>2</sub>		<input type="checkbox"/> If medications required, Fentanyl or Versed, drawn up, labeled, and dose confirmed.
	<input type="checkbox"/> Vitals, ECG, & Monitor Visible		<input type="checkbox"/> Epinephrine, drawn up, labeled, and dose confirmed (optional)
	<input type="checkbox"/> SpO <sub>2</sub> Opposite Side of NIBP		<input type="checkbox"/> Preoxygenate with BVM ≥15 LPM or NRB
	<input type="checkbox"/> 15L NC on Patient		<input type="checkbox"/> BVM, with inline ETCO <sub>2</sub> , & PEEP (as needed)
	<input type="checkbox"/> Suction Tested & Verified		<input type="checkbox"/> Select PEEP pressure, as needed
	<input type="checkbox"/> O <sub>2</sub> Cylinder x 2 & > ½ Full		<input type="checkbox"/> 2 Person, 2 Hand BVM technique
	<input type="checkbox"/> NIBP Cycle q 60 Seconds		<input type="checkbox"/> Jaw Thrust and OPA/NPA PRN
	<input type="checkbox"/> Supraglottic airway sized & available		<input type="checkbox"/> Administer sedative medications, as needed
	<input type="checkbox"/> Needle Cricothyrotomy Kit available		<input type="checkbox"/> SpO <sub>2</sub> > 93%, then begin 30 second countdown
	<input type="checkbox"/> Size 6.5, 7.0, & 7.5 mm ET tubes available		<input type="checkbox"/> Place Supraglottic Airway, or consider ETT & prepare to use backup system, if necessary
	<input type="checkbox"/> ETT holder ready		<input type="checkbox"/> If ETT, then Video Laryngoscopy, with or without Bougie; if Direct Laryngoscopy, with Bougie
<b>ALS Provider</b>	<input type="checkbox"/> ETT size chosen, and cuff tested	<i>If no 1<sup>st</sup> pass success with VL, must use bougie for repeat attempts</i>	
	<input type="checkbox"/> Bougie in place		
	<input type="checkbox"/> Waveform ETCO <sub>2</sub> Confirmed		
	<input type="checkbox"/> Direct Laryngoscopy or Video Laryngoscopy handle/blade Selected & Tested		
<b>Anyone Can Speak Up &amp; Say</b>			
I am Concerned About....			
I am Uncomfortable About....			
Stop			

3 <sup>rd</sup> GO AND PERFORM	
<b>Place Advanced Airway</b>	
<b>ALS Provider</b>	<input type="checkbox"/> Verify ETCO <sub>2</sub> Waveform & Number
	<input type="checkbox"/> Verify Airway Depth, Absent Epigastric Sounds, then Present Bilateral Breath Sounds
	<input type="checkbox"/> Verify Cuff Pressure
	<input type="checkbox"/> Secure Tube & Communicate Depth
	<input type="checkbox"/> Gastric Tube, PRN
	<input type="checkbox"/> Assign Crew Member to Continuously Monitor Airway & Waveform ETCO <sub>2</sub>
	<input type="checkbox"/> Post-Intubation Sedation & Analgesia
<input type="checkbox"/> Titrate BVM FiO <sub>2</sub>	

## Clinical Guidelines 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

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- 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

- [Vascular access](#)
- Consider [Isotonic Fluids](#)
- [Nausea](#)

- 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



## Clinical Guidelines

# Alcohol Withdrawal

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### **Pearls:**

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- Alcohol withdrawal has a high mortality rate without appropriate treatment.
- It is important to treat symptoms early rather than waiting for symptoms to become serious.
- Patients may not be initially forthcoming about their alcohol history.

## Clinical Guidelines

# 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

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- 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<sub>2</sub>](#) 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), If unconscious patient, or patients who are unable to protect their own airway: Dextrose IV-administer in incremental doses until mental status improves or maximum field dosing is reached (if available, D10% is preferred)
  1. Maximum field adult dosing: 25g of 10-50% dextrose IV
    - a. 50 ml of 50% dextrose
    - b. 100ml of 25% dextrose
    - c. 250 ml of 10% dextrose 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
- [Advanced Airway Management](#) as needed

Consult Online Medical Control as Needed

## Clinical Guidelines

# Altered Mental Status

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### **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.
- Patients 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.

## Clinical Guidelines

# 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

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- 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.
- Administer [Albuterol](#), consider [CPAP](#) if refractory response
- IV fluid therapy with [Isotonic Fluids](#), titrated to Adult SBP  $\geq$  90 mmHg or MAP
- Consider 0.3-0.5 mg IM [Epinephrine](#), up to 3x doses
- 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 ( $\geq 2$ ) 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.

## Clinical Guidelines

# Behavioral Health & Violent Emergency

Assessment		
<b>Pediatric Pearls:</b> <ul style="list-style-type: none"> <li>Consider using Broselow tape</li> </ul>	<b>Signs &amp; Symptoms:</b> <ul style="list-style-type: none"> <li>Anxiety, agitation, confusion</li> <li>Affect change, hallucinations</li> <li>Delusional thoughts, bizarre behavior</li> <li>Expression of suicidal homicidal thoughts</li> <li>Tachycardia, diaphoresis, tachypnea, hyperthermia</li> <li>Struggles violently despite appropriate restraint</li> <li>Combative / violent</li> </ul>	<b>Differential:</b> <ul style="list-style-type: none"> <li>Hypoxia</li> <li>Alcohol intoxication</li> <li>Medication effect / overdose</li> <li>Withdrawal syndromes</li> <li>Bipolar (manic-depressive)</li> <li>Schizophrenia, anxiety disorders, etc.</li> <li>Hypertensive emergency</li> <li>Seizure / Postictal</li> <li>Domestic Violence or Abuse</li> </ul>

Clinical Management Options		
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		<ul style="list-style-type: none"> <li>Follow <a href="#">General Prehospital Care Protocol</a></li> <li>See Pearls below regarding Law Enforcement.</li> <li>Basic Airway Management as needed</li> <li><a href="#">Physical restraint</a> if needed, and use <a href="#">Restraint Checklist</a></li> <li>Cooling measures if needed</li> <li>Place cardiac monitor and <a href="#">12-Lead ECG</a></li> <li>Place ETCO2 monitor if sedated</li> </ul>
		<ul style="list-style-type: none"> <li><a href="#">Vascular access</a> as appropriate for patient condition</li> <li>Fluid therapy as needed with <a href="#">Isotonic Fluids</a>, preferred cooled fluids if Excited Delirium</li> <li><a href="#">BGL Assessment</a></li> <li>If the patient is suspected of excited delirium and suffers cardiac arrest, then consider a fluid bolus and 50mEq IV <a href="#">Sodium Bicarbonate</a> early</li> </ul>
		<ul style="list-style-type: none"> <li><a href="#">Advanced Airway Management</a> as needed</li> <li>Use <a href="#">Restraint Checklist</a> with all chemical restraint</li> <li>Assess Mental Status: if treating RASS <math>\geq 2</math>, then you <i>must</i> consult OLMC               <ul style="list-style-type: none"> <li>RASS +4, violent excited delirium, use <a href="#">Droperidol</a></li> <li>RASS +2 or +3, aggressive behaviors requiring chemical restraint, use 5mg IV/IM <a href="#">Midazolam</a> or <a href="#">Droperidol</a>, this dose may be repeated once</li> <li>RASS +1 or +2, uncontrolled anxiety, use 2.5mg IV/IM <a href="#">Midazolam</a> or <a href="#">Droperidol</a></li> </ul> </li> <li>If suspecting Hyperkalemia, consider 1g IV <a href="#">Calcium Chloride</a> and 50mEq <a href="#">Sodium Bicarbonate</a></li> </ul>

**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

## Clinical Guidelines

# Behavioral Health & Violent Emergency

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### 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<sub>2</sub> 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

## Clinical Guidelines

# Behavioral Health & Violent Emergency

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- 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

## Clinical Guidelines

# 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

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- 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 see 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%202019\\_singlepages.pdf](https://georgiawildlife.com/sites/default/files/wrd/pdf/brochures/Venomous%20Snakes%20of%20Georgia%202019_singlepages.pdf)



## Clinical Guidelines

### 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:

$$70 + (\text{age} \times 2) = \text{lowest SBP}$$

##### Signs & Symptoms:

- Burns, pain, swelling
- Dizziness
- Loss of consciousness
- Hypotension / shock
- Airway compromise / distress, singed facial or nasal hair, hoarseness / wheezing / stridor

##### Differential:

- 1<sup>st</sup> degree – red and painful
- 2<sup>nd</sup> degree - blistering
- 3<sup>rd</sup> degree - painless and charred or leathery skin
- Chemical
- Thermal
- Electrical
- Radiation

#### Clinical Management Options

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- 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<sub>2</sub>](#) 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

- Continuous ECG monitoring
- [Vascular Access](#) as appropriate for patient condition
- [Advanced Airway Management](#) as needed
- Apply 10ml of calcium chloride 10% solution in 150 ml in sterile water-soluble gel

##### 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**

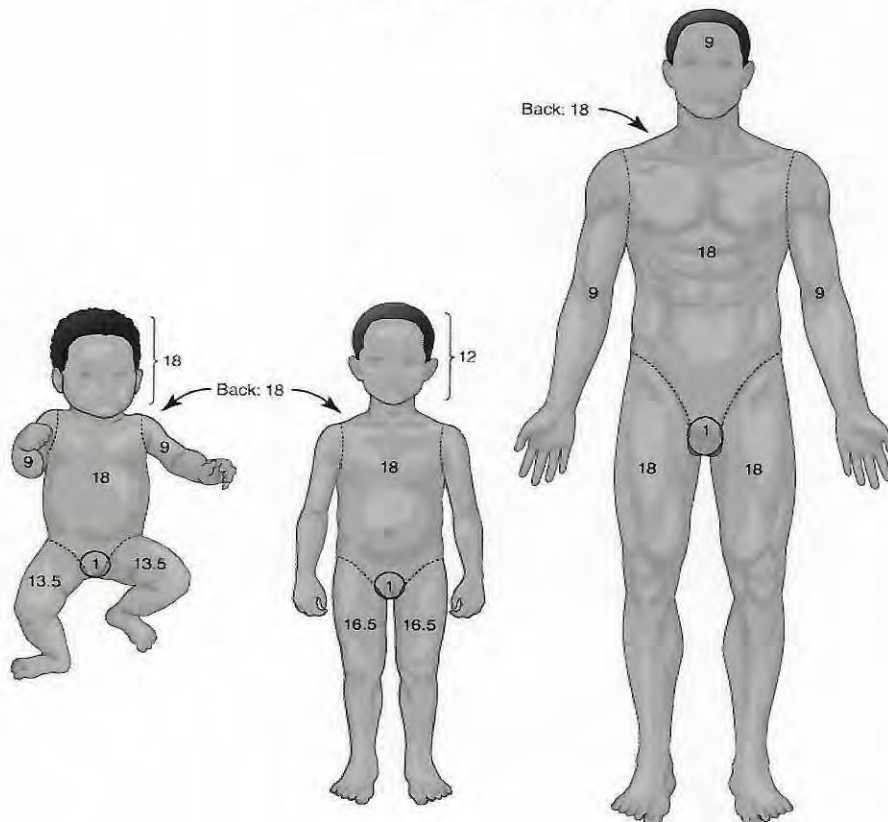
## Clinical Guidelines

# Burns – Thermal, Chemical, & Electrical

### 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



# Clinical Guidelines

## 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

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- 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<sub>2</sub>](#) and ECG monitoring
- Place [12-Lead ECG](#)
- Monitor [ETCO<sub>2</sub>](#)
- Vascular access as appropriate for patient condition
- IV fluid with [Isotonic Fluids](#) as needed
- 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.
- Fetal 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.

## Clinical Guidelines

### 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

- |   |   |   |   |
|---|---|---|---|
| E | A | M | • Follow <a href="#">General Prehospital Care Protocol</a>  |
| M | E | E | • Basic airway management   |
| T | M | D | • If pediatric and HR <60 with poor perfusion despite oxygenation & ventilation, begin <a href="#">Pit Crew CPR</a> |
| T | I | C | • Place 4 lead and <a href="#">12-Lead ECG</a>  |
| C | C | C | • Place waveform <a href="#">EtCO<sub>2</sub></a>   |
| C | C | C | • <a href="#">Vascular access</a>   |
| C | C | C | • <a href="#">Isotonic Fluids</a> PRN titrated to SBP $\geq$ 90 mmHg or MAP $\geq$ 65                               |
| C | C | C | • <a href="#">Glucagon</a> in setting of Beta Blocker OD or Calcium Channel Blocker OD                              |
| C | C | C | • Monitor and interpret ECG   |
| C | C | C | • <a href="#">Advanced airway management</a> as needed  |
| C | C | C | • <a href="#">Atropine</a>  |
| C | C | C | • <a href="#">Transcutaneous Cardiac Pacing</a>   |
| C | C | C | o Consider sedation as necessary: <a href="#">Midazolam</a> or <a href="#">Droperidol</a>                           |
| C | C | C | • If Adult: <a href="#">Dopamine</a> or <a href="#">Epinephrine</a> infusion titrated to MAP $\geq$ 65              |
| C | C | C | • If Pediatric: <a href="#">Epinephrine</a> infusion titrated to patient presentation                               |

#### 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

## Clinical Guidelines

# 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  $\leq$  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

- |   |   |   |  |
|---|---|---|--|
| E | A | M | • Follow <a href="#">General Prehospital Care Protocol</a>                           |
| M | E | E | • Place cardiac monitor and <a href="#">12-Lead ECG</a>                              |
| T | M | D | • Place waveform <a href="#">EtCO<sub>2</sub></a>                                    |
| T | I | C | • Valsalva Maneuver (Adults only)  |
| C | C | C | • Consider dehydration or sepsis as primary cause, and not necessarily an arrhythmia |

- [Vascular access](#)
- [Isotonic Crystalloid](#) PRN titrated to SBP  $\geq$  90 mmHg or MAP  $\geq$  65
- 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](#) or [Droperidol](#) 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 in18.25-20.25	8.8 lbs in20.25-21.5	11 lbs in21.5-23.25	13-15 lbs in23.25-26.25	17-20 lbs in26.25-29.25	22-24 lbs in29.25-33	26-30 lbs in33-37.5	33-40 lbs in37.5-42.5	42-50 lbs in42.5-51.25	53-64 lbs in47.75-51.25	66-80 lbs in51.25-59.25
Synchronized Cardioversion	0.5 j	1	2	2	3	4	5	7	8	10	15
	1.0 j	3	4	5	6	8	10	15	15	20	30
	2.0 j	6	8	10	15	15	20	30	30	50	70

## Clinical Guidelines

# Narrow Complex Tachycardia with a Pulse

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### **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.

## Clinical Guidelines

### 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

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

- [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

- 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.

## Clinical Guidelines

# 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 all

#### 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

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

- 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  $\geq 180$  mmHg and/or DBP  $\geq 110$ mmHg **AFTER** Fentanyl's given**
- [Isotonic Crystalloid](#) PRN titrated to SBP  $\geq 100$  mmHg or MAP  $\geq 65$
- **Inferior Wall MI:** consider [Isotonic Crystalloid](#)

- 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.



## Clinical Guidelines

# STEMI/ACS/Acute Myocardial Infarction

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- 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<sub>2</sub> 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 1<sup>st</sup> 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: **Appropriate receiving facility**
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.

## Clinical Guidelines

# 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

- Follow [General Prehospital Care Protocol](#)
- Basic airway management
- Place on cardiac monitor and [12-lead ECG](#)
- Place [EtCO<sub>2</sub>](#)

- Vascular access
- [Isotonic Crystalloid](#) PRN titrated to SBP ≥ 90 mmHg or MAP ≥ 65

- 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	in51.25-58.25
Synchronized Cardioversion	0.5 j	1	2	3	4	5	7	8	10	15	15
	1.0 j	3	4	5	6	8	10	15	15	20	30
	2.0 j	6	8	10	15	15	20	30	30	50	50

#### Pearls:

## Clinical Guidelines

### Wide Complex Tachycardia with Pulse

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- 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.

# Clinical Guidelines

## 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	17-19 lbs	22-24 lbs	26-30 lbs	33-40 lbs	41-50 lbs	53-64 lbs	65-80 lbs
	m18.25-20.25	m20.25-21.5	m21.5-23.25	m23.25-26.25	m26.25-29.25	m29.25-33	m33-37.5	m37.5-42.5	m42.5-47.5	m47.75-51.25	m51.25-56.25
Synchronized Cardioversion	0.5 j	1	2	2	3	4	5	7	8	10	15
Sync or Defib	1.0 j	3	4	5	6	8	10	15	15	20	30
Defibrillation	2.0 j	6	8	10	15	15	20	30	30	50	50
	4.0 j	10	15	20	30	30	50	50	70	85	100

### Clinical Management Options

- |   |   |   |   |
|---|---|---|---|
| E | A | M | • Follow <a href="#">General Prehospital Care Protocol</a>  |
| M | E | E | • Refer to <a href="#">Imminent Care Delivery Protocol</a>  |
| T | M | D | • Assess for unresponsiveness, absence of normal breathing, and pulselessness   |
| T | I | C | • Assess for obvious death criteria   |
| C | C | C | • Begin <a href="#">Pit Crew CPR</a>  |
| C | C | C | • BLS Airway Management and <a href="#">BVM</a> with Oxygen as available  |
| C | C | C | • Passive oxygenation with nasal cannula at 25 LPM  |
| C | C | C | • Place <a href="#">ETCO<sub>2</sub></a> monitor <ul style="list-style-type: none"> <li>◦ If ETCO<sub>2</sub> is &lt;10mmhg, improve CPR quality &amp; confirm airway ventilation</li> </ul>      |
| C | C | C | • Utilize AED if no paramedic on-scene  |
| C | C | C | • See <a href="#">Termination of Resuscitation</a> , or quick reference below, if applicable  |
| C | C | C | • <a href="#">Vascular access</a> via IV/IO; humeral->femoral->tibial IO preference order   |
| C | C | C | • Advanced Airway placement as needed (intubation is not required if supraglottic airway device is functioning appropriately with continuous waveform capnography on paramedic interpretation)    |
| C | C | C | • <a href="#">Epinephrine</a> <ul style="list-style-type: none"> <li>◦ If refractory, consider <a href="#">Amiodarone</a>, if still refractory consider <a href="#">Lidocaine</a></li> </ul>      |
| C | C | C | • If Torsades de Points or polymorphic pVT, then <a href="#">Magnesium Sulfate</a>  |
| C | C | C | • Fluid bolus with <a href="#">Isotonic Fluids</a> as needed  |
| C | C | C | • If treatable cause is identified, move that treatment up in priority  |
| C | C | C | • Monitor and interpret ECG   |
| C | C | C | • <a href="#">Manual Defibrillation</a> for pVT or VF <ul style="list-style-type: none"> <li>◦ Adult: Maximum Joules</li> <li>◦ Pediatric: Initial 2 joules/kg then repeat 4 joules/kg</li> </ul> |
| C | C | C | • For refractory VF, use <a href="#">Double Sequential Defibrillation</a> at maximum Joules for Adults  |
| C | C | C | • If <a href="#">ROSC</a> , then use <a href="#">Post-Resuscitation</a> Reference.  |
| C | C | C | • If patient is Hyperthermic (Temp >37.5°C or 99.5°F), initiate cooling measures  |

# Clinical Guidelines

## Cardiac Arrest

### Reversible Cause Treatments (With A Pulse)

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

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- 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

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- 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.

## Clinical Guidelines

### Cardiac Arrest

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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 ETCO<sub>2</sub> should be initiated as soon as practicable.
- Calcium and sodium bicarbonate should be given early if hyperkalemia is suspected (renal failure, dialysis)

## Clinical Guidelines

### Cardiac Arrest

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- 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.

# Clinical Guidelines

## Crush Injury

### 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

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- 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 arrhythmia develops then deploy/tighten tourniquet.
  - Follow [General Prehospital Care Protocol](#)
- 
- [Vascular access](#) at 1.5 L/hr of [Isotonic Fluids](#) during extrication. If adequate hemodynamics, then reduce to 500 mL/hr after extrication.
  - Continuous [ETCO<sub>2</sub>](#) and ECG monitoring once practical.
  - [Nebulized Albuterol](#) or saline PRN for patients with dust concentrations in airway.
- 
- 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:
    - Consider Analgesics
    - Administer Opioids with caution

### 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.



## Clinical Guidelines

### Crush Injury

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- 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.
- ETCO<sub>2</sub> if multiple doses of Narcotic Medication administered.

## Clinical Guidelines

### General Prehospital 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

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- 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
  - Consider 3-lead ECG monitoring (cardiac monitor)
  - Obtain vital signs: BP, pulse rate, respiratory rate, and body temperature
  - Oxygen as needed to maintain SpO<sub>2</sub> 92 – 96% or as indicated by signs of hypoxia
  - Perform medication cross check for all medication administrations
  - Place and monitor EtCO<sub>2</sub> 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
- 
- 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.

## Clinical Guidelines Hyperthermia

### 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:

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

#### Differential:

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

### Clinical Management Options

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- 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
- 
- [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
- 
- 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.

## Clinical Guidelines Hypothermia & Frostbite

### 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:

- Cold, clammy
- Shivering
- 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

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- 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<sub>2</sub>](#)

- 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  $\geq 30^{\circ}\text{C}$

- 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.

## Clinical Guidelines Nausea & Vomiting

### 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:

- Pain
- Constipation
- Diarrhea
- Anorexia
- Hematemesis

#### Differential:

- 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

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- Follow [General Prehospital Care Protocol](#)
- Inhaled (sniff) [Isopropyl Alcohol Wipe](#) to help control nausea.
- Identify cause
- Place ECC monitor

- IV/IO Access as necessary
- [BGL](#) assessment
- ECG interpretation
- Adult: [Diphenhydramine](#) if patient allergic to Ondansetron **and** Metoclopramide
- [Isotonic Fluids](#) as needed

- *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
- [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 Extrapyrimal Syndrome and **Prolonged QT syndrome.**

## Clinical Guidelines

# Neonatal and Newborn Care

### Assessment

#### Pediatric Pearls:

- Due date and gestational age
- Multiple gestation (twins, etc.)
- Meconium
- Delivery difficulties
- Congenital disease
- Maternal medications
- Maternal risk factors:  
Substance misuse, Smoking

#### Signs & Symptoms:

- Respiratory distress
- Normal peripheral cyanosis or mottling
- Abnormal central cyanosis
- Altered level of responsiveness
- Bradycardia

#### Differential:

- Airway failure, Respiratory drive
- Infection
- Maternal medication effect
- Hypovolemia
- Hypoglycemia
- Congenital heart disease
- Hypothermia

### Clinical Management Options

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- 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<sub>2</sub> if <95%
  - If after initial ventilations pulse improves and maintains >100, monitor and reassess
- 
- [Vascular access](#) – if cardiac arrest of critical condition
  - [Isotonic Fluids](#) titrated to perfusion (10-20cc/kg bolus)
  - [BGL](#) heel stick
- 
- [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

# Clinical Guidelines

## Obstetrical Emergency

### Assessment

#### History:

- 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

#### Signs & Symptoms:

- Vaginal bleeding
- Abdominal pain
- Seizures
- Hypertension
- Severe headache
- Visual changes
- Edema of the hands and face

#### Differential:

- Pre-eclampsia/  
Eclampsia
- Placenta previa
- Placenta abruptio
- Spontaneous  
abortion

### Clinical Management Options

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

## Clinical Guidelines

# Obstetrical Labor & Childbirth

### Assessment

#### Pediatric Pearls:

- 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

#### Signs & Symptoms:

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

#### Differential:

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

### Clinical Management Options

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- 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***.
- 
- IV/IO Access as necessary
  - [Vascular access](#) with [Isotonic Crystalloid](#) titrated to effect for vaginal hemorrhage
- 
- [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



## Clinical Guidelines Overdose

### 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:

- Salivation
- Lacrimation
- Urination
- Defecation
- GI distress
- Emesis
- Bronchospasm
- Bronchorrhea
- Bradycardia
- Seizure

#### Differential:

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

### Clinical Management Options

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- Follow [General Prehospital Care Protocol](#)
- Scene Safety and PPE.
- Attempt immediate decontamination if possible; consider risk of "off-gassing"
- If prolonged transport time, consult OLMC and/or Poison Control Center at 1-800-222-1222.
- Place ECG & EtCO<sub>2</sub>
- **Suspect Opiate OD:** [Naloxone](#) if respirations are depressed

- IV/IO Access as necessary
- Interpretation of [12-lead ECG](#)

- [Advanced Airway Management](#) as needed
- **Opiate OD:** [Naloxone](#) if respirations are depressed
- **Stimulant OD** (Methamphetamine, Cocaine): consider [Midazolam](#)
- **Calcium Channel/Beta Blocker OD:** [Calcium Chloride](#), [Epinephrine](#) Infusion & [Glucagon](#) (Beta blocker OD only)
- **Tricyclic or Phenobarbital OD:** [Sodium Bicarbonate](#)
- **Acute wide QRS:** [Sodium Bicarbonate](#), consider STEMI also
- **Cholinergic Crisis:** [Atropine](#) for secretions, [Midazolam](#) for seizures (see *Organophosphate Exposure* protocol)
- **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.

## Clinical Guidelines

### Overdose

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- 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.

## Clinical Guidelines 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

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- Follow [General Prehospital Care Protocol](#)
  - Bleeding Control
  - [Pain scale assessment](#) 0-10, [Wong-Baker](#) faces for pediatrics, [FLACC](#) for infants
  - [SMR](#) Evaluation, Bandaging, & Splinting as needed
  - Ice packs and ace bandages as needed
  - Bilateral BP measurements if suspecting Aortic Dissection
  - Place ECG and [ETCO<sub>2</sub>](#)
- 
- IV/IO Access as necessary
  - [Isotonic Fluids](#) as needed
- 
- [Acetaminophen](#) – Adult PO or IV
  - [Ibuprofen](#) – Adult PO only
  - [Fentanyl](#)

### Consult Online Medical Control As Needed

#### Pearls:

- Pain severity is a vital sign to be recorded 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 and Ketamine 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

## Clinical Guidelines Respiratory Distress

### 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:

- 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

#### Differential:

- 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

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- 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<sub>2</sub>](#) 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<sub>2</sub>
- For the following, in addition to [Albuterol](#) with [Ipratropium](#), consider:
- **Pulmonary Edema (Diffuse crackles + Bilateral Pedal Edema):**
  - Consider [CPAP](#) with [PEEP](#) with rales/rhonchi indicating wet lung sounds
  - [Nitroglycerin](#) q 5 minutes if SBP ≥ 100mmHg
- **Asthma/COPD (Wheezing):**
  - [CPAP](#) with [PEEP](#) if refractory to NEB
  - [Methylprednisolone](#)
  - [Epinephrine](#) (0.3mg IM dose)
  - [Magnesium Sulfate](#)
- **Upper Airway Cause (Stridor – pediatric):**
  - Nebulized [Epinephrine](#)
  - [Methylprednisolone](#)
- **Pneumothorax (Absent/Asymmetric breath sounds):**
  - If evidence of tension pneumothorax, consider [Pleural Decompression](#)
- [Advanced Airway Management](#) as needed

**Consult Online Medical Control As Needed**

**Pearls:**

Last Revised: 08/2023

Page 1 of 2

## Clinical Guidelines

# Respiratory Distress

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### 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 o<sub>2</sub> 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<sub>2</sub> and SpO<sub>2</sub> 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 CO<sub>2</sub> 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 is an ominous sign

## Clinical Guidelines Seizure

### 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:

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

#### Differential:

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

### Clinical Management Options

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- Follow [General Prehospital Care](#)
- [CPSS](#) assessments
- [SMR](#) assessment and consider Trauma cause
- BLS airway management
- For any seizure in a pregnant or recently post-partum patient, consider eclampsia and consult the [Obstetrical Emergencies](#) protocol.
- Place ECG and ETCO<sub>2</sub>
- If patient is post-ictal or confused, refer to [Altered Mental Status](#)
- IV/IO Access as necessary
- [BGL](#) assessment
- [Isotonic Fluids](#) fluid challenge at 10-20 ml/kg
- Monitoring and interpretation of ECG & [EtCO<sub>2</sub>](#)
- **General Seizure Treatment:** [Midazolam](#)
- **Hypoglycemic Seizure:** [Glucose](#)
- **Pediatric Febrile Seizure:** if temp greater than 100.4 [Ketorolac](#) 1mg/kg max dose 15mg IV(if unable to swallow), then [Acetaminophen](#)
- **Eclampsia:** [Magnesium](#), consider adjunct [Midazolam](#)
- [Advanced Airway Management](#) as needed
- Patient assist: [Vagus Nerve Stimulator](#) (VNS) q 60 seconds, may repeat x3

### Consult Online Medical Control As Needed

#### Pearls:

- Hypoglycemia is the 2<sup>nd</sup> 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.

## Clinical Guidelines

### Seizure

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- In an infant, a seizure may be the only evidence of a closed head injury.

## Clinical Guidelines

# Shock/Hypotension, Non-Traumatic

### 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:

- Restlessness, confusion, weakness
- Syncope
- Tachycardia
- Diaphoresis
- Pale, cool, clammy skin
- Delayed capillary refill
- Coffee-ground emesis
- Tarry stools

#### Differential:

- Infection/Sepsis
- Dehydration
- Vomiting
- Diarrhea
- Congenital heart disease
- Medication/Toxin
- Anaphylaxis
- Cardiac Failure (myocarditis)

### Clinical Management Options

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- 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](#)

- 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
  - If CHF or ESRD/Dialysis then limit fluids to 250-500ml bolus; 1L total

- [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  $\geq$  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.



## Clinical Guidelines

### Stroke

#### 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:**

- Altered mental status
- Weak / Paralysis
- Blindness or other sensory loss
- Aphasia / Dysarthria
- Syncope
- Vertigo / Dizziness
- Vomiting
- Headache
- Seizures
- Hyper-/Hypotension

##### **Differential:**

- Altered mental status
- Transient Ischemic Attack
- Seizure
- Hypoglycemia
- Hypoxia / Hypercarbia
- Stroke
- Thrombotic / Embolic (85%)
- Hemorrhagic (15%)
- Tumor
- Trauma
- Atypical migraine

#### Clinical Management Options

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- 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<sub>2</sub>](#)

- [BGL](#) assessment
- Vascular access, 2<sup>nd</sup> vascular access if time and patient conditions permit

- [Advanced Airway Management](#) as needed
- Monitoring and interpretation of ECG & [EtCO<sub>2</sub>](#)

#### 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.

## Clinical Guidelines Stroke

- 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)

<b>START HERE</b>	↓	Is the patient having a stroke?	✓ Check if yes
<b>Balance</b> <ul style="list-style-type: none"> <li>• Perform bilateral index finger-to-nose test and bilateral heel-to-shin test</li> <li>• Does the patient have sudden loss of balance or coordination, trouble walking or dizziness?</li> </ul>			B
<b>Eyes</b> <ul style="list-style-type: none"> <li>• Assess 4 quadrants of visual field by having patient locate your index finger.</li> <li>• Does the patient have trouble seeing out of one or both eyes or sudden double vision?</li> </ul>			E
<b>Face</b> <ul style="list-style-type: none"> <li>• Ask the patient to smile or show their teeth.</li> <li>• Does the patient's face look uneven, have sudden drooping or numbness on one side?</li> </ul>			F
<b>Arms</b> <ul style="list-style-type: none"> <li>• Ask the patient to raise and extend both arms with their palms up.</li> <li>• Does one arm drift downward?</li> <li>• Does the patient have sudden numbness or weakness of the arm on one side of the body?</li> </ul>			A
<b>Speech</b> <ul style="list-style-type: none"> <li>• Ask the patient to say, "You can't teach an old dog new tricks".</li> <li>• Does the patient have slurred speech, trouble speaking, understanding or seem confused?</li> </ul>			S
<b>Time</b> <ul style="list-style-type: none"> <li>• What time did the symptoms start? _____ : _____</li> <li>• What time was the patient last known well (last appear normal)? _____ : _____</li> </ul>			T
<b>Glucose level = _____</b>			

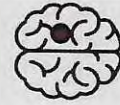
**Clinical Guidelines**  
**Stroke**

## **FAST-ED (Calculate Score)**

<p><b>Ask if the patient is on any anticoagulant medications, such as:</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 33%; border: none;">• Coumadin/Warfarin</td> <td style="width: 33%; border: none;">• Xarelto/Rivaroxaban</td> <td style="width: 34%; border: none;"></td> </tr> <tr> <td style="border: none;">• Pradaxa/Dabigatran</td> <td style="border: none;">• Savaysa/Edoxaban</td> <td style="border: none; vertical-align: top;"><b>Time anticoagulant last taken:</b></td> </tr> <tr> <td style="border: none;">• Eliquis/Apixaban</td> <td style="border: none;">• Heparin/Enoxaparin</td> <td style="border: none;"></td> </tr> </table> <p>• Any other anticoagulants? (please list):</p>			• Coumadin/Warfarin	• Xarelto/Rivaroxaban		• Pradaxa/Dabigatran	• Savaysa/Edoxaban	<b>Time anticoagulant last taken:</b>	• Eliquis/Apixaban	• Heparin/Enoxaparin	
• Coumadin/Warfarin	• Xarelto/Rivaroxaban										
• Pradaxa/Dabigatran	• Savaysa/Edoxaban	<b>Time anticoagulant last taken:</b>									
• Eliquis/Apixaban	• Heparin/Enoxaparin										
F	<p><b>Facial Palsy</b> (<i>ask the patient to show their teeth or smile</i>)</p> <ul style="list-style-type: none"> <li>• Both sides of the face move equally or not at all</li> <li>• One side of the face droops or is clearly asymmetric</li> </ul>	<p><b>Score:</b> 0 1</p>									
A	<p><b>Arm Weakness</b> (<i>with eyes closed, ask patient to hold arms out with their palms up and hold them there for 10 seconds</i>)</p> <ul style="list-style-type: none"> <li>• Both arms remain up for &gt; seconds or slowly move down equally</li> <li>• Patient can raise arms but one arm drifts down in &lt; 10 seconds</li> <li>• One or both arms fall rapidly, can't be lifted, or no movement occurs at all</li> </ul>	<p><b>Score:</b> 0 1 2</p>									
S	<p><b>Speech Changes</b></p> <p><i>Expressive Aphasia</i> - ask the patient to name 3 common items</p> <ul style="list-style-type: none"> <li>• Names 2 to 3 items correctly</li> <li>• Names 0 to 1 item correctly</li> </ul> <p><i>Receptive Aphasia</i> - ask the patient to perform a simple command (Example: "show me two fingers")</p> <ul style="list-style-type: none"> <li>• Normal - patient can follow the simple command</li> <li>• Unable to follow the simple command</li> </ul>	<p><b>Score:</b> 0 1  0 1</p>									
T	<p><b>Time</b></p> <ul style="list-style-type: none"> <li>• What time did the symptoms start? <span style="font-size: 1.5em;">→</span></li> <li>• What time was the patient last known well (last appear normal)?</li> </ul>	<p>____ : ____ ____ : ____</p>									
E	<p><b>Eye Deviation</b></p> <ul style="list-style-type: none"> <li>• No deviation; eyes move equally to both sides</li> <li>• Patient has clear difficulty when looking to one side (left or right)</li> <li>• Eyes are deviated to one side and do not move to the other side</li> </ul>	<p><b>Score:</b> 0 1 2</p>									
D	<p><b>Denial/Neglect</b></p> <p><i>Denial</i> - show the patient their affected arm and ask, "Do you feel weakness in this arm?"</p> <ul style="list-style-type: none"> <li>• Patient <b>recognizes</b> the weakness in their weak arm</li> <li>• Patient <b>does NOT recognize</b> the weakness in their weak arm</li> </ul> <p><i>Neglect</i> - show the patient their affected arm and ask, "Whose arm is this?"</p> <ul style="list-style-type: none"> <li>• Patient <b>recognizes</b> their weak arm</li> <li>• Patient <b>does NOT recognize</b> their weak arm</li> </ul>	<p><b>Score:</b> 0 1  0 1</p>									

## 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?



Si la respuesta es **SÍ** a cualquiera de estas preguntas,

llame 9-1-1 **¡AHORAI**

y diga "stroke"

## Clinical Guidelines

### 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

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- 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<sub>2</sub>](#)

- 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<sub>2</sub>

#### 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.

## Clinical Guidelines 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:

- **M**assive Hemorrhage
- **A**irway
- **R**espirations (decompression)
- **C**irculation (IV, TXA)
- **H**ypothermia/Head Injury
- 
- **P**ain
- **A**ntibiotics
- **W**ound care
- **S**plinting

#### Differential:

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

### Clinical Management Options

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- 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
    - o 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
    - o 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<sub>2</sub>](#)
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- [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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- [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

**Consult Online Medical Control As Needed**

## GCS Score

## Clinical Guidelines

### Trauma: General

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  $\geq 90$ mmHg.
- 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 neurovascular 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.

# Clinical Guidelines

## 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
- Tension Pneumothorax
- Pelvic fracture(s)
- Hypoventilation
- Hypovolemia
- Hemorrhage
- Tamponade

### Clinical Management Options

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- 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<sub>2</sub>](#)
  - Place 3-lead ECG
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- 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.
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- Perform [Needle Decompression](#)

### 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:



## Clinical Guidelines

# Traumatic Arrest

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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

### **Pearls:**

- Emphasis is to be placed on correcting traumatic causes of death (hemorrhage control, 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.

## Reversible Cause Treatments (With A Pulse)

## Clinical Guidelines Traumatic Arrest

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- Hypoxia:
    - Adult & Pediatric - Airway Management and [Oxygen](#)
  - Hypothermia:
    - Adult & Pediatric - Active warming strategies

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  - 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](#)

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  - 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](#)
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