



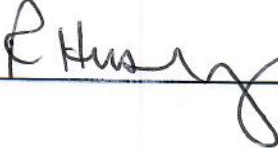
MEMORANDUM

To: All Associates
From: Rick Huskey, VP Southeast Region
Date: 12-15-2023
Re: Addendum to the Amerimed EMS Official Medical Protocols

The attached document is an addendum to the "Amerimed EMS Clinical Protocols" dated 11-09-2023. These protocols will replace any protocols that currently coincide with same (see list below).

- Advanced Airway Management
- Behavioral Health
- Cardiac – Brady Cardia
- Cardiac- Narrow Complex Tachycardia
- Crush Injury
- Pain Management
- Respiratory Distress

Approved and attested by:  _____ Date: 12/18/23

Amerimed Authorized Representative, Rick Huskey, VP  _____ Date: 12-20-23

[Type here]

Amerimed EMS Florida Drug List 12-14-2023

ALS Medications Box	Quantity
Acetaminophen (Tylenol) 325mg	1 bottle
Adenosine (6 mg vial)	3
Albuterol 2.5 / Combivent	4
Amiodarone (150 mg vial)	3
Asprin 81 mg	1 bottle
Atropine (1mg prefill)	2
Atrovent .5mg or Combivent	4
Calcium Chloride (10% prefill)	2
Dextrose D10 25G	2
Diphenhydramine (50mg vial)	2
Dopamine (200 mg 250cc)	1
Droperidol (2.5mg/ml 2ml)	1
Epinephrine 1:1000 1mg	2
Epinephrine 1mg (1:10,000)	4
Glucagon 1mg	1
Ibuprofen (200mg)	1 bottle
Ketamine (500mg/10ml)	2
Ketorolac (30mg)	1
Lidocaine (100mg/5ml)	4
Magnesium Sulfate (2g vial)	2
Methylprednisolone (40mg/ml 5ml)	1
Metoclopramide (10mg/2ml)	1
Narcan 2mg	2
Nitroglycerine .4	1 bottle
Norepinephrine 4mg/4m	1
Ondansetron (4mg vial)	2
Oral Glucose	2
Sodium Bicarbonate (50mEq prefill)	2

Fluids	Quantity
Normal Saline 500cc	2
Normal Saline 100cc / 250cc	1 each
Normal Saline Flush	5

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

The Drug list for Amerimed EMS Florida is correct.

APPROVED BY:

John Lloyd, MD



12/18/23

Signature

Date

Due to RX shortages how RX is supplied may vary

Ketamine

Indications: Pain, Severe bronchospasm, Procedural sedation, Advanced airway management, Excited delirium, Lifesaving procedure
Contraindications: Uncontrolled Hypertension, Hypersensitivity; be cautious administering to older adults and elderly.

MUST apply ETCO2 if using Ketamine

Concentration: 100 mg/mL

ADULT DOSING

Indication	Dose	Rate & Route	Note
Pain – or – Severe bronchospasm	10 mg or 0.1mg/kg 0.1 mL	IV/IO infusion over 10 minutes	For IV/IO administration, mix dose in 100 mL isotonic then administer with 60 gts wide open; may repeat x at 10 minutes.
	25 – 50 mg or 0.2mg/kg 0.25 - 0.5 mL	IM	May repeat IM every 20 minutes titrated to pain management or presence of nystagmus.
Advanced Airway Management	200 mg or 2mg/kg IV 2 mL	IV/IO push over 1 minute	May repeat IV/IO push every 10 - 20 minutes titrated to effect.
Violent Excited delirium – or – Lifesaving procedure	200 – 300 mg or 4mg/kg 2 mL – 3 mL	IM	May repeat IM every 20 minutes titrated to effect. Lifesaving procedure when IV/IO access cannot be obtained.
	50 – 75 kg		
	> 75 kg	400 mg or 4mg/kg 4 mL	

PEDIATRIC DOSING

Indication	Dose	Rate & Route	Note
Pain	0.1 mg/kg Max dose: 10 mg	IV/IO infusion over 10 minutes	May repeat once.
	0.2 mg/kg Max dose: 25 mg	IM	
Procedural sedation - or - Lifesaving procedure	2 mg/kg Max dose: 100mg	IV/IO push over 1 minute	OLMC Required. Must be \geq 3 months old and see pediatric dosing chart for patient weight minimums. For IV/IO infusion, correct weight-based dose is mixed in 100 mL isotonic then administer with 60 gtt/s wide open; may repeat x1 at 20 minutes. May repeat IV/IO push every 10 - 20 minutes titrated to effect.
	4 mg/kg Max dose: 400 mg	IM	
	2 mg/kg Max dose: 200 mg	IV/IO push over 1 minute	
Advanced Airway Management			

Precautions

Laryngospasms and other forms of airway obstruction have occurred. Use with caution in patients with history of Schizophrenia. Be aware that in lower dosing some patients may experience partial disassociation.

Adverse/Side Effects

Respiratory depression may occur, Laryngospasms, Hypertension, Emergence Reactions (Hallucinations, Delirium), dizziness, nausea, vomiting

Class

Ketamine hydrochloride is a rapid-acting dissociative anesthetic.

Mechanism of Action

The anesthetic state produced by ketamine hydrochloride has been termed "dissociative anesthesia" in that it appears to selectively interrupt association pathways of the brain before producing somesthetic sensory blockade. It may selectively depress the thalamocortical system before significantly obtunding the more ancient cerebral centers and pathways (reticular-activating and limbic systems).

Onset of Action

< 30 seconds (IV)
3 – 15 minutes (IM)

Peak Effect Fast (IV)

5 – 30 minutes (IM)

Duration of Action

IV Anesthetic: 5 – 10 minutes

IM Anesthetic: 12 – 25 minutes

Analgesia: 15 – 30 minutes

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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C | <ul style="list-style-type: none"> • Follow General Prehospital Care Protocol • Place NPA and/or OPA and ventilate with BVM • Oxygen, including passive apneic oxygenation 25lpm via NC • Place Cardiac & ETCO₂ Monitor • If there is a foreign body obstruction, consider removal via direct visualization; never perform a blind sweep – if patient’s airway is intact and not at immediate risk for decline, defer procedure to ED. See Foreign Body Airway Obstruction evaluation /removal. • All advanced airway procedures will include passive apneic oxygenation when possible |
| | C | <ul style="list-style-type: none"> • Supraglottic placement if airway not protected • 12-lead ECG • IV/IO access as appropriate for patient condition |
| | C | <ul style="list-style-type: none"> • Strongly prefer IGel as 1st line airway tool, unless contraindicated • For intubation, Advanced Airway Management Checklist (or see pg. 3 below) <ul style="list-style-type: none"> ○ Video laryngoscopy(VL) +/- Bougie for intubation; if no 1st pass success then must use Bougie for repeat attempts ○ Direct laryngoscopy intubation with Bougie • Consider Epinephrine Push-Dose prior to intubation for hypotension • Post-intubation: <ul style="list-style-type: none"> ○ 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. ○ Fentanyl ○ Midazolam ○ Consider Ketamine, (1mg/kg IV slow push q10-20 minutes) • Consider Needle Cricothyrotomy |

Consult Online Medical Control As Needed

Clinical Guidelines

Advanced Airway Management & Intubation Checklist

Pearls:

- Refer to drug formulary charts for all medication dosing for both adults and pediatric patients.
- Ask yourself if the patient needs the airway right now and if you are the right person to secure it. Expect failure so you can prepare for it.
- Patients showing fatigue, increasing ETCO₂, slowing respirations, altered mental status, increased ventricular ectopy, and hypoxia may have impending respiratory failure. Manage aggressively and preemptively
- Passive oxygen: High Flow Nasal Cannula (HFNC) at 25 LPM may be used with BVM, CPAP, or during supraglottic and intubation insertion attempts. Once airway device placement is confirmed discontinue HFNC.
- Have the tools available for your backup plans before the first intubation attempt.
- Positive pressure ventilation may worsen hypotension in the hemodynamically unstable patient, avoid in trauma patients and consider push dose Epinephrine or Norepinephrine in any potentially hemodynamically unstable patient getting intubated.

Clinical Guidelines

Advanced Airway Management & Intubation Checklist

1 st READY EQUIPMENT AND TEAM		2 nd SET FOR PROCEDURE	
ALS or BLS Provider	<input type="checkbox"/> Position Patient <i>Ear 2 Notch</i>	ALS Provider	<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 nd Vascular Access PRN
	<input type="checkbox"/> Apply ETCO ₂ & Prepare ETI ETCO ₂		<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 ₂ 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 ₂ , & PEEP (as needed)
	<input type="checkbox"/> Suction Tested & Verified		<input type="checkbox"/> Select PEEP pressure, as needed
	<input type="checkbox"/> O ₂ 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 ₂ > 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
ALS Provider	<input type="checkbox"/> ETT size chosen, and cuff tested	<i>If no 1st pass success with VL, must use bougie for repeat attempts</i>	
	<input type="checkbox"/> Bougie in place		
	<input type="checkbox"/> Waveform ETCO ₂ Confirmed		
	<input type="checkbox"/> Direct Laryngoscopy or Video Laryngoscopy handle/blade Selected & Tested		
Anyone Can Speak Up & Say			
I am Concerned About....			
I am Uncomfortable About....			
Stop			

3 rd GO AND PERFORM	
Place Advanced Airway	
ALS Provider	<input type="checkbox"/> Verify ETCO ₂ 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 ₂
	<input type="checkbox"/> Post-Intubation Sedation & Analgesia
<input type="checkbox"/> Titrate BVM FiO ₂	

Clinical Guidelines

Behavioral Health & Violent Emergency

Assessment

Pediatric Pearls:

- Consider using Broselow tape

Signs & Symptoms:

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

Differential:

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

Clinical Management Options

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

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

- [Advanced Airway Management](#) as needed
- Use [Restraint Checklist](#) with all chemical restraint
- Assess Mental Status: if treating RASS ≥ 2 , then you *must* consult OLMC
 - RASS +4, violent excited delirium, use [Droperidol](#), consider [Ketamine 4mg/kg IM](#)
 - RASS +2 or +3, aggressive behaviors requiring chemical restraint, use 5mg IV/IM [Midazolam](#) or [Droperidol](#), this dose may be repeated once
 - RASS +1 or +2, uncontrolled anxiety, use 2.5mg IV/IM [Midazolam](#) or [Droperidol](#)
- If suspecting Hyperkalemia, consider 1g IV [Calcium Chloride](#) and 50mEq [Sodium Bicarbonate](#)

Consult Online Medical Control for management of ALL Pediatric patients

Richmond Agitation Sedation Scale (RASS)

- | | |
|----|--|
| +4 | Combative: Overly combative or violent and an immediate danger to provider |
| +3 | Very Agitated: Aggressive, non-combative or pulls on or removes tube(s) or catheter(s) |
| +2 | Agitated: Frequent, non-purposeful movement or patient/ventilation desynchrony |
| +1 | Restless: Anxious or apprehensive, movements not aggressive or vigorous |

Clinical Guidelines

Behavioral Health & Violent Emergency

0 Alert and Calm: Spontaneously pays attention to provider

Pearls:

- Respect the dignity of every patient
- For patients experiencing substance withdrawal (alcohol) and post-ictal state, consider benzodiazepines (Midazolam) as a first line medication.
- Consider your safety first. Physical restraint should be performed or assisted by Law Enforcement. Law Enforcement presence should be requested in any patient whom the EMS Provider deems a threat or potential threat to the safety of themselves or public bystanders.
- Treat conditions such as hypoglycemia, hypoxia, or poisoning as per appropriate protocol.
- Patients experiencing behavioral health emergencies should be transported for treatment if they have any of the following:
 - Can be reasonably expected to intentionally or unintentionally physically injure themselves/others or has engaged in acts or made threats to support the expectation.
 - Are unable to attend to basic physical needs.
 - Have judgement that is so impaired that individual is unable to understand the need for treatment and whose behavior will cause significant physical harm.
 - Have weakened mental processes because of age, epilepsy, alcohol, or drug dependence which impairs their ability to make treatment decisions.
- SAVE Mnemonic for De-Escalation:
 - Support - "Let's work together..."
 - Acknowledge - "I see this has been hard for you..."
 - Validate - "I would probably be reacting the same way if I was in your shoes..."
 - Emotion naming - "You seem upset..."
- Make every effort to use the minimum amount of sedatives required in order to adequately address the behavioral health and violent emergency.
- All patients who receive either physical or chemical restraints must be continuously monitored by ALS personnel on scene or immediately upon their arrival. Monitoring must include: Cardiac, pulse oximetry, and ETCO₂ 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:

Clinical Guidelines

Behavioral Health & Violent Emergency

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

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

EMT

- Follow [General Prehospital Care Protocol](#)
- Basic airway management
- If pediatric and HR <60 with poor perfusion despite oxygenation & ventilation, begin [Pit Crew CPR](#)
- Place 4 lead and [12-Lead ECG](#)
- Place waveform [EtCO₂](#)

- [Vascular access](#)
- [Isotonic Fluids](#) PRN titrated to SBP \geq 90 mmHg or MAP \geq 65
- [Glucagon](#) in setting of Beta Blocker OD or Calcium Channel Blocker OD

- Monitor and interpret ECG
- [Advanced airway management](#) as needed
- [Atropine](#)
- [Transcutaneous Cardiac Pacing](#)
 - Consider sedation as necessary: [Midazolam](#) or [Droperidol](#), consider [Ketamine](#)
- If Adult: [Dopamine](#) or [Epinephrine](#) infusion titrated to MAP \geq 65
- If Pediatric: [Epinephrine](#) 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

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- Follow [General Prehospital Care Protocol](#)
- Place cardiac monitor and [12-Lead ECG](#)
- Place waveform [EtCO₂](#)
- Valsalva Maneuver (Adults only)
- 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:**
 - 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, consider [Ketamine](#)
 - 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 in42.5-47.75	53-64 lbs in47.75-51.25	66-80 lbs in41.25-56.25
<i>Synchronized Cardioversion</i>	0.5 j	1	2	3	4	5	7	8	10	15	15
	1.0 j	3	4	5	6	8	10	15	20	30	30
	2.0 j	6	8	10	15	15	20	30	50	50	70

Pearls:

Clinical Guidelines

Narrow Complex Tachycardia with a Pulse

- 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 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 [ETCO₂](#) 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
 - If MAP greater or equal to 65 and no respiratory failure, then [Fentanyl](#), consider [Ketamine](#)

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.

Clinical Guidelines

Crush Injury

- The larger the mass crushed (ie more limbs) the greater the likelihood of severe rhabdomyolysis and renal failure.
- Crush injury may cause profound electrolyte disturbances resulting in dysrhythmias. Monitor as soon as practically possible.
- Do not overlook treatment of additional injuries, airway compromise, hypothermia/hyperthermia.
- ETCO₂ if multiple doses of Narcotic Medication administered.

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 [ETCO₂](#)
- IV/IO Access as necessary
- [Isotonic Fluids](#) as needed
- [Acetaminophen](#) – Adult PO or IV
- [Ibuprofen](#) – Adult PO only
- [Fentanyl](#)
- Consider [Ketamine](#), if given IV, then must be mixed in 100cc NS, MUST apply ETCO₂, if using Ketamine

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 [ETCO₂](#) 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 & EtCO₂
- 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
- If severe bronchospasm refractory to other medications, consider [Ketamine](#)

Consult Online Medical Control As Needed

Clinical Guidelines

Respiratory Distress

Pearls:

Pulmonary Edema/CHF:

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

Asthma/COPD/Stridor

- EtCO₂ and SpO₂ must be monitored continuously if either are abnormal or decline in patient's mental status/condition.
- A silent chest in respiratory distress is a sign for pre-respiratory arrest.
- Chronic COPD may have elevated CO₂ at baseline. Patient respiratory status must be reassessed after each nebulizer/medication to determine need for additional dosing.
- CPAP if continued respiratory distress and if adequate mask seal can be established.
- Immediately assess for pneumothorax in asthmatics who develop a sudden decrease in blood pressure, increase in heart rate, or other signs of pneumothorax during an exacerbation.
- Development of bradycardia in respiratory distress is an ominous sign