SAN FRANCISCO EMS AGENCY PROTOCOL MANUAL

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Protocol Revisions – Effective February 3, 2020			
Reference 13.I: Medication List	Cetacaine Spray	Revision	Removed from the medication list, consistent with the removal of nasal intubation as an approved intervention.
Reference 13.I: Medication List	Epinephrine	Revision	Administration intervals for Pediatric Cardiac Arrest updated to reflect those outlined in Protocol 2.04 Cardiac Arrest and maintain consistency with adult administration intervals. *Previous Version* **PEDIATRIC DOSE/ROUTE**: ⇨ **Cardiac Arrest**: 0.01 mg/kg IVP/IO (1:10,000) q 3 min during cardiac arrest. May repeat x1 in 5 minutes. *New Version* **PEDIATRIC DOSE/ROUTE**: ⇨ **Cardiac Arrest**: 0.01 mg/kg IVP/IO (1:10,000) at the time intervals specified in Protocol 2.04 Cardiac Arrest – VF/pulseless VT and asystole/PEA.
Reference 13.I: Medication List	Midazolam	Revision	Adult and pediatric doses for seizure are doubled. Minor changes to language made for consistency. *Previous Version* **ADULT DOSE/ROUTE:** ⇨ **Sedation/Agitation:** 2 - 5mg IM x 1 or 1 – 2 mg slow push IV/IO. May repeat in 5min for continued agitation. Maximum total dose 5 mg IV/IO. ⇨ **Seizure**: 5 mg IM x1 or intranasally (2.5 mg each nostril) or 2.5 mg slow push IV/IO. May repeat IV/IO dose in 5 minutes. Max dose 5 mg IV/IO. **PEDIATRIC DOSE/ROUTE**: ⇨ **Agitation/Sedation/Seizure**: 0.1 mg/kg IV/IM/IO or 0.2 mg/kg intranasally. Total max dose is 2mg. *New Version* **ADULT DOSE/ROUTE:** ⇨ **Sedation/Agitation:** 2 - 5mg IM x1 or 1 – 2mg slow push IV/IO. May repeat IV/IO dose in 5 minutes for continued agitation. Maximum total dose 5mg IV/IO. ⇨ **Seizure:** 10mg IM x1 or intranasally (5mg each nostril) or 5mg slow push IV/IO. May repeat IV/IO dose in 5 minutes. Maximum total dose 10mg IV/IO. **PEDIATRIC DOSE/ROUTE:** ⇨ **Agitation/Sedation/Seizure:** 0.2 mg/kg IV/IM/IO or 0.4 mg/kg intranasally. Maximum total dose 4mg.

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Reference 13.I: Medication List	Normal Saline	Revision	**Known or Suspected Hypoglycemia** removed from pediatric indications. **PEDIATRIC DOSE/ROUTE:** ⇨ IV/IO of Normal Saline TKO. ⇨ **Pediatric hypovolemic shock**: IV/IO bolus of 20 mL/Kg. Repeat up to 60 mL/Kg if indicated. ⇨ **Neonatal hypovolemic shock**: 10 mL/Kg. Repeat up to 30 mL/Kg. ⇨ ~~**Known or Suspected Hypoglycemia:** IV/IO bolus of 10 mL/Kg.~~ ⇨ **AMS of Unknown Cause:** IV/IO bolus of 10 mL/Kg.
Reference 13.I: Medication List	Naloxone	Revision	Updated **Adult Dose/Route** to include repeat dosing for IN, consistent with that of IV/IM/IO. *Previous Version* **ADULT DOSE/ROUTE:** ⇨ **Intranasal**: 2 mg via mucosal atomizer device (MAD). *New Version* **ADULT DOSE/ROUTE:** ⇨ **Intranasal:** 2 mg via mucosal atomizer device (MAD), may repeat in 5 min for continued respiratory depression.
Reference 13.III: Pediatric Dosage Chart	Midazolam	Revision	Updated to reflect change in dosages for IV/IM/IO and IN (see Reference 13.I: Medication List – Midazolam).
Reference 13.III: Pediatric Dosage Chart	Fentanyl	Revision	Updated to include Fentanyl IV/IO and Fentanyl IM/IN.
1.01	Patient Assessment – Primary Survey	Revision	Addition of the following clarifying language. *Previous Version:* The purpose of the primary survey is to identify and immediately correct life-threatening problems. *New Version:* The purpose of the primary survey is to identify and immediately correct life-threatening problems. A primary survey shall be performed on all patients (as defined in Policy 4040) upon contact, following determination of scene safety. Should a provider be unable to perform a Primary Survey, the circumstances shall be documented in a Patient Care Report. `
1.01	Patient Assessment	Revision	Under **Airway** section, the word “open” is replaced with “patent.” *Previous Version*

	– Primary Survey		**AIRWAY:** • Ensure open airway. *New Version* **AIRWAY:** • Ensure patent airway.
1.03	Patient Assessment – Critical Patient Offload Survey	New Protocol	Establishes a standard for continued assessment and monitoring of higher-acuity patient, during a time interval defined as **"…between an ambulance's arrival at hospital and the time in which patient care is transferred to Emergency Department staff."**
2.01	Abdominal Discomfort	Revision	Updated to refer to Protocol 2.09 Pain Control rather than include only morphine for pain management. *Previous Version* • For pain, may administer **Morphine Sulfate**. *New Version* • For pain, refer to **Protocol 2.09 Pain Control.**
8.02	Pediatric Altered Mental Status	Revision	Updated to reflect removal of Normal Saline bolus for known or suspected hypoglycemia (see Reference 13.I: Medication List – Normal Saline). *Previous Version* • IV or IO of **Normal Saline** 10 ml/kg. *New Version* • IV/IO of **Normal Saline** at TKO

CITY AND COUNTY OF SAN FRANCISCO

PREHOSPITAL CARE VISION AND ETHICS STATEMENT

2015

Our EMS community consists of a team of health care professionals including EMT-1's, Paramedics, Nurses, Physicians, Researchers, Dispatchers and system Educators and Administrators. This statement defines our goals and ethical responsibilities and is beneficial in guiding our practice.

We believe that…

- We exist to provide the best possible emergency care to the residents and visitors of the City and County of San Francisco at all times and in all places.
- Competent medical care must be provided with compassion and regard for human dignity to all persons, regardless of ethnicity, race, creed, gender, economic status, sexual orientation, gender identity, age or response to our care.
- Patients who are competent have the right to determine what shall be done with their body and to receive or refuse medical service and to know the consequences of their decision.
- We are accountable for providing medical care to the best of our ability and for accurately documenting our care.
- Patients and colleagues must be dealt with in an honest and truthful manner in all matters pertaining to our prehospital care.
- The highest standard of professional conduct must be maintained with providing medical care, including respect, confidentiality and maintenance of personal competence and teaching other members of the prehospital community.
- We are responsible for upholding the standards of the profession and for participating in activities that contribute to its growth and improve our community.
- We must obey and respect the law and not participate in any professionally unethical activities. We refuse to let personal considerations such as economic gain or convenience influence our provision of patient care, and we refrain from activities which may impair our professional judgment and our ability to act competently.
- Our EMS system, organization, supervisors, peers and subordinates deserve our utmost loyalty.
- Where conflicts of interest arise, our professional judgments should always be guided by our ultimate obligation which is to our patients and the public that we serve.
- We are committed to accomplishing our job; and that commitment stems from the desire to be the best we can possibly be and the affirmation of all the preceding elements of this code.

Section 1: Assessment

1.01 PATIENT ASSESSMENT—PRIMARY SURVEY

The purpose of the primary survey is to identify and immediately correct life-threatening problems. A primary survey shall be performed on all patients (as defined in Policy 4040) upon contact, following determination of scene safety. Should a provider be unable to perform a Primary Survey, the circumstances shall be documented in a Patient Care Report.

SCENE SIZE-UP / GLOBAL ASSESSMENT:

- Recognize hazards, ensure safety of scene and secure a safe area for treatment.
- Apply appropriate universal body/substance isolation precautions.
- Identify number of patients and whether additional resources are needed
- Observe position of patient and determine chief complaint or mechanism of injury.
- Plan strategy to protect evidence at potential crime scene.

GENERAL IMPRESSION:

- Check for life threatening conditions.
- AVPU (**A**=alert, **V**=responds to verbal stimuli, **P**=responds to painful stimuli, **U**=unresponsive).

AIRWAY:

- Ensure patent airway.
- Protect spine from unnecessary movement in patients at risk for spinal injury.
- Look and listen for evidence of upper airway problems and potential obstructions:
- Utilize any appropriate adjuncts as indicated to maintain airway.

BREATHING:

- Assess for breathing.
- Intervention for inadequate ventilation and/or oxygenation using approved adjuncts as indicated.

CIRCULATION:

Check for pulse. If no pulse, begin CPR and/or defibrillate while following appropriate cardiac arrest protocols.

- Control life-threatening hemorrhage.

1.02 PATIENT ASSESSMENT –SECONDARY SURVEY

The secondary survey is the systematic assessment and complaint-focused relevant physical examination of the patient.

- The Primary Survey and initial treatment and stabilization of life-threatening airway, breathing and circulation difficulties.
- Need for Spinal Motion Restriction.
- A rapid trauma assessment (if indicated by related trauma protocol).
- Transport of the potentially unstable or critical patient.
- Investigation of the chief complaint and associated complaints, signs or symptoms.
- An initial set of vital signs:
  - Pulse.
  - Blood pressure.
  - Respiration.
  - Lung sounds.
  - Pupils.
  - Cardiac rhythm (if indicated by related protocol).
  - Pulse oximetry.
  - Blood Glucose (if indicated by related protocol).
  - Determine Glascow Coma Scale (GCS) Score:

Eye Opening	Verbal Response	Motor Response
4 = Spontaneous	5 = Oriented	6 = Obeys Commands
3 = To verbal stimuli	4 = Confused	5 = Purposeful / Localizes pain
2 = To painful stimuli	3 = Inappropriate words	4 = Withdraws to pain
1 = No Response	2 = Incomprehensible words	3 = Flexion to pain
	1 = No Response	2 = Extension to pain
		1 = No Response

USING THE GCS TO ASSESS INFANTS AND YOUNG CHILDREN:

Eye Opening	Verbal Response	Motor Response
4 = Spontaneous	5 = Smiles, oriented to sounds, follows objects, interacts	6 = Obeys Commands
3 = To verbal stimuli	4 = Cries but is consolable; inappropriate interactions	5 = Purposeful/Localizes pain
2 = To painful stimuli	3 = Inconsistently consolable, moaning	4 = Withdrawal from pain
1 = No response	2 = Inconsolable, agitated	3 = Flexion to pain
	1 = No vocal response	2 = Extension to pain
		1 = No motor response

HISTORY

- Obtain Patient History from available sources.
- Allergies.
- Medications. Past medical history relevant to chief complaint
- Assessment questions, if appropriate:
  - OPQRST (location, factors that increase or decrease the pain severity and a pain

scale.)
    - O= Onset (Sudden or gradual)
    - P= Provoke (What were you doing when the pain started? Does anything make it better or worse?)
    - Q= Quality (What does the pain feel like?)
    - R= Region/Radiate (Where is the pain? Does it go anywhere else?)
    - S= Severity (On a scale of 1-10, 10 being the worst pain you have ever had, how would you rate that pain now? How would you rate that pain at its worst or during exertion/movement?)
    - T= Time (When or what time did this start?)
  - PASTE (Used for Shortness of Breath Assessment)
    - P= Progression (Sudden or gradual?)
    - A= Assoc. Chest Pain (If yes, which came first?)
    - S= Sputum (Are you coughing anything up? If yes, what color is it?)
    - T= Time, Temp, Talkability (When or what time did this start? Have you had or do you have a fever? How many word sentences can the patient speak in?)
    - E= Exercise tolerance (What is the patient's tolerance for exertion? Can they get up and walk without getting SOB? What is their baseline tolerance level?)
- Mechanism of injury (as indicated by relevant protocol).

  For focused history findings relevant to specific patient complaints, see protocols related to each chief complaint.

EXPOSE, EXAMINE & EVALUATE:

- Minimize on scene time for trauma patients

- All physical assessments for trauma should determine the presence or absence of **DCAP-BTLS**:
  - **D**eformity
  - **C**ontusion/Crepitus
  - **A**brasion
  - **P**uncture
  - **B**ruising/Bleeding
  - **T**enderness
  - **L**aceration
  - **S**welling
- In situations with suspected life threatening trauma mechanism, a rapid trauma assessment should be performed:
  - Expose head, trunk, and extremities.
  - Rapid Trauma Assessment looking for and treating life threatening injuries.
  - See relevant protocols for Head, Neck, Facial, Chest, Abdominal, Pelvis, and Extremity.
- Treat any newly discovered life-threatening wounds.

1.03 PATIENT ASSESSMENT—CRITICAL PATIENT OFFLOAD SURVEY

"Patient Offload" is defined as the time interval between an ambulance's arrival at hospital and the time in which patient care is transferred to Emergency Department staff. The purpose of the Critical Patient Offload Survey is to identify life-threatening changes in patient condition, as well as monitor the effectiveness of interventions during this time interval.

CRITICAL PATIENTS

- For the purpose of this protocol, "critical patients" will be defined as those meeting any of the following criteria:
    - Cardiac Arrest/ROSC
    - STEMI
    - Stroke
    - Patients transported Code 3
    - Any patient meeting the following field triage criteria, as defined in Policy 5000:
        1. Airway obstruction or respiratory insufficiency with inadequate ventilation
        2. Hypotension with shock
        3. Status epilepticus
        4. Acute deteriorating level of consciousness without trauma

SURVEY COMPONENTS

- The following shall be performed throughout Critical Patient Offload:
    - Continuous monitoring of airway, breathing, circulation, and mental status
    - Cardiac monitoring with ECG
    - Monitoring and reconfirmation of IV/IO placement
    - Monitoring and reconfirmation of advanced airway adjuncts, including the use of capnography

Section 2: Medical

2.01 ABDOMINAL DISCOMFORT

BLS Treatment
• Position of comfort. • NPO • **Oxygen** as indicated.
ALS Treatment
• IV / IO of **Normal Saline** TKO. • If SBP <90 or signs of poor perfusion, **Normal Saline** fluid bolus. • For pain refer to **Protocol 2.09 Pain Control.** • For nausea/vomiting may administer **Ondansetron** .

2.02 ALLERGIC REACTION

BLS Treatment – ALL Allergic Reactions

- Position of comfort.
- NPO
- **Oxygen** as indicated.
- May help patient administer their personal EpiPen autoinjector or equivalent product.
- If patient does not have a personal autoinjector, give IM EpiPen autoinjector or equivalent product for suspected anaphylaxis and/or severe asthma if EMT has been trained.

ALS Treatment - SPECIFIC Allergic Reactions

MILD ALLERGIC REACTION

Hives, rash and/or itching

- **Diphenhydramine**

MODERATE ALLERGIC REACTION

Hives, rash. Mild bronchospasm.

- Establish IV/IO **Normal Saline** TKO.
- **Diphenhydramine**
- **Albuterol**

SEVERE ALLERGIC REACTION (ANAPHYLAXIS)

Altered mental status, hypotension (SBP < 90) and evidence of hypoperfusion. Bronchospasm and/or angioedema

- **Epinephrine**
- Establish IV/IO **Normal Saline** TKO.
- If no response to IM **Epinephrine** or patient is in extremis, administer IV **Epinephrine**.
- **Diphenhydramine**
- **Albuterol**
- If SBP < 90 or signs of poor perfusion, **Normal Saline** fluid bolus.

2.03 ALTERED MENTAL STATUS

BLS Treatment
• Position of comfort. • NPO except as noted below. • **Oxygen** as indicated. • Check blood glucose (if EMT has been trained). • Administer **Glucose Paste** or **Oral Glucose** to known diabetic patients with symptoms of hypoglycemia. Patient must be conscious and have an intact gag reflex. • If opiate overdose is suspected AND respiratory depression are not responsive to BLS airway management: administer **Naloxone** IN if EMT has been trained.
ALS Treatment
• IV / IO of **Normal Saline** TKO. • Check blood glucose**:** o If blood glucose is <60 mg/dl, unmeasurable, or patient is a known diabetic: administer **Dextrose.** o If blood glucose < 60 mg/dl and IV cannot be established: administer **Glucagon** . • If opiate overdose is suspected AND respiratory depression are not responsive to BLS airway management: administer **Naloxone** IN, IV or IM.

2.04 CARDIAC ARREST

ALL Cardiac Arrests – High Performance CPR

See Appendix 2 for High Performance Team Organization.

Start CAB (compressions, airway, breathing) when patient is unconscious/unresponsive, not breathing normally and no pulse is detected within 10 seconds.

Compressions

Do 5 cycles of chest compressions at 30:2 compression/ventilation ratio:

- Push hard (at least 2") and fast (100/120/min).
- Allow complete chest recoil.
- Minimize compression interruptions.
- Next up team compressor is continuously checking quality of femoral pulse and is ready to rotate to the compressor position at the end of the cardiac cycle (2 minutes).
- Rotate compressors every 2 minutes or sooner if fatigued.

Airway/Ventilation:

- Open airway. Provide bag-mask ventilation. Pause compressions 2 seconds or less to ventilate during 30:2.
- Ventilate enough to cause chest rise. Avoid excessive ventilation (too fast or too much volume).
- Inserts airway adjuncts as appropriate. Do NOT stop chest compressions during advanced airway insertions.
- Asynchronous ventilations every 6 seconds once advanced airway is in place or every 10th compression

AED/Defibrillator

- While CPR is in progress, turn on AED/defibrillator and apply pads and puck.
- Shock on a 2-minute cycle. Pre-charge AED/Defibrillator at 1:45 to get ready to deliver shock at 2 minutes.
- Minimize perishock pause to less than 5 seconds.
- Change out rescuer on chest compressions during perishock pause.
- After first 30 compressions, analyze rhythm. Clear patient and shock if indicated. Resume compressions for another 2 minutes before next rhythm analysis.
- Always resume chest compressions immediately after rhythm analysis or shock.
- **EXCEPTION**: If patient goes into VF/pulseless VT while monitored or attached to an AED or defibrillator, a shock must be administered immediately.
- If no shock advised, resume compressions for another 2 minutes before next rhythm analysis/femoral pulse check.

IV/IO Medications:

- ALS provider gets IV/IO access and gives medications as appropriate.

2.04 CARDIAC ARREST

TREAT REVERSIBLE CAUSES FOR PULSELESS ELECTRICAL ACTIVTY (PEA)	
1. **H**ypoxia	1. **T**ension Pneumothorax
2. **H**ydrogen Ion (Acidosis)	2. **T**orsades
3. **H**ypovolemia	3. **T**oxins
4. **H**ypothermia	4. **T**amponade (cardiac)
5. **H**ypo/**H**yperkalemia	5. **T**hrombosis, pulmonary or cardiac

Hypoxia: Bag-mask ventilation with O2. Insert airway adjuncts as appropriate. Target O2 saturation 94 – 95%.

Hydrogen Ion (Acidosis): Assure adequate ventilation to blow off CO2.

Hypovolemia: **Normal Saline** bolus for an organized rhythm with SBP < 90.

- If hypotension persists, may administer **Dopamine.**

Hypothermia: Rewarm if patient is hypothermic.

Hyperkalemia: Suspect hyperkalemia if tall, peaked T waves on monitor or EKG (in all leads) and prolonged QRS (>0.12 sec).

- Give **Sodium Bicarbonate**.
- Give **Calcium Chloride**. May repeat in 10 min.

Tension Pneumothorax: Relieve tension pneumothorax per **Protocol 7.06 Needle Thoracostomy**

Torsades: Give **Magnesium Sulfate**.

Toxins: Treat signs and symptoms of drug toxicity:

- If QRS widening from Tricyclic Antidepressant Overdose, give **Sodium Bicarbonate**. May repeat.
- If calcium channel blocker overdose, give **Calcium Chloride**. May repeat in 10 min.

Tamponade (cardiac) or Thrombosis, pulmonary or cardiac: In hospital treatment only.

CARDIAC ARREST IN PREGNANCY

- Anticipate difficult airway; experienced provider preferred.
- **Normal Saline** fluid bolus. Reassess and repeat as indicated.
- During CPR, have a provider manually displace gravid uterus to patient's left side. If ROSC is achieved, place patient in Left Lateral Decubitus Position.
- If patient is receiving IV/IO **Magnesium** pre-arrest, stop infusion and switch to **Normal**

Saline. Flush line with **Normal Saline** prior to giving **Calcium Chloride** . May repeat in 10 min.

AFTER CARE IF ROSC

- Go to **Protocol 2.05 Adult Post-Cardiac Arrest or Return of Spontaneous Circulation**.

AFTER CARE IF NO ROSC

- Provide grief support and referrals for on-site survivors as needed.

DOCUMENTATION

- Initial "At Patient Side" Time.
- Intervention and medication times.
- Use accelerometer ("puck") to track CPR.
- Report cardiac arrest data to **SFCardiacCaseReview@sfdph.org**.
- Patient response to interventions and medications (rhythm changes; pulses with and without CPR, ROSC).
- ROSC or termination resuscitation time.

FIELD TREATMENT CONSIDERATIONS FOR PATIENTS WITH A LEFT VENTRICULAR ASSIST DEVICE (LVAD)

1. Attempt to locate a POLST form. Many patients have made end-of-life care decisions.

2. Provide pre-hospital care to the patient in a manner consistent with ALS and BLS treatment protocols for the patient's condition with the following exceptions:
   - Do NOT perform chest compressions since it will dislodge the LVAD and cause internal bleeding.
   - **Arrhythmias**: Do not disconnect power source, defibrillate per ACLS protocol.
   - DO follow the directions of the patient's caregiver when moving and transporting the patient.

3. The **HeartMate (HM) II LVAD** replaces the pumping action of the left ventricle via a continuous blood flow mechanism, where there is no filling or emptying phase.
   - As a result, patients commonly have NO PALPABLE PULSE, NO OBTAINABLE PULSE OXIMETRY OR BLOOD PRESSURE, and only a "mean" arterial pressure detectable using a Doppler.

- An LVAD patient's ECG heart rate will differ from the pulse rate since the LVAD is not synchronized with the native heart rate.

4. Assess the patient's airway and intervene per protocol. If you are unable to obtain pulse oximetry readings, you should assume the patient is hypoxic and place the patient on supplemental oxygen.

5. If the patient has an altered level of consciousness, immediately check for end-tidal CO2 using capnography.

6. Auscultate heart sounds to determine if the device is functioning. You should expect to hear a continuous "whirling" sound for most devices.

7. Assess the device for any alarms / malfunctions. Check with patient or caregivers for device reference materials or contact the VAD Center.

8. Start at least 1 large bore IV, and give a 1L **Normal Saline** fluid bolus if you obtain a low blood pressure (systolic < 100) or are unable to obtain a blood pressure or the patient has an altered level on consciousness.

9. Call the LVAD Center (open 24/7) per patient or patient's caretaker's contact to get advice on caring for the patient.
   - You are authorized to take orders from professionals at the LVAD Center, as long as they are within your scope of practice.
   - Contact the Base Hospital with questions or if directed by patient's caregiver or LVAD Center personnel to do something outside of your protocol.

10. Always transport the patient to the LVAD Center that implanted the device (UCSF or CPMC-Pac). You are authorized to BYPASS the closest San Francisco LVAD Center to get the patient to the LVAD Center that implanted their device no matter the patient's condition. If the LVAD Center that implanted the device is not in San Francisco, take the patient to the closest San Francisco based LVAD Center.
    - Bring **ALL** of the patient's equipment. Bring the patient's caregiver to act as the information resource on the device. You are authorized to use the caregiver as an information resource on the device.

11. Upon arrival to Emergency Department, immediately plug in the device into an electrical socket.

12. Call the Base Hospital for in-field termination of care in the event there are no signs of life and end-tidal capnography is not consistent with life (< 10).

2.04 CARDIAC ARREST

Appendix 1: Treatment of Cardiac Arrest

MOVE PATIENT TO A WORKABLE SPACE

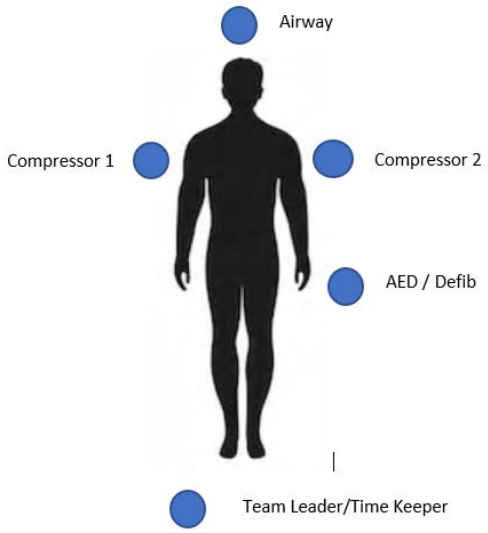
0:00:00	**Begin Clock**	**HP CPR / Attach Monitor-Defibrillator Pads, Puck & Limb Leads / BLS Airway**	
		↓	
0:02:00	Analyze	Shock 120j if VF or puleseless VT Continue CPR if no shock indicated	**Start IV or IO**
		↓	
0:04:00	Analyze	Shock 150j if VF or pulseless VT	**EPINEPHRINE for aystole/PEA/VF/VT**
		↓	
0:06:00	Analyze	Shock 200j if VF or pulseless VT	
		↓	
0:08:00	Analyze	Shock 200j if VF or pulseless VT	**EPINEPHRINE for aystole/PEA/VF/VT**
		↓	
0:10:00	Analyze	Shock 200j if VF or pulseless VT	**Start 2nd IV or IO**
		↓	
0:12:00	Analyze	Shock 200j if VF or pulseless VT	**AMIODARONE for VF/VT**
		↓	**EPINEPHRINE for aystole/PEA**
0:14:00	Analyze	Shock 200j if VF or pulseless VT	
		↓	
0:16:00	Analyze	Shock 200j if VF or pulseless VT	**AMIODARONE for VF/VT**
		↓	**EPINEPHRINE for aystole/PEA**
0:18:00	Analyze	Shock 200j if VF or pulseless VT	
		↓	
0:20:00	Analyze	Shock 200j if VF or pulseless VT	**EPINEPHRINE for aystole/PEA/VF/VT**
		↓	
	PEA/Asystole OPTIONS: at 20 minutes	**1. Call Base Physician** **2. Transport to STAR center with CPR** **3. Stop resuscitation**	
		↓	
0:22:00	Analyze	Shock 200j if VF or pulseless VT	**Do alternate defib vector**
		↓	
0:24:00	Analyze	Shock 200j if VF or pulseless VT	**EPINEPHRINE**
		↓	
0:26:00	Analyze	Shock 200j if VF or pulseless VT	
		↓	
0:28:00	Analyze	Shock 200j if VF or pulseless VT	**EPINEPHRINE**
		↓	
0:30:00	Analyze	Shock 200j with alternate vector if VF or pulseless VT	
	OPTIONS: at 30 minutes	**1. Call Base Physician** **2. Transport to STAR center with CPR** **3. Stop resuscitation**	

Obtain ALS Airway/'ET

Treat PEA/Asystole Causes (H's/T's

APPENDIX 2: High Performance CPR Team Set Up

Assign functional positions based on available personnel. One person may do one or more of the recommended functional positions listed below:



Compressor:
- Does chest compressions.

Airway:
- Opens airway.
- Provides bag-mask ventilation with O2. Inserts airway adjuncts as appropriate.
- Target O2 saturation 94 – 95%.

AED/Monitor/Defibrillator:
- Bring and operates AED/monitor/defibrillator

IV/IO Medications:
- ALS role – gets IV/IO access and gives medications.

Team Leader /Time keeper:
- Assigns team roles (or assumes roles if not assigned).
- Provides team feedback.
- Records intervention and medication times. Announces when next interventions and medications due.
- Records frequency and duration of CPR interruptions.

Next Compressor:
- Continuously checking femoral pulse. Switch at end of cardiac cycle (2 minutes).

2.05 ADULT POST-CARDIAC ARREST or RETURN OF SPONTANEOUS CIRCULATION (ROSC)

BLS Treatment
• CPR/AED • **Oxygen** as indicated.
ALS Treatment
• IV/IO with **Normal Saline** TKO. Place second large bore IV with **Normal Saline**. • **Normal Saline** fluid bolus if SBP < 90 or signs of hypoperfusion, and lungs are clear. Repeat PRN. • If fluid bolus ineffective, may administer **Dopamine** (or available alternate)**.** Titrate to maintain SBP > 90. • Obtain and transmit 12 Lead ECG.

2.06 CHEST PAIN / ACUTE CORONARY SYNDROME

Strive for total on-scene time of less than or equal to 15 minutes.

BLS Treatment

- Assess circulation, airway, breathing, and responsiveness.
- Bilateral blood pressures.
- **Oxygen** as indicated.
- Position of comfort.
- **Aspirin**
- NPO, unless otherwise noted.
- Either list patient medications on PCR or gather medication vials for transport to hospital.

ALS Treatment

Establish a large bore (18G or larger) IV with **Normal Saline** TKO. If possible, establish a second large bore NS lock in the same arm.

12-lead EKG:

- Do prior to administration of **Nitroglycerin** or pain medication.
- Transmit if EKG interpretation is "STEMI" and notify appropriate STAR center.
- Apply "stand-by" defibrillation pads to all EKG confirmed STEMI patients.

Nitroglycerin: DO NOT administer **Nitroglycerin** to patients who have taken a phosphodiesterase inhibitor (erectile dysfunction drugs) within the following time frames:

- Sildenafil (Viagra, Revatio) or Vardenafil (Levitra, Staxin) < 24 hours
- Tadalafil (Cialis, Adcirca) < 48 hours
- See "Use 12-Lead EKG to Determine Safety of Nitroglycerin Administration"

Persistent chest pain of suspected cardiac origin at any level (scale 1 – 10) shall be treated with **Morphine** or **Fentanyl**. Doses may be started at lower levels than for traumatic or other types of pain treatment.

Ondansetron as needed for nausea.

If hemodynamically unstable, go to **Protocol 2.16 Shock**.

2.06 CHEST PAIN / ACUTE CORONARY SYNDROME

USE 12-LEAD EKG TO DETERMINE SAFETY OF NTG ADMINISTRATION

- Follow **Protocol 7.10 12-Lead EKG**.
- Determine presence of ST elevation in leads II, III and AVF. If ST elevation is present, then apply V4R lead.
  - If ST elevation present in V4R, do NOT give **NTG** (to maintain RV filling pressure).
  - If ST elevation in V4R AND clinical signs of shock, including SBP < 90 Hg go to **Protocol 2.16 Shock.**

Documentation

- "At Patient Side" Time.
- VS including bilateral BPs and room air O2 saturation.
- Reassessment of patient symptoms, complaints and vital signs." At minimum, two sets of vital signs and a reassessment should be done and documented in the PCR after any intervention.
- "O-P-Q-R-S-T symptom assessment:
  O = Onset (Sudden or gradual)
  P = Provoke (What were you doing when the pain started? Does anything make it better or worse?)
  Q = Quality (What does the pain feel like?)
  R = Region/Radiate (Where is the pain? Does it go anywhere else?)
  S = Severity (On a scale of 1-10, 10 being the worst pain you have ever had, how would you rate that pain now? How would you rate that pain at its worst or during exertion/movement?)
  T = Time (When or what time did this start?)
- Aspirin given by EMS. Note if patient self-administered Aspirin or if it was given by someone else (e.g. medical provider).
- EKG findings.
- List patient identifiers on **ALL** transmitted EKGs:
  - Patient Last Name + First Initial
  - Gender
  - Age
  - Ambulance company name and unit number

2.07 DYSRHYTHMIA: SYMPTOMATIC BRADYCARDIA

BLS Treatment

- Position of comfort.
- NPO
- **Oxygen** as indicated.

ALS Treatment

Current American Heart Association Guidelines concerning Emergency Cardiac Care assessments and interventions shall always take precedence over local protocols when there is a conflict concerning techniques of resuscitation.

- IV/IO with **Normal Saline** TKO.
- 12-lead EKG. If symptomatic, do not delay therapy in order to obtain 12 lead.
- **Atropine** or **Transcutaneous Pacing** (TCP) as needed for continued unstable bradycardia.
- If agitated during TCP and SBP > 90, may administer **Midazolam.**
- **Morphine Sulfate**
- If the heart rate > 50 BPM, but hypotension persists:
  - **Normal Saline** fluid bolus.
  - If **Normal Saline** bolus ineffective, administer **Dopamine** Titrate to maintain SBP > 90.
- If dialysis patient with suspected hyperkalemia [T wave is peaked; QRS is prolonged (>0.12 seconds) or hypotension develops] AND bradycardia is unresponsive to **Atropine** and **Transcutaneous pacing**, administer **Calcium Chloride.**
- If suspected hyperkalemia persists (peaked T wave; prolong QRS), administer **Albuterol** via nebulizer (helps drive K^+ into cells).

2.08 DYSRHYTHMIA: TACHYCARDIA

BLS Treatment

- Position of comfort.
- NPO
- **Oxygen** as indicated.

ALS Treatment

Current American Heart Association Guidelines concerning Emergency Cardiac Care assessments and interventions shall always take precedence over local protocols when there is a conflict concerning techniques of resuscitation.

- IV/IO with **Normal Saline** TKO, preferably at antecubital fossa.
- 12-lead EKG (If symptomatic, do not delay therapy in order to obtain 12 lead).
- Treat if >150 BPM and patient is symptomatic.

STABLE AND NARROW (QRS < 0.12 seconds):

- Vagal maneuvers (Valsalva, cough or breath holding).
- **Adenosine**

STABLE AND WIDE (QRS > 0.12 seconds):

- **Amiodarone**
- For Torsades de Pointes, administer **Magnesium Sulfate.**

UNSTABLE:

- Synchronized cardioversion
- If sedation is needed for awake patient during anticipated cardioversion AND if SBP >90, may administer **Midazolam** and/or:
- **Morphine Sulfate**
- If UNSTABLE, NARROW and REGULAR: **Adenosine** may be substituted for cardioversion.
- If UNSTABLE AND WIDE and synchronized cardioversion fails: administer **Amiodarone**.

Base Hospital Contact Criteria

Contact Base Hospital physician before administering **Midazolam** and **Morphine** together.

Comments

ATRIAL FIBRILLATION

- Only administer synchronized cardioversion for atrial fibrillation if patient is unstable.

2.09 PAIN CONTROL

BLS Treatment
• Position of comfort. • NPO • **Oxygen** as indicated**.**
ALS Treatment
• IV/IO with **Normal Saline** TKO. • If pain score < 6 – give either PO **Ibuprofen** or IV **Ketorolac** (if no contraindications). • If pain score > 6 – IN/IV/IO **Fentanyl** OR IV/IM/IO **Morphine.** • **Ondansetron** as needed. • Document pain score and vital signs before and after medication administration on PCR.
Base Hospital Contact Criteria
• **Patients may NOT be released AMA after receiving Fentanyl or Morphine without Base Hospital Physician consult.**
Notes
• **Fentanyl**, **Morphine** and/or **Midazolam** may act synergistically to cause respiratory depression and should not be combined unless seizures or other indications for midazolam use is present. Contact Base Hospital MD for consultation if needed for this combined use. • If utilizing 2 or more doses of **Fentanyl**, **Morphine**, and/or **Midazolam**, patient shall be placed on continuous end tidal CO2 monitoring. A trend of increasing EtCO2 readings (2 or more readings, 10% or more, above baseline) indicates the need for immediate re-assessment of patient's respiratory status to include rate and depth of respirations. Ventilatory support should be provided as necessary to return ETCO2 to baseline. • All injectable pain medications shall be cross-checked with a Paramedic (secondarily an EMT) for correct medication and dose at time of administration unless transporting in the back of an ambulance without a second attendant.

2.10 POISONING AND OVERDOSE

BLS Treatment – ALL Poisoning and Overdose Incidents
• Position of comfort. • NPO except as noted below. • **Oxygen** as indicated.

ALS Treatment - ALL Poisoning and Overdose Incidents
• Establish IV/IO, **Normal Saline** at TKO. • For nausea / vomiting, may administer **Ondansetron.** • **Activated Charcoal** unless contraindicated.

ALS Treatment - SPECIFIC Poisoning and Overdose Incidents
NARCOTICS **(e.g. Heroin, Demerol, Methadone, Morphine, Fentanyl, Dolophine, Darvocet, Darvon, Propoxyphene, Oxycodone, Oxycontin, Oxyir, Percocet)** Assess for symmetrical, pinpoint pupils, respiratory depression/apnea, decreased level of consciousness, bradycardia, hypotension and decreased muscle tone: • For suspected overdose with respiratory depression not responsive to BLS airway interventions: **Naloxone**

CARBON MONOXIDE
• Administer high-flow **Oxygen** via NRB. Assist ventilations with BVM as needed. • Do NOT withhold **Oxygen** therapy for patients with respiratory compromise and “normal” pulse oximeter values.

2.10 POISONING AND OVERDOSE

CALCIUM CHANNEL or BETA BLOCKER TOXICITY
(e.g. Verapamil, Metoprolol)

Assess for bradycardia, hypotension and shock; apply and assess 12-lead EKG:

- **Activated Charcoal**
- **Calcium Chloride** as indicated for Calcium Channel Blocker overdose.
- **Glucagon** as indicated for Beta Blocker Toxicity.

TRICYCLIC ANTIDEPRESSANTS
(e.g. Elavil, Amitriptyline, Etrafon, Pamelor, Nortriptyline)

- **Oxygen** as indicated.
- If SBP <90, seizure, and/or QRS widening > 0.10 seconds is present: **Sodium Bicarbonate**

ANTIPSYCHOTICS WITH EXTRAPYRAMIDAL REACTION
(e.g. Haldol, Haloperidol)

Assess for fixed, deviated gaze to one side of body, painful spasm of trunk or extremity muscles and/or difficulty speaking:

- **Diphenhydramine**

CYANIDE

Assess for nausea, headache, anxiety, agitation, weakness, muscular trembling, seizures, apnea, soot around mouth or airway:

- Remove contaminated clothing. Do NOT transport with patient.
- Give **Hydroxocobalamin** for suspected overdose and if available.
- Hydroxocobalamin is not routinely stocked on the ambulances but is available in your provider disaster caches. Transport patient to receiving hospital for treatment if there is any delay in ability to administer **Hydroxocobalamin**.

ORGANOPHOSPHATES
(e.g. Malathion)

Assess for "SLUDGE": (Salivation, Lacrimation, Urination, Diaphoresis/Diarrhea, Gastric hypermotility, Emesis/Eye (small pupils, blurry vision). Severe exposures may result in decreased level of consciousness, fasciculation/muscle weakness, paralysis, seizures:

- Administer **Atropine** until SLUDGE symptoms subside.
- Treat seizures with **Midazolam.**

2.10 POISONING AND OVERDOSE

NERVE AGENTS
(e.g. VX, Sarin, Soman, Tabun)

Same as signs/symptoms as Organophosphate Poisoning (see above).

- Administer **Atropine** until SLUDGE symptoms subside.
- If available, administer **DuoDote** [**Atropine/Pralidoxime (2-PAM)] Autoinjector** IM in using dosing table below:

DuoDote (2-PAM) Dosing Estimator
DuoDote = Atropine 2.1mg / Pralidoxime 600mg

Do NOT Use Atropine/2-PAM Injector	Use Between 1 – 3 Atropine/2-PAM Injectors IM	Use 3 Atropine/2-PAM Injectors IM
• No signs of life • Fits non-resuscitation group (expectant) due to other concomitant injury	Titrate dose based on 1 or more SLUDGE signs and: • Elderly • Children appearing under age 14 • Prolonged extrication (may require more than 3 autoinjectors)	• Exhibiting 2 or more SLUDGE signs OR • Non-ambulatory

Bronchospasm and respiratory secretions are the best acute symptoms to monitor response to Atropine/2-PAM therapy:

- Decreased bronchospasm and respiratory secretions = getting better.
- No change or increased bronchospasm and respiratory secretions = Base Hospital Contact for administration of additional medication, in excess of listed Maximum Dosage.

Comments

- May contact **Poison Control** at **1-800-222-1222** if substance is unknown.

Base Hospital Contact Criteria

- Contact Base Physician if Poison Control recommends treatment outside of current protocols.
- Suspected Narcotic overdose not responsive to max doses of **Naloxone**.
- Bradycardia and/or hypotension caused by a CALCIUM CHANNEL BLOCKER: **Calcium Chloride.**
- Bradycardia and/or hypotension caused by a BETA BLOCKER: **Glucagon**.

2.11 RESPIRATORY DISTRESS: BRONCHOSPASM

BLS Treatment
• Position of comfort. • NPO • **Oxygen** as indicated.
ALS Treatment
• Establish IV/IO of **Normal Saline** TKO. • Monitor O2 saturation. • **Albuterol**, repeated as needed until relief of symptoms. • For patients with severe refractory bronchospasm who are less than 50 years old and /or NO history of coronary artery disease or hypertension; administer: o IM **Epinephrine** o If no response to IM **Epinephrine** or patient is in extremis: IV **Epinephrine**. • Follow **Protocol 7.01 Airway Management** for advanced procedures as indicated.
Base Hospital Contact Criteria
• To administer **Epinephrine** to patients ≥ 50 years of age. • If additional **Epinephrine** administration is needed beyond max dose.

2.12 RESPIRATORY DISTRESS: ACUTE PULMONARY EDEMA

BLS Treatment
• Position of comfort. • NPO • **Oxygen** as indicated.
ALS Treatment
• Apply CPAP as indicated. • Obtain 12 lead EKG. • Establish IV/IO with **Normal Saline** TKO. • **Nitroglycerin** • If SBP < 90 mmHg, signs of hypoperfusion or cardiogenic shock, administer **Dopamine** (or available alternate)**.** • Follow **Protocol 7.01 Airway Management** for advanced procedures as indicated.

Comments
DO NOT administer **Nitroglycerin** to patients who have taken a phosphodiesterase inhibitor (erectile dysfunction drug) within the following time frames: o Sildenafil (Viagra, Revatio) or Vardenafil (Levitra, Staxin) < 24 hours o Tadalafil (Cialis, Adcirca) < 48 hours

2.13 ADULT SEIZURE

BLS Treatment
• Position of comfort. • NPO • **Oxygen** as indicated.
ALS Treatment
• Advanced airway management as indicated. • Status epilepticus is continuous seizure activity lasting > 5 minutes OR multiple seizures without regaining consciousness between seizures. SBP > 90, administer: **Midazolam** • Establish IV/IO access with **Normal Saline** TKO. • If BGL < 60 mg/dl, **Dextrose** IV/IO. Repeat as needed. If IV cannot be established, administer **Glucagon** . • For suspected narcotic overdose with respiratory depression or failure and/or shock, administer **Naloxone**.
Base Hospital Contact Criteria
• Additional **Midazolam** administration beyond max dose needed for patient with continued seizures.

2.14 STROKE

BLS Treatment

- Position of comfort.
- NPO
- **Oxygen** as indicated.

ALS Treatment

- IV/IO, **Normal Saline** TKO.
- If blood glucose <60 mg/dl, unmeasurable or patient is a known diabetic: **Dextrose**
- If SBP < 90 or signs of poor perfusion: **Normal Saline** fluid bolus.
- Perform CINCINNATI PREHOSPITAL STROKE SCALE ASSESSMENT (see COMMENTS).
- If potential stroke is suspected with patient last seen normal 24 hours or less from the time of patient contact, immediately transport patient to a designated Stroke Receiving Hospital (See **Policy 5000 Destination**).

Comments

***CINCINNATI PREHOSPITAL STROKE SCALE (CPSS):** Apply CPSS if you suspect that the sudden neurological impairment is due to stroke. If patient scores "abnormal" in any of the following 3 tests, there is a 72% likelihood of stroke:

1. **Facial Droop -** Have patient show teeth or smile:
   Normal: both sides of face move equally.
   Abnormal: one side of face does not move as well as the other side.

2. **Pronator Drift -** Patient closes eyes and holds both arms straight out for 10 seconds:
   Normal: both arms move the same or both arms do not move at all.
   Abnormal: one arm does not move, or one arm drifts down compared with the other.

3. **Abnormal Speech -** Have the patient repeat a statement such as, "You can't teach an old dog new tricks":
   Normal: patient uses correct words with no slurring.
   Abnormal: patient slurs words, uses the wrong words, or is unable to speak.

2.15 SUSPECTED SEPSIS

BLS Treatment

- Position of comfort.
- NPO
- **Oxygen** as indicated.

ALS Treatment

- Establish IV/IO with **Normal Saline** TKO. Recommend 2 IV lines if possible.
- If blood glucose <60 mg/dl, unmeasurable or patient is a known diabetic: **Dextrose**
- For HR > 100 or BP <90 administer **Normal Saline** fluid bolus.

SEPSIS SCREEN

For all patients with vital sign abnormalities, conduct the following screen (see COMMENTS):

1. Does patient have suspected or documented infection?
2. Does patient have 2 or more of the following vital sign abnormalities:
    - Temperature **>** 38° C or **<** 36° C
    - Heart Rate **>** 90
    - Respiratory Rate **>** 20

If answer to BOTH #1 and #2 is YES, continue with sepsis protocol. Otherwise go to other applicable protocol.

Comments

- Sepsis is caused by a whole-body inflammatory response called, "Systemic Inflammatory Response Syndrome "characterized by a fever (not always present), tachycardia, tachypnea and hypotension. It is more common in the very young (newborns), the elderly, diabetics or those with compromised immune systems. Other risk factors include: cancer/malignancies, renal disease, alcoholism, drug abuse, malnutrition, hypothermia or recent surgical or other invasive procedures (e.g. long-term venous catheters placed). Field treatment is early recognition, fluid and notifying hospital staff about possible sepsis.

Base Hospital Contact Criteria

Consultations as need for question about possible septic patient.

2.16 SHOCK

BLS Treatment
• Position of comfort. • NPO • Oxygen as indicated.
ALS Treatment
• Establish IV/IO with **Normal Saline** TKO. • If SBP < 90 or signs of poor perfusion, **Normal Saline** fluid bolus. • For suspected cardiogenic shock**: Dopamine**.
Comments
• **Compensated shock:** Anxiety, agitation, disorientation, tachycardia, normal B/P, capillary refill normal to delayed, symptoms of allergic reaction, pallor, and/or diaphoresis. • **Decompensated shock:** Decreased level of consciousness, tachycardia changing to bradycardia, hypotension, delayed capillary refill, cyanosis, and/or unequal central and distal pulses. • Follow **Protocol 2.02 Allergic Reaction/Anaphylaxis** if patient has suspected anaphylaxis.

Section 3: Environmental

3.01 BITES, STINGS AND ENVENOMATION

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BITES AND STINGS

BLS Treatment

- Position of comfort.
- NPO
- **Oxygen** as indicated.
- Remove the stinger or injection/biting mechanism if visible.
- Neutralize jellyfish stings with vinegar or baking soda paste if available at scene.
- Apply heat to stingray and sea urchin and other unidentified marine animal stings.
- Apply cooling measures on wound site for land animal/insect bite.
- May help patient administer their prescribed EpiPen autoinjector or equivalent product.

ALS Treatment

- IV/IO with **Normal Saline** TKO.
- If pain, administer **Morphine.**

Comments

LOCALIZED REACTION

- Puncture marks at injury site
- Rash, hives
- Localized erythema/edema/decreased pain or touch sensation

SYSTEMIC REACTION

Any localized reaction with:

- Respiratory distress, wheezing, stridor or tachypnea
- Hypotension, tachycardia
- Diaphoresis (out of proportion to air temperature)
- See **Protocol 2.02 Allergic Reaction** if signs or symptoms of an allergic reaction.

3.01 BITES, STINGS AND ENVENOMATION

ENVENOMATION

BLS Treatment

- Position of comfort.
- NPO.
- Oxygen as indicated.
- Do not attempt to capture live snake/animal.
- Remove rings or other jewelry from affected extremity to prevent possible constriction due to edema.
- If extremity bite, immobilize the affected extremity.
- Minimize exertion of victim.
- Rapid transport of all suspected envenomation for medical evaluation.

ALS Treatment

- IV or IO of **Normal Saline** TKO.
- If SBP < 90 or signs of poor perfusion, **Normal Saline** fluid bolus.
- For pain, may administer: **Morphine Sulfate**

Comments

- Do not use lymphatic constriction bands, tourniquets, electric shock, or alcohol.
- Do not incise envenomation.
- Do not use mouth suction or commercial extraction pumps (e.g. Sawyer extraction pump).
- Do not apply Ice.
- All “pet” snakes must be positively identified, if possible.
- Zoos and legal exotic snake collectors are required to have a supply of antivenin on hand for each type of snake in their care. If available, bring antivenin/container with patient to hospital.
- Bites from coral snakes, elapids related to cobras, usually do not present with early symptoms. All bites are considered envenomated.

3.02 DECOMPRESSION INJURY

BLS Treatment

- NPO
- 100% **Oxygen** by non-rebreather mask.
- Place patient in left lateral position, have suction ready.

ALS Treatment

- IV or IO of **Normal Saline** TKO.
- If SBP < 90 or signs of poor perfusion, **Normal Saline** fluid bolus.

Comments

- Shock position is contraindicated.
- Be alert for recurring hypoxia.
- Gather dive history in preparation for later transfer to recompression-capable facility:
  - Total dive time in the last 24 hours.
  - Number of dives made, include surface intervals between dives, if available.
  - Duration of and time since descent/ascent (total surface interval).
  - Depth of deepest submersion and depth of last dive (include previous dives within 24 hours, if available).
  - Temperature of the water.
  - Symptom onset (times and description).
  - Mechanism of injury suggestive of head/neck injury.
  - Emergency ascent? If so, from what depth?
  - Was the dive made with compressed air or other types of mixed gas?
- Joint pain (location/severity)
- Pulmonary exam: Rales or signs of pulmonary edema, respiratory distress including symptoms of mediastinal emphysema.
- Neurologic exam: Monitor frequently (q 10-15 minutes) for changes.

3.03 (NEAR) DROWNING

BLS Treatment

- Position of comfort.
- NPO
- **Oxygen** as indicated.

ALS Treatment

- Advanced airway intervention, as necessary.
- Cardiac monitor.
- IV or IO of **Normal Saline** TKO.

Comments

- Rapid transport. Patient can deteriorate rapidly.
- Description (salt or fresh water) and temperature of submersion fluid.
- Duration of submersion.
- Height of fall/mechanism of injury.
- Suspicion of alcohol or other drugs/medications involved.
- Evidence of head/ spinal trauma or other associated injuries.
- Neurologic status.
- Respiratory findings: rales or signs of pulmonary edema, respiratory distress.

Base Hospital Contact Criteria

- To withhold or cease resuscitation due to witnessed submersion of **>** 25 minutes or no response to treatment.

3.04 HAZARDOUS MATERIALS

OVERVIEW

- Follow **Policy 8050 Hazardous Materials Incident Field Policy** to establish scene control and ensure rescuer safety. Notify SFFD Hazmat team for scene response.
- Attempt identification of hazardous materials from container signage, bystanders, etc. Activate additional resources as needed, including, but not limited to:
  - Fire Department; Police Department (traffic and crowd control);
  - Health Department; Hazardous Material Response Team;
  - Local Industry Response Team; and/or other specialized detection or response teams.
- For treatment of poisonings due to specific hazardous materials, refer to **Protocol 2.10 Poisoning and Overdose**.
- If suspected chemically related terrorist event, refer to **Protocol Section 11 – Special Circumstances**.

Decontamination and Treatment

- Patients should be removed to a safe environment by emergency personnel wearing appropriate PPE prior to rendering medical care.
- If life-saving treatment is needed prior to removal of patient from Hazmat Zone, do simultaneous gross decontamination only if safe to do so (follow SFFD Hazmat team instructions), then initiate treatment. Identify containment areas for gross decon runoff.
- For patients with no apparent immediate life-threatening conditions, decontaminate the patient prior to rendering care.
  - Brush off dry powder.
  - Remove any contaminated or wet clothing.
  - Irrigate continuously with saline or water.
- Ambulatory patients leaving the "Exclusion Zone" are considered contaminated until formally decontaminated by trained personnel.
- Provide advance notice to receiving hospital about patient and decontamination procedures prior to arrival at facility.

Comments

- Decontaminate the patient BEFORE transport to reduce/avoid contamination of EMS personnel; ambulance and receiving facility (see **Policy 8050 Hazardous Materials Incident Field Policy**).
- Certain hazardous materials, such as organophosphates, have easily recognized groups of symptoms. See **Protocol 2.10 Poisoning and Overdose**.

3.05 HEAT INJURY / HYPERTHERMIA

BLS Treatment

- Position of comfort.
- **Oxygen** as indicated.
- Remove excess clothing.
- Move patient to cool area.
- Encourage PO (cool/cold) liquids as tolerated.
- Spray or sprinkle tepid water and use fan to cool
- Apply wet towels or sheets to patient.
- Apply ice packs to going and axillae.

ALS Treatment

- IV or IO of **Normal Saline** fluid bolus for signs/symptoms of heat exhaustion/heat stroke. Repeat as needed if continued signs/symptoms of heat exhaustion/heat stroke or SBP < 90 or signs of poor perfusion.
- Continue active cooling measures during transport.

Comments

- Persons at great risk of hyperthermia are infants, elderly, individuals in athletic endurance events, and persons taking medications that impair the body's ability to regulate heat (e.g. many psychiatric medications, diuretics, alcohol).
- Heat exhaustion may progress to heat stroke without obvious external signs/symptoms.
- Heat stroke is associated with altered mental status and temperature > 106 degrees Fahrenheit (41.1 degrees Celsius).
- Evaluate for concomitant trauma and institute appropriate treatment as indicated.
- Utilize body temperature serial measurements as a tool to assess effectiveness of cooling measures. If temperature fails to decrease add additional therapy.

Base Hospital Contact Criteria

- Cessation of resuscitation efforts in hyperthermic patients.

3.06 COLD INJURY/HYPOTHERMIA

BLS Treatment

- Position of comfort.
- NPO.
- **Oxygen** as indicated.
- Remove all wet clothing. Gently dry patient. Cover with blankets (warm if possible) to prevent further heat loss.
- Do active, external rewarming, using ready-heat chemical blankets.
- Maintain warm environment.

ALS Treatment

- IV/IO of **Normal Saline** at TKO.

Comments

- Treat cardiac dysrhythmias according to protocol.
- Severely hypothermic patients may need prolonged palpation/observation to detect pulse and respirations.
- Bradycardia is normal; very slow rates may be sufficient for metabolic demands.
- Defibrillation may not be effective until patient is re-warmed.
- Do NOT determine death for acutely hypothermic patient unless re-warmed or patient is determined dead by other criteria.
- Avoid heat packs with temperature > 110 degrees Fahrenheit that may burn patient's skin.
- Excessive movement of the patient may precipitate ventricular fibrillation. Use caution while performing advanced airway management or when moving patient.
- Hypothermic cardiac arrest patients with return of spontaneous circulation should not be actively cooled. Keep patient covered and transport to STAR center.
- Pale, cool, insensate extremities may be due to frostbite.
- Frostbite: DO NOT rub or apply hot packs; manage affected extremities gently; keep covered and avoid exposures that might cause thawing and re-freezing.

Base Hospital Contact Criteria

- Cessation of resuscitation efforts in hypothermic patients

Section 4: Trauma & Burns

4.01 GENERAL TRAUMA EVALUATION AND OVERVIEW

BLS Treatment

- Assess circulation, airway, breathing, and responsiveness.
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated.
- Splint suspected fractures/instability as indicated.
- Bandage wounds/control bleeding as indicated.
  - Apply tourniquet if appropriate.
  - Combat Gauze (such as "Quick Clot") may be utilized for excessive bleeding with signs and symptoms of shock. Combat gauze should contain Kaolin, not Z-Lite.

ALS Treatment

- IV/IO **Normal Saline** at TKO.
- If SBP <90, administer **Normal Saline** fluid bolus.

Comments

- Minimize on scene time for unstable patients or patients who meet trauma triage criteria. Secondary survey and IV therapy should be done en route to hospital.
- Give ZSFG early notification. Follow **Policy 3020 Field to Hospital** for report formats to trauma team.
- For vehicular crashes/bike incidents, protective devices should be reported.
- Do not use Combat Gauze on mucus membranes.

4.02 TRAUMATIC CARDIAC ARREST

BLS Treatment

- Assess circulation, airway, breathing, and responsiveness.
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated.
- Appropriately splint suspected fractures/instability as indicated.
- Bandage wounds/control bleeding as indicated.

ALS Treatment

- Minimize scene time. All treatments should be done en route as possible.
- IV/ IO **Normal Saline** fluid bolus.

ASYSTOLE:

- If asystolic with no signs of life (absence of vital signs and respirations; asystole in two leads) consider pronouncement in the field (Refer to **Policy 4050 Death in the Field**).
- Notify medical examiner.
- Provide grief support and referrals for on-site survivors as needed.

V-Fib or PEA:

- Refer to **Protocol 2.04 Cardiac Arrest** and **Policy 4050 Death in the Field**.

Comments

- Consider cardiac etiology in older patients with low probability of mechanism of injury.
- If patient not responsive to trauma oriented resuscitation, consider possible medical etiology and treat accordingly.
- Unsafe scene may warrant transport despite low potential for survival.
- Minimal disturbance of potential crime scene.

4.03 HEAD, NECK AND FACIAL TRAUMA

BLS Treatment

- Assess circulation, airway, breathing, and responsiveness.
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated.
- Appropriately splint suspected fractures/instability as indicated.
- Bandage wounds/control bleeding as indicated.
- Control external bleeding with direct pressure.
- Stabilize impaled objects with bulky damp dressing.
- Apply cold packs to soft tissue swelling.
- Eye injuries: cover both eyes with dressings.
- Keep avulsed teeth in saline and transport with patient.
- For suspected head injury, evaluate visual acuity in both eyes. Assess if pupils are PERRLA.

ALS Treatment

- Monitor for airway obstruction. Only impaled objects that obstruct the airway can be removed.
- Advanced airway management as indicated.
- IV/IO **Normal Saline** at TKO.
- If SBP <90 mmHg administer **Normal Saline** fluid bolus.
- For pain, if no evidence of head injury, or signs of hypoperfusion, and SBP > 90: may administer **Morphine Sulfate.**
- For nausea/vomiting: may administer **Ondansetron .**

Comments

- Avoid prophylactic hyperventilation. Hyperventilation for head trauma is ONLY indicated for signs of cerebral herniation (posturing, pupillary abnormalities, sudden neurologic deterioration) NOT due to hypotension or hypoxemia.
  - Hyperventilation for adults is 16-20 breaths per minute.
  - Utilize Et CO2 and adjust ventilation rate to keep EtCo2 at 30 to 35 mmHg.
- If the patient deteriorates, recheck for problems with airway, breathing or circulation.

Base Hospital Contact Criteria

- Pain management for patients with evidence of hypotension (smaller doses for elderly and very young).

4.04 CHEST, ABDOMINAL AND PELVIC TRAUMA

BLS Treatment

- Assess circulation, airway, breathing, and responsiveness.
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated.
- Appropriately splint suspected fractures/instability as indicated.
- Bandage wounds/control bleeding as indicated.
- If open chest wounds with air leak, apply occlusive dressing taped on 3 sides.
- Cover any exposed eviscerated organs with moist saline gauze.
- Immobilize impaled objects in place.
- For pregnancy 20 weeks or greater, place in left lateral position. If spinal motion restriction initiated, tilt spine board to the left.

ALS Treatment

- Needle Thoracostomy for suspected tension pneumothorax.
- IV/IO **Normal Saline** at TKO.
- If SBP <90, administer **Normal Saline** fluid bolus.
- For pain, if no evidence of head injury, or signs of hypoperfusion, and SBP > 90: may administer **Morphine Sulfate.**
- For nausea/vomiting: may administer **Ondansetron** .

Comments

- Consider pre-existing respiratory medical conditions causing distress.
- Chest injuries causing respiratory distress are commonly associated with significant internal blood loss. Reassess frequently for signs and symptoms of hypovolemia / shock.
- Significant intra-thoracic or intra-abdominal injury may occur without external signs of injury, particularly in children.

Base Hospital Contact Criteria

- If there is any question with the hemodynamic status of the patient following administration of pain or nausea medications.

4.05 EXTREMITY TRAUMA

BLS Treatment

- Apply tourniquet proximal to the injury when:
  - Direct pressure does not control bleeding.
  - Amputation or near amputation of the limb**.**
  - Severe bleeding from a site which is not accessible (example: entrapment).
  - Severe bleeding from an impaled object.
  - During a mass casualty.
  - Limb with the tourniquet should remain exposed.
- Splint injured extremities. Elevate the limb and apply cold packs. Cover open wounds with sterile dressing. Re-check neurological function/circulation every 5 minutes.
- Place amputated extremity in dry sterile dressing. Place in a plastic bag and on top of an ice/cold pack**.**
- If deformed extremity is pulseless, use gentle in line traction to restore anatomical position.
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated.
- Appropriately splint suspected fractures/instability as indicated.
- Bandage wounds/control bleeding as indicated.

ALS Treatment

- Hemostatic dressings, as indicated.
- IV/ IO **Normal Saline** at TKO.
- If SBP <90, administer **Normal Saline** fluid bolus.
- For pain, if no evidence of head injury, or signs of hypoperfusion, and SBP > 90: may administer **Morphine Sulfate.**
- For nausea/vomiting: may administer **Ondansetron.**

Comments

Must communicate time when tourniquet was applied to receiving hospital staff.

Base Hospital Contact Criteria

- If there is any question with the hemodynamic status of the patient following administration of pain or nausea medications.

4.06 BURNS

BLS Treatment

- Position of comfort.
- NPO
- **Oxygen** as indicated.

Thermal:

- Remove jewelry and non-adhered clothing. Do not break blisters.
- Cover affected body surface with dry sterile dressing or dry sterile sheet.

Chemical:

- Treat according to **Protocol 3.04 Hazardous Materials**.

Electrical:

- Disconnect electrical source before touching patient.
- Dry sterile dressing on any exposed injured area.

Tar:

- Cool to tepid water. Do NOT remove tar or apply solvents.

ALS Treatment

- Early advanced airway management for patients with evidence of inhalation injury.
- IV/IO **Normal Saline** at TKO.
- If partial or total thickness burns > 10% BSA, administer **Normal Saline** fluid bolus.
- For pain: Use medication per appropriate pain protocol
- For nausea/vomiting: may administer **Ondansetron**.

Comments

Patients with the following criteria shall be transported to St Francis Hospital Burn Center:

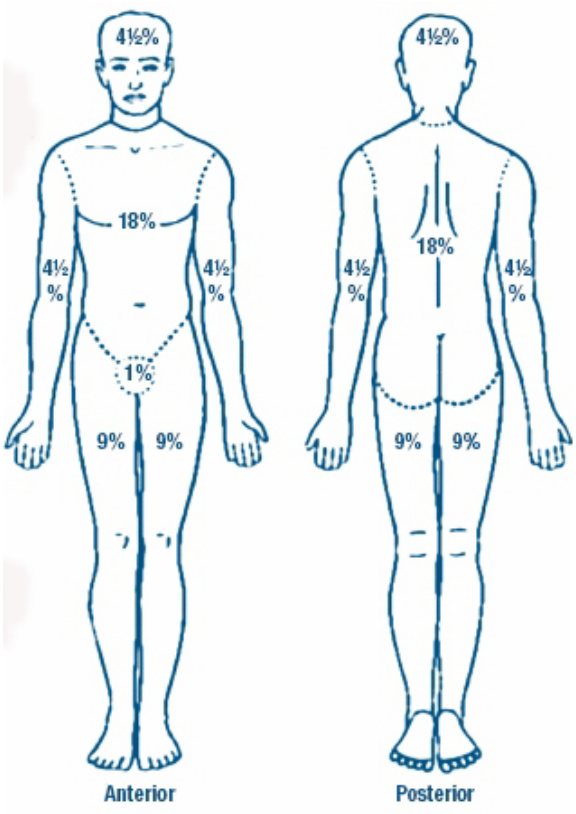
1. Partial thickness burns **>** 10% of the total body surface area (TBSA);
2. Burns involving the face, eyes, ears, hands, feet, perineum or major joints;
3. Full thickness or 3rd degree burns in any age group;
4. Serious electrical burns;
5. Serious chemical burns;
6. Inhalation injuries (including burns sustained in a enclosed space or facial burns);
7. Pediatric burn patients who do not meet trauma triage criteria shall be transported to St. Francis Memorial Hospital;

- Transport to Zuckerberg San Francisco General Hospital Trauma Center if the patient meets trauma triage criteria.
- Inhalation injuries are burn injuries and may cause delayed, but severe airway compromise.
- Do NOT apply ice or ice water directly to skin surfaces (additional injury will result).

4.06 BURNS

- Lightning injuries may cause prolonged respiratory arrest.
- Assume presence of associated multisystem trauma from explosions, electrical shock, falls or with signs or symptoms of hypovolemia.
- Dysrhythmias may be present with electrical burns due to changes in K^+ levels.

CALCULATING BODY SURFACE AREA



Section 5: Obstetrics & Gynecological

5.01 Gynecological and Obstetrical Emergencies

Vaginal Bleeding (Not Related to Labor)

BLS Treatment
• Position of comfort. • NPO • Assess circulation, airway, breathing, and responsiveness. • **Oxygen** as indicated. • Place pad or large dressing over vaginal opening.
ALS Treatment
• IV / IO of **Normal Saline** TKO. • If SBP < 90, **Normal Saline** fluid bolus.
Comments
• DO NOT pack the vagina with any material to stop bleeding. A bulky dressing or pad may be used externally to absorb blood flow. • Consider ruptured ectopic pregnancy in a woman of childbearing age with signs of shock.

Spontaneous Abortion (Miscarriage)

BLS Treatment
• Position of comfort. • NPO • Assess circulation, airway, breathing, and responsiveness. • **Oxygen** as indicated. • Place pad or large dressing over vaginal opening. • Assess if fetus < 20 weeks gestation.
ALS Treatment
• IV / IO of **Normal Saline** TKO. • If SBP < 90, **Normal Saline** fluid bolus. • Save and transport all tissue or fetal remains passed.
Base Hospital Contact
• Spontaneous abortion of a fetus > 20 weeks gestational age should be considered a neonatal resuscitation until Base Hospital contact is made. See **Protocol 8.05 Neonatal Resuscitation**.

CHILDBIRTH: NORMAL DELIVERY

BLS Treatment
IF BABY IS **NOT** CROWNING: Assist mother into position of comfort and transport. IF BABY IS CROWNING: • For mother: If hypoxic, **Oxygen** via nasal cannula at 2-6 L/min or via non-rebreather mask at 10-15 L/min as tolerated. • Assist mother into position of comfort. • Prepare area for delivery to prevent baby from hitting hard surface. Have blanket/chux ready to catch baby. • Support the baby's head. Apply gentle pressure to perineum to prevent tearing. Do NOT pull on baby's head. If necessary, ask mother to push again to deliver the rest of the baby. • Dry and cover newborn for warmth (especially the head). If possible, place skin to skin with the mother on abdomen or to breast for shared body heat. Wrap mother and baby together. • If baby delivers and cord is tight, unwind cord from neck or shoulder. • Check APGAR score at 1 and 5 minutes post-delivery (see below). • Assess VS of mother and baby post-delivery and after placenta delivers. If signs of shock, see below under ALS Treatment. • Allow the cord to pulse for *at least* one minute OR until pulsing stops OR until transfer to receiving hospital. To cut the cord, clamp cord with 2 clamps and cut cord between clamps. If the cord interferes with newborn resuscitation, cut the cord immediately. • Cover visible portion of cord with sterile gauze moistened with **Normal Saline** (to prevent spasm and premature delivery). Warm **Normal Saline** is preferred. • Allow spontaneous birth of placenta and save all available parts for inspection at hospital. Do not delay transport for delivery of placenta. Allow parents to transport bagged placenta if desired. • If bleeding persists after delivery of placenta, rub abdomen below navel with flat hand x 15 seconds PRN (uterine massage). As uterus contracts, it should feel like a firm grapefruit and bleeding should slow.
ALS Treatment
See below for specific ALS treatment of delivery complications.
Comments
• Suction only if airway is obstructed. Routine suctioning only delays the onset of spontaneous breathing and cause laryngeal spasm and vagal bradycardia. • Delayed cord clamping allows oxygenated blood to continue to flow to infant.
Base Hospital Contact Criteria

5.01 Gynecological and Obstetrical Emergencies

If there are concerns about need for resuscitation based on fetus' gestational age and viability.

CHILDBIRTH: COMPLICATIONS

Uncontrolled Hemorrhage Before or During Labor

ALS Treatment

- High flow **Oxygen** 10-15 L/min via non-rebreather mask.
- Trendelenberg position for transport.
- Reassess blood loss and VS every 3-5 min.
- IV / IO of **Normal Saline** bolus if SBP < 90. Repeat **Normal Saline** bolus of 500 mL until SBP > 90 mm Hg and improvement of perfusion.
- Second IV with **Normal Saline** bolus if no improvement. Begin pressure infusions with both IVs. Continue infusions as long as hemorrhage persists. Additional boluses PRN.

Premature Births (<36 Weeks Gestational Age)

BLS Treatment

- **If greater than 20 weeks gestational age**: Attempt to resuscitate and transport to **Pediatric Critical Care Center**. See **Protocol 8.05 Newborn/Neonatal Resuscitation**.
- **If less than or equal to 20 weeks gestational age:** Wrap baby in blanket. Allow mother to hold baby if desired and offer emotional/grief support as appropriate. Place all other uterine contents that are expelled during delivery in a biohazard bag to Receiving Hospital.

Breech Delivery

BLS Treatment

If baby is delivering (not head):

- Allow newborn to deliver. If unable to deliver, left lateral Trendelenburg position and rapid transport.
- If head does not deliver, place gloved hand in vagina, and position fingers on either side of the neonate's nose and mouth to make a "V" until the head delivers.

ALS Treatment

- IV / IO with **Normal Saline** at TKO.

5.01 Gynecological and Obstetrical Emergencies

Prolapsed Cord

BLS Treatment
• Left lateral Trendelenburg position. • If the cord is visible, gently displace presenting part of baby off cord and maintain displacement. DO NOT pull or over-handle cord in order to prevent cord compression and spasm. • Cover visible portion of cord with sterile gauze moistened with warm **Normal Saline** (to prevent cord spasm and premature delivery).
ALS Treatment
• IV/IO with **Normal Saline** TKO.

Pre-Eclampsia / Eclampsia

BLS Treatment
• Assess for significant signs and symptoms of Pre-Eclampsia: hypertension (SBP > 160, DBP > 90), AMS, blurred vision, "spots" before the eyes, or headache. • Assess for signs of Eclampsia: Altered mental status, coma or seizure. • Maintain quiet, dim environment (see Comments below). • Monitor VS every 5 minutes if significant signs and symptoms.
ALS Treatment (for Eclampsia only)
• IV/IO with **Normal Saline** TKO. • **Magnesium Sulfate**

Comments
• First priority in childbirth is assisting the mother with delivery of the child. The mother's physical and emotional comfort will affect outcome. Dim lights, quiet, reducing number of providers and keeping mother's companions nearby may be helpful. • Signs of imminent birth include a sensation of bearing down with or without grunting. • Newborn hypothermia can occur within minutes. Keep the baby on the mother's belly skin to skin until the cord is clamped. If continued access to the infant is necessary (e.g. for positive pressure ventilation) keep the baby warm including the use of warmed blankets or radiant warmer if available). • Never pull on the cord. • If possible, encourage mother to breastfeed infant to decrease vaginal bleeding.

5.01 Gynecological and Obstetrical Emergencies

- For cardiac arrest of mother, see **Protocol 2.04 Cardiac Arrest**.
- For cardiac arrest of newborn, see **Protocol 8.05 Neonatal Resuscitation**.

Base Hospital Contact Criteria

- Concerns about need for resuscitation based on fetus' gestational age and viability.
- Contact Base Hospital with questions about continuing treatments initiated at home or at birth centers by licensed midwives or other licensed professionals.

APGAR SCORE:

Appearance (skin color)	0=Body and extremities blue, pale	1=Body pink, extremities blue	2=Completely pink
Pulse	0=Absent	1=Less than 100/min	2=100/min and above
Grimace (Irritability)	0=No response	1=Grimace	2=Cough, sneeze, cry
Activity (Muscle tone)	0=Limp	1=Some flexion of the extremities	2=Active motion
Respirations	0=Absent	1=Slow and irregular	2=Strong cry

Section 6: Behavioral

6.01 AGITATED / VIOLENT PATIENT

BLS Treatment

- Assess scene safety and involve law enforcement if indicated to ensure safety.
- Attempt verbal de-escalation. Involve caregivers. Utilize even vocal tone and be aware of body language and threatening physical gestures.
- Consider physical restraints (4-point, soft restraints with patient in supine position if possible) if patient continues to represent danger to self or others.
- NPO.
- **Oxygen** as indicated.

ALS Treatment

- If glucose<60, administer **Dextrose**.
- For adults with severe agitation posing a danger to self or others and SBP > 90: administer **Midazolam.**
- Do NOT use intranasal **Midazolam** in actively-resisting agitated patients since its degree of absorption is unknown.
- All patients receiving a chemical restraint must continuous cardiac and pulse-oximetry monitoring and have frequent reassessment.

Comments

- Physical restraints must NOT be placed in such a way as to prevent evaluation of the patient's medical status (e.g. airway, breathing, circulation), impede patient care, or harm the patient. Circulation to extremities (distal restraints) should be evaluated frequently. If handcuffs are applied by law enforcement, a law enforcement officer shall accompany the patient in the ambulance.

Base Hospital Contact Criteria

- For additional **Midazolam** administration needed for patient with continued agitation

Section 7: Procedures

7.01 AIRWAY MANAGEMENT

BLS Treatment
• Assess circulation, airway, breathing, and responsiveness. • Assist ventilations with BVM and oxygen if indicated. • Pulse oximetry, if training occurs and approved by Provider Medical Director. • OPA or NPA as indicated. • BLS maneuvers to remove foreign body airway obstruction as indicated. • **Oxygen** as indicated.
ALS Treatment
• ALS maneuvers to remove foreign body airway obstruction as indicated. • Advanced airway as indicated, including: o **Protocol 7.07 Continuous Positive Airway Pressure** o **Protocol 7.02 Oral Endotracheal Intubation** o **Protocol 7.03 Supraglottic Airway** o Video Laryngoscopy, if available, and approved by the Medical Director. o **Protocol 7.05 Needle Cricothyrotomy** with jet insufflation is the airway of LAST RESORT when all other methods of establishing and maintaining a patent airway have been attempted and have failed.
Notes
o Must obtain and document End Tidal CO2 for initial advanced airway placement and continuous monitoring of advanced airways. o Target O2 saturation 94-95%. o Target End Tidal CO2 is 35-45 mmHg

AGE-BASED AIRWAY TREATMENT:

Between 0 & 8 years:

- Laryngoscopy to remove foreign body (as indicated).
- **Supraglottic Airway** for airway management in pediatric patients who cannot be adequately managed with BLS airway adjuncts.

Greater than 8 years:

- o **CPAP** as needed.
- o **Oral Endotracheal Intubation**
- o If unsuccessful return to BVM or use **Supraglottic Airway**.
- o **Supraglottic Airway** may be used initially.

7.02 ORAL ENDOTRACHEAL INTUBATION

INDICATIONS

Unconscious, apneic, or near apneic, patients without a gag reflex.

PROCEDURE

1. Place patient in correct position.
2. Hyperoxygenate patient with BVM ventilations with adequate tidal volume and rate for 1-3 mins with 100% **Oxygen**, avoid hyperventilation.
3. Apply cricoid pressure as needed to prevent passive regurgitation.
4. Instruct partner to place patient on cardiac and pulse oximeter monitors.
5. Select a proper ETT.
6. Insert stylet.
7. Select proper sized blade and visualize landmarks (Epiglottis, posterior notch, vocal cords).
8. Suction as needed.
9. Insert ETT 2-3 cm past the cords under direct visualization.
10. Attempts should be limited to a fall in HR or Pulse Ox. or 30 seconds per attempt.
11. Hyperoxygenate between attempts.
12. Remove stylet, inflate cuff and bag ventilate.
13. Confirm position with the End Tidal CO2 detection monitor and at least two of the following methods (one method needs to be mechanical):
    - Presence of equal breath sounds and equal chest rise.
    - Absence of epigastric breath sounds.
    - Misting or fogging in the ETT.
    - Direct endotracheal visualization.
    - Video Laryngoscopy, if available.
14. Continuously monitor with the End Tidal CO2 monitor.
15. Secure the tube. (Consider cervical collar to prevent extubation).
16. Reassess tube placement after each patient movement (may be done with CO2 detection device).
17. If any doubt about proper placement, use direct visualization to confirm.

7.03 SUPRAGLOTTIC AIRWAY

INDICATIONS

King Airway insertion may be performed only on those patients who meet ALL of the following criteria:

- Are unconscious and without purposeful movement.
- Do not have a gag reflex.
- Apnea

INSERTION PROCEDURE

1. Inflate cuff and check for leaks.
2. Apply water-soluble lubricant to distal end of tube.
3. Pre-oxygenate patient.
4. Place patient's head in a neutral position.
5. With non-dominant hand, hold mouth open and apply chin lift.
6. Using lateral approach, introduce tip into mouth.
7. Advance the tip behind the base of the tongue while rotating tube back to midline so that the blue orientation line faces the chin of the patient.
8. Without exerting undue force, advance tube until base of connector is aligned with teeth or gums.
9. Inflate cuff (the appropriate size volume).
10. Attach BVM to King Airway.
11. While gently bagging patient to assess ventilation, withdraw the airway until ventilation is easy and free-flowing.
12. Assess ventilation:
    - Rise and fall of the chest.
    - Bilateral lung sounds.
    - Confirm placement with CO2 detector
    - Gastric auscultation.
    - If breath sounds are present continue to ventilate. If an air leak is noted, up to 10 mL of air can be added to the cuff.
13. If there is any question about the proper placement of the King Airway, deflate the cuffs and remove device, ventilate the patient with BVM for 30 seconds and repeat.
14. Secure the tube. Note depth marking on tube.
15. Continue to monitor the patient for proper tube placement throughout prehospital treatment and transport.

7.05 NEEDLE CRICHOTHYROTOMY

INDICATION

Life threatening upper airway obstruction where all other BLS and ALS maneuvers and techniques have failed.

EQUIPMENT

- #10 gauge angiocath or commercial crichothyrotomy needle
- Adaptor for ETT – BVM or
- Jet Insufflation Device

PROCEDURE

1. Locate the cricothyroid membrane and prep area.
2. Extend the neck to bring the membrane anterior.
3. Insert #10 gauge angiocath or commercial crichothyrotomy needle through membrane at 50 degree angle to the feet. Ensure 10cc syringe is attached
4. May consider using second angiocath, in the same puncture site, for expired air outlet.
5. Aspirate air during the insertion to confirm placement in the trachea.
6. Once air has been aspirated, advance the catheter towards the feet while withdrawing the needle.
7. Attach the adaptor to the end of the angiocath or commercial crichothyrotomy needle.
8. Hyperventilate as rapidly as possible using the BVM.
9. A jet insufflation device shall be used at a ratio of one (1) sec of inflation to five (5) sec of exhalation. Set pressures to 50 for adults; 20 for children
10. If the airway pressure progressively increases with each insufflation, then briefly disconnect to allow for exhalation or insert second catheter for exhalation port.
11. If subcutaneous emphysema occurs, stop insufflation and attempt second catheter placement.

7.06 NEEDLE THORACOSTOMY

INDICATION

TENSION PNEUMOTHORAX: Air leak into pleural space through a hole in lung, acting as a one-way valve. Assessment confirmed by some of the following:

- Decreased breath sound, uni- or bilaterally
- Tracheal shift away from affected side
- Extreme dyspnea
- Neck vein distension
- Agitation
- Possible cyanosis
- Hypotension
- Hyper resonance to percussion

EQUIPMENT

- #10 gauge angiocath or other appropriate over the catheter needle
- Large syringe
- Connecting tubing
- Heimlich valve or similar one-way valve device

LOCATION

- PRIMARY: Second intercostal space in the mid-clavicular line on the affected side.
- ALTERNATE: 4th or 5th intercostal space, mid-axillary, on the affected side.

PROCEDURE

1. Introduce either angiocath or other appropriate over the catheter needle (attached to large syringe) just above the rib margin during expiration.
2. Continue until lack of resistance or "pop" as needle enters pleural space.
3. Once air returns under pressure or is aspirated with ease
    a) Remove plunger.
    b) Listen for air escaping.
4. Once air has ceased escaping
    a) Remove syringe barrel from needle.
    b) Advance the catheter.
    c) Secure catheter with needle guard or tape.
    d) Attach connecting tubing.
    e) Attach one-way valve device or Heimlich valve with **BLUE** end toward patient.

7.07 CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

INDICATIONS

Patients age 8 or older in moderate to severe respiratory distress secondary to:

- CHF with pulmonary edema
- Acute exacerbation of COPD or asthma
- Pneumonia
- Near drowning
- Any other cause of respiratory failure (not respiratory arrest)

PROCEDURE

1. Place patient in seated position.
2. Set up CPAP system (per manufacturer's recommendation) with pressure set between 7.5-10 cm H2O.
3. Explain procedure to patient.
4. Apply mask while reassuring patient-encourage patient to breath normally (may have a tendency to hyperventilate).
5. Re-evaluate the patient every 5 minutes- normally the patient will improve in the first 5 minutes with CPAP as evidenced by:
    - Decreased heart rate
    - Decreased respiratory rate
    - Decreased blood pressure
    - Increased SPO2
6. NTG and Albuterol may be administered as indicated during the use of CPAP.

7.08 PULSE OXIMETRY

INDICATION

- Any patient that presents with respiratory compromise
- Ambulance company's medical director must approve the use of the pulse oximeter by EMT's.

PROCEDURE

1. Ensure any nail polish is removed
2. Place probe on finger. Pediatric finger wraps may be used on pediatrics.
3. Target O2 saturation 94-95%. Supplement **Oxygen** via nasal cannula (2-6 L/min) for awake, oriented, stable patients without evidence of hypoperfusion or 100% high flow via nonrebreather mask (10-15 L/min) if indicated.

NOTES

- **Some inhalational poisonings, such as carbon monoxide and hydrogen sulfide, may result in patients with normal oxygen saturation readings, but cellular hypoxia due to displacement of the oxygen molecule from the hemoglobin in red blood cells.**
- In all of the above cases, maximal **Oxygen** therapy should be delivered to the patient regardless of pulse oximeter reading if the patient has signs of respiratory compromise.

7.09 CARBOXYHEMOGLOBIN MONITORING

INDICATION

- Suspected carbon monoxide exposure.
- Ambulance company medical directors must approve the use of carboxyhemoglobin (SpCO) monitors.

PROCEDURE

1. Follow manufacture's recommendations.
2. Place probe on finger or; apply nasal device.
3. Place patient on 100% high-flow **Oxygen.**

NOTES

Duration of exposure and concentration of CO will determine onset and severity of symptoms. The symptom chart below indicates exposure and (approximate PPM ranges) and associated risks.

Ranges	Symptoms
> Approx. 35 ppm (0.0035%)	Headache and dizziness within 6 - 8 hours of constant exposure.
100 ppm (0.01%)	Slight headache in 2- 3 hours.
200 ppm (0.02%)	Slight headache within 2 - 3 hours. Loss of judgment/confusion.
400 ppm (0.04%)	Frontal headache within 1 – 2hours.
800 ppm (0.08%)	Dizziness, nausea and convulsions within 45 min. AMS within 2 hours.
1,600 ppm (0.16%)	Headache, tachycardias, dizziness and nausea within 20 min. Death in less than 2 hours.
3,200 ppm (0.32%)	Headache, dizziness and nausea in five to ten minutes. Death within 30 minutes.
6,400 ppm (0.64%)	Headache and dizziness in one to two minutes. Convulsions, respiratory arrest and death in less than 20 minutes.
12,800 ppm (1.28%)	Unconsciousness after 2–3 breaths. Death in less than three minutes.

- **Some inhalational poisonings, such as carbon monoxide and hydrogen sulfide, may result in patients with normal oxygen saturation readings, but cellular hypoxia due to displacement of the oxygen molecule from the hemoglobin in red blood cells.**
- In all of the above cases, maximal oxygen therapy should be delivered to the patient regardless of pulse oximeter or SpCO monitor readings if the patient has signs of respiratory compromise.

7.10 12-LEAD ELECTROCARDIOGRAM PROCEDURE

INDICATIONS

Any patient with known or suspected Acute Coronary Syndrome (ACS). Examples:

- Substernal pain
- Discomfort or tightness radiating to the jaw, left shoulder or arm
- Nausea
- Diaphoresis
- Dyspnea
- Anxiety
- Syncope/dizziness
- Other "suspicious symptoms"
- Known treatment for ACS

PROCEDURE

1. Input the following MANDATORY patient information PRIOR to acquiring 12-lead EKG:
   a) Patient Last Name + First Initial
   b) Gender
   c) Age
   d) Under the patient ID field, list ambulance unit number. List as "SFFD 74," etc. to avoid confusion between ambulance unit number and patient age.

2. Attach EKG leads to the patient (limb leads to the upper arms, ankles and six chest leads) and perform EKG.
   - V1: right 4th intercostal space
   - V2: left 4th intercostal space
   - V3: halfway between V2 and V4
   - V4: left 5th intercostal space, mid-clavicular line
   - V5: horizontal to V4, anterior axillary line
   - V6: horizontal to V5, mid-axillary line
   - V4R: right 5th intercostal space, mid-clavicular line (use in all suspected inferior MI's for establishing appropriateness for administering **Nitroglycerin** or **Morphine**) Any Lead II, III AVF ST elevation shall receive V4R prior to administration of **Nitroglycerin** or **Morphine**.
3. Serial 12-Lead EKGs en-route are encouraged.

STEMI EKG CRITERIA

- If the EKG indicates an ST elevation MI by either of the methods below, transport to an approved STAR Cardiac Receiving Center according to **Policy 5000 Destination**.
  - Convex or flat ST segment elevation of more than 1 mm (one small box) in two or more contiguous leads.
  - EKG machine interpretation ***ACUTE STEMI*** or similar wording.

- Provide early notification to the STAR facility per **Policy 3020 Field to Hospital Communications**. Transmit the EKG (if capable) to the receiving facility.

DOCUMENTATION

- MANDATORY labeling of ALL 12-Lead EKGs with the four patient identifiers listed under procedures.
- PCR:
    - Age and gender
    - Interpretation of the 12-lead EKG (leads, ST elevation in millimeters)
    - Location of reciprocal changes (if applicable)
    - Symptoms (including presence or absence of chest pain)
    - Significant vital signs and physical findings
    - Attach a copy (or electronic equivalent) of the EKG to the hospital copy and the file copy of the PCR

7.11 Spinal Motion Restriction

INDICATION

Patients who present following decelerating or blunt force injury suspicious for head or neck trauma with any of the following should have Spinal Motion Restriction:

- Midline back or neck pain.
- Numbness, weakness or paresthesias of the extremities.
- Blunt and or penetrating injury to the head or neck**.** Penetrating trauma does not require SMR unless spinal injury is suspected.
- Altered mental status of unknown etiology with traumatic injury suspected.

Spinal Motion Restriction is NOT indicated if the patient meets ALL the following criteria:

- Age <65.
- No decrease or change in baseline mental or neurological status.
- No suspected or witnessed axial load injury to head.
- No numbness, weakness or paresthesias of the extremities.
- No significant distracting injuries.
- Reliable translation for any language barrier.
- No vertebral column injury noted on palpation.
- Patient able to perform motor/sensory exam without deficits:
    - Wrist or finger flexion (both hands), plantarflexion (both feet), dorsiflexion (both feet).
    - Check gross sensation in all extremities.
    - Check for parasthesias.

EMTs and Paramedics shall apply or direct application of SMR whenever extent of injury is in question or patient history is unreliable.

PROCEDURE

1. Limit flexion, extension, rotation and distraction of spine.
2. Provide manual stabilization restricting gross motion.
3. Reduce gross movement of patient.
4. Prevent duplicating the damaging mechanism to spine.
5. Regularly assess sensory and motor function.
6. Obtain assistance (minimum 2-person procedure) to apply rigid cervical collar. Alert and co-operative patients may be allowed to self-limit motion, if appropriate, without cervical collar.

NOTES

- Methods used to achieve Spinal Motion Restriction that are allowable include (less restrictive to more restrictive):
    - Lateral, semi-fowler's or fowler's position with cervical collar only.
    - Soft collars
    - Pillows
    - Mattress

  - Children's car seats
  - KED, backboards with adequate padding
  - Head immobilizers and straps
- In the event that a patient meets inclusion criteria for SMR, but cannot or will not tolerate allowable methods, consider manual stabilization using additional rescuers, tools or techniques to achieve limited spinal motion during extrication and transport.
- Long spine boards are indicated only in patients who exhibit neurological deficits, decreasing level of consciousness or inability to be screened for discontinuation of spinal motion restriction.

Once SMR has been applied to a patient, it may NOT be discontinued in the field.

7.12 ADULT AND PEDIATRIC VASCULAR ACCESS WITH INTRAOSSEOUS (IO) DEVICE

INDICATION

- Critically ill or injured patients
  - Unable to obtain pulse;
  - Unresponsive;
  - Apneic;
  - Hypotension with shock;
  - Acute deteriorating level of consciousness.
- If vascular access cannot be established via peripheral IV in 2 attempts or less than 90 seconds, then proceed with either IO or PVAD access.
- Less invasive route of medication administration (PO, IN, IM) is preferred for stable patients prior to the attempting an IO insertion.

PROCEDURE

1. Assemble needed equipment.
2. Non-traumatized proximal tibia is the preferred insertion site. Locate the landmarks 2-3 cm below the tibial tuberosity on the anteromedial flat bony surface of the proximal tibia and prepare the site.
3. If there is significant trauma or fractures bilaterally in the lower extremities then the humeral head may be used for intraosseous insertion.
   a. Place the patient's hand over their umbilicus on the side chosen for insertion in order to perform a medial rotation of the humorous and elbow.
   b. Place the IO about 1 cm above the surgical neck of the humorous.
   c. Secure extremity in swath bandage.
4. Insert the IO needle holding the leg (or arm) steady:
   a. Grasp the needle with the obturator still in place and insert it through the skin at the selected site at a 90-degree angle to the skin surface.
5. When the needle is felt to 'pop' into the bone marrow space:
   a. Remove the obturator.
   b. Attach a syringe with 0.5 mg/kg of 2% **Lidocaine** solution (max dose 50 mg) and flush the IO needle in patients who are conscious.
   c. Attach a <10 ml syringe containing IV solution, to flush the IO needle 30 to 60 seconds following lidocaine administration.
      OR
   d. Remove the obturator; attach a primed IV solution set with or without a stop cock.
   e. Draw 5 ml of fluid from the IV bag then pinch or close the stopcock and flush IO needle.
6. If unable to flush, continue procedure and watch carefully for extravasation and swelling while infusing fluids and/or medications.
7. Secure the needle by taping and splint the leg as indicated to maintain stability.
8. If infiltration occurs or needle removed, stop the infusion, remove the needle, and apply a pressure bandage to the IO site. If another IO will be attempted, use a different bone.

7.12 ADULT AND PEDIATRIC VASCULAR ACCESS WITH INTRAOSSEOUS (IO) DEVICE

NOTES

- Active pushing of fluids may be more successful than gravity infusion. Use the same size syringe for fluid boluses.
- An insertion device pre-approved by the EMS Agency Medical Director may be utilized according to manufacturer instructions substituting for steps 2 through 4 above.

7.13 ADULT AND PEDIATRIC VASCULAR ACCESS WITH PRE-EXISTING VASCULAR ACCESS DEVICE (PVAD)

INDICATION

- Critically ill or injured patients
    - Unable to obtain pulse;
    - Unresponsive;
    - Apneic;
    - Hypotension with shock;
    - Acute deteriorating level of consciousness.
- If vascular access cannot be established via peripheral IV in 2 attempts or less than 90 seconds, then proceed with either IO or PVAD access.
- Less invasive route of medication administration (PO, IN, IM) is preferred for stable patients prior to the attempting an IO insertion.
- Do not use if infection at site is present.

PROCEDURE

1. Prepare medication and 10 ml **Normal Saline** or IV solution flush, and tubing. Purge all air from lines and syringe.
2. Apply pressure cuff to IV bag if access is being made to fistula or shunt.
3. Wash hands thoroughly and/or cleanse with alcohol-based cleanser. Sterile gloves are preferred for procedure if available.
4. If betadine wipes or cleanser are not available, alcohol preps may be used.
5. Cleanse injection cap or access site with betadine wipes. If time allows, let set for 90 seconds.
6. Wipe injection cap or access site with alcohol.
7. Due to high pressures created, never use syringes smaller than 10 ml for IV push medications or flushing.
8. Never use high pressures for IV push fluids. Pressure cuffs < 150 mm.
9. Prior to infusion, withdraw and discard 5 ml of blood to remove heparin lock and assure patency.
10. If unable to withdraw 5 ml of blood or assure patency of line, do not continue PVAD access. May attempt IO access.
11. If multiple color ports are available, the BLUE color port is preferred.

NOTES

- Strict adherence to clean or aseptic technique is crucial when handling any PVAD to prevent infection.
- **Air embolism**: The PVAD provides a direct line into the central circulation. Introduction of air into these devices can be hazardous.
    - Do not remove injection cap from catheter unless catheter is clamped
    - Do not allow IV fluids to run dry
    - Always expel air from preload/syringe prior to administration.

7.13 ADULT AND PEDIATRIC VASCULAR ACCESS WITH PRE-EXISTING VASCULAR ACCESS DEVICE (PVAD)

- **Thrombosis**: A blood clot within the vascular device. Dislodging a clot can cause pulmonary embolus or vascular damage.
    - Follow medication with 5 ml normal saline or heparin solution (if within scope of practice) flush.
    - Do NOT inject medications or fluids if resistance is met. When establishing patency, draw back first.
- **Catheter damage**: Should damage occur to the external catheter:
    - Clamp immediately between the skin exit site and the undamaged area to prevent air embolism or blood loss.
    - Use padded hemostats (or padded with 2 X 2 and tape).
- **Bleeding**: If needle or catheter is dislodged from fistula or shunt, or if device is damaged from trauma, maintain direct pressure as for an arterial bleed.

7.14 REPORTING ASSAULT / ABUSE

INDICATION

Suspected assault or Abuse

PROCEDURE

1. Follow appropriate treatment protocol for patient's chief complaint, e.g. head trauma.
2. If concerned about patient safety, transport to an appropriate Receiving Hospital. Notify receiving hospital staff of your concerns.
3. Contact appropriate law enforcement agency (see below).
4. Provide emotional support to the victim and family.
5. When in doubt, transport suspected abuse/neglect victims to a Receiving Hospital.
6. Treat all clothing, medications and personal items with patient at time of transport as potential evidence. If these need to be removed from patient to facilitate assessment/treatment, place them in a container labeled with patient identification and document turnover of these materials to patient treatment team or law enforcement.
7. The patient care report should be descriptive as possible of the conditions of the elder/dependent adult and of his/her living situation.

REPORTING PROCEDURES (SUSPECTED OR ACTUAL INCIDENT)

Contact the appropriate agency by telephone as soon as possible to give a verbal report and receive instructions on how to file a written report (generally must be done within **36-hours**).

DOMESTIC VIOLENCE:

- Notify local law enforcement or Receiving Hospital staff and document.

CHILD ABUSE:

- **Must transport pediatric patients who are potential child abuse victims.**
- San Francisco Human Services Agency - Child Abuse Hotline (800) 856-5553 (available 24-hrs)

ELDER ABUSE (age 65 or older):

If the any combination of the following circumstances are present, contact **San Francisco Police Department** immediately to respond to the scene from where the elder/dependent adult was removed by paramedics, regardless of whether it was at home or at an acute care or long term care facility.

- Evidence of either (a) *decubitis ulcer on the elder/dependent adult, or (b) injuries on the elder/dependent adult that are consistent with falls or an assault, i.e., possible fractures, lacerations, bruises, or signs of inappropriate physical restraint.*
- Evidence of poor hygiene or living conditions for the elder/dependent adult (i.e., *feces/urine soaked bedsheets or clothing, evidence of dehydration or malnutrition, extreme clutter or filth in the home, extremely bad odors, evidence of human waste that has not been properly disposed of, such as dirty adult diapers, or waste being kept in buckets or by other inappropriate means*).

- *Identifiable caretaker(s) for the elder/dependent adult, whether or not present at the scene at the time of the paramedics responding.*

The report by the paramedic should be descriptive as possible of the conditions of the elder/dependent adult, and of his/her living situation, including any odors, and the extent of poor hygiene or filth in the residence or facility.

ELDER ABUSE AT A LICENSED HEALTH CARE FACILITY BY FACILITY STAFF:

California Department of Health Services
Division of Licensing and Certification
350 90th Street
Daly City, CA 94105
(650) 301-9971 / (800) 554-0353

OR

Ombudsman
(for Skilled Nursing Facility Complaints)
6221 Geary Boulevard
San Francisco, CA 94121
(415) 751-9788

ELDER ABUSE AT HOME OR ABUSE BY A VISITOR OR ANOTHER RESIDENT AT A LICENSED HEALTH CARE FACILITY:

- San Francisco Human Services Agency – Adult Protective Services,
- Adult Abuse Hotline (415) 355-6700 (24-hour number)

DEPENDANT ADULT AT HOME OR ABUSE BY A VISITOR OR ANOTHER RESIDENT AT A LICENSED HEALTH CARE FACILITY:

- San Francisco Human Services Agency – Adult Protective Services,
- Adult Abuse Hotline (415) 355-6700 (available 24-hrs)

SEXUAL ASSAULT:

- Patients should be encouraged to be transported to San Francisco General Hospital emergency department for evidence collection *if the assault occurred less than 72-hours prior to ambulance call.*
- Discourage bathing, washing, urination/defecation or changing clothes until arrival at the hospital in order to preserve evidence.

HUMAN TRAFFICKING*:

- SFPD's Vice Crimes tip line (415) 643-6233 for suspected human trafficking.
- San Francisco Collaborative against Human Trafficking (www.sfcaht.org) lists other local resources or call the National Human Trafficking Resource Center (888) 373-7888.

***Definition:** "Human trafficking is when people are treated as possessions (such as being forced into prostitution or involuntary labor). Warning signs include individuals who are segregated from contact with the responders, are physically or emotionally bullied by others, or who don't have control of their own ID/documents; locations with unsuitable living conditions or unreasonable security measures; or incidents where responders are approached and asked for protection/asylum from other individuals at a scene."*

7.15 SPLINTING

INDICATION

- Suspected or Obvious extremity fracture.
- Appropriate splinting can reduce or minimize dislocation, motion, hemorrhage, swelling, and pain.

PROCEDURE

1. Remove or cut away clothing.
2. Dress and bandage significant wounds using a sterile dressing.
3. Check CMS distal to injury before and after splinting.
4. Immobilize joints above and below injured bones.
5. For joint injuries, leave in place and immobilize the bone above and below the joint
6. ***If extremity is pulseless*** it may be necessary on a mid-shaft (center 1/3) fracture to realign angulated injuries.
7. Pad splints well.
8. Elevate extremity after splinting, if possible.
9. Monitor CMS after splinting.

GUIDELINES FOR SPECIFIC INJURIES

Realignment of Long Bone Fractures

- ***If extremity is pulseless*** attempt to realign (open or closed) long bones that are angulated in the middle 1/3 then splint. If resistance to movement is encountered or pain is too severe, discontinue realignment efforts and immobilize in place.
- Long-bone fractures which occur in the proximal or distal 1/3, that may or may not involve a joint, may be realigned if compromise of distal circulation or nerve function is detected and transport is prolonged.
- Realignment may sometimes be necessary to facilitate packaging for transport.
- Check and document CMS before and after splinting and/or realignment.

Dislocations/Sprains

- Splint dislocations or other joint injuries in the position found.
- Exception: Loss of a distal pulse and neurological function and definitive care is delayed.
    - In that case, attempt to straighten into anatomical position until the pulse returns, excessive pain is felt, or resistance is encountered.
    - Support with blanket, pillow, or well-padded splint.
    - Elevate the limb.
    - Pack the injured area in ice or use an ice pack.

TRACTION SPLINTING

- A lower extremity traction splint stabilizes fractures of the femur. This reduces motion, hemorrhage, swelling, and pain. Traction splints are indicated in midshaft femoral fractures without involvement of the hip joint, knee, or lower leg.
- **PROCEDURE for Applying a Traction Splint**

7.15 SPLINTING

1. Two EMTs are needed to apply a traction splint.
2. Remove or cut away clothing.
3. Dress and bandage significant wounds using a sterile dressing.
4. Manually immobilize the injured extremity prior to dressing/bandaging.
5. Do not apply manual traction. Check distal CMS before and after manipulation.
6. Determine SICK/NOTSICK
7. Control Bleeding
8. Size splint to uninjured leg
9. Have one EMT stabilize the leg while the other applies the traction device.
10. Apply splint
    - Groin strap
    - Ankle hitch
    - Knee strap
    - Extend
    - Thigh and calf straps
11. Reassess CMS and vital signs

Section 8: Pediatric Medical

8.01 PEDIATRIC ALLERGIC REACTION / ANAPYHLAXIS

BLS Treatment – ALL Allergic Reactions

- May help patient administer EpiPen autoinjector or equivalent product.
- Position of comfort.
- NPO
- **Oxygen** as indicated.

ALS Treatment

Current American Heart Association Guidelines concerning Emergency Cardiac Care assessments and interventions shall always take precedence over local protocols when there is a conflict concerning techniques of resuscitation.

MILD ALLERGIC REACTION

Hives, rash, itching.

- **Diphenhydramine**

ANAPHYLAXIS (SYSTEMIC REACTION) WITH NO SHOCK

Normal blood pressure WITH 2 body systems involved (e.g. respiratory AND GI symptoms) such as hives, rash, wheezing, cough, chest tightness, stridor, grunting, swallowing difficulty and / or throat tightness, lip / facial swelling, anxious, abdominal cramping, nausea / vomiting (especially common in children).

- **(Do 1st) Epinephrine**
- **Diphenhydramine**
- **Albuterol**

ANAPHYLAXIS WITH SHOCK

Low blood pressure with signs of hypoperfusion such as altered mental status, agitation, restlessness, somnolence, pale, cool, diaphoretic; cyanotic; low O2 saturations; and / or delayed or poor capillary refill. SaO2 < 95% on room air.

- **(Do 1st) Epinephrine**
- IV / IO of **Normal Saline** bolus with 20 ml/kg NS IV or IO. Repeat up to 60 ml/kg if indicated.
- **Epinephrine** (1:10,000 If hypotension not responding to IM **Epinephrine** or fluid bolus)
- **Diphenhydramine**
- **Albuterol**

8.02 PEDIATRIC ALTERED MENTAL STATUS

KNOWN OR SUSPECTED HYPOGLYCEMIA

BLS Treatment
• Position of comfort. • NPO, unless otherwise specified. • Assess circulation, airway, breathing, and responsiveness. • **Oxygen** as indicated. • Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated. • Appropriately splint suspected fractures/instability as indicated. • Bandage wounds/control bleeding as indicated. • Oral **Glucose** to known diabetic patients with symptoms of hypoglycemia.
ALS Treatment **Current American Heart Association Guidelines concerning Emergency Cardiac Care assessments and interventions shall always take precedence over local protocols when there is a conflict concerning techniques of resuscitation.**
• Advanced airway if indicated. • IV/IO of **Normal Saline** at TKO. • Check blood glucose. If blood glucose <60 mg/dl: administer **Dextrose.** • If no IV or IO access: administer **Glucagon** .

AMS OF UNKNOWN CAUSE

BLS Treatment
• Position of comfort. • NPO, unless otherwise specified. • Assess circulation, airway, breathing, and responsiveness. • **Oxygen** as indicated. • Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated. • Appropriately splint suspected fractures/instability as indicated. • Bandage wounds/control bleeding as indicated. • Oral **Glucose** to known diabetic patients with symptoms of hypoglycemia.
ALS Treatment
• IV or IO of **Normal Saline** at 10 ml/kg. • **Naloxone**: Neonate = AVOID use in neonate • Check blood glucose. If blood glucose <60 mg/dl: administer **Dextrose.** • If no IV or IO access: administer **Glucagon.**

8.02 PEDIATRIC ALTERED MENTAL STATUS

APPARENT LIFE-THREATENING EVENT (ALTE)

BLS Treatment
• Position of comfort. • NPO, unless otherwise specified. • Assess circulation, airway, breathing, and responsiveness. • **Oxygen** as indicated. • Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated. • Appropriately splint suspected fractures/instability as indicated. • Bandage wounds/control bleeding as indicated. • Oral **Glucose** to known diabetic patients with symptoms of hypoglycemia.
ALS Treatment
• IV or IO of **Normal Saline** As indicated • **Naloxone**: Neonate = AVOID use in neonate • Check blood glucose. If blood glucose <60 mg/dl: administer **Dextrose.** • If no IV or IO access: administer **Glucagon.**

ALTE is defined as:

- Age less than or equal to 2 years old.
- Episode frightening to the observer (may think the infant has died) and involves some combination of:
  - Apnea
  - Color change (cyanosis, pallor, erythema, plethora)
  - Marked change in muscle tone (limpness)
  - Choking or gagging

8.03 PEDIATRIC DYSRHYTHMIA: BRADYCARDIA

BLS Treatment
• Start CPR if HR < 60/min. • Position of comfort. • NPO • Assess circulation, airway, breathing, and responsiveness. • **Oxygen** as indicated; with appropriate adjuncts as indicated. • Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated. • Appropriately splint suspected fractures/instability as indicated. • Bandage wounds/control bleeding as indicated.
ALS Treatment **Current American Heart Association Guidelines concerning Emergency Cardiac Care assessments and interventions shall always take precedence over local protocols when there is a conflict concerning techniques of resuscitation.**
• Advanced airway if indicated. • IV **Normal Saline** TKO, preferably at antecubital fossa. • If unstable, IO after 1 min of IV attempts. • **Epinephrine (**1:10,000) • **Atropine**

Comments
SYMPTOMATIC BRADYCARDIA DEFINITION: Pulse rate **<** 60 BPM and any of the following: • Hypotension. • Signs of shock/hypoperfusion. • Acutely altered mental status, syncope or near syncope.

8.04 PEDIATRIC DYSRHYTHMIA: TACHYCARDIA

BLS Treatment

- Position of comfort.
- NPO
- Assess circulation, airway, breathing, and responsiveness.
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated.
- Appropriately splint suspected fractures/instability as indicated.
- Bandage wounds/control bleeding as indicated.

ALS Treatment – All Tachycardias

Current American Heart Association Guidelines concerning Emergency Cardiac Care assessments and interventions shall always take precedence over local protocols when there is a conflict concerning techniques of resuscitation.

- Advanced airway if indicated.
- IV with **Normal Saline** TKO, preferably at antecubital fossa.
- If unstable, IO after 1 min of IV attempts.

ALS Treatment – Specific Tachycardias

SINUS TACHYCARDIA (NARROW QRS)

- Search for and treat underlying cause.
- IV or IO with **Normal Saline** fluid bolus.

SUPRAVENTRICULAR TACHYCARDIA WITH PULSE and ADEQUATE PERFUSION (NARROW QRS)

- Consider vagal maneuvers.
- **Adenosine**

SUPRAVENTRICULAR TACHYCARDIA WITH PULSE and POOR PERFUSION (NARROW QRS)

- IV/ IO **Normal Saline** fluid bolus.
- **Adenosine**
- If IV/IO unavailable, synchronized cardioversion.
- Pre-sedate with **Midazolam** if possible; DO NOT delay cardioversion.

VENTRICULAR TACHYCARDIA WITH PULSE and ADEQUATE PERFUSION (WIDE QRS)

- Consider vagal maneuvers.
- **Amiodarone**

VENTRICULAR TACHYCARDIA WITH PULSE and POOR PERFUSION (WIDE QRS)

- IV or IO with **Normal Saline.**
- Synchronized Cardioversion
- If responsive to pain, sedate before cardioversion with **Midazolam**.

8.04 PEDIATRIC DYSRHYTHMIA: TACHYCARDIA

Comments

QRS INTERPRETATION

Sinus Tachycardia	SVT	Ventricular Tachycardia
• Onset often gradual. • Known cause (fluid loss, trauma) • P-waves present/normal • Variable R-R, consistent PR • Rate: infant < 220 bpm. • Rate: child < 180 bpm.	• Onset sudden. • Vague, nonspecific history • P waves absent, HR not variable. QRS < 0.09 sec. • Rate: infant > 220 bpm. • Rate: child > 180 bpm.	• Onset sudden. • QRS duration > 0.09 sec. • Rate: > 120 bpm.

VAGAL MANEUVERS

- Infant and preschool children: Ice cold water to face (place cold washcloth over forehead and face without obstructing airway).
- Older children: Valsalva maneuvers.

8.05 PEDIATRIC CARDIAC ARREST: NEONATAL RESUSCITATION

BLS Treatment

- Assess circulation, airway, breathing, and responsiveness.
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated.
- Appropriately splint suspected fractures/instability as indicated.
- Bandage wounds/control bleeding as indicated.

HR < 60

CPR at rate of 120/min, compression to ventilation ratio 3:1.

HR > 100, but persistent cyanosis and/or labored breathing

- Blow by **Oxygen** using non-rebreather mask at 100%.

HR < 100, gasping or apnea

- BVM rate of 40-60/min with 100% **Oxygen.**
- If HR < 100 persists, reposition airway and adjust ventilation rate.

ALS Treatment

Current American Heart Association Guidelines concerning Emergency Cardiac Care assessments and interventions shall always take precedence over local protocols when there is a conflict concerning techniques of resuscitation.

- Advanced airway if indicated
- Provide grief support and referrals for on-site survivors as needed.

HR < 60

- If thick meconium and baby is not vigorous, perform deep tracheal suctioning using ETT and meconium aspirator.
- IV/IO with **Normal Saline** TKO.
- **Epinephrine** (1:10,000)
- Check blood glucose. If blood glucose <60 mg/dl: administer **Dextrose.**

Base Hospital Contact Criteria

Naloxone for respiratory depression following restoration of HR > 60 and skin signs.

8.06 PEDIATRIC CARDIAC ARREST: BRADYASYSTOLE AND PEA

BLS Treatment
• If HR < 60, start CPR. • **Oxygen** as indicated. • Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated. • Appropriately splint suspected fractures/instability as indicated. • Bandage wounds/control bleeding as indicated.
ALS Treatment **Current American Heart Association Guidelines concerning Emergency Cardiac Care assessments and interventions shall always take precedence over local protocols when there is a conflict concerning techniques of resuscitation.**
• Advanced airway if indicated. • Establish IV/IO with **Normal Saline** TKO. • **Normal Saline** bolus if hypovolemia suspected. • **Epinephrine** • Provide grief support and referrals for on-site survivors as needed.
Base Hospital Contact Criteria
Termination of efforts.

8.07 PEDIATRIC CARDIAC ARREST: VENTRICULAR FIBRILLATION / PULSELESS VENTRICULAR TACHYCARDIA

BLS Treatment
• Assess circulation, airway, breathing, and responsiveness. • If HR < 60**,** START CPR. • **Oxygen** as indicated. • Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated. • Appropriately splint suspected fractures/instability as indicated. • Bandage wounds/control bleeding as indicated.
ALS Treatment **Current American Heart Association Guidelines concerning Emergency Cardiac Care assessments and interventions shall always take precedence over local protocols when there is a conflict concerning techniques of resuscitation.**
• Defibrillation • Advanced airway if indicated. • **Epinephrine** • IV/ IO **Normal Saline** fluid bolus. • **Amiodarone**
Base Hospital Contact Criteria
Termination of efforts.

8.08 PEDIATRIC POISONING AND OVERDOSE

BLS Treatment – ALL Pediatric Poisoning and Overdoses

- Position of comfort.
- NPO
- Assess circulation, airway, breathing, and responsiveness.
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated.
- Appropriately splint suspected fractures/instability as indicated.
- Bandage wounds/control bleeding as indicated.

ALS Treatment - ALL Pediatric Poisoning and Overdoses

Current American Heart Association Guidelines concerning Emergency Cardiac Care assessments and interventions shall always take precedence over local protocols when there is a conflict concerning techniques of resuscitation.

- IV/ IO of **Normal Saline** TKO.
- Check blood glucose. If blood glucose <60 mg/dl: **Dextrose**.
- If no IV or IO access: administer **Glucagon.**

Base Hospital Contact Criteria

- May consult California Poison Control (800) 222-1222.
- Contact Base Physician if Poison Control recommends treatment outside of current protocols.

Comments

NEVER induce vomiting for hydrocarbons (gasoline, kerosene, turpentine, Pine Sol) or caustic substances (alkali (e.g. lye or Drano) or acid substances).

ALS Treatment – SPECIFIC Pediatric Poisoning and Overdoses

UNKNOWN SUBSTANCE

- **Naloxone**: Neonate = AVOID use in neonate
- **Activated Charcoal** mixed in water to form a slurry IF patient is alert; able to maintain airway; non-acid, non-caustic, non-petroleum ingestion; it is within 1-hour of ingestion AND >1 year old.

KNOWN OR SUSPECTED OPIATES

Pinpoint pupils, respiratory depression, decreased level of consciousness, hypotension and decreased muscle tone:

- **Naloxone**: Neonate = AVOID use in neonate

8.08 PEDIATRIC POISONING AND OVERDOSE

ANTIPSYCHOTICS WITH EXTRAPYRAMIDAL REACTION SYNDROME
(Haldol, Haloperidol)

Fixed, deviated gaze to one side of body, painful spasm of trunk or extremity muscles and difficulty speaking:

- **Diphenhydramine**

ORGANOPHOSPHATES

SLUDGE Symptoms: Salivation, lacrimation, urination, diaphoresis/diarrhea, gastric hypermotility, and emesis/eye (small pupils, blurry vision):

- **Atropine**

TRICYCLIC ANTIDEPRESSANTS

May experience rapid depression of mental status, sudden seizures, or worsening of vital signs:

- If hypotensive, seizing and / or wide QRS > 0.10 sec
- **Sodium Bicarbonate**

BETA BLOCKER OR CALCIUM CHANNEL BLOCKER
(e.g. Metoprolol)

Bradycardia, hypotension and / or shock:

- **Activated Charcoal** mixed in water to form a slurry IF patient is alert; able to maintain airway; non-acid, non-caustic, non-petroleum ingestion; it is within 1-hour of ingestion AND >1 year old.

Base Hospital Contact Criteria

Contact Base Physician for approval of:

- **Glucagon** for Beta Blockers.
- **Calcium Chloride** 10% solution for Calcium Channel Blockers.

Comments

Calcium Chloride causes severe tissue damage if extravasated. Properly secure IV and check IV patency prior to administration.

8.08 PEDIATRIC POISONING AND OVERDOSE

CARBON MONOXIDE (CO) / HYDROGEN SULFIDE

Consider CO poisoning if found unconscious, or has AMS, or non-specific complaints AND patient situation includes:

- Found down in enclosed space with CO source (running motors, indoor use of charcoal/ gas grill/ generator or heater malfunction)
- Multiple persons sharing the vicinity have similar symptoms.
- Environmental CO detectors are alarming.

Give 100% NRB or via BVM regardless of pulse oximeter reading.

Comments

Patients with CO and hydrogen sulfide may have normal oxygen saturation readings, but cellular hypoxia due to displacement of the oxygen molecule from the hemoglobin in red blood cells.

8.09 PEDIATRIC RESPIRATORY DISTRESS

BLS Treatment
• Position of comfort. • NPO • Assess circulation, airway, breathing, and responsiveness. • **Oxygen** as indicated. • Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated. • Appropriately splint suspected fractures/instability as indicated. • Bandage wounds/control bleeding as indicated.
ALS Treatment **Current American Heart Association Guidelines concerning Emergency Cardiac Care assessments and interventions shall always take precedence over local protocols when there is a conflict concerning techniques of resuscitation.**
• IV / IO of **Normal Saline** at TKO. • **Albuterol** • If severe distress and/or no relief with **Albuterol** administer **Epinephrine.**

8.10 PEDIATRIC SEIZURE

BLS Treatment

- Assess airway, breathing, circulation and responsiveness.
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated.
- Transport in left lateral recumbent position if no C-spine injury is suspected.
- Cooling measures if fever present.

ALS Treatment

- IV or IO of **Normal Saline** at TKO.
- Check blood glucose. If blood glucose <60 mg/dl: administer **Dextrose.**
- If no IV or IO access: administer **Glucagon.**

- If status epilepticus is present AND SBP > 90, administer **Midazolam:**
  - Status epilepticus is continuous seizure activity lasting > 5 minutes OR multiple seizures without regaining consciousness between seizures.

- If patient has Diastat rectal gel for personal use, this may be substituted for IN, IV or IO **Midazolam** solution. May assist caregiver in giving Diastat rectal gel by inserting a syringe tip (no needle) into rectum. Hold or tape buttocks for 5 minutes to prevent spillage of Diastat from rectum. Follow prescription dosing directions.

Base Hospital Contact Criteria

Requests for additional **Midazolam** if status epilepticus continues after second dose, or if status epilepticus is present and SBP is less than or equal to 90.

8.11 PEDIATRIC SHOCK & HYPOTENSION

BLS Treatment

- Position of comfort.
- NPO
- Assess circulation, airway, breathing, and responsiveness.
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated.
- Appropriately splint suspected fractures/instability as indicated.
- Bandage wounds/control bleeding as indicated.

ALS Treatment

Current American Heart Association Guidelines concerning Emergency Cardiac Care assessments and interventions shall always take precedence over local protocols when there is a conflict concerning techniques of resuscitation.

- For hypotension, administer **Normal Saline** bolus.
- Check blood glucose. If blood glucose <60 mg/dl: administer **Dextrose**.
- If no IV or IO access: administer **Glucagon**.

Compensated Shock:	**Uncompensated Shock:**
Anxiety, agitation, restlessness	Decreased level of consciousness
Tachycardia	Tachycardia to bradycardia
Normotensive	Hypotensive
Capillary refill normal to delayed	Cyanosis
Symptoms of allergic reaction	Delayed capillary refill
Pallor, mottling	Inequality of central & distal pulses

Base Hospital Contact Criteria

Dopamine

For shock unresponsive to initial ALS interventions, contact for IV **Dopamine** orders.

8.12 PEDIATRIC PAIN CONTROL

BLS Treatment
• Position of comfort. • NPO • Reassurance and redirection. • Ice or heat as indicated. • **Oxygen** as indicated**.**
ALS Treatment
• IV/IO with **Normal Saline** TKO as indicated. • If pain score 1-6 by Pediatric Pain Rating Scale, give PO **Ibuprofen** (if no contraindications). • If pain score is greater than 6, give IN/IV/IO **Fentanyl** OR IV/IM/IO **Morphine** • **Ondansetron** as needed. • Document pain score and vital signs before and after medication administration on PCR.
Base Hospital Contact Criteria
• Base Hospital Physician consult is required for patients whose parents are requesting an AMA after receiving **Fentanyl** or **Morphine.**
Notes
• **Fentanyl, Morphine**, and/or **Midazolam** may act synergistically to cause respiratory depression and should not be combined unless seizures or other indications for midazolam use is present. Contact Base Hospital MD for consultation if needed for this combined use. • If utilizing 2 or more doses of **Fentanyl, Morphine**, and/or **Midazolam**, patient shall be placed on continuous end tidal CO2 monitoring. A trend of increasing EtCO2 readings (2 or more readings, 10% or more, above baseline) indicates the need for immediate re-assessment of patient's respiratory status to include rate and depth of respirations. Ventilatory support should be provided as necessary to return ETCO2 to baseline. • All injectable pain medications shall be cross-checked with a Paramedic (secondarily an EMT) for correct medication and dose at time of administration unless transporting in the back of an ambulance without a second attendant.

Section 9: Pediatric Trauma & Burns

9.01 PEDIATRIC TRAUMA

BLS Treatment

- Assess circulation, airway, breathing, and responsiveness.
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated.
- Appropriately splint suspected fractures/instability as indicated.
- Bandage wounds/control bleeding as indicated.
- For head trauma, elevate head of spine board 15-20 degrees.

ALS Treatment

Current American Heart Association Guidelines concerning Emergency Cardiac Care assessments and interventions shall always take precedence over local protocols when there is a conflict concerning techniques of resuscitation.

- Advanced airway if indicated.
- **Normal Saline** bolus.

For isolated extremity trauma, for pain:

- **Morphine**

For nausea / vomiting:

- **Ondansetron**

Base Hospital Contact Criteria

- For additional **Morphine** above maximum dose.

9.02 PEDIATRIC BURN

BLS Treatment

- Position of comfort.
- NPO
- Assess circulation, airway, breathing, and responsiveness.
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated.
- Appropriately splint suspected fractures/instability as indicated.
- Bandage wounds/control bleeding as indicated.

Thermal:

- Use water to stop further tissue damage. Dry area to avoid hypothermia.
- Remove jewelry and non-adhered clothing. Do not break blisters.
- Cover affected body surface with dry sterile dressing or dry sterile sheet.

Chemical:

- Treat according to **Protocol 3.04 Hazardous Materials**.

Electrical:

- Disconnect electrical source before touching patient.
- Dry dressing on any exposed area.

ALS Treatment

- Advanced airway as indicated.
- **Normal Saline** bolus.

For pain:

- Use medication per **Protocol 8.12 Pediatric Pain Control**.

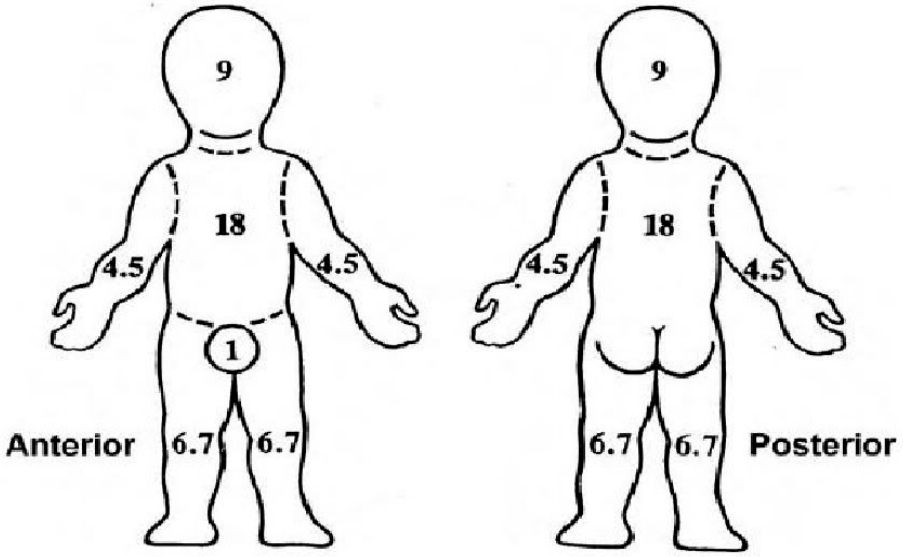
For nausea / vomiting:

- **Ondansetron**

Base Hospital Contact Criteria

- For additional **Fentanyl** or **Morphine** above maximum dose.
- Pediatric burn patients who do not meet trauma triage criteria shall be transported to St. Francis Memorial Hospital.
- Transport to Zuckerberg San Francisco General Hospital Trauma Center if the patient meets trauma triage criteria.

CALCULATING BODY SURFACE AREA



Section 10: Pediatric Behavioral

10.01 PEDIATRIC AGITATED / VIOLENT PATIENT

BLS Treatment
• Position of comfort. • NPO • Assess circulation, airway, breathing, and responsiveness. • **Oxygen** as indicated. • Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated. • Appropriately splint suspected fractures/instability as indicated. • Bandage wounds/control bleeding as indicated. • Attempt verbal de-escalation. Involve caregivers. • Apply soft physical restraints if patient does not respond to verbal de-escalation and is still a danger to self or others.
ALS Treatment
• IV or IO of **Normal Saline** TKO Blood glucose <60 mg/dl: • **Dextrose** or **Glucagon** For sedation: • **Midazolam** Do NOT use intranasal **Midazolam** in actively resisting, agitated patients since its degree of absorption is unknown.
Base Hospital Contact Criteria
• For repeat doses of **Midazolam**.

Section 11: Special Circumstances

11.01 SPECIAL CIRCUMSTANCES: AUSTERE CARE

AUSTERE MEDICAL CARE CONCEPT

Austere Medical Care ("Austere Care") is a modified standard of care provided during disaster situations when medical resources, supplies and / or medical personnel are extremely limited or unavailable. Situations in which this may occur include an earthquake with major infrastructure damage or biological events with depletion of health care resources, or disruptions to the normal supply chains. The goal of a modified standard of care is to provide a basic (austere) level of medical care that is less time and resource intensive. By modifying the standard of care to a more basic (austere) level, fewer medical resources are provided to an individual person, but, instead are distributed to a greater number of individuals in a given population. The intent of austere medical care standards is to attempt to do the most good for the greatest number of people during a disaster situation.

Austere Care is only rendered in the setting of disaster or isolation and requires activation as described in this protocol. Austere Care is never considered advantageous over normal emergency medical care and cannot be used in settings where normal or comprehensive emergency care is available.

ACTIVATION/DEACTIVATION OF AUSTERE CARE

Austere care is only authorized by the County Health Officer or his or her designee. Communication of the decision to use Austere Care will come through the Incident Command System chain of authority. Medical units will render care as described in the following protocols. If warranted, standard emergency medical care protocols can be utilized at the discretion of the Medical Group Supervisor depending on local conditions. Austere Care is designed to be a "floor" level of medical care, which may be superseded or augmented as conditions permit.

AUSTERE CARE GUIDELINES

The following table identifies changes to the treatment of patient conditions covered in the Standard Treatment Protocols under Austere Care:

CONDITION	TREATMENT
Abdominal Discomfort	Treat for shock if indicated. Trial of PO fluids. Trial of over-the-counter antacid if available.
Allergic Reaction	**Epinephrine** or **Diphenhydramine** IM if indicated.
Altered Mental Status	Check glucose. Treat with oral or IV **Dextrose** if indicated.
Cardiac Arrest	• V-Fib/ Pulseless V-Tach: If no return of spontaneous circulation (no pulses) after 3 shocks, cease resuscitation efforts. • Do not initiate resuscitation of other cardiac arrest rhythms.

Chest Discomfort / Pain	**Aspirin** and **Nitroglycerin**
Childbirth	**Oxygen** and IV fluid hydration if needed. Deliver baby.
Near Drowning	**Oxygen** and protect from hypothermia.
Pain Control	• **Morphine** • Help patient self-administer over-the-counter oral pain medications as appropriate & available (e.g. Tylenol; Ibuprofen).
Respiratory Distress	Bronchospasm: **Albuterol** CHF: **Nitroglycerin**
Stroke	**Aspirin**
Trauma	Follow standard treatment guidelines for treatment of individual conditions. If shock develops and does not respond to initial IV infusion of 2 liters of normal saline, provide palliative care only.

The following table identifies treatment for conditions that are not found in the standard treatment protocols:

CONDITION	TREATMENT
Anxiety / Depression	Reassure patient; assist with finding supportive group of others such as friends, relatives or volunteers. Lorazepam OR diazepam if needed for restraint/sedation.
Dehydration	Oral rehydration solutions (Gatorade, sports drinks, water, juices.)
Fracture Care	Immobilization, ice pack, pain control with **Morphine** or over-the-counter pain medication.
Palliative Care (Comfort care for dying patients)	Reassurance, place patient with supportive others. **Morphine** or over-the-counter pain medication.
Nausea / Vomiting	Antiemetic if available, oral rehydration solutions.
Wound Care	Clean wounds with soap and water. Remove foreign bodies and debris. Irrigate with normal saline or clean water as available. Apply dressings. Qualified personnel may perform suturing. Wounds that are over 6 hours old cannot be sutured. Dressings should be changed daily. Signs of infection (fever, pus drainage, red streaks on skin, increased pain from wound) warrant triage to higher level of care.

11.02 SPECIAL CIRCUMSTANCES: CRUSH SYNDROME

BLS Treatment

- Position of comfort.
- NPO
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated.
- Appropriately splint suspected fractures/instability as indicated.
- Bandage wounds/control bleeding as indicated; apply tourniquet proximal to injury as indicated.
- Assess extremity for decreased sensation, motor function, skin color changes and diminished pulses every 5 min (while entrapped and after extrication).

ALS Treatment

- EKG rhythm strip before and after extrication of crushed extremity.

Pre-Extrication

- Establish IV/IO and administer bolus of 2L of **Normal Saline** followed by 500ml /hr.

Immediately Prior to Extrication

- Administer **Sodium Bicarbonate** 1mEq/kg up to 100 mEq IVP.

Post Extrication

- If hyperkalemia is suspected [T waves is peaked; QRS is prolonged (>0.12 seconds) or hypotension develops], administer **Calcium Chloride.**
- If suspected hyperkalemia persists (peaked T wave; prolong QRS), administer **Albuterol** (helps drive K^+ into cells).
  - For pain: may administer **Morphine.**
- For nausea / vomiting: may administer **Ondansetron.**

Comments

- Complete trauma assessment and evaluate patient for other distracting injuries and treat as indicated.

Base Hospital Contact Criteria

- Fluid bolus for pediatric patient.
- Patients with history of cardiac or renal dysfunction.

11.03 SPECIAL CIRCUMSTANCES: CHEMICAL & RADIOLOGICAL AGENTS

RADIATION INJURY

- Burns and / or blast injury.
- Multiple health issues with lower dose exposures.

BLS Treatment

- Position of comfort.
- NPO
- Assess circulation, airway, breathing, and responsiveness.
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated.
- Splint suspected fractures/instability as indicated.
- Bandage wounds/control bleeding as indicated.

ALS Treatment

- For pain, see **Policy 2.09 Pain Control** or **Policy 8.12 Pediatric Pain Control**.

Comments

- Follow facility radiation exposure plan for patient decontamination and disposal of all contaminated waste.
- In the nuclear bomb scenario casualty load will be excessive. Utilize austere care protocol and strict triaging to maximize available resources. Access all available disaster resources.

11.03 SPECIAL CIRCUMSTANCES: CHEMICAL & RADIOLOGICAL AGENTS

CHEMICAL AGENT INJURY: NERVE AGENTS (e.g. VX, Sarin, Soman, Tabun)

- Causes "SLUDGE" (Salivation, Lacrimation, Urination, Diaphoresis/Diarrhea, Gastric hypermotility, Emesis/Eye (small pupils, blurry vision).
- Severe exposures may result in decreased level of consciousness, fasciculation/muscle weakness, paralysis, seizures.

BLS Treatment

- Position of comfort.
- NPO
- Assess circulation, airway, breathing, and responsiveness.
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated.
- Appropriately splint suspected fractures/instability as indicated.
- Bandage wounds/control bleeding as indicated.

ALS Treatment

- Administer **Atropine** 2-5 mg IVP/IO. Repeat every 2 – 5 minutes until SLUDGE symptoms subside.
- For seizures: administer **Midazolam**.

Comments

Nerve agent poisoning can be very toxic. Large amounts of **Atropine/2-PAM** may be needed to treat symptoms. If the patient is initially symptomatic and no response is seen to the initial doses of medication, continue giving until a response is achieved. May need to access pharmaceutical disaster cached called, "CHEMPACK" to have sufficient supply of antidote to treat multiple patients. If available, administer **DuoDote** [**Atropine/Pralidoxime (2-PAM)]** **Autoinjector** IM in using dosing table below:

DuoDote (2-PAM) Dosing Estimator

DuoDote = Atropine 2.1mg / Pralidoxime 600mg

Do NOT Use Atropine/2-PAM Injector	Use Between 1 – 3 Atropine/2-PAM Injectors IM	Use 3 Atropine/2-PAM Injectors IM
• No signs of life • Fits non-resuscitation group (expectant) due to other concomitant injury	Titrate dose based on 1 or more SLUDGE signs and: • Elderly • Children appearing under age 14 • Prolonged extrication (may require more than 3 autoinjectors)	• Exhibiting 2 or more SLUDGE signs OR • Non-ambulatory

Bronchospasm and respiratory secretions are the best acute symptoms to monitor response to **Atropine/2-PAM** therapy:

- Decreased bronchospasm and respiratory secretions = getting better.
- No change or increased bronchospasm and respiratory secretions = needs more **2-PAM**.

MUSTARD (SULFUR MUSTARD)

Blistering agent affecting skin and mucous membranes.

BLS Treatment

- Position of comfort.
- NPO
- Assess circulation, airway, breathing, and responsiveness.
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated.
- Appropriately splint suspected fractures/instability as indicated.
- Bandage wounds/control bleeding as indicated.
- Preserve body temperature if blistered area is large.

ALS Treatment

- Advanced airway if indicated.

Comments

- Liquid or vapor mustard penetrates the skin and mucous membranes and damages cells within minutes of exposure, so decontamination must be done immediately after exposure.
- Mustard agent can be very persistent; all surfaces with potential contamination must be carefully cleaned before considered decontaminated.

METHYLENE DIPHENYL ISOCYANATE (MDI), METHYLENE DIISOCYANATE, AND METHYL ISOCYANATE (MIC)

- Strong eye, skin and respiratory tract irritant.
- High concentrations may result in severe respiratory distress and pulmonary edema.

BLS Treatment

- Eyes or skin irritation: flush with copious amounts of water as feasible.
- Position of comfort.
- NPO
- Assess circulation, airway, breathing, and responsiveness.
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated.
- Appropriately splint suspected fractures/instability as indicated.
- Bandage wounds/control bleeding as indicated.

ALS Treatment

- Advanced airway as indicated.
- Consider needle cricothyroidotomy for laryngospasm if unable to maintain airway with BLS maneuvers or advanced airway procedures.
- IV/IO of **Normal Saline** TKO.
- **Albuterol**
  - For patients with severe refractory bronchospasm who are less than 50 years old and NO history of coronary artery disease or hypertension: administer IM **Epinephrine** (1:1,000)
  - If no response to IM **Epinephrine** or patient is in extremis: administer IV **Epinephrine** (1:10,000)

Comments

- All patients who have had a moderate or high level of exposure (respiratory, GI or Cardiovascular signs or symptoms upon exam by EMS personnel) should be referred to a medical facility for examination and treatment.
- If utilized, the ETT's placement and patency must be maintained at all times.

11.03 SPECIAL CIRCUMSTANCES: CHEMICAL & RADIOLOGICAL AGENTS

CHLORINE

- Strong eye, skin and respiratory tract irritant.
- High concentrations may result in severe respiratory distress and pulmonary edema.
- Symptoms:
  - **Low dose**—cough, eye irritation & lacrimation, choking sensation
  - **High dose**—hoarseness, wheezing, severe cough, sudden collapse due to laryngospasm

BLS Treatment

- Eyes: Flush with copious amounts of water.
- Skin: Flush with copious amounts of water.
- Position of comfort.
- NPO
- Assess circulation, airway, breathing, and responsiveness.
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated.
- Appropriately splint suspected fractures/instability as indicated.
- Bandage wounds/control bleeding as indicated.

ALS Treatment

- Establish IV/IO of **Normal Saline** TKO.
- **Albuterol**
  - For patients with severe refractory bronchospasm who are less than 50 years old and NO history of coronary artery disease or hypertension: administer IM **Epinephrine** (1:1,000)
  - If no response to IM **Epinephrine** or patient is in extremis: administer IV **Epinephrine** (1:10,000)
- Advanced airway as indicated.
- Consider needle cricothyroidotomy for laryngospasm if unable to maintain airway with BLS maneuvers or intubation.

Comments

- All patients who have had a moderate or high level of exposure (respiratory distress or airway symptoms upon exam by EMS personnel) should be referred to a medical facility for examination and treatment.

KEY ASSESMENT FINDINGS

- History: Exposure to a greenish-yellow gas with a pungent, acrid odor.

Cyanide

Blocks O2 use in cell causing cellular asphyxia and death.

BLS Treatment

- Position of comfort.
- NPO
- Assess circulation, airway, breathing, and responsiveness.
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated.
- Appropriately splint suspected fractures/instability as indicated.
- Bandage wounds/control bleeding as indicated.

ALS Treatment

- Advanced airway as indicated.
- If SBP < 90 mmH, administer IV/IO of **Normal Saline** fluid bolus.
- **Hydroxocobalamin** if available.

Comments

- Patients from enclosed space fires are at risk of cyanide poisoning.
- Notify hospital about possible cyanide poisoning and need for Cyanokit antidote.

11.04 SPECIAL CIRCUMSTANCES FIELD AMPUTATION

BLS Treatment

- If crush injury, refer to **Protocol 11.02 Crush Syndrome**.
- Request Amputation Team (minimum 3-person procedure).
- Clear access to chest, head and as far distally on entrapped extremity as possible.
- Position of comfort.
- NPO
- Assess circulation, airway, breathing, and responsiveness.
- **Oxygen** as indicated.
- Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated.
- Appropriately splint suspected fractures/instability as indicated.
- Bandage wounds/control bleeding as indicated.

ALS Treatment

- IV or IO of **Normal Saline** TKO.
- For pain: may administer **Morphine.**

Treat for Crush Injury, as indicated.

- Expose extremity as much as possible. Assist amputation team during procedure, as needed.
- Transport amputated limb with patient to hospital following procedure.

Comments

- Be conservative and apply spinal motion restriction precautions if a suspicion of cervical spine injury exists and time permits. Do not delay life-saving patient care to perform interventions.
- Rapid transport of the post-amputation patient to a trauma center is critical.

Paramedic may assist with field amputation. Performing amputation/procedural sedation is not in the current paramedic scope of practice and sedation medications may only be administered by physicians or nurses in the field.

Amputation Team Guidelines (Physicians ONLY)

- Patient consent.
- Prep extremity.
- Establish proximal and distal control, if possible.
- Maintain clean, if not sterile, technique.
- Sedation: Preferred medication is **Midazolam.**
- Anesthesia: Preferred medications are **Ketamine** for prolonged procedure and **Methohexital** for short procedure.
- Provide pain control: Preferred medication is **Fentanyl.**
- Perform amputation using scalpel, cable saw and extremity tourniquet, as available.
- Accompany patient during transport to hospital.

11.04 SPECIAL CIRCUMSTANCES FIELD AMPUTATION

- Equipment list for amputation: (should be kept in a "go bag" accessible for rapid transport with team) EQUIPMENT NEEDS: O.R. amputation pack with:
  - Cable saw
  - Scalpel with # 10 blade
  - Scalpel with # 15 blade
  - Pneumatic tourniquet
  - Non-pneumatic tourniquet
  - Gauze
  - Kerlex
  - Betadine and betadine applicators
  - Needle driver
  - Tissue forceps, long and short
  - 4-0 Ethilon suture material on a curved needle
  - Bone wax
  - Coagulation dressing material
  - **Fentanyl** 500 micrograms
  - **Midazolam** 20 milligrams
  - **Ketamine** 500 milligrams
  - **Methohexital** 300 milligrams
  - Syringes assorted sizes
  - Needles assorted sizes

Training requirements of Amputation Team:

- All personnel: Current licensure and credentialing at hospital of origin.
- Operator: General Surgeon or Orthopedist (with O.R. privileges).
- Assistant Operator: Anesthesiologist or Emergency Physician (with sedation privileges.
- Second Assistant: Operating Room or Emergency Department technician.
- Documentation of field amputation on prehospital Patient Care Record.
- Sentinel Event: 100% review by Trauma System Audit Committee and Hospital Process Improvement Committee.

Base Hospital Contact Criteria

- Team activation: Requested by scene commander; dispatched by request through Department of Emergency Communications to Base Hospital Physician. Base Physician contacts Trauma Center Medical Director for approval, then the team on-call as designated by participating physician group and provided to Base Hospital.

11.05 SPECIAL CIRCUMSTANCES BLAST INJURY

BLS Treatment
• Position of comfort. • NPO • Assess circulation, airway, breathing, and responsiveness. • **Oxygen** as indicated. • Provide **Spinal Motion Restriction** as indicated or position of comfort as indicated. • Appropriately splint suspected fractures/instability as indicated. • Bandage wounds/control bleeding as indicated.
ALS Treatment
• Advanced airway as indicated. • Perform needle decompression of chest if signs/symptoms of tension pneumothorax are present. • For pain: may administer **Morphine.**
Comments
• Do NOT apply hemostatic dressings to mucous membrane surfaces. • Patients presenting with tympanic membrane damage may have concomitant traumatic brain injury and must have frequent neurologic reassessment.

Section 12: Critical Care Paramedic Transport

12.01 INTRAVENOUS INFUSION OF NITROGLYCERIN
CCT PARAMEDICS

- Per Policies 4070 & 4071, these IV Infusions and Interventions are only to be monitored/operated by those with the specific training and scope allowed for CCT-Paramedics.
- Patients shall be placed on cardiac and pulse oximetry monitors for duration of transport.
- A non-invasive blood pressure monitor device that will record and print out routine blood pressure reading every fifteen (15) minutes will be utilized.
- Signed transfer orders from the transferring physician must be obtained prior to transport and must provide for maintaining the **Nitroglycerin** infusion during transport.
- If medication administration is interrupted (infiltration, accidental disconnection, malfunctioning pump, etc.), the CCT-P may restart the IV line as delineated in the transfer orders. Caution must be used to prevent inadvertent overdose of medication.
- The following parameters shall apply to all patients with pre-existing **Nitroglycerin** infusions:
  - Infusion will be either NS or D5W.
  - Regulation of the infusion rate will occur within the parameters as defined by the transferring physician, but in no case will changes be made in greater than 10 mcg/minute increments every 5-10 minutes.
- If infusion pump failure occurs and cannot be corrected, the paramedic is to discontinue the **Nitroglycerin** infusion and notify the transferring physician or the base hospital physician if the transferring physician is not available.
- In cases where severe hypotension (systolic blood pressure < 90 mmHg), the medication infusion will be discontinued, and notification made to both transferring and base hospital physicians.

12.02 INTRAVENOUS INFUSION OF HEPARIN
CCT PARAMEDICS

- Per Policies 4070 & 4071, these IV Infusions and Interventions are only to be monitored/operated by those with the specific training and scope allowed for CCT-Paramedics.
- Patients shall be placed on cardiac monitor for duration of transport.
- Signed transfer orders from the transferring physician must be obtained prior to transport and must provide for maintaining the **Heparin** infusion during transport.
- If medication administration is interrupted (infiltration, accidental disconnection, malfunctioning pump, etc.) the CCT-P may restart the IV line as delineated in the transfer orders. Caution must be used to prevent inadvertent overdose of medication.
- The following parameters shall apply to all patients with pre-existing **Heparin** infusions:
  - Medication concentration will not exceed 100 units/ml of IV fluid (25,000 units/250 ml or 50,000 units/500 ml.
  - Infusion rates must remain constant during transport with no regulation of rates being performed by the CCT-P.
- If pump failure occurs and cannot be corrected, the paramedic is to discontinue **Heparin** infusion and notify the transferring physician or the base hospital physician if the transferring physician is not available.

12.03 INTRAVENOUS INFUSION OF POTASSIUM CHLORIDE CCT PARAMEDICS

- These procedures/interventions shall only be performed by paramedics with CCT-P (Critical Care Transport-Paramedic) training and designation.
- Patients shall be placed on cardiac monitor for duration of transport.
- Signed transfer orders from the transferring physician must be obtained prior to transport and must provide for maintaining the **Potassium Chloride** infusion during transport.
- If medication administration is interrupted (infiltration, accidental disconnection, malfunctioning pump, etc.) the CCT-P may restart the IV line as delineated in the transfer orders. Caution must be used to prevent inadvertent overdose of medication.
- The following parameters shall apply to all patients with pre-existing **Potassium Chloride** infusions:
- Medication concentration will not exceed 40 mEq/liter of IV fluid.
- A more concentrated solution that contains no more than 10 mEq KCL TOTAL in the infusion bag is allowable.
- Infusion rates must remain constant during transport with no regulation of rates being performed by the CCT-P.
- CCT-Ps may not initiate **Potassium Chloride** infusions.
- Infusion rate may **NOT** exceed 10mEq/hour.
- Vital signs are to be monitored as indicated in the transfer orders, not less frequently than every 15 minutes.
- In case of new onset of cardiac dysrhythmia, infusion should be stopped immediately, patients treated according to appropriate dysrhythmia protocol, and receiving hospital notified immediately.
- If pump failure occurs and cannot be corrected, the paramedic is to discontinue the **Potassium Chloride** infusion and notify the transferring physician or the base hospital physician if the transferring physician is not available.

12.04 INTRAVENOUS INFUSION OF AMIODARONE HYDROCHLORIDE CCT PARAMEDICS

- These procedures/interventions shall only be performed by paramedics with CCT-P (Critical Care Transport-Paramedic) training and designation.
- Patients shall be placed on cardiac and pulse oximetry monitors for duration of transport.
- Signed transfer orders from the transferring physician must be obtained prior to transport and must provide for maintaining the **Amiodarone Hydrochloride** infusion during transport.
- If medication administration is interrupted (infiltration, accidental disconnection, malfunctioning pump, etc.) the CCT-P may restart the IV line as delineated in the transfer orders. Caution must be used to prevent inadvertent overdose of medication.
- The following parameters shall apply to all patients with pre-existing **Amiodarone Hydrochloride** infusions:
  - Medication concentration must be a minimum of 150 mg/250 ml D5W (0.6 mg/ml); unstable in a more dilute solution.
  - Infusion rates may vary between 0.5 – 1.0 mg/minute.
  - Physician guidelines must specify the infusion rate within the CCT-P scope of practice.
- Infusion rates must remain constant during transport with no regulation of rates being performed by the CCT-P, except for discontinuation of the infusion.
- If pump failure occurs and cannot be corrected, the paramedic is to discontinue the **Amiodarone Hydrochloride** infusion and notify the transferring physician or the base hospital physician if the transferring physician is not available.
- This procedure shall only be performed by paramedics with CCT-P (Critical Care Transport-Paramedic) training and designation.
- CCT-Ps may not initiate **Amiodarone Hydrochloride** infusions.
- Vital signs are to be monitored as indicated in the transfer orders, not less frequently than every 15 minutes.
- Y-injection incompatibility; the following will precipitate with **Amiodarone Hydrochloride**:
  1. **Heparin Sodium**
  2. **Sodium Bicarbonate**
- **Amiodarone Hydrochloride** intravenous infusion monitoring is not approved for patients < 14 years old without base hospital physician contact.
- For infusions longer than one (1) hour, **Amiodarone Hydrochloride** concentration should not exceed 2 mg/ml unless a central venous catheter is used.

PRECAUTIONS AND COMMENTS

- This procedure shall only be performed by paramedics with CCT-P (Critical Care Transport-Paramedic) training and designation.
- CCT-Ps may not initiate **Amiodarone Hydrochloride** infusions.
- Vital signs are to be monitored as indicated in the transfer orders, not less frequently than every 15 minutes.
- Y-injection incompatibility; the following will precipitate with **Amiodarone Hydrochloride**:
    3. **Heparin Sodium**
    4. **Sodium Bicarbonate**
- **Amiodarone Hydrochloride** intravenous infusion monitoring is not approved for patients < 14 years old without base hospital physician contact.
- For infusions longer than one (1) hour, **Amiodarone Hydrochloride** concentration should not exceed 2 mg/ml unless a central venous catheter is used.

12.05 MONITORING OF THORACOSTOMY TUBE
CCT PARAMEDICS

- These procedures/interventions shall only be performed by paramedics with CCT-P (Critical Care Transport-Paramedic) training and designation.
- Patients shall be placed on cardiac and pulse oximetry monitors for duration of transport.
- Signed transfer orders from the transferring physician must be obtained prior to transport and must specify the maintenance of chest tube either to gravity or mechanical suction drainage. If mechanical suction drainage is utilized, the amount of mechanical suction must be specified.
- Mechanical suction rate must remain constant during transport with no changes in the rate being performed by the CCT-P.
- Collection receptacle must be kept below the level of the chest to prevent drained fluid from re-entering the pleural space. Do not allow the collection receptacle to tip over.
- If hemorrhage occurs through the chest tube, observe for signs and symptoms of shock and treat according to protocol.
- Complications:
  - If the **Thoracostomy Tube** is partially pulled out, do NOT push the tube back into the chest. Secure the site.
  - If the **Thoracostomy Tube** is completely pulled out, place an occlusive dressing over the insertion site.
  - If air leaks are present, check all connections.
    - If the patient becomes dyspneic, assess breath sounds and notify the base hospital physician (needle thoracostomy may need to be performed).

- CCT-Ps may not initiate **Thoracostomy Tubes**.
- Avoid pulling on **Thoracostomy Tube** as this can cause accidental dislodgement of the tube.
- Do not restrict gravity or suction drainage from the chest by the use of clamps, dependent loops or kinks in tubing as this will interfere with the flow of drainage and may lead to increased pleural pressure or information of clots.
- Do not disconnect the drainage system or puncture tubing. Tape all connections securely to prevent violation of sterility and loss of negative pressure.
- In case of suction device failure, the end of the **Thoracostomy Tube** may be covered by a one way valve (Heimlich or similar valve device).

12.06 STOMA AND TRACHEOSTOMY CARE
CCT PARAMEDICS

- These procedures/interventions shall only be performed by paramedics with CCT-P (Critical Care Transport-Paramedic) training and designation.
- Use of demand valve is contraindicated in both suctioning and stoma intubation.
- CCT-Ps may not initiate a surgical airway.
- Suctioning of a tracheostomy tube should take no longer than ten (10) seconds for the adult patient.
- Allow no longer than 30 (thirty) seconds for stoma intubation.
- Temporary or permanent placement of a tracheostomy tube is often necessary to maintain an open airway.
- Patients with tracheostomy tubes or stomas should not be intubated orally.
- Administration of inhaled medications will need to be given via the stomas or tracheostomy tubes.
- Never attempt to reinsert a dislodged tracheostomy tube. Trying to do so may cause a false channel in the subcutaneous tissue anterior to the trachea. Compression of the trachea may result.

Procedure:

1. Adjust suction to 120 – 150 mmHg.
2. Apply sterile gloves.
3. Flush suction catheter with saline to lubricate tip and establish patency of suction catheter.
4. Remove the T-tube if a tracheostomy patient is on humidified oxygen.
5. Ventilate the patient with 100% oxygen several times.
6. Insert the suction catheter into the stoma or tracheostomy opening with the suction off (the thumb hole open). The short length of the tracheostomy tube facilitates suctioning. The catheter may be directed through the right or left bronchus by having the patient turn his/her head to the opposite side.
7. Apply suction by occluding the thumb hole while slowly withdrawing the catheter in a twisting motion.
8. If mucous plugs or thick secretions are present, the instillation of 3 – 5 ml of sterile saline may be helpful.
9. Ventilate with 100% oxygen.
10. Check breath sounds.
11. Suctioning can stimulate a cough reflex. Allow the patient to cough. Be prepared to suction or catch secretions from the tracheal opening. Recheck breath sounds.

Stoma Intubation

Equipment:

1. Appropriate sized cuffed and uncuffed ET tubes
2. Bag valve mask
3. Appropriate sized suction catheters

4. Oxygen supply
5. Suction equipment with adjustable suction capacity

Procedure:

1. Select the largest endotracheal tube that will fit through the stoma without force. Check the cuff, unless an uncuffed tube is being used.
2. Ventilate with 100% oxygen using a bag valve mask device with the face mask fitted over the stoma. (see **PRECAUTIONS and COMMENTS**)
3. Wear sterile gloves. Do not use stylet. It is not necessary to lubricate the tube
4. Suction if necessary.
5. Pass the endotracheal tube ½ the length of the tube and inflate the cuff. The pharynx has been bypassed, so the tube will protrude from the neck several inches.
6. Hold the tube in place, watch for chest rise with ventilation.
7. Secure the tube and ventilate.
8. Auscultate the lung fields. Check the neck for subcutaneous emphysema, indicating false passage. Confirm tube placement with standard methods per airway protocols.

12.07 CHEMICAL SEDATION FOR VENTILATOR-DEPENDENT AND AGITATED PATIENTS CCT PARAMEDICS

- These procedures/interventions shall only be performed by paramedics with CCT-P (Critical Care Transport-Paramedic) training and designation.
- Patients shall be placed and maintained on cardiac and pulse oximetry monitors during transport.
- Signed transfer orders from the transferring physician must be obtained prior to transport and must provide for maintaining the chemical sedation during transport.
- If patient meets the criteria for chemical sedation and no orders are given see guidelines for administration of **Midazolam** below.

Ventilator Dependent Patients

- Apply soft restraints if appropriate.
- Continuously monitor oxygen saturation, end-tidal CO2, heart rate, blood pressure and LOC.
- Guidelines for the administration of **Midazolam** for adults 12 years or older:
  - **Midazolam** 2 – 4 mg slow IV push
  - May repeat dose every 20 – 30 minutes as needed for sedation. Maximum total dose is 10 mg.
  - Use IM only if IV access is unavailable. IM dose is 3 – 5 mg, given deep into a large muscle mass. Maximum total dose is 10 mg.
  - May repeat IM dose every 60 – 90 minutes as needed for sedation.

Agitated Patients

- Continuously monitor oxygen saturation, end-tidal CO2, heart rate, blood pressure and LOC
- Guidelines for the administration of **Midazolam** for adults 12 years or older:
  - **Midazolam** 2 – 4 mg slow IV push
  - May repeat with smaller IV dose of 1 – 2 mg every 20 – 30 minutes as needed for sedation. Maximum total dose is 6 mg
  - Use IM only if IV access is unavailable. IM dose is 3 – 5 mg, given deep into a large muscle mass
  - May repeat with smaller IM dose of 1 – 3 mg every 60 – 90 minutes as needed for sedation. Maximum total dose is 6 mg.
- Assess for sedative side effects. **Midazolam** is 3 – 4 times more potent than Diazepam.
- The half-life of **Midazolam** is < 2 hours.
- Onset of action is usually 2 – 5 minutes. Wait after each incremental dose to assess effect. A total dose greater than 6 mg is usually not necessary.
- Serious cardio-respiratory complication may occur. These include respiratory depression, apnea, respiratory arrest and/or cardiac arrest. Resuscitation equipment should be immediately available.
- Hypotension has been noted, particularly with concomitant narcotic administration.
- Use 25 – 33% less **Midazolam** if narcotics are co-administered or administered prior to arrival.

12.08 AUTOMATIC TRANSPORT VENTILATORS
CCT PARAMEDICS

- These procedures/interventions shall only be performed by paramedics with CCT-P (Critical Care Transport-Paramedic) training and designation.
- Patients shall be placed and maintained on cardiac and pulse oximetry monitors during transport.
- A continuous end-tidal CO2 detector must be employed during transport.
- Signed transfer orders from the transferring physician must be obtained prior to transport and must provide parameters for maintaining and adjusting ventilators via ATV during transport.
- Personnel shall monitor the PSI level in the oxygen cylinder.
- CCT-Ps shall continually observe the patient and document patient response to any changes while the device is operational. CCT-Ps shall document the initial settings and any subsequent changes. Such documentation shall appear on the patient care report.
    - If an Automatic Transport Ventilator failure occurs and cannot be corrected, or patient's condition deteriorates due to respiratory compromise, the CCT-P is to discontinue use of the ATV and initiate ventilation by bag valve mask or bag valve mask ETT and notify the transferring physician or the Base Hospital Physician if the transferring physician is not available.
- CCT-Ps may not initiate ventilator support.
- The CCT-P is responsible for all airway management and must frequently reassess endotracheal tube placement. Bilateral breath sounds are to be checked after each patient movement.

SPECIAL CONSIDERATIONS:

The ventilator that the provider is to use should be able to match the existing ventilator settings. The following minimum device features (including circuit) must be present for this category of patient:

1. Set rate of ventilations
2. Adjustable delivered tidal volume
3. Adjustable Inspiratory and Expiratory ratios (I:E ratio)
4. Positive End-Expiratory Pressure (PEEP)
5. Peak airway pressure
6. Modes:
    a. Assist control (AC)
    b. Synchronized Intermittent Mandatory Ventilation (SIMV)
    c. Controlled Mechanical Ventilation (CMV)
7. Alarms:
    a. Peak airway pressure
    b. Disconnect
8. Strongly recommended option – blend percentage oxygen

MEDICAL PROVIDER MAINTAINCE REQUIREMENTS:

Agencies using this equipment must be certain to follow the manufacture's instructions regarding use, maintenance, cleaning and regular testing of this device.

1. The unit must be inspected and tested after every patient use.
2. The unit must be disinfected after use unless a disposable unit is used.
3. The unit shall undergo preventative testing and maintenance by qualified personnel annually.
4. Agencies shall arrange for (at least) annual inspection and testing of the equipment by a manufacture's representative (or designee). Documentation of this service shall be maintained in a service log. This record shall be kept by each agency using ATVs.

CCT PARAMEDIC TRAINING REQUIREMENTS:

CCT-Ps must be thoroughly trained and regularly retrained in the device's use. Such training shall occur annually and shall be documented.

12.09 INTRAVENOUS INFUSION OF BLOOD/BLOOD PRODUCTS CCT PARAMEDICS

- These procedures/interventions shall only be performed by paramedics with CCT-P (Critical Care Transport-Paramedic) training and designation.
- Identify the patient and the blood by checking the patient ID band against the blood/blood product label and the blood/blood product order for patient name, blood type, unit identifying number and expiration date. The blood or blood product must be hung and the infusion initiated by a RN or MD prior to the CCT-P accepting the patient for transfer.
- Patients shall be placed and maintained on cardiac and pulse oximetry monitors during transport.
- A non-invasive or manual blood pressure monitor device that will record blood pressure readings and a means of measuring temperature will be utilized every fifteen (15) minutes to monitor for signs of adverse effects.
- Signed transfer orders from the transferring physician must be obtained prior to transport and must provide for maintaining the blood/blood products infusion during transport.
- If medication administration is interrupted (infiltration, accidental disconnection, malfunctioning pump, etc.) the CCT-P may restart the IV line as delineated in the transfer orders.
- The following parameters shall apply to all patients with pre-existing blood/blood products infusions:
  - Infusion will be through filtered infusion tubing compatible with the CCT-P mechanical infusion device.
  - Regulation of the infusion rate will occur within the parameters as defined by the transferring physician. No other flow adjustments may be made by the CCT-P other than to discontinue the infusion in the event of complications.
- If pump failure occurs and cannot be corrected, the CCT-P is to discontinue the blood/blood products infusion and notify the transferring physician or the base hospital physician if the transferring physician is not available.
- In cases of suspected transfusion reactions, the blood/blood products infusion will be discontinued and notification made to both the transferring and Base Hospital Physician.
- CCT-Ps may not initiate infusions of blood or blood products.

Adverse Reactions

- Hemolytic Reactions: Hemolytic reactions are the most life threatening. Clinical manifestations may vary considerably and include: fever, headache, chest or back pain, pain at the infusion site, hypotension, nausea, generalized bleeding or oozing from a surgical site or shock. The most common cause is from ABO incompatibility due to clerical error or transfusion to the wrong person. Chances of survival are dose dependent; therefore it is important to STOP the transfusion immediately if a hemolytic reaction is suspected. Administer fluid challenge of NS.
- Febrile Non-Hemolytic Reaction: Chills and fever (rise from baseline temperature of 1 degree C or 1.8 degree F).

- Allergic Reaction: Characterized by appearance of hives and itching (urticaria or diffuse rash). See P-005 Allergic Reaction Protocol after discontinuing the infusion.
- Anaphylaxis: May occur after administration of only a few mls of a plasma containing component. Symptoms include coughing, bronchospasm, respiratory distress, vascular instability, nausea, abdominal cramps, vomiting, diarrhea, shock and loss of consciousness. See P-005 Allergic Reaction Protocol after discontinuing the infusion.
- Volume Overload: Characterized by dyspnea, headache, peripheral edema, coughing, frothy sputum or other signs of congestive heart failure occurring during or soon after transfusion. Restrict fluids.

12.10 INTRAVENOUS INFUSION OF GLYCOPROTEIN IIb/IIIa RECEPTOR INHIBITORS CCTPARAMEDICS

- These procedures/interventions shall only be performed by paramedics with CCT-P (Critical Care Transport-Paramedic) training and designation.
- Patients shall be placed and maintained on cardiac and pulse oximetry monitors during transport.
- Signed transfer orders from the transferring physician must be obtained prior to transport and must provide for maintaining the Glycoprotein Receptor Inhibitor infusion during transport.
- If medication administration is interrupted (infiltration, accidental disconnection, malfunctioning pump, etc.), the CCT-P may restart the IV line as delineated in the transfer orders. Caution must be used to prevent inadvertent overdose of medication.
- The following parameters shall apply to all patients with pre-existing Glycoprotein Receptor Inhibitor infusions:
    1. Medication concentration will not exceed the standard manufacture's concentration.
    2. Infusion rate must remain constant during transport with no regulation of rates being performed by the CCT-P, except for the discontinuation of the infusion (e.g. as in a case of bleeding).
    3. Documentation of calculation of the ordered infusion rate based on recent patient weight (in kilograms). Documentation of the following lab values (if available):
        a. Blood Urea Nitrogen
        b. Creatine
        c. Hemoglobin
        d. Hematocrit
        e. Platelet Count
        f. Coagulation Studies

If pump failure occurs and cannot be corrected, the paramedic is to discontinue the Glycoprotein Receptor Inhibitor infusion and notify the transferring physician or the base hospital physician if the transferring physician is not available.

- CCT-Ps may not initiate Glycoprotein Receptor Inhibitor infusions.
- Vital signs are to be monitored as indicated in the transfer orders but no less often than every 15 minutes

Eptifibatide (*Integrilin*) – Infusion bolus is 180 mcg/kg.
Eptifibatide (*Integrilin*) – Infusion rate MAY NOT EXCEED 2 mcg/kg/min.
Triofiban (*Aggrastat*) – Infusion rate MAY NOT EXCEED 0.1 mcg/kg/min
Abciximab (*ReoPro*) - Infusion rate MAY NOT EXCEED 0.125 mcg/kg/min

Incompatible with the following medication if given via same IV line: **Diazepam** (***Valium***)

12.11 INTRAVENOUS INFUSION OF TOTAL PARENTAL NUTRITION (TPN) CCT PARAMEDICS

- These procedures/interventions shall only be performed by paramedics with CCT-P (Critical Care Transport-Paramedic) training and designation.
- Patients shall be placed and maintained on cardiac and pulse oximetry monitors during transport.
- Signed transfer orders from the transferring physician must be obtained prior to transport and must provide for maintaining the **Total Parental Nutrition infusion** (**TPN**) during transport.
- If medication administration is interrupted (infiltration, accidental disconnection, malfunctioning pump, etc.), the CCT-P may restart the IV line as delineated in the transfer orders.
- If the medication is infiltrated the CCT-P may **NOT** restart the infusion. **TPN may only be delivered through a central line.**
- The following parameters shall apply to all patients with pre-existing **TPN** infusions:
  1. **TPN** concentration will not exceed a 3:1 solution mixture.
  2. Infusion rates must remain constant during transport with no regulation of rate being performed by the CCT-P, except for the discontinuation of the infusion (e.g. as in case of infiltration).
  3. All patients who have insulin as part of the **TPN** solution shall have documentation of the most recent blood glucose level.
- Vital signs are to be monitored as indicated in the transfer orders, not less frequently than every 15 minutes.
- If pump failure occurs and cannot be corrected, the paramedic is to discontinue the Total Parental Nutrition infusion and notify the transferring physician or the base hospital physician if the transferring physician is not available.
- **TPN** solution with Lipid emulsion must be infused through special filtered intravenous tubing compatible with the CCT-P infusion device.
- **TPN** solution IV lines shall not be used for any medication or fluid administration.

12.12 INTRAVENOUS INFUSION OF MORPHINE SULFATE CCT PARAMEDICS

- These procedures/interventions shall only be performed by paramedics with CCT-P (Critical Care Transport-Paramedic) training and designation.
- Patients shall be placed on cardiac and pulse oximetry monitors for duration of transport.
- A non-invasive blood pressure monitor device that will record and print out routine blood pressure reading every fifteen (15) minutes will be utilized.
- Signed transfer orders from the transferring physician must be obtained prior to transport and must provide for maintaining the **Morphine Sulfate** infusion during transport.
- If medication administration is interrupted (infiltration, accidental disconnection, malfunctioning pump, etc.) the CCT-P may restart the IV line as delineated in the transfer orders. Caution must be used to prevent inadvertent overdose of medication.
- The following parameters shall apply to all patients with pre-existing **Morphine Sulfate** infusions:
  - Regulation of the infusion rate will occur within the parameters as defined by the transferring physician, but may be titrated to the individuals response during transport
  - In cases of **severe** respiratory depression, sedation, confusion, hypotension, bradycardia, nausea and vomiting, the medication infusion will be discontinued and **Naloxone**, if indicated, may be administered as directed by your county of origin's EMS protocol. Notify the base physician.
- CCT-Ps may not initiate **Morphine Sulfate** infusions.

12.13 INTRAVENOUS INFUSION OF MIDAZOLAM
CCT PARAMEDICS

- These procedures/interventions shall only be performed by paramedics with CCT-P (Critical Care Transport-Paramedic) training and designation.
- Patients shall be placed on cardiac and pulse oximetry monitors for duration of transport.
- A non-invasive blood pressure monitor device that will record and print out routine blood pressure reading every fifteen (15) minutes will be utilized.
- Signed transfer orders from the transferring physician must be obtained prior to transport and must provide for maintaining the **Midazolam** infusion during transport.
- If medication administration is interrupted (infiltration, accidental disconnection, malfunctioning pump, etc.) the CCT-P may restart the IV line as delineated in the transfer orders. Caution must be used to prevent inadvertent overdose of medication.
- The following parameters shall apply to all patients with pre-existing **Midazolam** infusions:
  1. Regulation of the infusion rate will occur within the parameters as defined by the transferring physician, but may be titrated to the individuals response during transport.
- In cases of severe respiratory depression, partial airway obstruction (especially when combined with narcotics), hypertension, hypotension, and excessive sedation the medication infusion will be discontinued and notify the base physician.
- CCT-Ps may not initiate **Midazolam** infusions.
- Dosage reductions are recommended for patients in CHF, septic shock, renal and/or hepatic dysfunction, low serum albumin, pulmonary insufficiency, COPD, or elderly patients.
- Reduce dose by 30% in patients pre-medicated with narcotics and/or CNS depressants.

Section 13: References

Reference I: MEDICATION LIST version *02/03/20202*

ADENOSINE (Adenocard)

ACTION: Antiarrhythmic

- Decreases conduction through the atrioventricular (AV) node interrupting re-entry pathways.
- Interrupts and may convert paroxysmal supraventricular tachycardia (PSVT).

INDICATIONS:

- Hemodynamically stable PSVT.
- Narrow and wide-complex, regular, monomorphic tachycardia.

CONTRAINDICATIONS:

- 2nd or 3rd degree AV block
- Sick sinus syndrome.
- Polymorphic wide complex tachycardia
- Do not use **Adenosine** on a patient with a known history of Wolff-Parkinson-White (WPW) syndrome.

POTENTIAL SIDE EFFECTS:

- Transient asystole (up to 20 to 30 secs.)
- Dyspnea and bronchospasms
- Chest pressure
- Hypotension
- Facial flushing and headaches
- Nausea

ADULT DOSE/ROUTE:

⇨ **First dose**: 6 mg rapid IVP/IO***** followed with 20 ml Normal Saline flush.

⇨ If first dose ineffective, repeat with 12 mg rapid IVP/IO.***** May repeat 12mg x 1 if still ineffective.

*******IV preferred route*

PEDIATRIC DOSE/ROUTE:

⇨ **First dose**: 0.1 mg/kg rapid IVP/IO*****followed by 10ml NS flush (max first dose 6 mg).

⇨ If first dose ineffective, repeat with 0.2 mg/kg rapid IVP/IO***** (max second dose 12 mg). May repeat 0.2 mg/kg x 1 if still ineffective.

*******IV preferred route*

NOTES:

- Clinically evaluate patients—adult and pediatric—to distinguish primary tachyarrhythmias such as PSVT—from patient conditions leading to sinus tachycardias.
- Adenosine is blocked by methylxanthines (caffeine) and potentiated by dipyridamole and carbamazepine.

Effective: 11/01/17
Supersedes: 03/01/15

ALBUTEROL (Ventolin or Proventil)

ACTION: Bronchodilator (beta2 adrenergic agonist)

- Albuterol is a sympathomimetic that is selective for beta-2 adrenergic receptors resulting in prompt bronchodilation.
- Albuterol also reduces serum potassium levels through stimulation of beta-2 adrenergic receptors.

INDICATIONS:

- Reversible bronchospasm due to asthma or COPD

CONTRAINDICATIONS:

- Tachydysrhythmias.
- Known hypersensitivity to the drug.
- Use cautiously in elderly patients and patients with cardiovascular disease.

POTENTIAL SIDE EFFECTS:

- Tachydysrhythmias and palpitations
- Anxiety and nervousness
- Nausea and vomiting
- Dizziness
- Headache

ADULT DOSE/ROUTE:

⇨ 5 mg/6mlNS via nebulizer over 5 to 15 min. May repeat x 1 if no relief from symptoms.

PEDIATRIC DOSE/ROUTE:

⇨ 2.5 mg/3 ml NS via nebulizer over 5 to 15 min. May repeat x 1 if no relief from symptoms.

NOTES:

- Use mask nebulizer if patient is unable to use hand-held nebulizer.
- Use in line bag valve mask to deliver albuterol if inadequate tidal volume to ensure good administration with a nebulizer.
- Albuterol may be administered as indicated during the use of CPAP.

Effective: 11/01/17
Supersedes: 03/01/15

AMIODARONE

ACTION: Antiarrhythmic

- Antiarrhythmic that slows conduction and lengthens the cardiac action potential resulting in suppression of ventricular and supraventricular tachycardias.

INDICATIONS:

- Hemodynamically unstable ventricular tachycardia
- Ventricular fibrillation and ventricular tachycardia without a pulse

CONTRAINDICATIONS:

- Sinus node dysfunction or sinus bradycardia
- 2nd or 3rd degree block
- Known hypersensitivity from past exposure

POTENTIAL SIDE EFFECTS:

- May prolong QT interval
- May cause hypotension

ADULT DOSE/ROUTE:

⇨ **VF or pulseless VT**: 300 mg slow IVP or IO bolus. Repeat 150 mg slow IVP or IO bolus if rhythm persists.

⇨ **Stable / Unstable VT with pulse**: Inject 150 mg of Amiodarone into 100ml of D5W. Run with target goal of infusing 100 ml over 10 minutes.

PEDIATRIC DOSE/ROUTE:

⇨ **VF or pulseless VT only**: 5 mg/kg IVP or IO bolus. Maximum dose 300 mg.

NOTES:

- Flush tubing with NS between dosages.
- Signs of **Amiodarone** toxicity include hypotension, 3rd degree AV block and prolonged QT interval.
- Do not use **Amiodarone** in the presence of underlying atrial fibrillation, atrial flutter, bradycardia with ventricular escape beats, or other conduction defect (2nd or 3rd degree AV block).
- Do not administer if patient with pulse is hypotensive. Do synchronized cardioversion.
- Stop administration if patient becomes hypotensive during treatment.
- Do not administer with bicarbonate in the same IV line (will precipitate).
- When creating infusion, careful mixing is needed to avoid foaming of the medication.
- Reconstitute Amiodarone per manufacturer's directions.

Effective: 11/01/17
Supersedes: 03/01/15

ASPIRIN (ASA)

ACTION: Antithromboembolic

- Irreversibly blocks formation of thromboxane A2 resulting in decreased platelet aggregation (antiplatelet effect).

INDICATIONS:

- New chest pain suggesting an active acute myocardial infarction.

CONTRAINDICATIONS:

- Hypersensitivity to ASA
- Relative contraindication in patients with active ulcers or asthma

POTENTIAL SIDE EFFECTS:

- Gastrointestinal bleeding
- Gastroesophageal reflux
- Tinnitus.

ADULT DOSE/ROUTE:

⇨ 4 baby ASA tablets (81 mg each for a total of 324 mg) PO chewed and swallowed.
⇨ Note: one 324 mg adult ASA tablet could also be chewed by patient.

PEDIATRIC DOSE/ROUTE:

⇨ Not applicable.

NOTES:

- Oral absorption occurs within 20 to 60 minutes and is dependent on dosage, gastric motility or pH, dissolution rate and whether the drug is taken with antacids or meals.
- Should be given within minutes of arrival in patients with new onset chest pain suggesting of an acute myocardial infarction.

Effective: 11/01/17
Supersedes: 03/01/15

ATROPINE SULFATE

ACTION: Anticholinergic (Vagolytic)

- Blocks acetylcholine receptors resulting in reduction of parasympathathetic tone and increased conduction through the AV node.
- Increases sinus node automaticity and AV conduction when suppressed by abnormal parasympathetic or vagal discharges.
- Antagonizes action of organophosphate agents.

INDICATIONS:

- Symptomatic bradycardia.
- Organophosphate or carbamate insecticide or nerve agent exposure.

CONTRAINDICATIONS:

- Atrial fibrillation or atrial flutter
- Glaucoma

POTENTIAL SIDE EFFECTS:

- Increase heart rate causing tachycardias.
- Post-atropine tachycardias can precipitate V-Fib or V-Tach.
- Can worsen patient's ischemia or extend size of infarct.
- Dry mouth.
- Doses lower than 0.5 mg can produce slowing of the heart.
- Dilated pupils.
- Decreased salivation.
- Flushed, hot skin.

ADULT DOSE/ROUTE:

⇨ **Symptomatic Bradycardia**: 0.5mg IVP or IO. May repeat every5min up to 3 mg if no resolution of bradycardia.

⇨ **Organophosphate Poisoning/Nerve agent Exposure**: 2 – 5mg IVP or IO. May repeat in 5 minutes. No max dose.

PEDIATRIC DOSE/ROUTE:

⇨ **Symptomatic Bradycardia:** 0.02 mg/kg IVP or IO (min dose 0.1mg, max dose 0.5mg)

⇨ **Organophosphate Poisoning**: 0.02 mg/kg IVP or IO (min dose 0.1mg, no max dose)

NOTES:

- External pacing is the treatment of choice for symptomatic bradycardia if there is suspected myocardial ischemia, or 2nd or 3rd degree AV blocks are present.
- Can be given IM in thigh for suspected organophosphate poisoning /nerve agent exposure.
- Note: the primary cause of bradycardia in pediatric patients is hypoxia.

Atropine is no longer recommended for adult or pediatric asystole.

Effective: 11/01/17
Supersedes: 03/01/15

CALCIUM CHLORIDE (CaCl)

ACTION: Electrolyte

- Increases calcium levels necessary for cardiac contractility.
- Stabilizes the myocardium in hyperkalemia or hypocalcemia associated cardiac arrhythmias.

INDICATIONS:

- Hyperkalemia.
- Hypocalcemia with tetany.
- Calcium channel blocker overdose/toxicity.
- Hypermagnesemia.

CONTRAINDICATIONS:

- Use with extreme caution in patients taking digitalis compounds.

POTENTIAL SIDE EFFECTS:

- Bradycardia and asystole.
- V-Fib.
- Hypotension.
- Nausea and vomiting.

ADULT DOSE/ROUTE:

⇨ **Hyperkalemia and calcium channel blocker overdose:** 500 mg – 1,000 mg (1 gm) IVP or IO over 5 min. May repeat in 10 min.

PEDIATRIC DOSE/ROUTE:

⇨ 20 mg/kg IVP or IO over 5 min.

NOTES:

- Ensure that you have patent IV line as calcium extravasation will cause tissue necrosis.
- Calcium precipitates in IV bag or tubing if mixed with sodium bicarbonate.

Effective: 11/01/17
Supersedes: 03/01/15

CHARCOAL (ACTIVATED) [Actidose with Sorbitol]

ACTION: Absorbent

- Activated charcoal binds and adsorbs ingested toxins present in the GI tract. It has a large surface area. Once it binds and adsorbs the ingested toxins, the combined complex is excreted from the body.
- Particularly useful if administered early in the management of acute poisoning.

INDICATIONS:

- Activated charcoal is a general-purpose antidote recommended for the treatment of all oral poisonings/overdose **except those caused by corrosive agents, cyanide, iron, toxic alcohols, or organic solvents.**

CONTRAINDICATIONS:

- Active vomiting.
- Patients with altered mental status unless administered by nasogastric tube and the patient has an ETT in place.

POTENTIAL SIDE EFFECTS:

- Nausea and vomiting.
- Abdominal cramping and bloating.
- Constipation/ diarrhea

ADULT DOSE/ROUTE:

⇨ 50 G Activated Charcoal. Have patient drink entire bottle.
⇨ **Note**: Shake bottle vigorously before taking cap off.

PEDIATRIC DOSE/ROUTE:

⇨ 1 G/kg mixed in water to form slurry.
⇨ **Note**: patient must be at least one year of age.

NOTES:

- Do not administer to patients with altered mental status without a nasogastric tube.
- Do not administer after ingestion of a corrosive substance (lye, gasoline, acids).
- Charcoal is not effective in cases of lithium, cyanide, iron, toxic alcohols ingestion or in absorbing toxins with a heavy molecular weight.

Effective: 11/01/17
Supersedes: 03/01/15

DEXTROSE 10% ($D_{10}W$)

ACTION: Glucose Replacement/N**utrient**

- Elevates blood glucose levels.

INDICATIONS:

- Blood glucose levels less than 60 mg/dl or high-index of suspicion of hypoglycemia.

CONTRAINDICATIONS:

- No major contraindications for administration.
- Dextrose containing fluids should be used cautiously in patients with suspected increased intracranial pressure.

POTENTIAL SIDE EFFECTS:

- Hyperglycemia.
- Tissue necrosis if extravasation occurs.

ADULT DOSE/ROUTE:

⇨ Up to 25 G of $D_{10}W$ = Up to 250ml IV or IO bolus. May repeat q5min based on patient response (max dose 50 grams).

⇨ Obtain blood glucose reading PRIOR to administration of Dextrose.

PEDIATRIC DOSE/ROUTE:

⇨ **Neonates < 1 month: D10W**, 2 ml/kg IV/IO (0.2 g/kg)

⇨ **Children> 1 month: D10W,** 5 ml/kg IV/IO (0.5 g/kg, max 25 grams)

NOTES:

- Concentrated dextrose can have a sclerosing effect on veins. Make sure that IV sites are patent by aspirating blood before and during administration of dextrose. Use largest available vein.

Effective: 11/01/17
Supersedes: 03/01/15

DIPHENHYDRAMINE (Benadryl)

ACTION: Antihistamine

- Antagonizes effects of histamine in allergy.
- Decreases itching, edema, bronchoconstriction and vasodilation.
- Antagonizes acetylcholine receptors resulting in resolution of dystonia caused by antipsychotic medications.

INDICATIONS:

- Anaphylaxis.
- Allergic reactions.
- Dystonic (extrapyramidal) neuromuscular reactions.

CONTRAINDICATIONS:

- Diphenhydramine can potentiate other CNS depressants
- Relative contraindication in pregnant or lactating females

POTENTIAL SIDE EFFECTS:

- Drowsiness and sedation
- Hypotension
- Palpitations
- Tachycardia
- Headache or blurred vision
- Anticholinergic effects

ADULT DOSE/ROUTE:

⇨ 25 - 50 mg IVP, IM or IO (up to max. 50 mg).

PEDIATRIC DOSE/ROUTE:

⇨ 1 mg/kg IVP, IO or IM (up to max. 25 mg).

NOTES:

- Consider IM administration of Diphenhydramine in patients who are perfusing well.
- Consider IV administration of Diphenhydramine with severe allergic reactions/anaphylaxis.

Effective: 11/01/17
Supersedes: 03/01/15

DOPAMINE (Intropin)

ACTION: Inotropic, Chronotropic

- Catecholamine (sympathomimetic)
- Dose depend stimulation of alpha, beta and dopaminergic receptors.
- At low doses (2 to 5 mcg/kg/min) stimulates dopaminergic receptors (renal and mesenteric artery dilation).
- At medium doses (5 to 10 mcg/kg/min) stimulates beta receptors (increased heart rate and contractility resulting in increased cardiac output).
- At high doses (greater than 10 mcg/kg/min) stimulates alpha-adrenergic receptors (peripheral vasoconstriction, increased blood pressure).

INDICATIONS:

Hypotension due to:

- **Cardiogenic shock**.
- **Distributive shock**: Neurogenic and anaphylactic shock.
- **Symptomatic bradycardias** unresponsive to other treatments such as atropine and pacing.

CONTRAINDICATIONS:

- Tachydysrhythmias.
- Use only 1/10 the normal dose in patients on Monoamine Oxidase Inhibitors (MAOI's) such as: Eutonyl, Parnate, Nardil as they potentiate the effects of Dopamine.

POTENTIAL SIDE EFFECTS:

- Tachydysrhythmias including V-Tach and V-Fib.
- Hypertension.
- Nausea and vomiting.
- Chest pain, ischemia and acute MI exacerbation.
- Extravasation causes tissue necrosis.

ADULT DOSE/ROUTE:

⇨ **Cardiogenic or distributive shock**: 5-20 mcg/kg/min IV/IO infusion. Titrate to SBP >90 mmHg.

PEDIATRIC DOSE/ROUTE:

⇨ **Cardiogenic or distributive shock:** 5-20 mcg/kg/min IV/IO infusion. Initiate only per instructions from Base Hospital MD.

NOTES:

- Do not infuse in same line with sodium bicarbonate
- Ensure that the patient is not hypovolemic before infusing dopamine.

Effective: 11/01/17
Supersedes: 03/01/15

EPINEPHRINE 1MG/1000ML (1MCG/ML) INFUSION
FOR USE ONLY WHEN DOPAMINE ON SHORTAGE

ACTION: Inotropic, Chronotropic
- Catecholamine (sympathomimetic).
- Dose dependent stimulation of alpha, beta and dopaminergic receptors.

INDICATIONS Hypotension due to:
- **Cardiogenic shock**.
- **Distributive shock**: Neurogenic and anaphylactic shock.
- **Symptomatic bradycardias** unresponsive to other treatments such as atropine and pacing.

CONTRAINDICATIONS:
- None in life threatening situation

POTENTIAL SIDE EFFECTS:
- Tachydysrhythmias including V-Tach and V-Fib
- Hypertension
- Nausea and vomiting
- Chest pain, ischemia and acute MI exacerbation
  Extravasation causes tissue necrosis

ADULT DOSE/ROUTE:
⇨ **Cardiogenic or distributive shock**: Inject 1mg (1:1000 OR 1:10,000) epinephrine into 1000ml of 0.9% sodium chloride. DO NOT USE PRESSURE BAG, run it at ~10-20ml/min using the drip chamber. If SBP>90mm Hg, use roller clamp to slow rate.

PEDIATRIC DOSE/ROUTE:
⇨ **NOT FOR PEDIATRIC USE. Contact Base Hospital MD.**

NOTES:
- Do not infuse in same line with sodium bicarbonate
- Ensure that the patient is not hypovolemic before infusing
- Label bag clearly to prevent rapid infusion

Effective: 01/30/18
New

Epinephrine 1mcg/ml infusion preparation

Add 1ml of 1:1000 = 1mg **OR** 10ml of 1:10,000 = 1mg

to 1000ml 0.9% sodium chloride

Effective: 01/30/18
New

EPINEPHRINE (Adrenaline)

ACTION: Sympathomimetic

- Catecholamine (sympathomimetic) with alpha and beta adrenergic action.
- Results in increased heart rate, systemic vascular resistance, and blood pressure. It also causes bronchodilation due to its effects of beta-2 adrenergic receptors.

INDICATIONS:

- All cardiac arrest patients, including V-Fib, pulseless V-Tach, asystole and PEA.
- Anaphylaxis.
- Severe bronchospasm.
- Refractory symptomatic bradycardia.

CONTRAINDICATIONS:

- None in cardiac arrest.
- Tachydysrhythmias.
- Use with extreme caution for severe asthma or allergic reactions in patients >age 40 or in patients with coronary artery disease since myocardial ischemia may be precipitated.
- Intravenous Epinephrine should **only** be used in extreme emergencies or cardiac arrest. Use intramuscular initially for patients with anaphylaxis.

POTENTIAL SIDE EFFECTS:

- Increased myocardial O_2 demand leading to chest pain and myocardial ischemia.
- Tachydysrhythmias including V-Tach and V-Fib.
- Headache and dizziness.
- Nausea and vomiting.

ADULT DOSE/ROUTE:

⇨ **For indications other than cardiac arrest including anaphylaxis:** (1:1,000**)** 0.3mg IM. May repeat x1. If hypotension not responding to IM Epinephrine x2 or IV fluid boluses, give Epinephrine (1:10,000) IV 0.1mg slow IV/IO over 5 minutes. Max IV dose 0.3mg.

⇨ **Cardiac Arrest:** (1:10,000) 1mg IVP/IO at the time intervals specified in Protocol 2.04 Cardiac Arrest - VF/pulseless VT and asystole/PEA.

PEDIATRIC DOSE/ROUTE:

⇨ **For indications other than cardiac arrest including anaphylaxis:** (1:1,000) 0.01 mg/kg IM in anterolateral thigh**.** May repeat x1 in 5 minutes.

⇨ **Cardiac Arrest:** 0.01 mg/kg IVP/IO (1:10,000) at the time intervals specified in Protocol 2.04 Cardiac Arrest – VF/pulseless VT and asystole/PEA.

Effective: 02/03/20
Supersedes: 05/22/19

FENTANYL CITRATE (Sublimaze)

ACTION: Opioid Analgesic

- Centrally acting opiate analgesic effective for acute pain.
- For cardiac patients: fentanyl reduces the pain of ischemia and reduces anxiety, reducing oxygen demands on the heart, improving perfusion.

INDICATIONS:

- Chest pain of suspected ischemic origin.
- Management of acute pain according to ALS Treatment Protocols.

CONTRAINDICATIONS:

- Hypersensitivity or prior allergic reaction
- Respiratory Insufficiency
- Asthma or exacerbated COPD
- Head injury
- Hypotension
- Decreased LOC

POTENTIAL SIDE EFFECTS:

- Respiratory depression
- Hypotension
- Decreased LOC
- Nausea and vomiting
- Bradycardia
- Muscle rigidity (rare)

ADULT DOSE/ROUTE:

⇨ 50 mcg IV/IO slow IV push (over 1 minute). May repeat every 5 minutes if SBP > 90 mm Hg. The maximum dose is 200 mcg without base contact.

⇨ If no IV/IO, 100 mcg IN or IM (IN preferred). May repeat every 10 minutes if SBP > 90 mm Hg. The maximum dose is 200 mcg without base contact.

PEDIATRIC DOSE/ROUTE:

⇨ If IV/IO, 1 mcg/kg/dose IV/IO up to 50mcg slow IV push (over 1 minute). Subsequent dose up to 25 mcg may be repeated every 10 minutes up to the maximum dose of 100 mcg without Base Hospital contact.

⇨ If **no** IV/IO, 2 mcg/kg/dose IN or IM (IN preferred) up to 50 mcg. Subsequent dose up to 25 mcg may be repeated every 10 minutes up to the maximum dose of 100 mcg without Base Hospital contact.

NOTES:

- Rapid infusions of Fentanyl have been associated with chest wall rigidity and respiratory depression, particularly in pediatrics. Administer doses over 1-2 min to prevent occurrence.

- Fentanyl is 100x stronger than Morphine and is dosed in micrograms. It is faster acting than Morphine (peak effect 5-10 minutes) and has a shorter duration of effect (approximately 30 minutes). 100 mcg of Fentanyl is approximately equivalent to 10 mg of Morphine.
- Fentanyl can cause depressed respiratory status. Be prepared to assist ventilations in patients receiving Fentanyl.
- Respiratory depression from Fentanyl can be reversed with Naloxone.
- Fentanyl's effects can be potentiated by Midazolam. Contact the Base Hospital Physician before administering both Fentanyl and Midazolam.
- Contact the Base Hospital Physician if higher doses of Fentanyl are required for adequate pain control.

Effective: 10/29/18
Supersedes: New

GLUCAGON

ACTION: Hormone/Antihypoglycemic

- Glucagon is a hormone secreted by the pancreas that causes a breakdown of stored glycogen into glucose and stops glucose conversion into glycogen resulting in increased circulating blood glucose.
- Glucagon is only effective if there are sufficient stores of glycogen in the liver.
- Used in treatment of beta blocker overdose; likely mechanism of action is the increase of cAMP in the myocardium.

INDICATIONS:

- Hypoglycemia when an IV cannot be established to administer $D_{50}W$.
- Patients given Glucagon usually take from 5 to 20 min. to return to consciousness.
- Bradycardia and Hypotension secondary to Beta Blocker Overdose (with Base Hospital Contact).

CONTRAINDICATIONS:

- Hypersensitivity to Glucagon.

POTENTIAL SIDE EFFECTS:

- Hypotension.
- Dizziness and headache.
- Nausea and vomiting.

ADULT DOSE/ROUTE:

⇨ **Hypoglycemia / Beta Blocker Overdose:** 1 mg IM/IV

PEDIATRIC DOSE/ROUTE:

⇨ **Hypoglycemia/Beta Blocker Overdose:**

Less than 20kg: 0.5 mg IM/IV

Greater than 20kg: 1 mg IM/IV

NOTES:

- Vomiting is very common following glucagon administration
- As soon as patient is awake, give carbohydrates such as orange juice or a meal.

Effective: 11/01/17
Supersedes: 03/01/15

GLUCOSE (Glucose)

ACTION: Oral Hyperglycemic Agent (Concentrated Sugar)
Reverses hypoglycemia. Good for conscious insulin overdose/hypoglycemic patients with an intact gag reflex.

INDICATIONS:
- Hypoglycemic patients who are conscious and who have a gag reflex.

CONTRAINDICATIONS:
- Patient with altered mental status that cannot self-administer glucose tube.

POTENTIAL SIDE EFFECTS:
- Aspiration of glucose if patient has no gag reflex.

ADULT DOSE/ROUTE:
⇨ Give 1-2 tubes to patient (30grams or more glucose).

PEDIATRIC DOSE/ROUTE:
⇨ Same as adult dose or as tolerated by patient.

NOTES:
- Check blood glucose level PRIOR to giving oral Glucose.
- Response (increasing LOC) should occur within 10 min.
- After patient is fully alert and oriented, ensure that patient consumes additional carbohydrates, such as orange juice or a meal.

Effective: 11/01/17
Supersedes: 03/01/15

HYDROXOCOBALAMIN

ACTIONS: Cyanide Antidote

- Directly binds to cyanide to form the nontoxic compound cyanocobalamin, which is then excreted in the urine.

INDICATIONS

- Symptomatic cyanide exposure, known or suspected.

CONTRAINDICATIONS

- None.

PRECAUTIONS

⇨ The most common adverse reactions are development of reddish skin, mucous membranes, and urine up to three days after infusion.

PREPARATION

- Using double-side spike and 5 G vial included in CYANOKIT box, fill the vial to the fill-line (200ml) with a bag of normal saline (dextrose may be used). The resulting concentration will be 25mg/ml.

ADULT DOSE/ROUTE:

- 5 grams IV infused over 15 minutes

PEDIATRIC DOSE/ROUTE:

- 70 mg/kg IV infused over 15 minutes

Pt. Weight	Dose 70 mg/kg	Volume of drug to withdraw & administer
3-5 kg	275 mg	11 ml
6-7 kg	420 mg	18 ml
8-9 kg	600 mg	24 ml
10-11 kg	700 mg	28 ml
12-14 kg	900 mg	36 ml
15-18 kg	1150 mg	46 ml
19-22 kg	1450 mg	58 ml
23-28 kg	1750 mg	70 ml
29-36 kg	2200 mg	88 ml
36-39 kg	2650 mg	106 ml
>40kg	Administer entire vial	

NOTES

- Hydroxocobalamin has replaced Sodium Thiosulfate.
- Hydroxocobalamin has limited toxicity and may be used when cyanide exposure is suspected, but not confirmed.
- Hydroxocobalamin is not routinely stocked on the ambulances, but is available in the pharmaceutical disaster and hazmat caches.

Effective: 10/29/18
Supersedes: New

IBUPROFEN

ACTION: Non-Selective COX Inhibitor

- Analgesic effective for mild to moderate pain.
- Additionally has anti-pyretic and anti-inflammatory properties.

INDICATIONS:

- Management of acute mild to moderate pain as described by patients as a pain score of 6 or less.

CONTRAINDICATIONS:

- Known allergy or hypersensitivity to NSAIDS
- Acute significant trauma (see notes)
- Acute neurologic symptoms (including focal weakness, paresthesia or other stroke symptoms)
- Hemophilia
- Pregnant or high possibility of pregnancy as reported by patient
- History of GI bleeding or ulcers
- Current aspirin or anticoagulation therapy
- History of renal disease, or kidney transplant
- Age < 6 months

POTENTIAL SIDE EFFECTS:

- Nausea
- Upset stomach
- Rash
- Headache
- Hypertension
- GI bleed

ADULT DOSE/ROUTE:

⇒ 400 mg PO x 1 dose.

PEDIATRIC DOSE/ROUTE:

⇒ 10 mg/kg PO up to 400 mg total dose.

NOTES:

- The median onset of pain relief with ibuprofen is approximately 25 minutes.
- Ibuprofen will not interact with IV/IO/IN opiate analgesics such as fentanyl if additional pain control is needed.
- Ibuprofen administration in combination with alcohol use may increase risk of GI bleeding.
- Significant trauma consists of injuries that would require trauma center destination criteria, or those as a result of which the paramedic is concerned for internal/difficult to control hemorrhage.

Effective: 10/29/18
Supersedes: New

KETOROLAC INJECTION

ACTION: Analgesic/antipyretic

- Non-selective COX inhibitor, which slows the production of prostaglandins (mediators of the inflammatory response causing pain and fever) by competitively blocking the enzyme cycloocxgenase (COX).

INDICATIONS:

- Mild to moderate pain as described by patients with a pain scale score of 6 or less.

CONTRAINDICATIONS:

- Known allergy or hypersensitivity to NSAIDS
- Acute significant trauma (see notes)
- Acute neurologic symptoms (including focal weakness, paresthesia or other stroke symptoms)
- Hemophilia
- Pregnant or high possibility of pregnancy as reported by patient
- History of GI bleeding or ulcers
- Current aspirin or anticoagulation therapy
- History of renal disease, or kidney transplant
- Age < 18 years old or > 65 years old
- Hypotension
- Current steroid use
- History of asthma

POTENTIAL SIDE EFFECTS:

- Diarrhea
- Abdominal pain
- Increased risk of GI bleeding
- Nausea / Vomiting
- Drowsiness
- Tinnitus (ringing in the ears)

ADULT DOSE/ROUTE:

⇨ Dose: 15 mg IV/IO* bolus or 30 mg IM.

**IV preferred route*

PEDIATRIC DOSE/ROUTE:

⇨ **Do Not Use in Patients Under Age 18**

NOTES:

- Clinically evaluate patients to determine if pain score can be administered. If pain score cannot be administered due to patient condition (severe pain) consider alternates to ketorolac.
- Significant trauma consists of injuries requiring trauma center destination criteria, or those as a result of which the paramedic is concerned for internal/difficult to control hemorrhage.

Effective: 10/29/18
Supersedes: New

LIDOCAINE (Xylocaine)

ACTION: Local Anesthetic

- Lidocaine decreases sensory nerve transmission of pain impulses.

INDICATIONS:

- Pain relief in IO insertion in conscious patients.

CONTRAINDICATIONS:

- Not indicated in unconscious, unresponsive patients for IO placement.

POTENTIAL SIDE EFFECTS:

Signs of Lidocaine toxicity may include:

- Drowsiness
- Dizziness
- Slurred speech
- Altered LOC
- Seizures
- Respiratory arrest

ADULT DOSE/ROUTE:

⇨ Adult patients: 50 mg IO (2.5ml of 2% lidocaine).

PEDIATRIC DOSE/ROUTE:

⇨ Pediatric patients: 0.5 mg/kg to a max dose of 50 mg IO.

NOTES:

Lidocaine is no longer used for cardiac indications in the prehospital setting.

Effective: 11/01/17
Supersedes: 03/01/15

MAGNESIUM SULFATE

ACTION: Electrolyte/Antiarrhythmic

- Magnesium provides electrical stability in the myocardium.
- Affects impulse formation and conduction time in myocardium reducing incidence of dysrhythmias associated with hypomagnesemia or prolonged QT interval.
- Magnesium is also effective in the prevention and management of seizures associated with eclampsia in pregnant women.

INDICATIONS:

- Drug of choice for treatment of Torsades de Pointes (polymorphic V-Tach).
- V-Fib/V-Tach cardiac arrest patients with poor dietary intake or chronic diseases (i.e. alcoholism, renal failure and use of diuretics).
- Refractory V-Fib/V-Tach after use of cardioversion and Amiodarone.
- Suspected ischemic chest pain patients presenting with significant ventricular ectopy AND who have poor dietary intake and habits or chronic diseases such as alcoholism and renal failure.
- Seizures secondary to eclampsia in pregnant women.

CONTRAINDICATIONS:

- In renal patients, use caution if giving additional doses of Magnesium sulfate.

POTENTIAL SIDE EFFECTS:

- Flushing and sweating.
- Mild bradycardia.
- Mild hypotension.
- Respiratory and CNS depression.

ADULT DOSE/ROUTE:

⇨ **Arrest due to Torsades de Pointes / Eclampsia**: 2 grams in 100 ml D5W slowly IV/IO. Run with target goal of infusing 100 ml over 10 minutes.

PEDIATRIC DOSE/ROUTE:

⇨ Not indicated

NOTES:

- In Torsades de Pointes (polymorphic V-Tach), give Magnesium Sulfate as the first-line antiarrhythmic. Doses higher than 2 G may be required in Torsades. Contact Base Hospital Physician for additional orders.

Effective: 11/01/17
Supersedes: 03/01/15

MIDAZOLAM (Versed)

ACTION: Hypnotic, Sedative, Anti-Seizure

- Midazolam is a potent, short-acting benzodiazepine with hypnotic and amnestic effects. It has no effect on pain.

INDICATIONS:

- Premedication before cardioversion, external pacing and other painful procedures.
- Seizures (status epilepticus).
- Agitated patient who may be a danger to self or others.

CONTRAINDICATIONS:

- Hypersensitivity
- Narrow-angle glaucoma
- Shock, with depressed vital signs
- Alcoholic coma

POTENTIAL SIDE EFFECTS:

- Laryngospasm
- Bronchospasm
- Dyspnea
- Respiratory depression and arrest
- Drowsiness
- Amnesia
- AMS
- Bradycardia
- Tachycardia
- PVC's
- Nausea
- Vomiting

ADULT DOSE/ROUTE:

⇒ **Sedation/Agitation:** 2 - 5mg IM x1 or 1 – 2mg slow push IV/IO. May repeat IV/IO dose in 5 minutes for continued agitation. Maximum total dose 5mg IV/IO.

⇒ **Seizure:** 10 mg IM x1 or intranasally (5mg each nostril) or 5mg slow push IV/IO. May repeat IV/IO dose in 5 minutes. Maximum total dose 10mg IV/IO.

PEDIATRIC DOSE/ROUTE:

⇒ **Agitation/Sedation/Seizure:** 0.2 mg/kg IV/IM/IO or 0.4 mg/kg intranasally. Maximum total dose 4mg.

NOTES:

- Do not use intranasal route in agitation because amount of absorption in an actively resisting, agitated patients is unknown.
- Midazolam is more potent than diazepam.
- Effects of midazolam may be potentiated if administered with morphine. Contact Base Hospital if considering administering both medications.
- Always be prepared to protect airway and ventilate patients who are given benzodiazepines. Continuous monitoring of vital signs before and after administration is required.

Effective: 02/03/20
Supersedes: 11/01/17

MORPHINE SULFATE

ACTION: Analgesic

- Centrally acting opiate analgesic effective for acute pain.
- For cardiac patients: morphine reduces the pain of ischemia and reduces anxiety, reducing oxygen demands on the heart, improving ischemia.

INDICATIONS:

- Chest pain of suspected ischemic origin.
- Management of acute pain according to ALS Treatment Protocols.

CONTRAINDICATIONS:

- Hypersensitivity
- Respiratory Insufficiency
- Asthma or exacerbated COPD
- Head injury
- Hypotension
- Decreased LOC

POTENTIAL SIDE EFFECTS:

- Respiratory depression
- Hypotension
- Decreased LOC
- Nausea and vomiting
- Decreased heart rate

ADULT DOSE/ROUTE:

⇨ 2 - 4 mg slow IVP/IO or 5mg IM. May repeat in 10min for continued pain if SBP > 90 mmHg to total dose of 20 mg.

PEDIATRIC DOSE/ROUTE:

⇨ **Less than 6 months:** 0.05mg/kg slow IVP/IM/IO. May repeat in 10min at half the initial dose. Max dose 4mg without Base Contact.

⇨ **Greater than 6 months:** 0.1 mg/kg slow IVP/IM/IO. May repeat in 10min at half the initial dose x1. Max dose 4mg without Base Contact.

NOTES:

- Closely monitor respiratory status and systolic blood pressure. Be prepared to assist ventilations of any patient who is administered Morphine.
- Morphine effects may be potentiated if administered with midazolam. Contact Base Hospital Physician if considering administering both medications.
- Contact Base Hospital Physician if higher doses of Morphine are required.

Effective: 11/01/17
Supersedes: 03/01/15

NALOXONE (Narcan)

ACTION: Narcotic Antagonist

- Antagonizes effects of opiate narcotic agents by competing at the receptor site resulting in reversal of respiratory depression associated with opiate overdoses.

INDICATIONS:

- Altered Mental Status in the presence of suspected narcotic overdose, or coma of unknown etiology.

CONTRAINDICATIONS:

- Patients with hypersensitivity to the drug.
- Neonate in the setting of opiate dependence.

POTENTIAL SIDE EFFECTS:

- Rapid administration can cause projectile vomiting.
- May precipitate withdrawal in chronic narcotic users.
- Patients may become agitated or violent after drug is administered.

ADULT DOSE/ROUTE:

⇨ **IVP/IM/IO:** 0.4 mg, may repeat in 5 min for continued respiratory depression up to 2mg.
⇨ **Intranasal:** 2 mg via mucosal atomizer device (MAD), may repeat in 5 min for continued respiratory depression.

PEDIATRIC DOSE/ROUTE:

⇨ DO NOT GIVE to NEONATES
⇨ **Less than 20 kg:** 0.1 mg/kg IV/IM/IO.
⇨ **Greater than 20 kg:** 2 mg IN via MAD or IVP/ IM/ IO.

NOTES:

- Doses of Naloxone smaller than 2 mg may be given if it is suspected that the patient may have taken a combination of heroin and cocaine (“speedball”).
- Because Naloxone is a short-acting narcotic antagonist, repeat doses may have to be given if the patient’s LOC and respiratory status start to diminish again.
- Higher doses of Naloxone may be indicated for some opiate overdoses (Buprenorphine, Suboxone, and Darvocet).

Effective: 02/03/20
Supersedes: 11/01/17

NITROGLYCERIN (Nitrolingual)

ACTION: Nitrate/Vasodilator

- Dilates venous capacitance vessels, reducing blood return to the heart (reduced preload).
- Decreases systemic vascular resistance and facilitates cardiac emptying (reduced afterload).
- Decreases myocardial oxygen demand.
- Dilates coronary arteries.

INDICATIONS:

- Chest pain of suspected cardiac origin.
- Acute pulmonary edema and congestive heart failure.

CONTRAINDICATIONS:

- Hypersensitivity
- Hypotension and shock
- Recent use of phosphodiesterase inhibitors (all erectile dysfunction drugs).

POTENTIAL SIDE EFFECTS:

- Hypotension
- Headache and flushing
- Syncope
- Tachycardia

ADULT DOSE/ROUTE:

⇨ **Cardiac Chest Pain or Pulmonary Edema**: 0.4 mg sublingual spray or tablet. Repeat q5 min for continued chest pain if SBP >90 mmHg, max of 3 doses.

PEDIATRIC DOSE/ROUTE:

⇨ Not indicated.

NOTES:

- Elderly patients and / or dehydrated patients are more vulnerable to hypotension caused by the vasodilation.
- Nitrolingual spray can be administered either on top of the tongue, or underneath the tongue. Have patients open their mouths. Instruct them to hold their breath. Spray the NTG lingually or sublingually, and then tell the patients that they can close their mouths and resume normal breathing.

Effective: 11/01/17
Supersedes: 03/01/15

NORMAL SALINE

ACTION: Isotonic volume expander. Electrolyte replacement.

- Normal Saline is a sterile, nonpyrogenic solution for fluid and electrolyte replacement.

INDICATIONS:

- Hypotension
- Crush Syndrome
- Cardiac Arrest
- Therapeutic Hypothermia
- Suspected Sepsis
- Allergic Reaction
- AMS
- Burns
- Shock

CONTRAINDICATIONS:

- Severe hypertension.
- Pulmonary edema.

POTENTIAL SIDE EFFECTS:

- Pulmonary edema.
- Febrile response.
- Hypervolemia.

ADULT DOSE/ROUTE:

⇨ IV/IO of Normal Saline TKO.

⇨ If SBP < 90 or signs of poor perfusion, fluid bolus 500 mL if lungs are clear. Reassess and repeat if indicated.

⇨ **Burns:** If partial thickness or total thickness burns > 10% BSA, fluid bolus 500 mL if lungs are clear. Reassess and repeat if indicated.

⇨ **Crush Syndrome:** Bolus of 2 L followed by 500 mL/hr.

⇨ **Cardiac Arrest in Pregnancy:** If SBP < 90 or signs of poor perfusion, fluid bolus 500 ml. Reassess and repeat if indicated.

⇨ **Post Cardiac Arrest or Return of Spontaneous Circulation (ROSC):** If SBP < 90 or signs of poor perfusion, fluid bolus 1000 mL if lungs are clear. Reassess and repeat if indicated.

⇨ **Therapeutic Hypothermia:** Infuse 30 mL/Kg of Normal Saline chilled to 3° C (66 Kg = 2 L using 300 mmHg pressure infusion sleeve(s) or BP cuff.

⇨ **Suspected Sepsis:** For signs of hypoperfusion and HR > 100 or BP < 90, fluid bolus 1000 mL if lungs are clear. Reassess and repeat if indicated.

PEDIATRIC DOSE/ROUTE:

⇨ IV/IO of Normal Saline TKO.

⇨ **Pediatric hypovolemic shock**: IV/IO bolus of 20 mL/Kg. Repeat up to 60 mL/Kg if indicated.

⇨ **Neonatal hypovolemic shock**: 10 mL/Kg. Repeat up to 30 mL/Kg.

⇨ **AMS of Unknown Cause:** IV/IO bolus of 10 mL/Kg.

NOTES:

- Use cautiously in patients with congestive heart failure, severe renal insufficiency, and in clinical states in which there exists edema with sodium retention (e.g., patients with diminished renal function.)
- Discontinue bolus if pulmonary edema develops.

Effective: 02/03/20
Supersedes: 11/.1/17

ONDANSETRON (Zofran)

ACTION: Anti-Emetic

- Selective antagonism of the serotonin 5-HT_3 receptor resulting in decreased nausea and vomiting

INDICATIONS:

- Severe Nausea and Vomiting

CONTRAINDICATIONS:

- History of hypersensitivity to similar drugs: Dolasetron (Anzemet), Granisetron (Kytril), or Palonosetron (Aloxi) or to ondansetron (Zofran).
- Taking Apomorphine (Apokyn, Ixense, Spontane, Uprima), an injectable drug for Parkinson's Disease, or rarely used for erectile dysfunction.
- Do not give oral tablet or solution to known phenylketonurics (contains phenylalanine).

POTENTIAL SIDE EFFECTS

- Hypotension
- Syncope
- QT prolongation
- Headache
- Diarrhea
- Dizziness
- Anaphylaxis
- Flushing
- Rash

ADULT DOSE/ROUTE:

⇒ 4 mg slow IVP/IM or 8mg tablet ODT (dissolved on the tongue).
⇒ May repeat in 20min for continued nausea up to 12 mg.

PEDIATRIC DOSE/ROUTE:

⇒ **Less than 6 months:** DON'T USE
⇒ **6 months – 12 years old or <40kg:** 0.1mg/kg slow IVP/IO (max 4mg)
⇒ **Greater than 12 years or >40kg:** 4mg slow IVP/IO. May repeat in 20min for continued nausea up to 12mg.

NOTES:

- Should be administered IV over 2-5 minutes. Rapid administration has been associated with increased incidence of side effects including syncope.
- Oral disintegrating tablets (ODT's) can be placed on tongue and do not need to be chewed. Medication will dissolve and be swallowed with saliva.
- Ondansetron can be used in pregnancy and breast-feeding mothers (pregnancy class B).

Effective: 11/01/17
Supersedes: 03/01/15

OXYGEN (O_2)

ACTION: Medical Gas

- Essential for cellular metabolism and survival**.**
- First drug used for respiratory compromise or any time hypoxia is possible.

INDICATIONS:

- All patients with cardiopulmonary emergencies.
- Respiratory emergencies, including any patient who complains of shortness of breath.
- Chest pain.
- Suspected hypoxemia.

CONTRAINDICATIONS:

- Do NOT withhold oxygen from anyone who might need it.

ADULT DOSE/ROUTE:

⇨ **Nasal Cannula**: 2 to 6 liters/min (delivers 24 to 44% oxygen).
⇨ **Nonrebreather Mask**: 10 to 15 liters/min (delivers 85 to 95% oxygen).
⇨ **BVM with O2 Reservoir**: 15 to 25 liters/min (delivers 85 to 95% oxygen).

PEDIATRIC DOSE/ROUTE:

⇨ **Nasal Cannula**: 2 to 4 liters/min (delivers 24 to 38% oxygen).
⇨ **Nonrebreather Mask**: 10 to 12 liters/min (delivers 85 to 95% oxygen).
⇨ **BVM with O2 Reservoir**: 10 to 15 liters/min (delivers 60 to 95% oxygen).

NOTES:

- Target oxygen saturation levels when administering O2 is 94 – 95%.
- Never withhold oxygen from anyone who might need it.
- Observe COPD patients closely and be prepared to ventilate them with BVM if necessary (development of apnea or increasing signs of respiratory failure).

Effective: 11/01/17
Supersedes: 03/01/15

PRALIDOXIME (2-PAM Chloride)

ACTIONS: Nerve agent antidote

- Restores cholinesterase activity.
- Administer as soon as possible after symptomatic nerve agent exposure.

INDICATIONS

- Potential or confirmed nerve agent exposure with SLUDGE symptoms and signs.

CONTRAINDICATIONS

- No signs of life.
- Non-resuscitation group due to other concomitant injury.

ADULT DOSE/ROUTE:

⇨ **Exhibiting 1 or more SLUDGE signs and Elderly or requiring prolonged extrication:**
  - 1-3 Autoinjectors IM

⇨ **Exhibiting 2 or more SLUDGE signs or Non-ambulatory:**
  - 3 Autoinjectors IM

PEDIATRIC DOSE/ROUTE:

⇨ **Exhibiting 1 or more SLUDGE signs and appearing less than 14 years old or requiring prolonged extrication:**
  - 1-3 Autoinjectors IM.

⇨ **Exhibiting 2 or more SLUDGE signs and Non-ambulatory:**
  - 3 Autoinjectors IM.

NOTES:

- Large amounts of Atropine/2-PAM may be needed to adequately treat symptoms of nerve agent poisoning.
- Each injector carries 2.1mg Atropine and 600mg Pralidoxime.
- Titrate dose to effect.
- Give atropine first.
- Do not administer to asymptomatic patients.
- Medication effects start within 1-5min following administration.
- Most effective if given early before irreversible binding of nerve agent with acetylcholinesterase ("aging") occurs, but may be administered up to 48 hours post exposure in symptomatic patients.
- Bronchospasm and respiratory secretions are the best acute symptoms to monitor response to Atropine/2-PAM therapy:
  - Decreased bronchospasm and respiratory secretions = Getting Better.
  - No change or increased bronchospasm and respiratory secretions = Needs more 2-PAM

Effective: 11/01/17
Supersedes: 03/01/15

SODIUM BICARBONATE

ACTION: Alkalinizing Agent

- Acts as a buffering agent when administered to neutralize hydrogen ions resulting in carbon dioxide as a byproduct.
- Alkalinization of blood results in shifting of potassium into the intracellular space, lowering serum potassium levels.

INDICATIONS:

- Known or suspected hyperkalemia or in patients with known renal failure.
- Cardiac arrests associated with tricyclic antidepressants or phenobarbital overdose.

CONTRAINDICATIONS:

- When used for situations above—none

POTENTIAL SIDE EFFECTS:

- Hypotension
- Headache and flushing
- Syncope
- Tachycardia
- Alkalosis
- Fluid overload

ADULT DOSE/ROUTE:

⇨ **Suspected Hyperkalemia / QRS widening from Tricyclic Antidepressant Overdose**: 1mEq/kg IV/IO. May repeat 0.5mEq/kg q 10 min to total of 2mEq/kg.

PEDIATRIC DOSE/ROUTE:

⇨ **Suspected Hyperkalemia or QRS widening from Tricyclic Antidepressant**: 1mEq/kg IV/IO. May repeat 0.5mEq/kg q 10 min to total of 2mEq/kg.

⇨ **If <2 years**, dilute bicarb 1:1 with sterile water.

NOTES:

- IV lines should be flushed thoroughly before administration of other medications to avoid precipitation.

Effective: 11/01/17
Supersedes: 03/01/15

Reference II: ABBREVIATIONS

ABC's	Airway, Breathing, Circulation
ACLS	Advanced Cardiac Life Support
AED	Automatic External Defibrillator
ALS	Advanced Life Support
AMS	Altered Mental Status
ASA	Aspirin
BLS	Basic Life Support
BP	Blood Pressure
BVM	Bag Valve Mask
CaCl	Calcium Chloride
C-Spine	Cervical Spine
CHF	Congestive Heart Failure
COPD	Chronic Obstructive Pulmonary Disease
CPR	Cardio-Pulmonary Resuscitation
$D_{10}W$	Dextrose 10% in water
$D_{25}W$	Dextrose 25% in water
$D_{50}W$	Dextrose 50% in water
DKA	Diabetic Ketoacidosis
DNR	Do Not Resuscitate
ED	Emergency Department
ECG	Electro-Cardiogram
EMS	Emergency Medical Services
Epi	Epinephrine
ETT	Endotracheal Tube
G	Gram
GCS	Glasgow Coma Scale
GYN	Gynecological
HazMat	Hazardous Materials Incident
HTN	Hypertension
IO	Intraosseous
IM	Intramuscular
IN	Intranasal
IV	Intravenous
IVP	IV Push
kg	Kilogram
J	Joule (Electrical measurement)
LOC	Level of Consciousness
lpm	Liter Per Minute
MAD	Mucosal Atomizer Device
max	Maximum
mcg	Microgram
meds	Medications
mEq	Milliequivalent
min.	Minute
mg	Milligram
MI	Myocardial Infarction
ml	Milliliter
NPA	Nasopharyngeal Airway
NPO	Nothing per mouth
NTI	Nasal Tracheal Intubation
NTG	Nitroglycerin
NS	Normal Saline
OB	Obstetrical
OPA	Oropharyngeal Airway
OTI	Oral Tracheal Intubation
OTC	Over the Counter
PALS	Pediatric Advanced Life Support
PEA	Pulseless Electrical Activity
PERRLA	Pupils equal, round and reactive to light and accommodation
PO	By mouth
prn	As Needed
QRS	Parts of cardiac contraction complex
R/O	Rule Out
SBP	Systolic Blood Pressure
SL	Sublingual
SQ	Subcutaneous
SVT	Supraventricular Tachycardia
TKO	To Keep Open
SL	Sublingual
V-Fib	Ventricular Fibrillation
V-Tach	Ventricular Tachycardia

Revised: 03/01/15

Reference III: San Francisco Pediatric Dosing Guide *(ver. 02/03/2020)*
Based on Broselow Length-Based Measurement Tape

	Grey	Pink	Red	Purple	Yellow	White	Blue	Orange	Green
WEIGHT (in kg):	**3 - 5**	**6 - 7**	**8 - 9**	**10 - 11**	**12 - 14**	**15 - 18**	**19 - 22**	**24 - 28**	**30 - 36**
(in lbs.):	6.6 - 11	13.2 - 15.4	17.6 - 19.8	22.0 - 24.2	26.4 - 30.8	33.0 - 39.6	41.8 - 48.4	52.8 - 61.6	66.0 - 79.2
ADENOSINE	0.3 - 0.5 mg	0.6 - 0.7 mg	0.8 - 0.9 mg	1.0 – 1.1 mg	1.2 – 1.4 mg	1.5 – 1.8 mg	1.9 – 2.2 mg	2.4 – 2.8 mg	3.0 – 3.6 mg
Concentration 6mg/2ml									
Dose 0.1 mg/kg									
ml to give =	0.1 – 0.2 ml	0.2 ml	0.3 ml	0.3 – 0.4 ml	0.4 – 0.5 ml	0.5 – 0.6 ml	0.6 – 0.7 ml	0.8 – 0.9 ml	1.0 – 1.2 ml
ADENOSINE	0.6 -1.0 mg	1.2 -1.4 mg	1.6 - 1.8 mg	2.0 – 2.2 mg	2.4 – 2.8 mg	3.0 – 3.6 mg	3.8 - 4.4 mg	4.8 – 5.6 mg	6.0 - 7.2 mg
Concentration 6mg/2ml									
Dose 0.2 mg/kg									
ml to give =	0.2 - 0.3 ml	0.4 - 0.5 ml	0.5 – 0.6 ml	0.7 - 0.8 ml	0.8 – 0.9 ml	1.0 – 1.2 ml	1.3 – 1.5 ml	1.6 – 1.9 ml	2.0 – 2.3 ml
ALBUTEROL	2.5 mg/3 ml NS for all pedi patients								
Concentration 2.5mg in 3ml NS									
AMIODARONE	15 - 25 mg	30 - 35 mg	40 - 45 mg	50 - 55mg	60 - 70 mg	75 - 90mg	95 - 110 mg	120 – 140 mg	150 – 180 mg
Concentration 150 mg/3ml									
Dose 5 mg/kg									
(give over 10 minutes)									
ml to give =	0.3 - 0.5 ml	0.6 - 0.7 ml	0.8 - 0.9 ml	1.0 – 1.1 ml	1.2 – 1.4 ml	1.5 – 1.8 ml	1.9 – 2.2 ml	2.4 – 2.8 ml	3.0 - 3.6 ml
ATROPINE	0.06 - 0.1 mg	0.12 - 0.14 mg	0.16 – 0.18 mg	0.2 - 0.22 mg	0.24 – 0.28 mg	0.3 - 0.36 mg	0.38 – 0.44 mg	0.48 – 0.50 mg	0.50 mg
Concentration 1 mg/10 ml									
Dose 0.02 mg/kg IV/IO									
Min 0.1 mg - Max 0.5 mg									
(No Max dose, if									
Organophosphate poisoning)									
ml to give =	1.0 ml	1.2 – 1.4 ml	1.6 - 1.8 ml	2.0 – 2.2 ml	2.4 – 2.8 ml	3.0 – 3.6 ml	3.8 – 4.4 ml	4.8 – 5.0 ml	5.0 ml

Cross-check and confirm dosage prior to administration of medication

	Grey	Pink	Red	Purple	Yellow	White	Blue	Orange	Green
WEIGHT (in kg):	**3 - 5**	**6 - 7**	**8 - 9**	**10 - 11**	**12 - 14**	**15 - 18**	**19 - 22**	**24 - 28**	**30 - 36**
(in lbs.):	6.6 - 11	13.2 - 15.4	17.6 - 19.8	22.0 - 24.2	26.4 - 30.8	33.0 - 39.6	41.8 - 48.4	52.8 - 61.6	66.0 - 79.2
DEXTROSE 10% ***Concentration 0.1 g/ml*** ***D10W = mix 1 ml of D50W with 4 ml of sterile water***	**Neonates < 1 month** ***D10W*** **Dose 2 ml/kg (0.2 g/kg)**	**Child > 1 month** ***D10W*** **Dose 5 ml/kg (0.5 g/kg) Max 25 gms**							
OR	**0.6 – 1.0 gm**	**1.2 – 1.4 gm**	**1.6 – 1.8 gm**	**2.0 – 2.2 gm**	**6 – 7 gm**	**7.5 – 9 gm**	**9.5 – 11 gm**	**12 – 14 gm**	**15 – 18 gm**
Draw from 250cc bag of D10W	**6 – 10 ml**	**30 – 35 ml**	**40 – 45 ml**	**50 – 55 ml**	**60 – 70 ml**	**75 – 90 ml**	**95 – 110 ml**	**120 – 140 ml**	**150 – 180 ml**
DIPHENHYDRAMINE ***Concentration 50 mg/ml*** **Dose 1 mg/kg** **Max 25 mg**	**3 – 5 mg**	**6 - 7 mg**	**8 - 9 mg**	**10 - 11 mg**	**12 - 14 mg**	**15 - 18 mg**	**19 - 22 mg**	**24 - 25 mg**	**25 mg**
ml to give =	**0.06 - 0.10 ml**	**0.12 - 0.14 ml**	**0.16 - 0.18 ml**	**0.2 - 0.22 ml**	**0.24 - 0.28 ml**	**0.3 - 0.36 ml**	**0.38 - 0.44 ml**	**0.48 - 0.5 ml**	**0.5 ml**
EPINEPHRINE 1:1,000 (Not Cardiac Arrest) ***Concentration 1 mg/1 ml*** **Dose 0.01 mg/kg IM** **Max 0.3mg**	**0.03 – 0.05 mg**	**0. 06 - 0.07 mg**	**0.08 - 0.09 mg**	**0.1 - 011 mg**	**0.12 – 0.14 mg**	**0.15 – 0.18 mg**	**019 – 0. 22 mg**	**0.24 – 0.28 mg**	**0.3 mg**
ml to give =	**0.03 – 0.05 ml**	**0.06 – 0.07 ml**	**0.08 – 0.09 ml**	**0.1 – 0.11 ml**	**0.12 - 0.14 ml**	**0.15 - 0.18 ml**	**0.19 – 0.22 ml**	**0.24 – 0.28 ml**	**0.3 ml**
EPINEPHRINE (Cardiac Arrest) ***Concentration 1 mg/10 ml (0.1mg/1ml)*** **Dose 0.01 mg/kg IV/IO** **Max 1 mg**	**0.03 – 0.05 mg**	**0. 06 - 0.07 mg**	**0.08 - 0.09 mg**	**0.1 - 011 mg**	**0.12 – 0.14 mg**	**0.15 – 0.18 mg**	**019 – 0. 22 mg**	**0.24– 0.28 mg**	**0.3 – 0.36 mg**
ml to give =	**0.3 - 0.4 ml**	**0.6 - 0.7 ml**	**0.8 – 0.9 ml**	**1.0 – 1.1 ml**	**1.2 – 1.4 ml**	**1.5 - 1.8 ml**	**1.9 - 2.2 ml**	**2.4 - 2.8 ml**	**3.0 - 3.6 ml**

Cross-check and confirm dosage prior to administration of medication

	Grey	Pink	Red	Purple	Yellow	White	Blue	Orange	Green
WEIGHT (in kg):	**3 - 5**	**6 - 7**	**8 - 9**	**10 - 11**	**12 - 14**	**15 - 18**	**19 - 22**	**24 - 28**	**30 - 36**
(in lbs.):	6.6 - 11	13.2 - 15.4	17.6 - 19.8	22.0 - 24.2	26.4 - 30.8	33.0 - 39.6	41.8 - 48.4	52.8 - 61.6	66.0 - 79.2
FENTANYL CITRATE *Concentration 100 mcg/2 ml* Dose 1mcg/kg IV/IO Max 50mcg on initial dose	3 - 5 mcg	6 - 7 mcg	8 - 9 mcg	10 - 11 mcg	12 - 14 mcg	15 - 18 mcg	19 - 22 mcg	24 - 28 mcg	30 - 36 mcg
ml to give =	0.06 - 0.1 ml	0.12 - 0.14 ml	0.16 - 0.18 ml	0.2 - 0.22 ml	0.24 - 0.28 ml	0.3 - 0.36 ml	0.38 - 0.44 ml	0.48 - 0.56 ml	0.6 - 0.72 ml
FENTANYL CITRATE *Concentration 100 mcg/2 ml* Dose 2mcg/kg IM/IN Max 50mcg on initial dose	6 - 10 mcg	12 - 14 mcg	16 - 18 mcg	20 - 22 mcg	24 - 28 mcg	30 - 36 mcg	38 - 44 mcg	48 - 50 mcg	50 mcg
ml to give=	0.12 - 0.2 ml	0.24 - 0.28 ml	0.32 - 0.36 ml	0.4 - 0.44 ml	0.48 - 0.56 ml	0.6 - 0.72 ml	0.76 - 0.88 ml	0.96 - 1 ml	1 ml
GLUCAGON *Concentration 1 mg/1 ml* Dose < 20 Kg give 0.5mg >20 Kg give 1mg	0.5 mg	0.5 mg	0.5 mg	0.5 mg	0.5 mg	0.5 mg	1.0 mg	1.0 mg	1.0 mg
ml to give =	0.5 ml if < 20 Kg						1.0 ml if > 20 Kg		
MIDAZOLAM *Concentration 5 mg/1 ml* Dose 0.2 mg/kg IM/IV/IO Max 4 mg	0.6 - 1 mg	1.2 – 1.4 mg	1.6 – 1.8 mg	2 - 2.2 mg	2.4 - 2.8 mg	3 - 3.6 mg	3.8 - 4 mg	4 mg	4 mg
ml to give =	0.12 - 0.2 ml	0.24 - 0.28 ml	0.32 – 0.36ml	0.4 - 0.44 ml	0.48 - 0.56 ml	0.6 - 0.72 ml	0.76 - 0.8 ml	0.8 ml	0.8 ml
MIDAZOLAM *Concentration 5 mg/1 ml* Dose 0.4 mg/kg Intranasal Max 4 mg (1/2 in each nare)	1.2 – 2 mg	2.4 – 2.8 mg	3.2 – 3.6 mg	4 mg	4 mg	4 mg	4 mg	4 mg	4 mg
ml to give =	0.24 – 0.4ml	0.48 - 0.56 ml	0.64 – 0.72 ml	0.8 ml	0.8 ml	0.8 ml	0.8 ml	0.8 ml	0.8 ml
MORPHINE *Concentration 10 mg/10 ml* Dose < 6 mos: 0.05 mg/kg IM / IV / IO Max 4 mg	0.2 – 0.3 mg	0.3 – 0.4 mg	0.4 – 0.5 mg	*****	*****	*****	*****	*****	*****
ml to give =	0.15 – 0.25 ml	0.3 – 0.35 ml	0.4 – 0.45 ml	*****	*****	*****	*****	*****	*****
MORPHINE *Concentration 10 mg/10 ml* Dose > 6 mos: 0.1 mg/kg IM/IV/IO	*****	*****	*****	1.0 - 1.1 mg	1.2 - 1.4 mg	1.5 - 1.8 mg	1.9 - 2.2 mg	2.4 - 2.8 mg	3.0 - 3.6 mg
ml l to give =	*****	*****	*****	1.0 – 1.1 ml	1.2 – 1.4 ml	1.5 – 1.8 ml	1.9 – 2.2 ml	2.4 – 2.8 ml	3.0 – 3.6 ml

Cross-check and confirm dosage prior to administration of medication

	Grey	Pink	Red	Purple	Yellow	White	Blue	Orange	Green
WEIGHT (in kg):	**3 - 5**	**6 - 7**	**8 - 9**	**10 - 11**	**12 - 14**	**15 - 18**	**19 - 22**	**24 - 28**	**30 - 36**
(in lbs.):	6.6 - 11	13.2 - 15.4	17.6 - 19.8	22.0 - 24.2	26.4 - 30.8	33.0 - 39.6	41.8 - 48.4	52.8 - 61.6	66.0 - 79.2
ONDANSETRON									
Concentration 4 mg/2 ml									
Dose 0.1 mg/kg	*****	*****	*****	**1 – 1.1 mg**	**1.2 – 1.4 mg**	**1.5 – 1.8 mg**	**1.9 – 2.2 mg**	**2.4 – 2.8 mg**	**3 – 3.6 mg**
ml to give =	*****	*****	*****	**0.5 – 0.55 ml**	**0.6 - 0.7 ml**	**0.75 – 0.9 ml**	**0.95 – 1.1 ml**	**1.2 – 1.4 ml**	**1.5 – 1.8 ml**
PRALIDOXIME CHLORIDE (2-PAM)	Bronchospasm and respiratory secretions are the best acute symptoms to monitor for evaluating the response to Atropine/2-PAM: • Decreased bronchospasm and respiratory secretions = getting better. • No change or increased bronchospasm and respiratory secretions = needs more 2-PAM								
Concentration 600 mg/2 ml									
Dose 20 mg/kg IM /IV									
These dosages are not available outside of the autoinjectors, but are as follows,in hospital setting:	**60 - 100 mg**	**120 - 140 mg**	**160 - 180 mg**	**200 - 220 mg**	**240 - 280 mg**	**300 - 360 mg**	**380 - 440 mg**	**480 - 560 mg**	**600 - 720 mg**
ml to give =	**0.2 - 0.33 ml**	**0.4 – 0.47 ml**	**0.53 – 0.6 ml**	**0.67 – 0.73 ml**	**0.8 – 0.93 ml**	**1.0 – 1.2 ml**	**1.27 – 1.47 ml**	**1.6 – 1.87 ml**	**2.0 - 2.4 ml**

Cross-check and confirm dosage prior to administration of medication

Normal Pediatric Vital Signs

	HR Beats/min	RR breaths/min	BP systolic mm/Hg	BP diastolic mm/Hg
Newborn (0-1 month)	100 - 180	30 - 60	73 - 92	52 - 65
Infant (1-12 months)	80 - 150	30 - 60	90 - 109	53 - 67
Toddler (1-3 years)	75 - 130	25 - 35	95 - 105	56 - 68
Pre-School (3-5 years)	75 - 120	22 - 32	99 - 110	55 - 70
School Age (5-12 years)	70 - 110	20 - 30	97 - 118	60 - 76
Adolescent (13-18 years)	65 - 105	16 - 22	110 - 133	63 - 83

Source: Los Angeles County EMS Agency, Pediatric Quick Reference, Sept. 2012