

**ASSAULT | ABUSE | DOMESTIC VIOLENCE****•Routine Medical Care**

- Level of distress - Is patient a trauma victim? If yes, see trauma protocol
- Provide emotional support to the victim and the family
- Contact appropriate law enforcement agencies

- 1. CHILD ABUSE / ELDER ABUSE / DOMESTIC VIOLENCE:** In any situation where the rescuer has reason to suspect Child or Elder abuse, or Domestic Violence:
  - 1.1 Immediately notify the appropriate law enforcement agency
  - 1.2 Reasonable effort will be made to transport the patient to a receiving hospital for evaluation. Immediately inform hospital staff of your suspicions
  - 1.3 Document all pertinent observations on the patient care report
  - 1.4 Immediately (or as soon as practical) contact the appropriate agency by telephone and give a verbal report
  - 1.5 A written report for child/elder abuse must be filed within 36 hours

**► TO REPORT CHILD ABUSE:****Child Protective Services**

24100 Amador St.  
Hayward, CA 94544  
**(510) 259-1800** - 24 hour number

**► TO REPORT ELDER OR DEPENDENT ADULT ABUSE:**

→ By staff at a licensed health care facility contact:

**Ombudsman (800) 231-4024**

→ At home, or by a visitor or another resident at a licensed health care facility contact:

**Adult Protective Services**

6955 Foothill Blvd., Suite 300  
Oakland, CA 94605  
**(866) 225-5277** - 24 hour number

*After 5 pm M-F and weekends, an operator answers this line and can page a social worker (if needed.) If the patient was assaulted or has suffered serious neglect contact local law enforcement.*



APS ONLINE REPORT

[bit.ly/aps-report](http://bit.ly/aps-report)

**► TO REPORT DOMESTIC VIOLENCE:**

*Domestic violence is defined as the willful intimidation, physical assault, battery, sexual assault, and/or other abusive behavior as part of a systematic pattern of power and control perpetrated by one intimate partner against another.*

- Notify receiving hospital staff
- Perform DV Assessment (see section 3)

- 2. SEXUAL ASSAULT:** Patients should be transported to the appropriate facility for evaluation regardless of the hospital's diversion status
  - 2.1 **Adult patients:** Alameda County Medical Center or Washington Hospital
  - 2.2 **Pediatric patients:** Children's Hospital (≤14 y.o.)

**ASSAULT | ABUSE | DOMESTIC VIOLENCE****3. DOMESTIC VIOLENCE (DV) LETHALITY SCREEN**

3.1 Determine level of distress – is patient injured or complaining of any medical complaints?

- ▶ Assess and treat as appropriate
- ▶ If patient c/o or presents with medical complaints, assess for signs & symptoms of possible strangulation
- ▶ Attempt private audience with patient (maintaining regard for safety)
- ▶ If patient is NOT transported - and if safe, appropriate and feasible - perform a DV Lethality Screen

→ If patient screens HIGH RISK, refer patient to the Family Violence Law Center (FVLC) by calling the **FVLC 24/7 hotline # 800-947-8301**

→ Briefly describe the DV circumstances to the FVLC advocate without providing any patient identifying information

→ If patient consents to speaking with FVLC advocate, hand patient the phone

→ If patient does not consent to speaking with FVLC advocate, give patient discreet FVLC resource information and advise that he/she can call 24/7

→ Repeat basic safety planning tips that the FVLC advocate provides

- ▶ If patient is transported, be sure to inform receiving facility of lethality risk (determined by tool) and DV advocacy steps taken

3.2 **Questions used in the Domestic Violence Lethality Screen for First Responders**

→ A “yes” response to any of Questions 1–3 automatically triggers the protocol referral

1. Has he/she ever used a weapon against you or threatened you with a weapon?
2. Has he/she threatened to kill you or your children?
3. Do you think he/she might try to kill you?

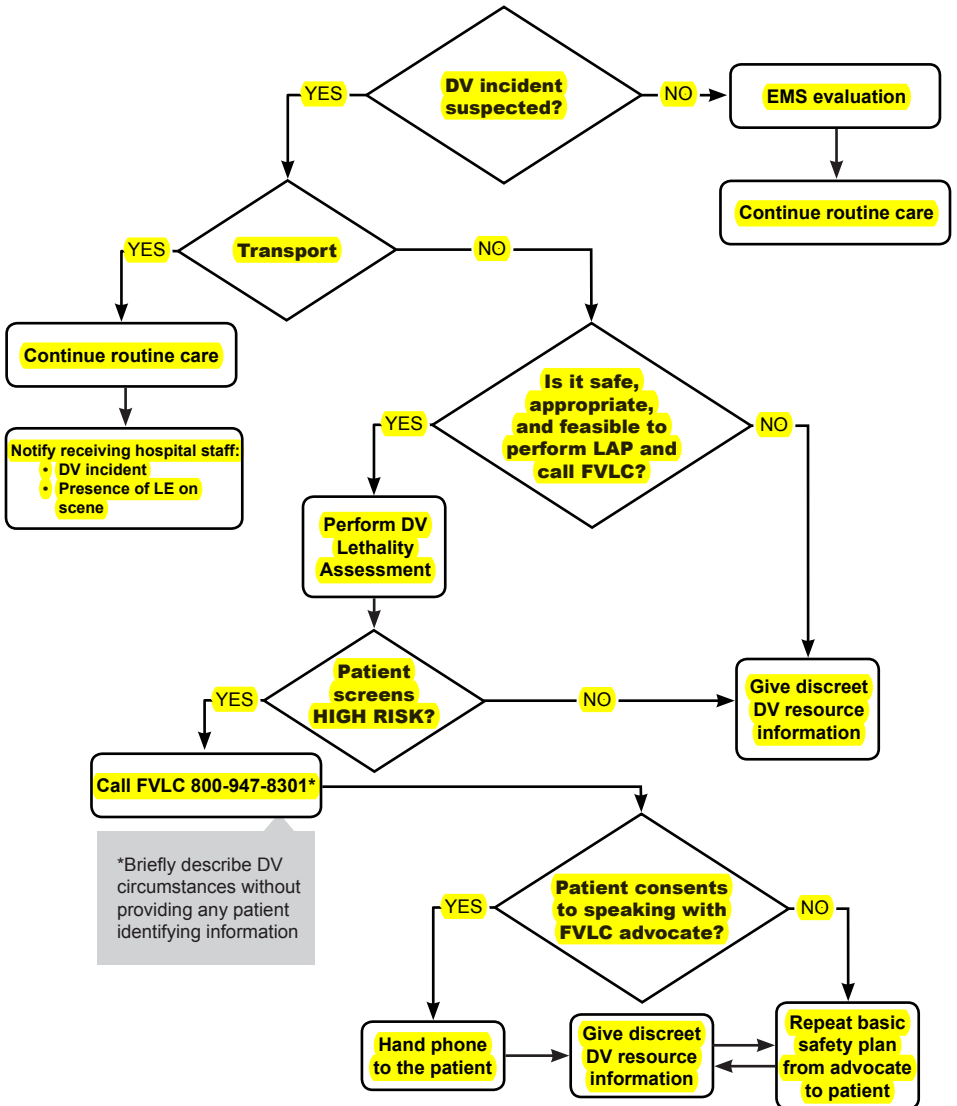
→ Negative responses to Questions 1–3, but positive responses to at least four of Questions 4–11, trigger the protocol referral

4. Does he/she have a gun or can he get one easily?
5. Has he/she ever tried to choke you?
6. Is he/she violently or constantly jealous or does he/she control most of your daily activities?
7. Have you left him/her or separated after living together or being married?
8. Is he/she unemployed?
9. Has he/she tried to kill himself?
10. Do you have a child that he/she knows is not his/hers?
11. Does he/she follow or spy on you or leave threatening messages?

***If patient consents, any first responder may trigger the protocol referral to FVLC if not already triggered above, as a result of the victim’s response to the below question, or whenever the first responder believes the victim is in a potentially lethal situation***

→ Is there anything else that worries you about your safety? (If “yes”) What worries you?

**ASSAULT | ABUSE | DOMESTIC VIOLENCE**



**BURN PATIENT CRITERIA**

1. **INTRODUCTION** -The intent of this policy is to transport patients with critical burns, who have a manageable airway, directly to a facility that is staffed and equipped to care for the medical needs of the patient, bypassing other receiving facilities. Minor to moderate burn patients will be transported to the closest, most appropriate receiving hospital.
2. **BURN PATIENT CRITERIA** (from the American Burn Association – Burn Unit Referral Criteria)
  - 2.1 Partial thickness burns greater than 10% total body surface area
  - 2.2 Moderate to severe burns that involve the face, hands, feet, genitalia, perineum, or major joints
  - 2.3 Full thickness burns in any age group
  - 2.4 Electrical burns, including lightning injury
  - 2.5 Chemical burns
  - 2.6 Burn injury in patients with preexisting medical disorders that could complicate management, prolong recovery, or affect mortality
3. **DESTINATION**
  - 3.1 **Adult and Pediatric patients** who meet burn patient criteria 2.1-2.6 may be transported directly to an out-of-county burn center (see #5 below).
  - 3.2 Exceptions:
    - 3.2.1 **Potentially unmanageable airway** - (e.g. - soot in the mouth and/or nose, inhalation injury, etc.) transport to the closest trauma center.
    - 3.2.2 **Unmanageable Airway** - The patient requires intubation, and the paramedic is unable to intubate, and an adequate airway cannot be maintained with B.V.M. device, transport to closest basic E.D.
    - 3.2.3 **Patient meets Critical Trauma Patient Criteria** - "Physiologic" or "Anatomic" - transport to the closest most appropriate designated trauma center
4. **OUT-OF-COUNTY TRANSPORT**
  - 4.1 Transporting medic ***must*** first contact out-of-county hospital to confirm bed availability. This can be done through the appropriate dispatch center or via land-line from the field
  - 4.2 Contact the Base Physician if medical consultation is needed
  - 4.3 Consider EMS Aircraft transport for land transport times greater than 45 minutes
  - 4.4 Give a brief report to the receiving facility including ETA

**Out-Of County Burn Centers:**

FACILITY	TRAUMA	HELIPAD	LOCATION	PHONE #
UC Davis Medical Center	YES	YES	2315 Stockton Blvd., Sacramento	(916) 734-3636
Santa Clara Valley Medical Center	YES	YES	751 S. Bascom Ave., San Jose	(408) 885-6666
St. Francis Memorial Hospital	NO	NO	900 Hyde Street, San Francisco	(415) 353-6255

**CARDIOPULMONARY RESUSCITATION (CPR)** 2015 Update

Summary of High-Quality CPR Components for BLS Providers			
Component	Adults and Adolescents	Children (Age 1 Year to Puberty)	Infants (Age Less Than 1 Year, Excluding Newborns)
<b>Scene safety</b>	Make sure the environment is safe for rescuers and victim		
<b>Recognition of cardiac arrest</b>	Check for responsiveness No breathing or only gasping (ie, no normal breathing) No definite pulse felt within 10 seconds (Breathing and pulse check can be performed simultaneously in less than 10 seconds)		
<b>Activation of emergency response system</b>	If you are alone with no mobile phone, leave the victim to activate the emergency response system and get the AED before beginning CPR  Otherwise, send someone and begin CPR immediately; use the AED as soon as it is available	<b>Witnessed collapse</b> Follow steps for adults and adolescents on the left  <b>Unwitnessed collapse</b> Give 2 minutes of CPR Leave the victim to activate the emergency response system and get the AED  Return to the child or infant and resume CPR; use the AED as soon as it is available	
<b>Compression-ventilation ratio without advanced airway</b>	1 or 2 rescuers 30:2	1 rescuer 30:2	2 or more rescuers 15:2
<b>Compression-ventilation ratio with advanced airway</b>	Continuous compressions at a rate of 100-120/min Give 1 breath every 6 seconds (10 breaths/min)		
<b>Compression rate</b>	100-120/min		
<b>Compression depth</b>	At least 2 inches (5 cm)*	At least one third AP diameter of chest About 2 inches (5 cm)	At least one third AP diameter of chest About 1½ inches (4 cm)
<b>Hand placement</b>	2 hands on the lower half of the breastbone (sternum)	2 hands or 1 hand (optional for very small child) on the lower half of the breastbone (sternum)	<b>1 rescuer</b> 2 fingers in the center of the chest, just below the nipple line <b>2 or more rescuers</b> 2 thumb-encircling hands in the center of the chest, just below the nipple line
<b>Chest recoil</b>	Allow full recoil of chest after each compression; do not lean on the chest after each compression		
<b>Minimizing interruptions</b>	Limit interruptions in chest compressions to less than 10 seconds		
<b>Defibrillation</b>	Attach and use AED/ Defibrillator as soon as available	Minimize interruptions in chest compressions before and after shock	Resume CPR beginning with compressions immediately after each shock

\*Compression depth should be no more than 2.4 inches (6 cm).

Abbreviations: AED, automated external defibrillator; AP, anteroposterior; CPR, cardiopulmonary resuscitation.

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**CARDIOPULMONARY RESUSCITATION (CPR)**


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**ADDITIONAL INFORMATION:**

1. Minimize interruptions in chest compressions
2. Use a mechanical compression device whenever possible
  - 2.1 Refer to manufacturer's instructions for specific information regarding mechanical CPR device
  - 2.2 Upon ROSC, you must discontinue mechanical CPR device **AND** ResQPOD®
3. Defer advanced airway insertion rather than interrupt chest compressions. Do not interrupt chest compressions to place an advanced airway. If after 2 minutes of continuous chest compressions with BVM support an immediate endotracheal airway can not be obtained, consider use of supraglottic airway
4. Emphasis is on high quality, uninterrupted CPR - "push hard and fast" – allow for complete recoil
5. Two minutes CPR between drug doses
6. Once an advanced airway is established, give continuous chest compression without pauses for breaths. Avoid hyperventilation
7. Check rhythm q 2 minutes
8. Defibrillation: Device specific. While both monophasic and biphasic wave form defibrillators are acceptable, biphasic is preferred. Energy level is dependant upon the manufacturer
9. **Newborn:** Unresponsive, not breathing but has a pulse: 40-60 ventilations/minute. Compression/ventilation ratio: 3:1 (90 compressions : 30 ventilations per minute)
10. Unresolved or persistent arrest, look for and treat:
 

→ Hypovolemia	→ Toxins
→ Hypoxia or ventilation problem	→ Tamponade (cardiac)
→ Hydrogen Ion (acidosis)	→ Tension pneumothorax
→ Hypo/Hyperkalemia	→ Thrombosis (coronary/pulmonary)
→ Hypoglycemia	→ Trauma (hypovolemia or ICP)
→ Hypothermia	

11. *If patient regains ROSC, refer to Return of Spontaneous Circulation - ROSC (see [page 48](#))*

**MECHANICAL CPR DEVICES:**

12. **PURPOSE:** Effective and uninterrupted compressions are important for survival; AHA/ERC Guidelines for CPR (Cardio-Pulmonary Resuscitation) 2005 emphasize the significance of compressions to provide critical blood flow to vital organs and in the end to increase the chances of a successful survival. Mechanical CPR allows for consistent, quality CPR that enables caregivers to focus on other aspects of resuscitation while maximizing effectiveness of therapeutic interventions

**13. Indications:**

- ▶ Use mechanical CPR devices wherever manual CPR is indicated
- ▶ IMPORTANT NOTE: If ROSC is obtained, mechanical CPR device must be discontinued

**14. Contraindications:****AutoPulse Contraindications**

- ≤ 17 years of age
- Patients with traumatic injury (wounds resulting from sudden physical injury or violence)

**Lucas 2 Contraindications**

- If it is not possible to position LUCAS safely or correctly on the patient's chest
- Too small patient: If you cannot enter the PAUSE mode or ACTIVE mode when the pressure pad touches the patient's chest and LUCAS alarms with 3 fast signals
- Too large patient: If you cannot lock the Upper Part of LUCAS to the Back Plate without compressing the patient's chest

## CRUSH INJURY SYNDROME

**•Routine Medical Care**

•Trauma Patient Care (see [page 24](#))

•**Note:** Hypovolemia and hyperkalemia may occur, particularly with extended entrapment (usually > 4 hours). Once compression is released cellular toxins and potassium may be released into the body. Administering sodium bicarbonate alkalizes the urine, controls hyperkalemia and acidosis

**→ Crush Injury syndrome**

**Definition:** Crush injury syndrome is the name given to the systemic manifestations of muscle crush injury and cell death. Crush injury syndrome should be suspected in patients with certain patterns of injury. Most patients in whom the syndrome develops have an extensive area of involvement such as a lower extremity and/or pelvis. It requires more involvement than just one hand or foot. The syndrome may develop after one hour in a severe crush situation, but usually requires 4 – 6 hours of compression for the processes that cause crush injury syndrome to occur.

Removed Base Contact

Immediate care of crush injury patient (prior to release)

- Cardiac Monitor
- 12 Lead EKG
- Albuterol 10-20 mg via nebulizer
- Fluid resuscitation 20 ml/kg NS
- Pain Management – see pain management policy  
 Adult: [page 43](#)  
 Pediatric: [page 68](#)  
 Use caution if other major traumatic injuries are suspected

Care of crush injury patient after release of compression

Note: entrapment more than 4 hours and/ or abnormal EKG findings – peaked “T” wave, absent “P” waves and widened “QRS”

- **Calcium Chloride** 1 gm slow IVP (over 2 min.) *Note: flush IV tubing after administering CaCl to avoid precipitation*
  - **Sodium Bicarbonate** 1 mEq/kg IVP over 60 seconds
- Note: make sure to have a second IV line as other medications may not be compatible.

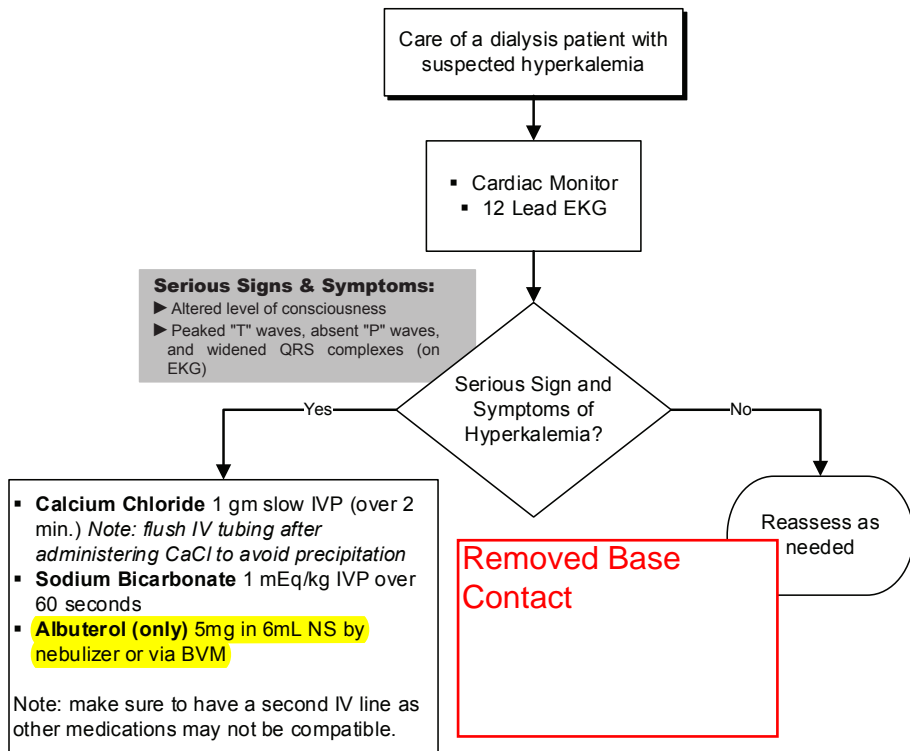
Hyperkalemia suspected? (see note)

Reassess as needed

## HYPERKALEMIA

### → Hyperkalemia in the context of dialysis

**Definition:** Hyperkalemia is common in patients with end-stage renal disease, and may result in serious electrocardiographic abnormalities. Dialysis is the definitive treatment of hyperkalemia in these patients. EKG findings are critical to proper treatment decisions. Findings such as peaked "T" waves and absent "P" waves as well as widening QRS complexes are signs that a renal patient in the context of dialysis is suffering from hyperkalemia. Renal patients who are taking ACE inhibitors, ARBs (angiotensin receptor blockers), NSAIDs, beta blockers and/or sodium channel blockers have an increased risk of hyperkalemia in the context of dialysis. Obtain a thorough history paying special attention to the patient's medications. In the periarrest dialysis patient, correcting hyperkalemia can be vital in the patient's overall survival.





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**SCOPE OF PRACTICE - LOCAL OPTIONAL**


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1. **Local Optional Scope of Practice** – requires authorization from State EMS Authority
  - 1.1 **ALS PERSONNEL:**
    - 1.1.1 Pediatric intubation
    - 1.1.2 Nerve agent exposure drugs:
      - Autoinjectors - for self-administration
      - Pralidoxime chloride (2-PAM) – (patient administration, HazMat trained paramedics only)
      - Atropine – (patient administration, HazMat trained paramedics only)
    - 1.1.3 Sodium Thiosulfate
    - 1.1.4 TXA
    - 1.1.5 Hydroxocobalamin (optional)
  - 2.1 **ALS PERSONNEL:**
    - 2.1.1 Pulse-oximetry
    - 2.1.2 Length-based resuscitation tape
    - 2.1.3 Meconium aspirator
    - 2.1.4 End-tidal CO<sub>2</sub> detection (colorimetric or capnographic technologies)
    - 2.1.5 12-lead EKG – optional for first responder agencies
    - 2.1.6 King-LTD supraglottic airway device
    - 2.1.7 Continuous Positive Airway Pressure (CPAP)
    - 2.1.8 Intraosseous Infusion – Adult and Pediatric
  - 2.2 **BLS PERSONNEL:**
    - 2.2.1 King-LTD supraglottic airway device - optional (see “Advanced Airway Management” **page 118**)
    - 2.2.2 Aspirin\*
    - 2.2.3 Pulse Oximetry \*
    - 2.2.4 Glucometry \*
    - 2.2.5 Epinephrine Auto Injector \*
    - 2.2.6 Narcan \*
    - 2.2.7 If using King-LTD:
      - End-tidal CO<sub>2</sub> detection (colorimetric or capnographic technologies)

\*Approved for 911 BLS first responders and transport. Optional for interfacility BLS transport
3. Field personnel will not perform any skill that is not a part of his/her scope of practice or has not been authorized by the Alameda County Health Officer and/or EMS Medical Director
4. During an inter-facility transfer or during a mutual aid response into another jurisdiction, a paramedic may utilize the scope of practice for which he/she is trained and accredited
5. Paramedics will not draw blood unless approved in advance by the EMS Medical Director
6. Field personnel are prohibited from carrying any medical equipment or medications that have not been authorized for prehospital use by the Alameda County EMS Medical Director

## SMOKE INHALATION / CO MONITORING

### •Routine Medical Care

### •Symptoms of Carbon Monoxide (CO) poisoning:

→ Initial symptoms are similar to the flu with no fever and can include dizziness, severe headaches, nausea, sleepiness, fatigue/weakness and disorientation/confusion

•**Note:** Carbon Monoxide is a colorless, odorless and tasteless poisonous gas that can be fatal when inhaled. CO inhibits the blood's capacity to carry oxygen. CO can be produced when burning any fuel. CO is a by-product of incomplete combustion. Suspect CO in the presence of any fire. **SpCO = carboxyhemoglobin**

1. Pulse oximetry values may be unreliable in SI patients
2. Cyanide and/or the combination of cyanide and carbon monoxide may be responsible for the majority of SI deaths
3. SI should be particularly suspected in patients rescued from closed-space structure fires
4. Sodium thiosulfate should not be given prophylactically
5. Remove victim from the source of exposure
  - 5.1 Completely remove victim's clothing prior to transport
  - 5.2 Perform Spinal Motion Restriction (SMR) if indicated
  - 5.3 Evaluate patient for facial burns, hoarseness, black sputum, and soot in the nose or mouth
  - 5.4 Monitor SpCO (if available)
  - 5.5 Assess and treat for traumatic and/or thermal injuries (go to appropriate policy)
6. Administer 100% oxygen via NRB
  - 6.1 Control airway early. Perform endotracheal intubation / King LTD placement if indicated
  - 6.2 Use BVM with airway adjuncts
  - 6.3 If bronchospasm present, go to appropriate respiratory policy
7. Provide cardiopulmonary support (go to appropriate cardiac arrest policy, if indicated)
8. Initiate IV NS. Consider fluid bolus 250-500 ml
9. **ONLY** if the patient exhibits serious signs and symptoms of **smoke inhalation (SI)**
  - 9.1 Administer sodium thiosulfate or hydroxocobalamin
    - 9.1.1 Sodium thiosulfate IV slowly over 10 minutes
 

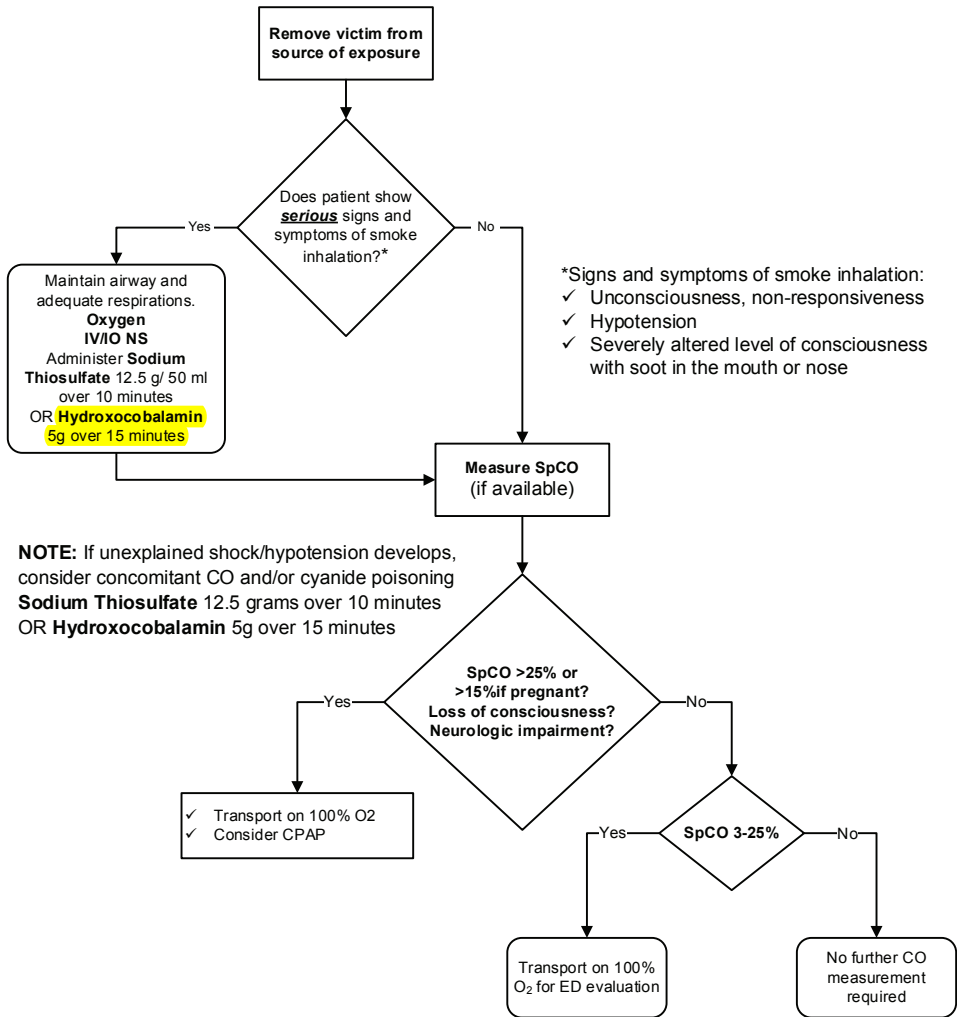
**Adults:** 12.5 g/50 ml | **Children:** 0.4 g/kg - to a maximum 12.5 g) to SI patients with any of the following signs of cyanide poisoning:

→ Unconsciousness, non-responsiveness

→ Hypotension

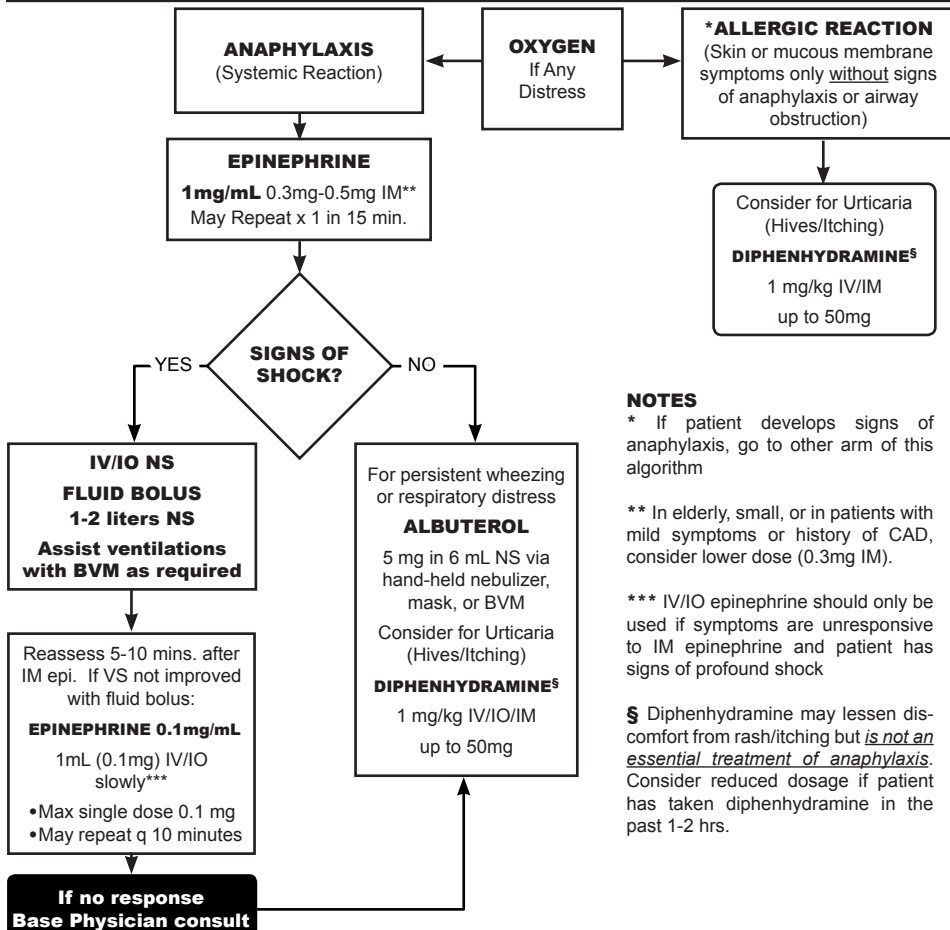
→ Severely altered level of consciousness **with** soot in the mouth or nose
    - 9.1.2 **Hydroxocobalamin - Optional (Additional Training Required) Adults: 5g over 15 minutes**
10. Treatment of cyanide poisoning must include immediate attention to airway patency, adequacy of oxygenation and hydration, cardiovascular support, and management of any seizure activity
11. If seizures present, go to appropriate seizure policy
12. If cardiac arrhythmia present, go to appropriate arrhythmia policy
13. Ensure rapid transport

**SMOKE INHALATION / CO MONITORING**



**ANAPHYLAXIS / ALLERGIC REACTION**

- **Epinephrine IM** is the cornerstone of treatment of anaphylaxis and should be given as early as possible. It is best absorbed from an injection in the lateral thigh
- If the patient is in severe distress, **administer Epinephrine IM** and consider immediate transport
- **SIGNS OF ANAPHYLAXIS (Systemic Reaction)** – wheezing, repetitive cough, tightness in chest, stridor, difficulty swallowing or tightness in throat, change in voice, dizziness or feeling faint, abdominal complaints (pain, repeated vomiting, diarrhea or incontinence), anxiety, lethargy
- **SIGNS OF ANAPHYLACTIC SHOCK** – pallor, hypotension, cool, clammy mottled skin, altered sensorium
- **Facial/oral swelling (Angioedema)** can accompany anaphylaxis, but is not always present

**NOTES**

\* If patient develops signs of anaphylaxis, go to other arm of this algorithm

\*\* In elderly, small, or in patients with mild symptoms or history of CAD, consider lower dose (0.3mg IM).

\*\*\* IV/IO epinephrine should only be used if symptoms are unresponsive to IM epinephrine and patient has signs of profound shock

§ Diphenhydramine may lessen discomfort from rash/itching but *is not an essential treatment of anaphylaxis*. Consider reduced dosage if patient has taken diphenhydramine in the past 1-2 hrs.

## BRADYCARDIA

**•Routine Medical Care**

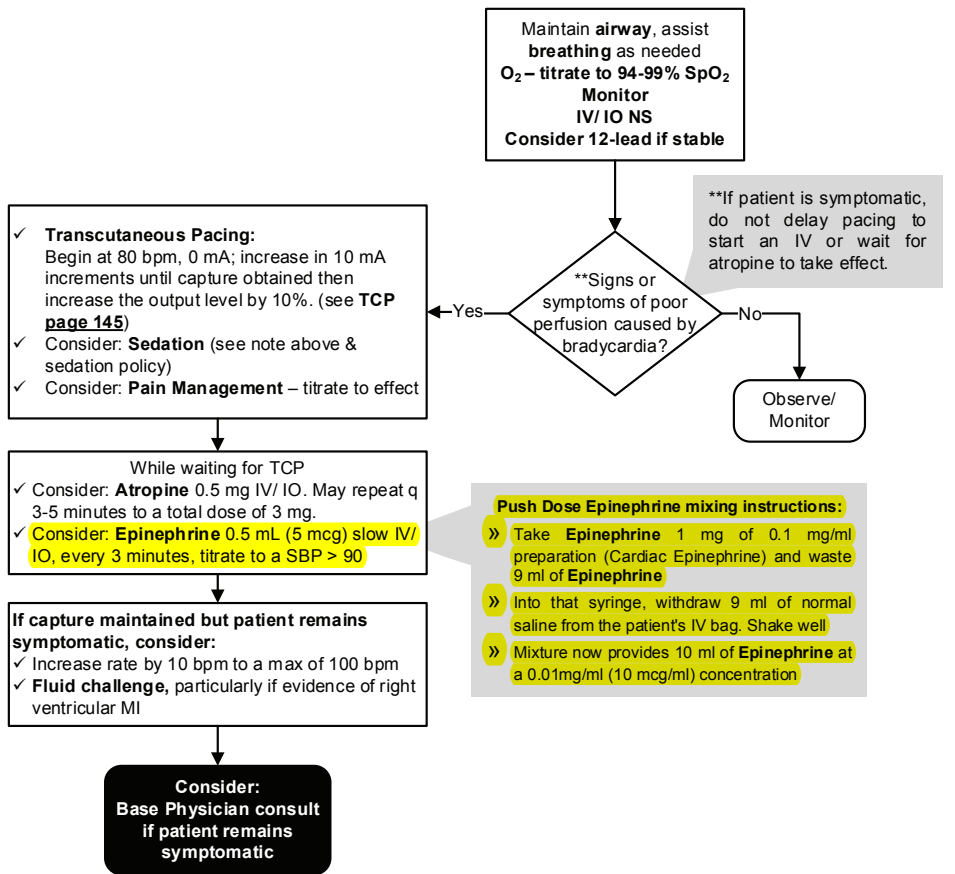
**•Bradycardia:** < 50 beats/minute, 2nd degree block, 3rd degree block

**•Serious signs and symptoms:**

- Acute altered mental status
- Hypotension
- On-going chest pain
- Other signs of shock

**•Note:**

- If utilizing Transcutaneous Pacing (TCP), verify mechanical capture and patient tolerance (see [page 144](#))
- Use sedation with caution in the hypotensive patient (see [page 137](#))
- If patient symptomatic and pacing not available, consider rapid transport
- Consider Hyperkalemia

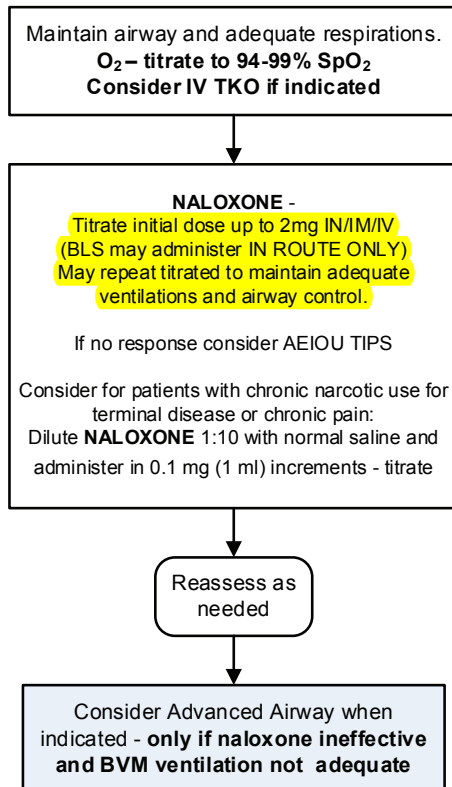


**MEDICATIONS – AUTHORIZED | STANDARD INITIAL DOSE**

<b>Adenosine</b>	1st dose: 6 mg; 2nd dose: 12 mg (rapid <i>IV/IO</i> push)
<b>Albuterol</b>	5 mg in 6 ml normal saline
<b>Amiodarone</b>	<b>Wide complex Tachycardia:</b> 150 mg <i>IV/IO</i> over 10 mins <b>VF/VT:</b> 1st dose: 300 mg <i>IV/IO</i> ; 2nd dose: 150 mg <i>IV/IO</i> Follow each dose with 20mL NS flush. (two doses only)
<b>Aspirin</b>	162 mg chewable or 324 mg (5gr.) tablet – not enteric coated)
<b>Atropine sulfate</b>	<b>Bradycardia:</b> 0.5 mg <i>IV/IO</i> - (max total 3 mg - 6 doses)
<b>Calcium chloride 10%</b>	1 gm over 2 minutes <i>IV/IO</i>
<b>Charcoal</b>	1 gm/kg (Max 50 gms) <i>PO</i>
<b>Dextrose 10%</b>	10 gms <i>IV/IO</i>
<b>Diphenhydramine</b> (Benadryl)	<b>Allergic Reaction:</b> 1 mg/kg <i>IV/IO/IM</i> up to 50 mg
<b>Epinephrine 1mg/mL</b>	<b>Anaphylaxis:</b> 0.3mg-0.5mg <i>IM</i> <b>Bronchospasm:</b> 0.01 mg/kg <i>IM</i> (max dose 0.5mg)
<b>Epinephrine 0.1mg/mL</b>	<b>Anaphylactic shock:</b> 1mL (0.1mg) <i>IV/IO</i> slowly <b>Cardiac arrest:</b> 10mL (1 mg) <i>IV/IO</i> <b>Cardiogenic/Distributive Shock:</b> Diluted to 0.01mg/ml (10mcg/ml), 0.5ml (5mcg) <i>slow IV/IO</i>
<b>Fentanyl</b> Minimum dose 50mcg Max single dose 100 mcg	<b>Chest pain:</b> 50-100 mcg <i>IV/IO/IM/IN</i> <b>Pain management:</b> 50-100 mcg <i>IV/IO/IM/IN</i> <b>Critical trauma patient:</b> 50 mcg <i>IV/IO/IM/IN</i>
<b>Glucagon</b>	1 mg <i>IM</i>
<b>Oral Glucose</b>	30 gms <i>PO</i>
<b>Ipratropium (Atrovent)</b>	500 mcg (2.5 ml unit dose) <i>Via nebulizer</i>
<b>Lidocaine 2%</b>	40mg <i>IO</i> (2 mL) <i>slowly</i> (1 ml over 30 seconds)
<b>Midazolam (Versed)</b>	<b>Sedation:</b> <i>IV (slowly) / IN (briskly):</i> 1-2 mg, <i>IM:</i> 2-4 mg (if no <i>IV</i> ) <b>Seizure:</b> <i>IN:</i> 5 mg, <i>IV/IM/IO:</i> 0.1 mg/kg - max dose 6 mg
<b>Naloxone (Narcan)</b>	Initial dose: 1 – 2 mg <i>IV/IM/SQ</i> 2 mg. <i>IN</i> - max dose
<b>Nitroglycerine spray</b>	0.4 mg metered spray or tablet
<b>Normal saline</b>	250 - 500 ml <i>IV/IO</i> fluid bolus
<b>Ondansetron</b> (Zofran)	4 mg <i>IV</i> <i>slowly</i> over 30 seconds or 4 mg <i>IM/PO</i> ( <i>oral dissolving tablets</i> ) (*rapid <i>IV</i> administration <30 seconds can cause syncope)
<b>Oxygen</b> (titrate to 94%-99% SpO2)	2 - 6 L/nasal cannula   15 L/non-rebreather mask
<b>Sodium bicarbonate</b>	1 mEq/kg <i>IV/IO</i>
<b>Sodium thiosulfate</b>	12.5 grams <i>IV/IO</i> over 10 minutes
<b>Hydroxocobalamin</b>	Smoke Inhalation/Cyanide Poisoning: 5g <i>IV/IO</i> over 15 minutes

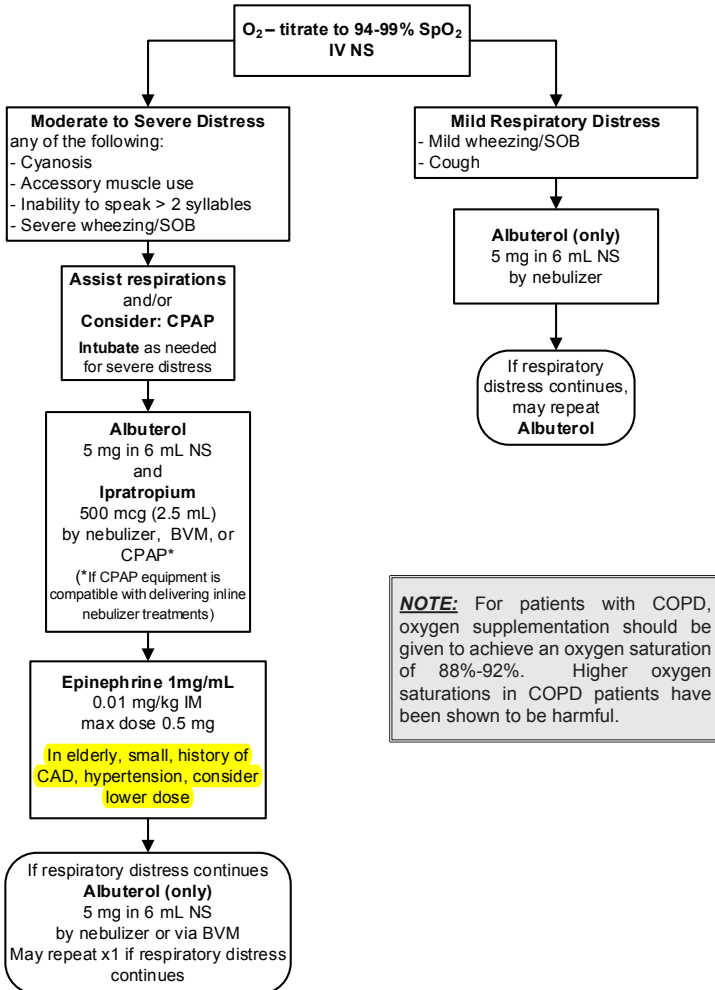
**RESPIRATORY DEPRESSION OR APNEA (SUSPECTED NARCOTIC OD)**

- **Routine Medical Care**
- **SAFETY WARNING! Naloxone will cause acute withdrawal symptoms in patients who are habituated users of narcotics (whether prescribed or from abuse)**
- Use of diluted Naloxone IV and titration with small increments may help decrease adverse effects of naloxone in patients who have chronic narcotic usage for terminal disease or pain relief
- **Naloxone treatment should only be given to patients with respiratory depression (rate less than 8)**
- Patients who are maintaining adequate respirations with decreased level of consciousness do not generally require Naloxone for management
- Naloxone can cause cardiovascular side effects (chest pain, pulmonary edema) or seizures in a small number of patients (1-2%)
- Older patients are at higher risk for cardiovascular complications
- Be prepared for patient agitation or combativeness after naloxone reversal of narcotic overdose



**RESPIRATORY DISTRESS****•Routine Medical Care**

- Asthma                                   → COPD
- Bronchospasm                       → Pulmonary edema (see [page 45](#))
- Limit physical exertion, reduce patient anxiety

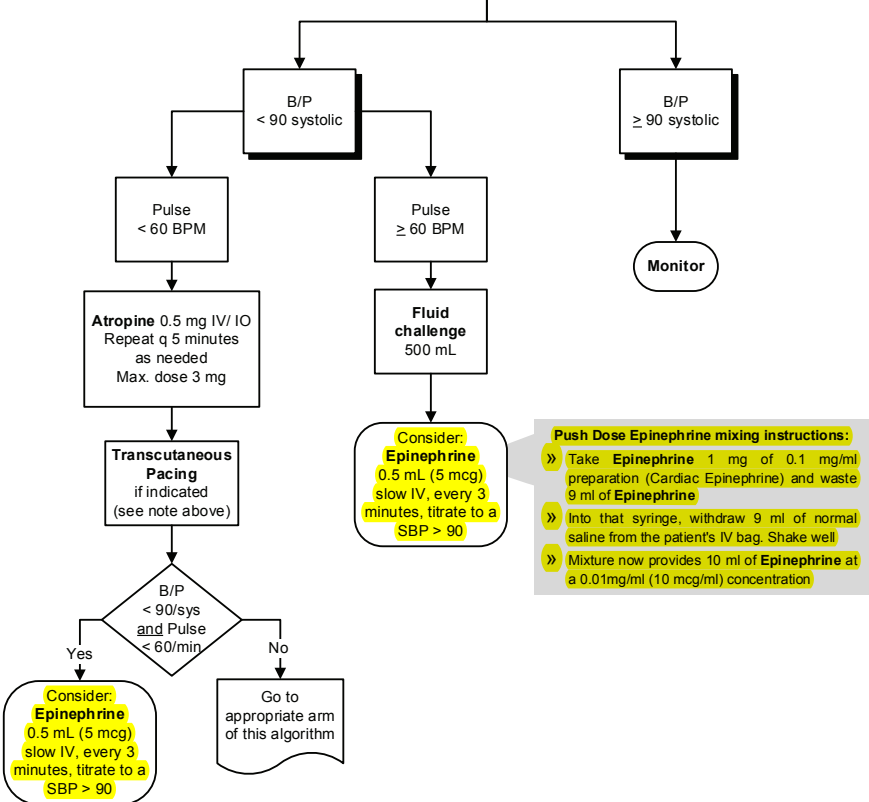




**RETURN OF SPONTANEOUS CIRCULATION - ROSC**

- **Routine Medical Care**
- **Remove Impedance Threshold Device (ITD)**
- Monitor for reoccurrence of arrest rhythm
- Transport patients with ROSC at any time to STEMI Center (except critical trauma patients)
- *If appropriate, transport pediatric patients to Children's Hospital*
- **Note: Transcutaneous Pacing (page 144):** Begin at 80 bpm, 0 mA; increase in increments of 10 mA until capture obtained then increase the output level by 10% If capture maintained but patient remains symptomatic consider increasing the rate by 10 bpm, to a maximum of 100 bpm

- ✓ Monitor & support ABCs
- ✓ Confirm palpable pulse & auscultated BP
- ✓ Monitor EtCO<sub>2</sub> (maintain 35-40 mmHg with PPV)
- ✓ O<sub>2</sub> titrate to 94-99%
- ✓ Perform 12-Lead
- ✓ Check blood glucose



**SEPSIS**

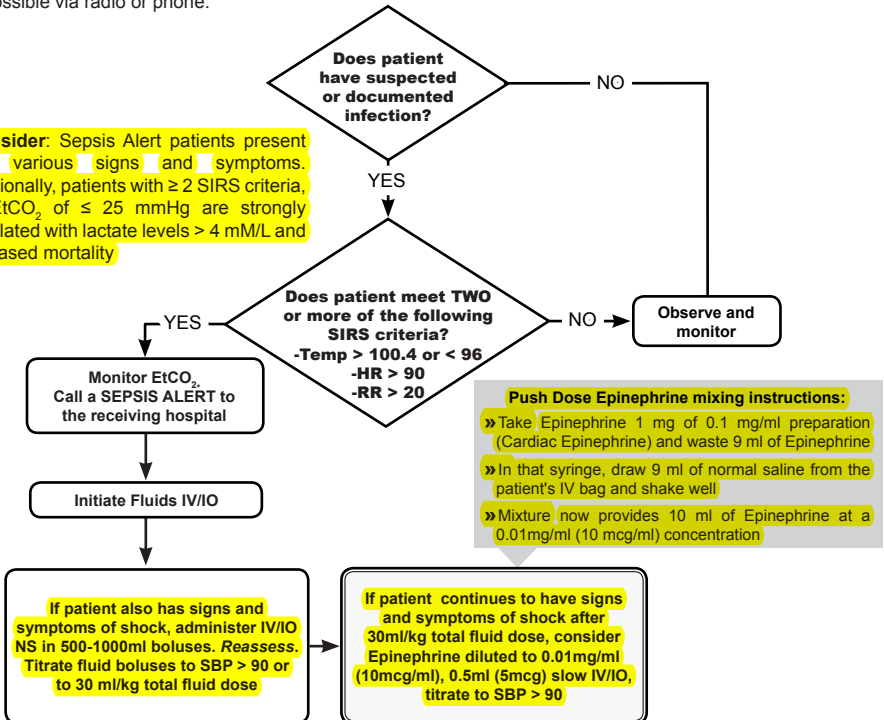
Sepsis is the body's overwhelming and life-threatening response to infection. In Sepsis, when an infection occurs at any potential site in the body, the immune system's inflammatory response can be overwhelmed leading to SIRS (Systemic Inflammatory Response Syndrome) which causes tissue damage that can lead to organ dysfunction, failure and death. The symptoms of SIRS can include fever, tachypnea, tachycardia or hypotension.

1. Risk Factors

- ▶ Age (Elderly, Newborn)
- ▶ Diabetes
- ▶ Compromised immune system including:
  - Cancer
  - Renal Disease
  - Alcoholism / IV Drug Abuse
  - Malnutrition
  - Hypothermia
  - Recent surgery or invasive procedure

2. Although sepsis patients can be any age, the Prehospital Sepsis Screening Tool triages for sepsis patients aged 15 years and older. For these patients, notify the receiving hospital of a SEPSIS ALERT as early as possible via radio or phone.

\*Consider: Sepsis Alert patients present with various signs and symptoms. Additionally, patients with  $\geq 2$  SIRS criteria, an  $\text{EtCO}_2$  of  $\leq 25$  mmHg are strongly correlated with lactate levels  $> 4$  mM/L and increased mortality



**SHOCK: HYPOVOLEMIC/CARDIOGENIC**

**•Routine Medical Care**

**•Shock** - 2 or more of the following:

- ➔ Pulse > 120/minute
- ➔ BP < 90/systolic
- ➔ Altered Mental Status
- ➔ Pale, cool and/or diaphoretic skin signs

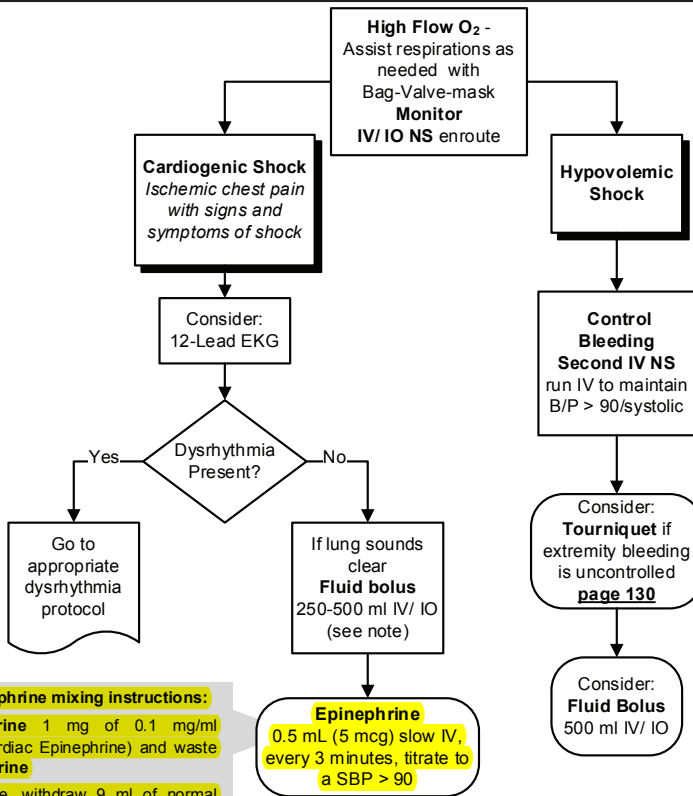
•Initiate early transport and treat en route, if appropriate.

**•NOTE:** A fluid bolus of up to 500 ml Normal Saline may be given to an adult patient in cardiogenic shock with clear lung sounds.

•If **anaphylaxis suspected**, see [page 36](#)

•If **trauma suspected**, see [page 24](#)

•If **sepsis suspected**, see [page 52](#)



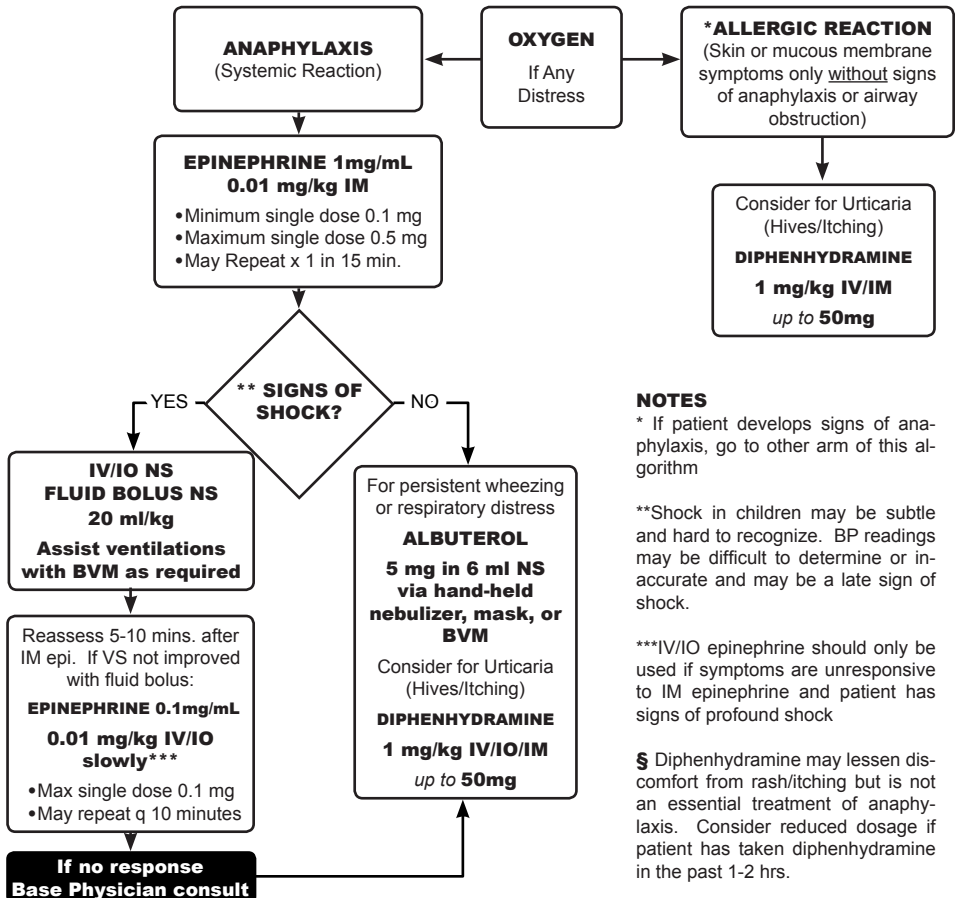
**Push Dose Epinephrine mixing instructions:**

- » Take **Epinephrine** 1 mg of 0.1 mg/ml preparation (Cardiac Epinephrine) and waste 9 ml of **Epinephrine**
- » Into that syringe, withdraw 9 ml of normal saline from the patient's IV bag. Shake well
- » Mixture now provides 10 ml of **Epinephrine** at a 0.01mg/ml (10 mcg/ml) concentration

**Epinephrine**  
0.5 mL (5 mcg) slow IV, every 3 minutes, titrate to a SBP > 90

**ANAPHYLAXIS / ALLERGIC REACTION**

- **Epinephrine IM** is the cornerstone of treatment of anaphylaxis and should be given as early as possible. It is best absorbed from an injection in the lateral thigh
- If the patient is in severe distress, **administer Epinephrine IM** and consider immediate transport
- **SIGNS OF ANAPHYLAXIS (Systemic Reaction)** – wheezing, repetitive cough, tightness in chest, stridor, difficulty swallowing or tightness in throat, change in voice, dizziness or feeling faint, abdominal complaints (pain, repeated vomiting, diarrhea or incontinence), anxiety, lethargy
- **SIGNS OF ANAPHYLACTIC SHOCK** – pallor, hypotension, cool, clammy mottled skin, altered sensorium
- **FACIAL/ORAL SWELLING (Angioedema)** can accompany anaphylaxis, but is not always present
- Use a length-based resuscitation tape (LBRT) to determine pediatric drug doses and fluid bolus



**NOTES**

\* If patient develops signs of anaphylaxis, go to other arm of this algorithm

\*\*Shock in children may be subtle and hard to recognize. BP readings may be difficult to determine or inaccurate and may be a late sign of shock.

\*\*\*IV/IO epinephrine should only be used if symptoms are unresponsive to IM epinephrine and patient has signs of profound shock

§ Diphenhydramine may lessen discomfort from rash/itching but is not an essential treatment of anaphylaxis. Consider reduced dosage if patient has taken diphenhydramine in the past 1-2 hrs.

**BRIEF RESOLVED UNEXPLAINED EVENT - BRUE****•Pediatric Routine Medical Care****1. DEFINITION:**

- 1.1 An Brief Resolved Unexplained Event (BRUE) was formally known as a Apparent Life Threatening Event- ALTE
- 1.2 A BRUE is an episode that is frightening to the observer (may think the infant has died) and involves some combination of:
  - ▶ **Apnea** (central or obstructive)
  - ▶ **Color change** (cyanosis, pallor, erythema, plethora)
  - ▶ **Marked change in muscle tone** (limpness)
  - ▶ **Choking or gagging**
- 1.3 Usually occurs in infants < 12 months old, however, any child less than 2 years old who exhibits the symptoms in 1.2 may be considered a BRUE
- 1.4 Most have a normal physical exam when assessed by responding field personnel
- 1.5 50–60% have no known etiology
- 1.6 40–50% have an identifiable etiology  
(e.g. Child abuse, SIDS, swallowing dysfunction, infection, bronchiolitis, seizures, CNS anomalies, tumors, cardiac disease, chronic respiratory disease, upper airway obstruction, metabolic disorders, or anemia)

**2. MANAGEMENT**

- 2.1 Assume the history given is accurate
- 2.2 Determine the **severity, nature** and **duration** of the episode
  - ▶ was the patient awake or asleep at the time of the episode
  - ▶ details of the resuscitation required
- 2.3 Obtain a **medical history**
  - ▶ known chronic diseases
  - ▶ evidence of seizure activity
  - ▶ current or recent infections
  - ▶ gastroesophageal reflux
  - ▶ inappropriate mixture of formula
  - ▶ recent trauma
  - ▶ medication history (current and recent)
- 2.4 Do a **comprehensive physical exam** that includes the general appearance of the child, skin color, extent of interaction with environment, and evidence of trauma
- 2.5 Perform **glucose analysis** if hypoglycemia suspected  
(see ALOC [page 64](#) if B.S. < 60mg/ dL)
- 2.6 Treat any identifiable causes
- 2.7 Transport
- 2.8 **Note: Contact the Base Physician** for consultation if the parent/guardian is refusing medical care and/or transport, prior to completing a Refusal of Care form

**NEONATAL RESUSCITATION**

**•Pediatric Routine Medical Care**

•Resuscitation should be initiated on **all** premature infants who meet the following criteria:

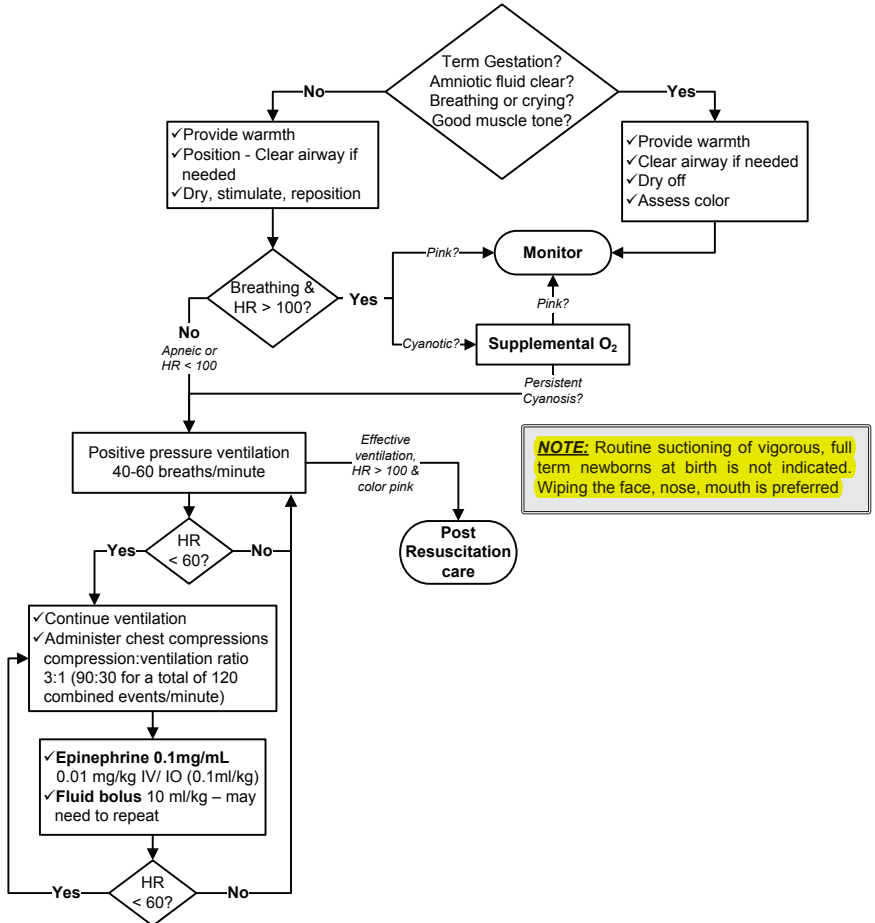
**Weight:** > 500 gms or 1 pound and **Gestational Age:** ≥ 20-24 weeks

•If naloxone considered for persistent respiratory depression, HR and color must first be restored

•Avoid naloxone for neonates whose mothers are suspected of long-term exposure to opioids

•**Note:** Perform endotracheal intubation only if BVM ventilation is unsuccessful or impossible

•**Use an LBRT to determine pediatric drug doses**  
(Shown underlined on the algorithm)



**RESPIRATORY DEPRESSION OR APNEA (SUSPECTED NARCOTIC OD)**

- **Routine Medical Care**
- **SAFETY WARNING! Naloxone will cause acute withdrawal symptoms in patients who are habituated users of narcotics (whether prescribed or from abuse)**
- Use of diluted Naloxone IV and titration with small increments may help decrease adverse effects of naloxone
- **Naloxone treatment should only be given to patients with respiratory depression (rate less than 12)**
- Patients who are maintaining adequate respirations with decreased level of consciousness do not generally require Naloxone for management
- Naloxone can cause cardiovascular side effects (chest pain, pulmonary edema) or seizures in a small number of patients (1-2%)
- Be prepared for patient agitation or combativeness after naloxone reversal of narcotic overdose

Maintain airway and adequate respirations.  
**O<sub>2</sub> – titrate to 94-99% SpO<sub>2</sub>**  
 Consider IV TKO if indicated

**NALOXONE – 0.1 mg/kg Titrate dose up to 2mg IN/IM/IV**  
 (BLS may administer IN ROUTE ONLY)  
 May repeat titrated to maintain adequate ventilations and  
 airway control.

If no response consider AEIOU TIPS

Consider for patients with chronic narcotic use for terminal  
 disease or chronic pain:

Dilute **NALOXONE** 1:10 with normal saline and administer  
 in 0.1 mg (1 ml) increments - titrate

Reassess as  
 needed

Consider Advanced Airway when  
 indicated - **only if naloxone ineffective**  
**and BVM ventilation not adequate**

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## ALS RESPONDER

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1. **ALS PERSONNEL** - In Alameda County, an "ALS responder" is defined as: An individual who is licensed as a paramedic in the state of California and accredited to practice in Alameda County.
2. **MEDICAL MANAGEMENT**
  - 2.1 An ALS responder is responsible for the care of the patient after accepting responsibility from the first responder personnel until the care of the patient is turned over to the staff at the receiving hospital (if transported), or until the patient leaves the scene
  - 2.2 Consider a second **accredited** paramedic to accompany the transporting paramedic for critical patients (e.g. - arrest, complicated airway, ROSC, severe trauma, STEMI, etc.)
  - 2.3 Initiate "START" triage if appropriate. (See **page 159** "Multi-Casualty Incident - EMS Response (MCI)")
  - 2.4 If it is determined that helicopter transport of the patient might be necessary, activate the air ambulance and secure an appropriate landing zone. (see **page 93** "EMS Aircraft")
  - 2.5 A verbal **and** written Patient Care Report (PCR) must be completed for **every** patient, describing the care rendered and given to the staff at the receiving hospital.
    - 2.5.1 **First Responder and transport personnel providing patient care are responsible for accurately documenting all available and relevant patient information on the electronic health record**
    - 2.5.2 Exception:
      - Multi-Casualty Incident – EMS Response (MCI) **page 159**
      - Refusal of Service **page 120**
  - 2.6 The PCR should include a chief complaint, a general assessment, a physical assessment and emergency care rendered by the ALS responder.
3. **PATIENT CARE**
  - 3.1 The following should be performed for each patient during an emergency response:
    - 3.1.1 A physical assessment and initiation of emergency first aid, basic life support, and/or advanced life support, as necessary
    - 3.1.2 A PCR must be completed for **every** patient (exception: Multi-Casualty Incident and Refusal of Service)
  - 3.2 ALS responders are held to the following standards during patient care:
    - 3.2.1 American Heart Association, or an approved equivalent, for:
      - ▶ CPR
      - ▶ Basic Life Support (healthcare provider)
      - ▶ Advanced Cardiac Life Support
      - ▶ Emergency Cardiac Care
    - 3.2.2 PEPP (Pediatric Education for Prehospital Personnel), **or** Pediatric Advanced Life Support (PALS), **or** Emergency Pediatric Care (EPC), **or** an approved equivalent
    - 3.2.3 "S.T.A.R.T. Triage"
    - 3.2.4 OSHA and CAL-OSHA for infection control
    - 3.2.5 International Trauma Life Support (ITLS), PreHospital Trauma Life Support (PHTLS), Assessment and Treatment of Trauma (ATT) **or** an approved equivalent
    - 3.2.6 Approved training program curriculum for emergency first aid and patient assessment
    - 3.2.7 Alameda County EMS policies for patient care not covered by, or in addition to the above



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**DEATH IN THE FIELD**

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→ **Exception:** Patients with **suspected hypothermia** will be resuscitated and transported to the closest most appropriate emergency department

**2.3 Actions**

- 2.3.1 Immediately notify the coroner and appropriate public safety agency (if not already done) and remain on the scene until they arrive
- 2.3.2 Complete a Patient Care Report form documenting the above and leave the PCR with the patient at the scene in a safe place. If unable to do so, complete the PCR and fax to Coroner's office (510) 268-7333 as soon as possible, but not later than the end of your shift
- 2.3.3 Search for a donor card (see **page 91**)
- 2.3.4 Rhythm documentation: EKG rhythm strips attached to the PCR, if available

**3. DO NOT RESUSCITATE (DNR)**

3.1 **Authority:** *Health and Safety Code, Division 2.5, Section 1798. Information contained in this policy is based on "Guidelines for EMS Personnel regarding Do Not Resuscitate Directives", Published by Emergency Medical Services Authority*

3.2 **Purpose:** To establish criteria for field personnel to determine the appropriateness of withholding or discontinuing resuscitative measures based on the wishes of the patient

3.3 **Philosophy:** Despite pre-planning, 9-1-1 is frequently activated when death is imminent. It is the intent of this policy to honor the wishes of the patient not to perform an unwanted resuscitation by establishing procedures whereby legitimate DNR directives are honored

3.4 **Definition:** Do Not Resuscitate (DNR) means **no**:

- ▶ assisted ventilation
- ▶ chest compressions
- ▶ defibrillation
- ▶ endotracheal intubation
- ▶ cardiotoxic drugs

3.5 **Approved Prehospital DNR Directives:** - The Prehospital DNR form **may be an original or a copy**. All forms require the patient's signature (or signature of appropriate surrogate) and the signature of the patient's physician to be valid. Field personnel may withhold or discontinue resuscitative measures, if presented with **any one** of the following:

- ▶ A Physician Orders for Life-Sustaining Treatment (POLST) Program form.
- ▶ An approved medallion (e.g. "Medic-Alert") inscribed with the words: "Do Not Resuscitate-EMS". Call the 800 number on the medallion for access to advance healthcare directives, including living wills, durable power of health care attorney documents, and organ, tissue, and anatomical gift donation information
- ▶ The patient's physician is present on scene and issues a DNR order, or issues a DNR order verbally over the phone to field personnel
- ▶ A DNR order signed by a physician in the patient's chart at a licensed health facility.
- ▶ An EMSA/CMA "Prehospital Do Not Resuscitate" form

3.6 **Medical Treatment of the patient with a DNR or End of Life Act directive:** If the patient requests treatment, including resuscitation, the request should be honored. The patient should receive treatment for pain, dyspnea, major hemorrhage, relief of choking or other medical conditions.

- ▶ However, **if the patient is in cardiac arrest, the DNR directive should be honored**
- ▶ Resuscitation should be withheld if there are DNR orders or evidence (e.g. - Final Attestation Form) that the patient is exercising their rights under the End of Life Act.

**EQUIPMENT AND SUPPLY SPECIFICATIONS - ALS/BLS**

MINIMUM SUPPLY SPECIFICATIONS	BLS	ALS	
		Non-Transport	Transport
● Adult (cuffed with adaptor)			
» Size 6.0 .....		1	2
» Size 6.5 .....		1	2
» Size 7.0 .....		2	2
» Size 7.5 .....		2	2
» Size 8.0 .....		1	2
● Stylet			
» Adult .....		1	1
» Pediatric .....		1	1
● King LTD			
» Size 3 .....	1 (optional)	1	1
» Size 4 .....	1 (optional)	1	1
» Size 5 .....	1 (optional)	1	1
● End-Tidal CO <sub>2</sub> Detectors			
» Adult - colorimetric .....	1 (optional)	1	1
» Pediatric – colorimetric .....	1 (optional)	1	1
● Digital Capnograph .....	2 (optional)	2	5
● ET Tube Holder			
» Adult .....		2	3
» Pediatric .....		1	2
● Meconium Aspirator .....		1	1
● Tracheal tube introducer (bougie) .....		1	2
<b>▼ Nebulizer</b>			
● Patient Activated .....		1	2
● Hand-held for Inhalation .....		1	2
● In-Line nebulizer equipment with 22 & 24 mm "T-piece" .....		1	2
<b>▼ Oxygen equipment and supplies:</b>			
● O <sub>2</sub> Tank (portable) .....	1	1	1
● Non-rebreather masks (transparent)			
» Adult .....	2	2	3
» Pediatric/Infant .....	1	2	2
» Nasal cannula for O <sub>2</sub> administration .....	2	4	4
» Portable Pulse-Oximetry .....	1*	1	1
» Adult end-tidal CO <sub>2</sub> sampling nasal cannula.....		1	1
» Pediatric end-tidal CO <sub>2</sub> sampling nasal cannula.....		1	1
<b>► Pleural Decompression kit to include:</b>			
● 3/4 " 14 gauge decompression needle		2	2
● One-way vent or drain valve			

\*Required for BLS 911 Transport. Optional (with EMS Medical Director approval) for BLS IFT.

**EQUIPMENT AND SUPPLY SPECIFICATIONS - ALS/BLS**

<b>MINIMUM SUPPLY SPECIFICATIONS</b>	<b>BLS</b>	<b>ALS Non-Transport</b>	<b>ALS Transport</b>
<b>EQUIPMENT AND SUPPLIES</b>			
<b>▼ Automated External Defibrillator (AED) equipment</b>			
● Automated External Defibrillator - pediatric ready .....	1		
● "Hands- off" defib pads			
» Adult .....	1-2 sets		
» Pediatric .....	1-2 sets		
<b>▶ Blanket Disposable</b>	1	1	1
<b>▼ Blood pressure cuff (portable):</b>			
● Adult .....	1	1	1
● Obese .....		1	1
● Pediatric .....	1	1	1
● Infant .....		1	1
<b>▶ Bulb Syringe</b> (optional if supplied in Delivery Kit)	1	1	1
<b>▶ Burn Sheets (sterile)</b>	1	2	2
may be disposable, or linen (sterilization date indicated)			
<b>▶ CO Monitor</b>		1 (Optional)	1 (Optional)
<b>▼ Delivery Kit</b>			
<b>Sterile, prepackaged to include:</b>			
● a minimum of two (2) umbilical cord clamps			
● scissors (may be packaged separately)			
● aspirating bulb syringe	1	1	1
● gloves			
● drapes			
● antiseptic solution			
<b>▶ EMS Field Manual</b>	1	1	1
<b>▶ Gloves, disposable</b>	1 box	1 box	2 boxes
<b>▶ Glucometer</b>	1*	1	1
<b>▼ Irrigation Equipment:</b>			
» Saline (sterile) for irrigation (500 mL) .....	2	2	2
» Tubing for irrigation .....		1	1
<b>▶ EMS Approved Length Based Resuscitation Tape - (LBRT)</b>		1	1
<b>▶ Lubricant, water soluble</b>		2 packs	4 packs
<b>▶ County Approved Mechanical CPR Device</b>		1 (Optional)	1 (Optional)

\*Required for BLS 911 Transport. Optional (with EMS Medical Director approval) for BLS IFT.

**EQUIPMENT AND SUPPLY SPECIFICATIONS - ALS/BSL**

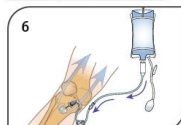
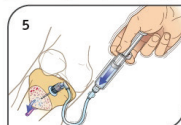
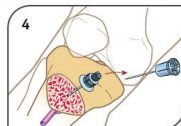
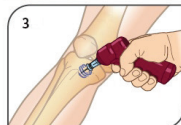
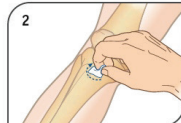
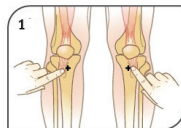
<b>MINIMUM SUPPLY SPECIFICATIONS</b>	<b>BLS</b>	<b>ALS Non-Transport</b>	<b>ALS Transport</b>
<b>MEDICATIONS AND SOLUTIONS - preloads preferred</b>			
▶ Adenosine 6 mg/ 2 mL NS		1	3
▶ Adenosine 12 mg / 4 mL NS		1	3
▶ Albuterol 2.5 mg in 3 mL NS		3	10
▶ Amiodarone 150 mg in 3 mL		2	3
▶ Aspirin 81 mg chewable tablet or 325 mg/5 gr. tablet	1 bottle*	1 bottle	1 bottle
▶ Atropine Sulfate 1 mg/5 mL		1	4
▶ Autoinjector antidote kit (optional) (atropine 2mg in 0.7mL's & pralidoxime chloride 600mg in 2 mL's)	3 per person	3 per person	3 per person
▶ Calcium Chloride 1 gm/10 mL		1	1
▶ Charcoal, 25 grams		1 bottle	2 bottles
▶ Dextrose 10% in 250mL bags		1	3
▶ Diphenhydramine 50 mg / 1 mL		2	2
▶ Epinephrine 1mg/mL 1 mg / 1 mL		2	2
▶ Epinephrine 0.1mg/mL 1 mg / 10 mL		3	10
▶ Epinephrine Auto Injectors Adult 0.3mg, Pediatric 0.15mg	1* Each		
▶ Fentanyl 100 mcg / 2 mL		2	3
▶ Glucagon 1 mg Kit		1	3
▶ Hydroxocobalamin 5g / 250ml		Optional	
▶ Oral Glucose - 31 gms	2	2	2
▶ Ipratropium (Atrovent) 500 mcg (2.5 mL)		2	2
▶ Lidocaine 2% 40 mg / 2 mL		1	1
▶ Midazolam 5 mg / 1 mL		2	4
▶ Naloxone 2 mg / 2 mL	2*	2	3
▶ Nitroglycerine		1 bottle	1 bottle
▶ Ondansetron (Zofran) 4mg / 2 mL for IV/IM injection		2	4
▶ Ondansetron (Zofran) 4mg oral dissolving tablets		2	4
▶ Saline, sterile (for injection) 10 mL		2	2
▶ Sodium bicarbonate 50 mEq / 50 mL		1	2
▶ Sodium Thiosulfate 12.5 gms with 10 gtt/mL vented tubing		1 (Supervisor or Battalion Chief)	
▼ Bags for infusion			
• D <sub>5</sub> W 100mL		1	2
• Normal Saline (NS) 1,000mL		2	5
<b>FOR USE ONLY BY PARAMEDICS AS MEMBERS OF MEDICAL HAZMAT TEAMS</b>			
▶ Atropine Sulfate 2 mg (for nerve agent exposure)		60 doses	60 doses
▶ Pralidoxime chloride		20 doses	20 doses

NOTE: Dual-chamber autoinjectors (e.g. - DuoDote®) may be substituted for individual doses of atropine and pralidoxime

\*Required for BLS 911 Transport. Optional (with EMS Medical Director approval) for BLS IFT

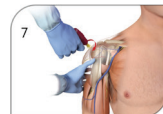
**INTRASOSEOUS INFUSION PROCEDURE – PROXIMAL TIBIA**

1. **PURPOSE:** To obtain rapid circulatory access to provide necessary intravenous fluids or medications
2. **INDICATIONS:**
  - ▶ Consider for use in any unconscious or seriously ill or injured patient in whom IV access cannot be established in a very timely fashion
  - ▶ Any medications or fluids that can be given in a peripheral vein can be given intrasosseous
3. **CONTRAINDICATIONS:**
  - ▶ Fracture in target bone
  - ▶ Previous, significant orthopedic procedure at the site, prosthetic limb or joint
  - ▶ IO catheter use in past 48 hours of the target bone
  - ▶ Infection at the area of insertion
  - ▶ Excessive tissue (severe obesity) and/or absence of adequate anatomical landmarks
4. **POSSIBLE COMPLICATIONS:**
  - ▶ Compartment syndrome
  - ▶ Growth plate injury
  - ▶ Skin infection
  - ▶ Failed infusion
  - ▶ Bone infection
  - ▶ Bony fracture
5. **PREPARATION:**
  - ▶ Place the patient in the supine position
  - ▶ Put a small towel roll under the knee
6. **PROCEDURE:**
  - 6.1 Locate the anatomical site - approximately 2cm medial to the tibial tuberosity, or approximately 3cm (two finger widths) below the patella and approximately 2cm medial, along the flat aspect of the tibia – **STEP 1**
  - 6.2 Prepare the skin with chlorhexidine – **STEP 2**
  - 6.3 Load the appropriate needle onto the driver
    - ▶ 15 mm Needle Set (pink hub, 3kg-39kg)
    - ▶ 25 mm Needle Set (blue hub, >3kg)
    - ▶ 45 mm Needle Set (yellow hub, >40kg with excessive tissue)
  - 6.4 Firmly stabilize the leg near (not under) the insertion site
  - 6.5 Firmly press the needle against the site at a 90° angle and push the needle set tip through the skin until the tip rests against the bone – **STEP 3**
  - 6.6 As the needle reaches the bone, stop and be sure that the 5mm marking on the needle is visible; if it is, continue to operate the driver
  - 6.7 When a sudden decrease in resistance is felt and the flange of the needle rests against the skin, remove the driver and the stylet from the catheter – **STEP 4**
  - 6.8 Aspirate for blood/bone marrow (2nd confirmation of placement)
  - 6.9 If the patient is responsive to pain, consider Pain Management Adult [page 43](#), Pediatric [page 68](#). Also, consider use of 2% Lidocaine for anesthetic effect. Prime EZ-Connect extension set with lidocaine *Note that the priming volume of the EZ-Connect is approximately 1.0mL.*
    - ▶ ADULT - 40mg (2 mL) 2% Lidocaine *slowly over 120 seconds.* Let Lidocaine dwell for 60 seconds. Flush with 5 to 10ml NS. Slowly administer an additional 20mg of lidocaine IO over 60 seconds. Repeat PRN
    - ▶ PEDIATRIC - 0.5mg/kg (not to exceed 40mg) 2% Lidocaine *slowly over 120 seconds.* Let Lidocaine dwell for 60 seconds. Flush with 2 to 5ml NS. Slowly administer subsequent lidocaine (half the initial dose) IO over 60 seconds. Repeat PRN
  - 6.10 If no infiltration is seen, attach the IV line and infuse fluids and/or medications as normal – **STEP 5**
  - 6.11 IV bag will need to be under pressure – **STEP 6**
  - 6.12 Secure the needle



**INTRASOSEOUS INFUSION PROCEDURE – PROXIMAL HUMERUS**

1. **PURPOSE:** To obtain rapid circulatory access to provide necessary intravenous fluids or medications
2. **INDICATIONS:**
  - ▶ Consider for use in any unconscious or seriously ill or injured patient in whom IV access cannot be established in a very timely fashion
  - ▶ Any medications or fluids that can be given in a peripheral vein can be given intraosseous
3. **CONTRAINDICATIONS:**
  - ▶ Fracture in target bone
  - ▶ Previous, significant orthopedic procedure at the site, prosthetic limb or joint
  - ▶ IO catheter use in past 48 hours of the target bone
  - ▶ Infection at the area of insertion
  - ▶ Excessive tissue (severe obesity) and/or absence of adequate anatomical landmarks
4. **POSSIBLE COMPLICATIONS:**
  - ▶ Compartment syndrome
  - ▶ Growth plate injury
  - ▶ Skin infection
  - ▶ Failed infusion
  - ▶ Bone infection
  - ▶ Bony fracture
5. **PREPARATION:**
  - ▶ Place the patient in the supine position
6. **PROCEDURE:**
  - 6.1 Locate the anatomical site
    - ▶ Place the patient's hand over the abdomen (elbow adducted and humerus internally rotated) – **STEP 1** ;or with the elbow against the body, rotate the hand medially until the palm faces outward, thumb pointing down – **STEP 1a\***
    - ▶ Place your palm on the patient's shoulder anteriorly; the "ball" under your palm is the general target area. You should be able to feel this ball, even on obese patients, by pushing deeply – **STEP 2**
    - ▶ Place the ulnar aspect of your hand vertically over the axilla and the ulnar aspect of your other hand along the midline of the upper arm laterally – **STEP 3**
    - ▶ Place your thumbs together over the arm; this identifies the vertical line of insertion on the proximal humerus – **STEP 4**
    - ▶ Palpate deeply up the humerus to the surgical neck. This may feel like a golf ball on a tee – the spot where the "ball" meets the "tee" is the surgical neck – **STEP 5**
    - ▶ The insertion site is 1 to 2 cm above the surgical neck, on the most prominent aspect of the greater tubercle – **STEP 6**
  - 6.2 Prepare the skin with chlorhexidine
  - 6.3 Load the appropriate needle onto the driver
    - ▶ 15 mm Needle Set (pink hub, 3kg-39kg)
    - ▶ 25 mm Needle Set (blue hub, >3kg)
    - ▶ 45 mm Needle Set (yellow hub, >40kg with excessive tissue)
  - 6.4 Firmly press the needle set at a 45-degree angle to the anterior plane and posteromedial – **STEP 7**
  - 6.5 As the needle reaches the bone, stop and be sure that the 5mm marking on the needle is visible; if it is, continue to operate the driver
  - 6.6 When a sudden decrease in resistance is felt and the flange of the needle rests against the skin, remove the driver and the stylet from the catheter – **STEP 8**
  - 6.7 Aspirate for blood/bone marrow (2nd confirmation of placement)
  - 6.8 If the patient is responsive to pain, Go to page 133, 6.9
  - 6.9 If no infiltration is seen, attach the IV line and infuse fluids and/or medications as normal
  - 6.10 IV bag will need to be under pressure
  - 6.11 Secure the needle



**CYANIDE POISONING**

- This policy is to be used in conjunction with Smoke Inhalation **page 21** and HazMat **page 157**
- Medications are only given if the patient is showing signs and symptoms of cyanide poisoning. **THEY ARE NOT TO BE GIVEN PROPHYLACTICALLY**

**Symptoms:**

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>▶ Exposure to a vapor or liquid that may smell like "bitter almonds"</li> <li>▶ Upper airway and/or eye irritation</li> <li>▶ Flushing</li> <li>▶ Headache</li> </ul> | <ul style="list-style-type: none"> <li>▶ Anxiety</li> <li>▶ Agitation</li> <li>▶ Vertigo</li> <li>▶ Weakness</li> <li>▶ Nausea</li> <li>▶ Muscular trembling</li> </ul> |
|--|---|

**Signs:**

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>▶ Transient hyperpnea, followed by seizures, apnea and cardiac collapse</li> <li>▶ Tremor</li> </ul> | <ul style="list-style-type: none"> <li>▶ Normal pupils</li> <li>▶ Diaphoresis</li> <li>▶ Cyanosis</li> </ul> |
|---|--|

