

## Vascular Access (S02)

### General

- Over-the-needle catheters may be inserted into peripheral veins of the limbs and the external jugular vein.
- External jugular veins should be used only after peripheral attempts or confirmation of no obvious peripheral vascular access is present.
- IVs may be established for fluid therapy, or when IV medications may be required.
- When large volumes of fluid may be required, large bore catheters (18-14 G) should be used, and placed in proximal veins when available (AC, EJ). This includes, but is not limited to, patients requiring **Adenosine**, STEMI and Stroke Alert candidates, and those in cardiac arrest.
- Establish two (2) IVs in patients who have, or are at risk for decompensation. For example, shock.
- Avoid more than three (3) attempts at vascular access *per patient* unless necessary for emergent treatment.
- Saline locks are optional and may be used when fluid boluses or numerous medication administrations are not expected to be necessary.
- A “fluid bolus” or “fluid challenge” in the adult patient consists of 250 milliliters of crystalloid solution delivered as rapidly as possible, with reassessment of hemodynamic parameters, respiratory status and lungs sounds before and after treatment.
- “TKO” or “to keep open” indicates a rate of 25-30 cc per hour (25-30 micro drops per minute, or 5 macro drops per minute). TKO shall be the default rate unless otherwise specified in a treatment guideline.
- “Wide open” indicates that the drip regulator is left in the open position. Use with extreme caution in the elderly, children or patients with pre-existing cardiovascular disease. Reassess lung sounds frequently in these patients.
- Document gauge, site, number of attempts, success or non-success, fluid, rate of infusion, paramedic performing procedure, and total amount infused in the pre-hospital setting upon transfer of care or arrival at facility.
- Paramedics may initiate only 0.9% **Sodium Chloride** solution (Normal Saline), but may monitor any crystalloid solution per Title 22 Paramedic Basic Scope of Practice.

### INTRAOSSSEUS`

- Any ALS patient for whom immediate fluid or medication treatment is indicated. In addition, patients must have at least one of the following:
  - An altered mental status
  - Respiratory compromise
  - Hemodynamic instability
- ✓ **IO lines are never indicated for prophylactic vascular access, or for the mildly distressed patient who can safely wait until arrival at the hospital for vascular access.**
- ✓ For children eight (8) years old and younger, an INTRAOSSSEUS line may be established in the tibia. ( See M08)
- ✓ For any ALS patient aged nine (9) years or older an INTRAOSSSEUS line may be established using the same tibial insertion site:
- ✓ For patients who are between ages nine to 18, special care should be taken to avoid the growth plate areas. The growth plates exist in children and adolescents on the long bones. Each long bone has at least two growth plates: one at each end.
- ✓ The limb with an IO line established should be immobilized as if fractured.

- ✓ In the child or infant, a “fluid bolus” or “fluid challenge” consists of 20 ml/kg body weight of crystalloid solution.
- ✓ In the newborn, less than 28 days old, a “fluid bolus” or “fluid challenge” consists of 10 ml/kg body weight of crystalloid solution.

## Medication Administration (S03)

### General

- Unless otherwise specified, pharmacological intervention indicates a need for transport to a hospital and further evaluation by a physician.
- Prior to administering any medication, ensure the right drug, right dose, right patient, and right route.
- Assess medication for expiration date, clarity, color, and intact seal PRIOR to administering the drug.
- Multi-dose vials of injectable medications are intended for multiple use on a single patient, not for use on multiple patients. They are multi-DOSE, not multi-PATIENT vials.
- Documentation shall include, at a minimum, medication name, dose, route, time of administration, and patient response (including vital signs).

### Special Considerations

#### CONTROLLED SUBSTANCES

- Monitor for respiratory depression when administering opiates (**Morphine**) or benzodiazepines (**Midazolam**).
- Always have **Naloxone** readily available when administering opiates.
- Refer to Pain Management protocols A17 and P07 as appropriate.

#### ADENOSINE

- **Adenosine** is administered very rapidly followed by an immediate 20 ml **Normal Saline bolus** through a proximal IV site (i.e. antecubital fossa).
- **Adenosine** has a rapid onset. If no effect is seen within one minute, escalate to the next intervention.

#### CARDIAC ARREST

- Bolus intravenous medications are administered rapid IV push, followed by a 10-20 ml **Normal Saline bolus** to facilitate circulation of the drug to the heart.
- Allow 60 seconds of circulation of drug between alternating interventions. For example, between “drug-shock-drug-shock”.

#### DEXTROSE

- Administer **D<sub>50</sub>** and **D<sub>25</sub>** with care. Extravasation may result in tissue necrosis. Test patency of IV by holding bag lower than cannulation site and confirming blood return into the IV or by aspiration of the IV. Stop administration if cannulation site swells, becomes reddened or resistance to flow increases.

#### CALCIUM CHLORIDE (CaCl<sub>2</sub>) & SODIUM BICARBONATE (Na HCO<sub>3</sub>)

- Flush the IV tubing well between injections when administering **CaCl<sub>2</sub>** and **NaHCO<sub>3</sub>** in sequence. When these drugs are mixed, a milky precipitate (calcium carbonate) may result.

#### ENDOTRACHEAL MEDICATION ADMINISTRATION:

- If the medication is not pre-diluted or not administered via an atomization device, dilute the medication with 5-10 mls of normal saline.

**Routine Medical Care – Adult (S04)****General**

- *Baseline vital signs*: pulse rate, blood pressure, respiratory rate, pulse oximetry
- *SAMPLE History*: Signs & symptoms, Allergies, Medications, Pertinent past history, Last oral intake, Events leading to the injury/illness

**BLS Treatment**

- **Scene Size-Up**
  - Use appropriate Personal Protective Equipment (PPE)
  - Scene safety
  - Determine mechanism of injury/nature of illness
  - Determine number of patients
  - Request additional assistance
  - Consider spinal immobilization
- **Initial Assessment**
  - Form general impression of the patient
  - Assess mental status
  - Assess the airway
  - Assess breathing
  - Assess circulation
  - Baseline vital signs
  - Identify priority patients
- **Treatment**
  - Airway (see Advanced Airway Management M01)
    - Open airway – Head tilt/Chin lift or modified jaw-thrust
    - Oropharyngeal/Nasopharyngeal airway as needed
    - Suction as needed
  - Breathing
    - Administer oxygen appropriate to patient condition
    - If the patient presents with signs and symptoms of pulmonary edema or severe respiratory distress, oxygen should be initiated at 15 Lpm by non-rebreather mask
    - Assist ventilations as necessary
  - Circulation
    - Initiate CPR as needed
  - Control external hemorrhage
  - Dress wounds
  - Splint orthopedic injuries whenever possible, but do not delay transport for a Major Trauma Victim
  - Provide psychosocial support

**Routine Medical Care – Adult (S04)**

- **Patient Position**
  - *Conscious, no trauma, good gag reflex:* Position of comfort
  - *Depressed level of consciousness, no trauma, decreased gag reflex:* Left lateral position
  - *Trauma:* Spinal immobilization as needed. Ensure that the patient can be rolled to the side in the event of vomiting
  - *Pregnancy:* Do not lay the patient flat if more than 20 weeks pregnant. Transport either in semi-fowlers or left-lateral decubitus position. If the patient requires spinal immobilization, secure the backboard first, and then tilt the board 20-30 degrees to the left.
  - *Respiratory Distress:* Fowler’s position or position of comfort
- **Patient Medications**
  - Field personnel should make a list of the patient’s medication(s), including the drug name, dose, and frequency, and/or bring the medication bottle(s) with the patient to the hospital.
  - BLS personnel may allow the patient to take his/her own medication; *however*, the patient must be alert enough to self-administer the medication. In most cases, these medications should only include: **Nitroglycerin** (if SBP >= 90 mmHg), anaphylaxis kit drugs, and metered dose inhalers.
- **Ongoing Assessment**
  - Reassess vital signs
  - Repeat focused assessment
  - Check interventions

**ALS Treatment**

- **Trauma Patients – Focused History and Physical Exam**

<b>Significant Mechanism of Injury</b>	<b>No Significant Mechanism of Injury</b>
<ul style="list-style-type: none"> <li>● Rapid trauma assessment</li> <li>● Baseline vital signs</li> <li>● SAMPLE history</li> <li>● Transport</li> <li>● Detailed physical exam</li> </ul>	<ul style="list-style-type: none"> <li>● Focused assessment based on chief complaint</li> <li>● Baseline vital signs</li> <li>● SAMPLE history</li> <li>● Transport</li> <li>● Detailed physical exam</li> </ul>
- **Medical Patients – Focused History and Physical Exam**

<b>Responsive</b>	<b>Unresponsive</b>
<ul style="list-style-type: none"> <li>● History of illness</li> <li>● SAMPLE history</li> <li>● Focused physical exam based on chief complaint</li> <li>● Baseline vital signs, temperature optional</li> <li>● Re-evaluate transport decision</li> <li>● Detailed physical exam</li> </ul>	<ul style="list-style-type: none"> <li>● Rapid medical assessment</li> <li>● Baseline vital signs</li> <li>● SAMPLE history</li> <li>● Re-evaluate transport decision</li> <li>● Detailed physical exam</li> </ul>
- **Treatment**
  - *If BLS measures are working and patient does not need further interventions, do not institute ALS measures*
  - Airway (see [Advanced Airway Management M01](#))
    - Open airway – Head tilt/Chin lift
    - Oropharyngeal/Nasopharyngeal airway as needed
    - Suction as needed

**Routine Medical Care – Adult (S04)**

- Breathing
  - Administer oxygen appropriate to patient condition (see Pulse Oximetry M04)
  - Oxygen administration is not to be excluded based on a saturation value obtained by pulse oximetry. Patients with conditions including, but not limited to, ischemic chest pain, trauma, respiratory conditions, congestive heart failure, carbon monoxide poisoning, and complications of third trimester pregnancies, etc. should receive appropriate concentrations of oxygen regardless of saturations. Like other physiologic parameters, pulse oximetry is used only as a guide in providing overall care to the patient.
  - If there is a history of COPD, observe for respiratory depression and support respirations as needed. **DO NOT** withhold oxygen from a patient in distress solely because of a history of COPD.
  - If the patient presents with signs and symptoms of pulmonary edema or severe respiratory distress, oxygen should be initiated at 15 Lpm by non-rebreather mask
  - Assist ventilations as necessary
  - Endotracheal intubation, ETDLA, or cricothyrotomy as necessary
- Circulation
  - Initiate CPR as needed
- Cardiac monitoring and 12-lead ECG when medic suspects patient may have cardiac ischemia or any dysrhythmias
- Any patient being treated per A08 shall have a 12-Lead EKG performed and the EKG shall be delivered to the receiving facility.
- Fluid Administration
  - Start an intravenous line as needed
  - Optionally, insert a saline lock if appropriate


**Routine Medical Care – Pediatric (S05)**

**General**

- The defined age of a pediatric patient is **under 15 years old**, and unless specified otherwise, pediatric protocols should be used to treat these patients. If at any time during the primary survey further intervention is required, refer to the appropriate treatment policies.
  - A neonate is considered as 0-4 weeks of age
  - An infant is considered to be 1 month to 1 year old
  - A child is considered to be >= 1 year old
- A pediatric length-based resuscitation tape should be used to determine drug doses, fluid volumes, defibrillation settings, and equipment sizes. The tape is designed to estimate a child’s weight based on length (head to heel). The tape may also include information about abnormal vital signs.

PRIMARY SURVEY	SPECIAL CONSIDERATIONS
Establish level of consciousness	<ul style="list-style-type: none"> <li>• AVPU – <u>A</u>lert, <u>V</u>erbal, <u>P</u>ainful, <u>U</u>nresponsive</li> <li>• Glasgow Coma Scale</li> </ul>
Evaluate airway and protective airway reflexes	<ul style="list-style-type: none"> <li>• Identify signs of airway obstruction and respiratory distress, including:                             <ul style="list-style-type: none"> <li style="width: 50%;">•Cyanosis</li> <li style="width: 50%;">•Intercostal retractions</li> <li style="width: 50%;">•Stridor</li> <li style="width: 50%;">•Absent breath sounds</li> <li style="width: 50%;">•Drooling</li> <li style="width: 50%;">•Apnea or bradypnea</li> <li style="width: 50%;">•Nasal flaring</li> <li style="width: 50%;">•Tachypnea</li> <li style="width: 50%;">•Choking</li> <li style="width: 50%;">•Grunting</li> </ul> </li> </ul>
Secure airway. <i>Intubation contraindicated if BLS airway is sufficient.</i> (see <u>Advanced Airway Management M01</u> ) Consider spinal immobilization.	<ul style="list-style-type: none"> <li>• Open airway using jaw-thrust and chin-lift (and/or head tilt if no suspected spinal trauma).</li> <li>• Suction as needed</li> <li>• Consider placement of an OPA or ETT if the patient is unconscious</li> </ul>
Assess need for ventilatory assistance	<ul style="list-style-type: none"> <li>• Use chest rise as an indicator of ventilation</li> <li>• Use pulse oximetry and capnography</li> </ul>
Evaluate and support circulation. Stop hemorrhage.	<ul style="list-style-type: none"> <li>• Assess perfusion using the following indicators:                             <ul style="list-style-type: none"> <li style="width: 50%;">• Heart rate</li> <li style="width: 50%;">• Mental status</li> <li style="width: 50%;">• Skin signs</li> <li style="width: 50%;">• Quality of pulse</li> <li style="width: 50%;">• Capillary refill</li> <li style="width: 50%;">• Blood pressure</li> </ul> </li> <li>• Cardiac monitor &amp; IV access as necessary</li> </ul>
Continue with secondary survey	<ul style="list-style-type: none"> <li>• Perform head-to-toe assessment, temperature optional</li> <li>• Obtain patient history</li> <li>• Do an environmental assessment, including consideration of intentional injury</li> </ul>

**Routine Medical Care – Pediatric (S05)**

<p>Determine appropriate treatment protocols</p>	<ul style="list-style-type: none"> <li>• Provide family psychosocial support</li> <li>• <b>Use a length-based resuscitation tape (LBRT) to determine weight, drug doses, fluid volumes, defibrillation settings, and equipment sizes</b></li> </ul>
	<div style="display: flex; align-items: center;">  <p>Do not use the drug doses listed on the section of the LBRT that refers to drugs used for intubation.</p> </div>
	<ul style="list-style-type: none"> <li>○ For drugs not listed on the tape, or for patients exceeding the tape length, determine appropriate dose by using the dosages listed in the treatment protocols.</li> <li>• Pediatric patients are subject to rapid changes in body temperature. Steps should be taken to prevent loss of or increase in body temperature.</li> <li>• Compared to the adult patient, a small amount of fluid lost from, or administered to, a pediatric patient can result in shock or pulmonary edema.</li> <li>• Scene time for treatment of pediatric patients should be kept at a minimum. Most treatment should be done en route.</li> </ul>

# Adult Protocols

## Authorized Medications – Adult

MEDICATIONS	STANDARD DOSE
Activated charcoal	1 gm/kg (max 50 gm) with or without Sorbitol
Adenosine	6 mg 1 <sup>st</sup> dose; 12 mg 2 <sup>nd</sup> and 3 <sup>rd</sup> doses (rapid IV push)
Albuterol	2.5 – 5 mg
Aspirin	324 mg PO (chewable – not enteric coated)
Atropine sulfate	<b>Cardiac arrest:</b> 1 mg IVP or IO repeat q 5 min.– (max dose 3 mg IVP or IO) or 2 mg ET (max dose 6 mg)if IV or IO unable. <b>Bradycardia:</b> 0.5 mg IVP, IO repeat in 5 min (max. dose 1 mg.) or 1 mg ET Repeat 1 time in 5 min (max dose 2 mg) if IV or IO unable
Calcium Chloride 10%	20-30 mg/kg IVP given over several minutes
Dextrose 50%	25 gm IVP
Diphenhydramine (Benadryl)	50 mg IVP/IM
Dopamine	5-20 mcg/kg/min titrated by 5 mcg/kg/min increments to effect
Epinephrine Auto-injector 0.3 mg	<b>Allergic reaction/Anaphylaxis:</b> use injector <b>Severe Bronchospasm:</b> use injector Use anterior lateral thigh injection site. Avoid deltoid or buttocks.
Epinephrine 1:10,000	<b>Anaphylaxis:</b> 0.1 mg very slow IVP or IO per base hospital physician order only. <b>Cardiac arrest:</b> 1 mg IVP/IO
Furosemide	<b>Suspected Acute Pulmonary Edema:</b> 40 mg SIVP only if patient is currently taking Furosemide or Bumex
Glucagon	<b>Hypoglycemia:</b> 1 mg IM <b>Calcium channel blocker overdose:</b> 1 mg IM <b>Beta blocker overdose:</b> 1 mg IM
Glucose paste	1-tube (approx. 25 gm) PO, 2 tubes max
Lidocaine	<b>V-Fib or V-Tac:</b> 1-1.5 mg/kg IVP or IO, repeat at 0.5-0.75 mg/kg q 5-10 minutes to a max of 3 mg/kg (2-3 mg/kg ET to a max of 6mg/kg if IV or IO unavailable) <b>PVC's:</b> 1-1.5mg/kg Slow IVP or IO, max of 3 mg/kg (2-3 mg/kg ET can repeat at 1-1.5 mg/kg to a max total dose of 6 mg/kg if IV or IO unavailable)
Midazolam (Versed)	<b>Sedation for Cardioversion:</b> 1-2 mg slow IVP, titrate to effect (max dose 5 mgs) <b>Seizure:</b> 1-2 mg IVP/IN or 0.1 mg/kg IM (max dose 5 mg) <b>TCP:</b> 1-2 mg slow IVP in conjunction with Morphine
Morphine sulfate	2-5 mg IVP q 3-5 minutes, to 15 mg max. 5-10 mg IM q 20 minutes to 15 mg max.
Naloxone (Narcan)	1-4 mg IVP/IM/IN/IO
Nitroglycerin	0.4 mg metered spray or 0.4 mg. tab, SL
Normal Saline Bolus	250 ml IV
Sodium bicarbonate	1 mEq/kg IVP
Sodium Thiosulfate	25% solution, 12.5g/50mL IV over 10 minutes. Can be given in an infusion using the table in procedure M13

## Santa Clara County Adult Protocols

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**Abdominal Pain (A01)****BLS Treatment**

- Routine Medical Care – Adult (see S04)
- Place patient in recovery position
- Treat associated signs and symptoms as appropriate (see Shock A10)

**ALS Treatment**

- Routine Medical Care – Adult (see S04)
- Consider a bolus via IV flow rate at wide open if hypotensive
- Suspected Aneurysm
  - Establish a second IV TKO
  - For Suspected Kidney Stones, Bowel Obstruction, Food Poisoning, or Ectopic Pregnancy
  - **Normal Saline** 250 ml bolus
- Consider pain management (see Pain Management A17)

## Seizure (A02)

### BLS Treatment

- Routine Medical Care – Adult (see S04), suction as necessary
- Document history, medications, and any neurologic deficits
- Spinal immobilization as appropriate (see Spinal Immobilization M11)
- Consider and treat for possible causes: hypoglycemia, pregnancy induced hypertension, cardiac, stroke/TIA, etc.
- Suspected hypoglycemia (see Hypoglycemia A03)
- If suspected seizure:
  - Recovery position with head elevated, if no suspected spinal injury or mechanism
  - Consider cooling measures if febrile (loosen blankets and/or remove excessive clothing)
  - Protect patient during active seizure

### ALS Treatment

- Routine Medical Care – Adult (see S04)
- Check blood sugar level
  - If BSL < 80 mg/dl, treat for hypoglycemia (see Hypoglycemia A03)
- For Status Epilepticus

#### *ALS Treatment*

**Midazolam** 2 mg IVP q 2 min. to a max. dose of 5 mg.

OR

**Midazolam** 2.5 mg/ ½ ml per nostril, rapid IN push.) using MAD Atomizer (See Procedure M14 IN Administration)

OR

**Midazolam** 0.1 mg/kg IM to a max of 5 mg

### Special Considerations

- *Status epilepticus* is a true medical emergency defined as either continuous seizures lasting at least 5 min. or two or more distinct seizures between which there is incomplete recovery of consciousness.
- Transport indicated for one or more of the following:
  - New onset Seizure
  - Medication administered by EMS
  - No prior seizure history
  - GCS < 15
  - Suspected pregnancy induced hypertension

## Hypoglycemia (A03)

### BLS Treatment

- Routine Medical Care – Adult (see S04), suction as necessary
- Document history, medications, and any neurologic deficits
- If suspected hypoglycemia, provide 1 tube of **oral glucose paste** under the following circumstances:
  - Known diabetic
  - Intact Gag Reflex
  - Able to hold head upright
  - Can self-administer the paste
- If patient improves in 5-10 minutes with oral glucose, may repeat 1 tube of **oral glucose paste**
- Suspected seizure (see Seizure A02)

### ALS Treatment

- Routine Medical Care – Adult (see S04)
- Check blood sugar level
  - If IV access available, and BSL < 80 mg/dl, and no improvement with, or not a candidate for, oral glucose
    - **Dextrose 50% 25 gm IVP**
    - If no improvement with Dextrose,
      - Consider repeat **Dextrose** or
      - **Glucagon 1mg IM**
  - If no IV access available, and BSL < 80 mg/dl, and no improvement with, or not a candidate for, oral glucose
    - **Glucagon 1 mg IM**

**Altered Mental Status (A04)**

**BLS Treatment**

- Routine Medical Care – Adult (see S04) suction as necessary
- Document history, medications, and any neurologic deficits
- Spinal immobilization as appropriate (see Spinal Immobilization M11)
- Consider and treat for possible causes: hypo/hyperglycemia, seizure, cardiac, stroke/TIA, etc.
- Suspected Hypoglycemia (see Hypoglycemia A03)
- Suspected Seizure (see Seizure A02)
- Suspected Stroke (see Stroke A13)

**ALS Treatment**

- Routine Medical Care – Adult (see S04)
- Check blood sugar level

<i>BSL &lt; 80 mg/dl</i>	<i>BSL &gt; 80 mg/dl</i>	<i>BSL &gt;250</i>
See <u>Hypoglycemia A03</u>	See <u>Poisoning and Overdose A15, Narcotics/Opioids</u>	See Special Considerations below

**Special Considerations**

- Methadone overdose patients may require repeated re-administration of Naloxone due to its long half-life
- Hyperglycemic patients who present with stupor or unconsciousness shall be transported to the nearest facility.
- Glucometers are inaccurate when either hypoglycemia (<80) or hyperglycemia (>250) is present
- Capnography can assist with the recognition of DKA. In this setting, exhaled CO2 concentration may be elevated.

**Symptomatic Bradycardia (A05)**

**BLS Treatment**

- Routine Medical Care – Adult (see S04)
- Signs and symptoms of shock, place patient in Shock Position
- If pulseless, see Cardiac Arrest A07

**ALS Treatment**

- Symptomatic Bradycardia: HR < 60 bpm with serious signs or symptoms

<i>Serious signs or symptoms</i>		
Chest pain	Decreased LOC	Shock
SBP < 90 mmHg	Pulmonary congestion	SOB
Acute MI	CHF	

- Routine Medical Care – Adult (see S04)
  - If rhythm changes during treatment, see appropriate protocol.
  - Consider 250 ml NS bolus IV, if hypotensive
- 12-lead ECG.
- Suspected Cardiac Ischemia (see Cardiac Ischemia A08)
- Shock, treat per Shock Protocol (A10)



Do not delay Transcutaneous Pacing (TCP) for Atropine administration in patients presenting with:

- Cardiac transplant history
- Type II 2<sup>nd</sup> degree heart block
- 3<sup>rd</sup> degree heart block with widened QRS complex
- Patients in-extremis

- **Atropine Sulfate**
  - 0.5 mg IVP or IO. 1 mg ET if IV/IO unable. If no response, repeat x 1 q 5 min.
- Perform Transcutaneous Pacing (TCP) if no response to 2 doses of Atropine. Otherwise, consider NS bolus and Dopamine. (see below)



Avoid TCP for patients with severe hypothermia.  
(See Environmental Emergencies A09)

- Prior to TCP, consider sedation:
  - **Midazolam** 1-2 mg slow IVP one time **and**
  - **Morphine Sulfate** 2 mg slow IVP one time
- See Transcutaneous Pacing (M10) for TCP procedure
- If serious signs or symptoms don't resolve *with or without* TCP:
  - If lungs are clear, administer a 250 ml NS bolus. May repeat once to a maximum total of 500 ml.
  - If 2 doses of Atropine have already been given then:

**Dopamine** 5-20 mcg/kg/min IV Infusion. Titrate in 5 mcg/kg/min increments to a SBP between 90 and 100 mmHg, and a pulse of 80-100 bpm.

**Burns (A06)**  
**BLS Treatment**

- Routine Medical Care – Adult (see S04)
- Decontamination should be done by trained personnel. Apply Triage Tag with appropriate contamination status as required
- STOP the burning process.
- Treat for signs and symptoms of shock as necessary.
- Elevate involved extremity if possible.
- Transport decision: Transport to a Burn Center if,
  - Partial thickness burns to  $\geq 20\%$  total body surface area
  - Full thickness burns to  $\geq 5\%$  total body surface area
  - Burns to face, hands, feet, genitalia, perineum
  - Electrical burns, including lightning
  - Chemical burns
  - Inhalation injuries
  - Circumferential extremity and/or chest burns
  - Patients with pre-existing illnesses and/or concurrent trauma

<i><b>Chemical</b></i>	<i><b>Thermal</b></i>
<ul style="list-style-type: none"> <li>• Consult with on scene HazMat Specialists</li> <li>• Transport Material Safety Data Sheet, if available.</li> </ul> <p style="text-align: center;">DRY</p> <ul style="list-style-type: none"> <li>• Brush powder off skin then flush with copious amounts of water or saline.</li> </ul> <p style="text-align: center;">LIQUID</p> <ul style="list-style-type: none"> <li>• Flush immediately with copious amounts of water for 20 minutes.</li> </ul> <p style="text-align: center;">EYES</p> <ul style="list-style-type: none"> <li>• Flush with copious amounts of saline, or water if saline not available, for at least 20 minutes.</li> </ul> <p style="text-align: center;">HYDROFUORIC ACID/FLUORIDES</p> <ol style="list-style-type: none"> <li>1. Wash Skin with Soap and Water on Scene for no less than 10 minutes (do not delay transport if other symptoms exist).</li> <li>2. If a facility has started treatment with <b>Calcium Gluconate Gel</b>, continue to permit the patient to topically self-administer enroute to the hospital and bring extra gel, if possible.</li> </ol> <p style="text-align: center;">CAPSICUM/PEPPER SPRAY</p> <ul style="list-style-type: none"> <li>• Remove exposed clothing</li> <li>• Irrigate with copious amounts of water</li> </ul>	<ul style="list-style-type: none"> <li>• Remove burning agent unless adherent to skin.</li> <li>• Do not break blisters.</li> <li>• Gently remove jewelry and non-adherent clothing, if possible.</li> <li>• Apply cool soaks only long enough to stop the burning, then cover wound with burn sheet or sterile dressing.</li> </ul> <p style="text-align: center;">TAR</p> <ul style="list-style-type: none"> <li>• <u>DO NOT</u> remove tar.</li> <li>• Cool with water until burning stops</li> </ul>

**Burns (A06)**

<i>Electrical / Lightning</i>	<i>Radiological</i>
<ul style="list-style-type: none"> <li>• <u>Reverse triage</u>: Pulseless, apneic patients get <u>first</u> priority</li> <li>• Apply dry dressings to the entry and exit wounds</li> </ul>	<ul style="list-style-type: none"> <li>• Consult with on scene Hazardous Materials Specialists</li> </ul>

**ALS Treatment**

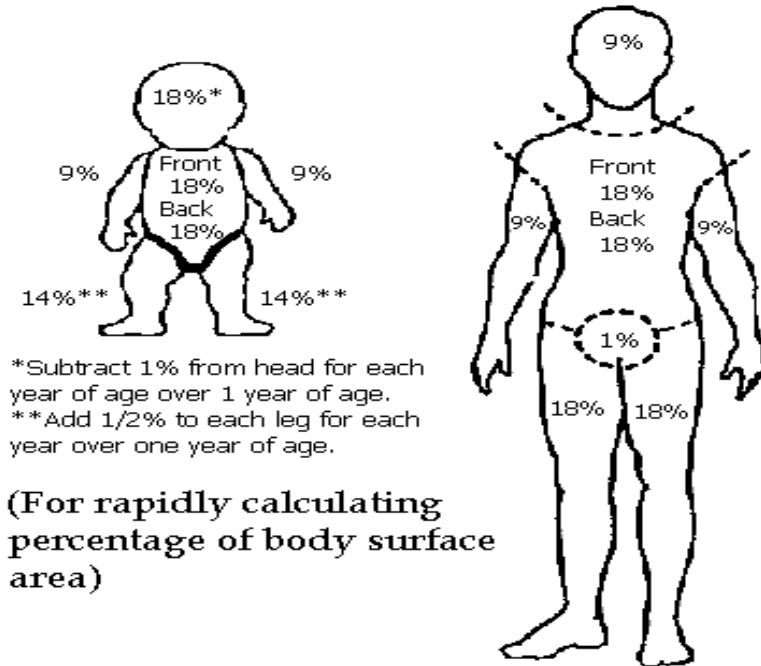
- Routine Medical Care – Adult (see S04).

<i>Thermal – Full or Partial Thickness</i>	<i>Electrical/Lightning</i>
<ul style="list-style-type: none"> <li>• Establish 2 large bore IVs of NS. Consider 1 Liter bolus for burns &gt; 20% TBSA</li> <li>• Pain Control.                             <ul style="list-style-type: none"> <li>◦ See <u>Pain Management A17</u></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Establish 2 large bore IVs of NS.</li> <li>• Pain Control.                             <ul style="list-style-type: none"> <li>◦ See <u>Pain Management A17</u></li> </ul> </li> </ul>

**Special Considerations**

- Consider hazardous fumes when patient enclosed in confined space or presenting with altered mental status.
- Assume multisystem trauma if patient exhibits hypotension.
- Do not apply ice directly to skin.

**Rule of Nines**



**Cardiac Arrest (A07)**

**BLS Treatment**

- Routine Medical Care – Adult (see S04)
- Confirm DNR status
- CPR per current AHA guidelines. (Minimize delays and interruptions of compressions during resuscitation. Push hard and fast but allow complete chest recoil. If BLS airway management (BVM/OPA) is working, establish IV/IO prior to inserting an advanced ALS airway. Avoid hyperventilation. Administer one breath every 5-6 seconds do not exceed 8-10 breaths per minute.
- Apply AED, if available and qualified. Follow AHA guidelines.
- Permit family/friends to witness resuscitation efforts if they request to do so. Provide explanations and support whenever possible throughout the duration of the efforts.
- Identify and treat for possible causes: Hypovolemia, Hypoxemia, Hydrogen Ion (Acidosis), Hyper/Hypokalemia, Hypothermia, Tablets (Drug OD), Tamponade (Cardiac), Tension Pneumothorax, Thrombosis (Coronary ACS thrombosis, pulmonary embolism)

**ALS Treatment**

<i>Asystole</i>	<i>Pulseless Electrical Activity (PEA)</i>	<i>Ventricular Fibrillation or Pulseless Ventricular Tachycardia</i>
<ul style="list-style-type: none"> <li>• <b>Epinephrine</b> <ul style="list-style-type: none"> <li>○ (1:10,000) 1 mg IVP <u>or</u> IO</li> <li>○ Repeat q 3-5 minutes for duration of arrest.</li> </ul> </li> <li>• <b>Atropine</b> <ul style="list-style-type: none"> <li>○ 1 mg IVP / IO q 3-5 minutes to max total dose of 3 mg</li> <li>○ or 2mg ET q 3-5 min. to max total dose of 6 mg</li> </ul> </li> <li>• Consider <b>Normal Saline</b> 250 ml fluid challenge. May repeat as indicated,</li> <li>• Consider termination of resuscitative efforts if Asystole fails to respond to two (2) rounds of medications after at least 10 minutes.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Epinephrine</b> <ul style="list-style-type: none"> <li>○ (1:10,000) 1 mg IVP or IO</li> <li>○ Repeat q 3-5 minutes for duration of arrest</li> </ul> </li> <li>• <b>Atropine</b> for electrical HR &lt; 60 bpm                             <ul style="list-style-type: none"> <li>○ 1 mg IVP /IO q 3-5 minutes to max total dose of 3 mg or 2mg ET q 3-5 min. to max total dose of 6 mg</li> </ul> </li> <li>• <b>Normal Saline</b> 250 ml fluid challenge. Repeat as indicated,</li> <li>• If electrical HR &lt; 40 bpm due to Blunt Trauma, consider determination of death</li> </ul>	<ul style="list-style-type: none"> <li>• Witnessed arrest: defibrillate immediately.</li> <li>• Unwitnessed arrest: CPR (bystander or EMS) for 5 cycles (2 min) prior to defibrillation.</li> <li>• Defibrillate once: using max. joules                             <ul style="list-style-type: none"> <li>○ Manual biphasic equivalent 120J-200J (follow manufacturer's specs.) If unknown use 200J</li> <li>○ Monophasic : 360J</li> </ul> </li> <li>• <b>Epinephrine</b> <ul style="list-style-type: none"> <li>○ (1:10,000) 1 mg IVP/IO</li> <li>○ Repeat q 3-5 min</li> </ul> </li> <li>• Defibrillate at max. joules as above after 5 cycles of CPR</li> <li>• Defibrillate after each medication throughout the arrest</li> <li>• <b>Lidocaine</b> <ul style="list-style-type: none"> <li>1-1.5 mg/kg IVP/IO; can repeat at 0.5-0.75mg/kg q 5-10 minutes to maximum of 3 mg/kg.</li> <li>ET doses 2-3mg/kg ET if no IV/IO available. Can repeat at 1-1.5 mg/kg q 5 min to max total dose 6mg/kg.</li> <li>▪ If return to supraventricular rhythm, consider:                                     <ul style="list-style-type: none"> <li>○ <b>Normal Saline</b> 250 ml bolus</li> <li>○ <b>Lidocaine Drip</b> 1-4 mg/kg</li> </ul> </li> </ul> </li> </ul>

## Cardiac Arrest (A07)

### Special Considerations

- If suspected non-accidental cause, preserve potential evidence without raising suspicion in family or bystanders. Ensure that the appropriate agencies are advised (Law enforcement)
- If patient experiences return of spontaneous circulation (ROSC) document time,
- If determination of death is made,
- Provide support for family/friends including an explanation of resuscitative efforts taken, assisting with notifications and facilitation, and providing compassion and understanding.
- Permit family and friends to be with the decedent whenever possible.
- Ensure the decedent's dignity.
- Do not remove airway adjuncts, IV catheters, monitor or defibrillation patches, etc.

## Suspected Cardiac Ischemia (A08)

### BLS Treatment

- Routine Medical Care – Adult (see S04)
- Treat for signs and symptoms of shock as necessary (see Shock A10)
- If pulseless, see Cardiac Arrest A07
  - Assist patient to take their own medications

### ALS Treatment

- Routine Medical Care – Adult (see S04)
- Obtain 12-lead ECG. Do not delay treatment and/or transport beyond 2-3 min. to obtain.
- “**STEMI ALERT**” (do not call STEMI Alert unless either of the two readings below are demonstrated on the 12-Lead EKG)
- Advise receiving hospital if 12-lead ECG reads “**ACUTE MI.**” Or “**ACUTE MI SUSPECTED**”.
- **Aspirin** 324 mg PO (chew in mouth)
- **Nitroglycerin** 0.4 mg SL/TM q 3-5 min. if SBP > 100 mmHg and no signs of hypotension. May repeat x 6



To avoid hypotension, withhold **Nitroglycerin** if patient has taken erectile dysfunction medication within specified time frames:

- Viagra (sildenafil) or Levitra (vardenafil) within past 24 hours.
- Cialis (tadalafil) within past 36 hours.

- If the patient becomes hypotensive after the administration of Nitroglycerin, place the patient in shock position, if possible. Do not immediately give a fluid bolus.
  - If no improvement after 5 minutes, see Shock A10
- **Morphine Sulfate** 2 mg slow IVP if still symptomatic after three (3) Nitroglycerin doses, or if Nitroglycerin is contraindicated.
  - May repeat 2-4 mg slow IVP q 3-5 min. to a max. Of 15 mg.
  - Monitor BP and respirations between dosages. Withhold if BP systolic < 100
- **Lidocaine:** 1-1.5 mg/kg slow IVP/IO can repeat at 0.5-0.75 mg/kg every 5-10 minutes to a maximum total dose of 3 mg/kg under the following circumstances:
  - > 6 PVCs per minute with poor perfusion
  - Bigeminy with poor perfusion
- **Lidocaine Drip:** 1gm in 250 ml Normal Saline or D/W. Administer 2-4 mg/min to decrease or eliminate ventricular ectopy.
  - > 6 PVCs per minute with poor perfusion
  - Bigeminy with poor perfusion

**Environmental Emergencies (A09)**

**BLS Treatment**

- Routine Medical Care – Adult (see S04)
- Assess and document body temperature with digital thermometer oral, tympanic or rectal.
  - NOTE: a rectal temperature is the only reliable reflection of a core body temperature. Employ clinical judgment as to the route used when evaluating the degree of hypothermia.
- Treat signs and symptoms of shock as necessary
- Hyperthermia
  - Passive cooling by placing the patient in a cool environment, applying cold packs to the axilla and groin, remove clothing, sponge with moist cool towels, etc. DO NOT CAUSE SHIVERING.
  - If the patient is A&O with moist skin, provide drinking water or an oral electrolyte solution (avoid highly sugary drinks), as tolerated by the patient.
  - If the patient is, actively seizing,
    - See Seizure A02
  - If the patient is disoriented or skin signs are hot and dry
    - Aggressively cool patient using water, fans, air-conditioning, and/or ice packs to axilla, groin, and neck.
    - Discontinue if shivering occurs or patient becomes alert and oriented.
- Hypothermia
  - Initiate passive rewarming by placing patient in warm environment, applying heat packs to the axilla and groin, and removing wet clothing.
- Severe Hypothermia



Handle patient carefully. Avoid unnecessary jostling or sudden impact

Signs and symptoms (core temp. < 86 deg F)		
Stupor	Hypotension	A-Fib or bradycardia
Unconsciousness	Diminished resp. rate/effort	Paradoxical undressing
Loss of shivering reflex	Pupillary dilation	

- Routine Medical Care – Adult (see S04)U

<b>Hyperthermia</b>	<b>Hypothermia</b>
<ul style="list-style-type: none"> <li>• Consider Normal Saline 500 ml. IV bolus                             <ul style="list-style-type: none"> <li>○ Frequently assess for signs and symptoms of fluid overload.</li> <li>○ Administer additional boluses as necessary. May repeat 4 additional times as necessary.</li> </ul> </li> <li>• Transport if:                             <ul style="list-style-type: none"> <li>○ Signs of Heat Stroke</li> <li>○ IV fluids administered</li> <li>○ No improvement in patient condition</li> </ul> </li> <li>• Consider non-transport if:                             <ul style="list-style-type: none"> <li>○ Alert and oriented throughout event</li> <li>○ Patient does not wish to go to the hospital via ambulance</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• If possible, tape heat packs to IV bag and coiled excess IV tubing.</li> <li>• Consider other causes of altered mental status(A04) )</li> <li>• Beware of dysrhythmias</li> <li>• In severely hypothermic patients (core temp &lt; 30 deg C or 86 deg F):Withhold IV medications until core temp rises                             <ul style="list-style-type: none"> <li>▪ Avoid TCP for bradycardia</li> </ul> </li> <li>• Transport Decision                             <ul style="list-style-type: none"> <li>➤ Do not transport mildly hypothermic, alert and oriented patients who do not wish to go to the hospital.</li> <li>➤ Transport indicated if:                                     <ul style="list-style-type: none"> <li>▪ Altered mental status</li> <li>▪ Signs and symptoms of severe hypothermia</li> <li>▪ No access to warm environment</li> </ul> </li> </ul> </li> </ul>

### Shock (A10)

**BLS Treatment**

- Routine Medical Care – Adult (see S04)
- Shock position
- Ensure adequate oxygenation and monitor vital signs.
- Control any bleeding

**Shock may include 2 or more of the following**

Pulse > 120 bpm	Pale, cool, and/or diaphoretic
SBP < 90 mmHg	Altered mental status

**ALS Treatment**

- Routine Medical Care – Adult (see S04)
- 250 ml bolus if lungs are clear
- Evaluate cause of, and manage inadequate perfusion in the following order: **Volume, Rate, Pump, Resistance**
- If cause is obvious, i.e. severe hemorrhage or severe allergic reaction, advance to appropriate treatment
  - For suspected allergic reaction or anaphylaxis, see Allergic Reaction/Anaphylaxis A12

<b>Cardiogenic</b>	<b>Hypovolemic</b>
<ul style="list-style-type: none"> <li>• <u>Dysrhythmia present</u>: see appropriate protocol.</li> <li>• <u>No dysrhythmia</u>: consider 2<sup>nd</sup> 250 ml bolus</li> <li>• No improvement after bolus                             <ul style="list-style-type: none"> <li>○ Dopamine 5-20 mcg/kg/min IV drip. Titrate in 5 mcg/kg/min increments every 5 minutes to an SBP between 90-100 mmHg and a pulse of 80-100 bpm.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Start 2<sup>nd</sup>IV wide open. Consider 2<sup>nd</sup> 250 ml bolus.</li> <li>• Keep SBP &gt; 90 mmHg</li> <li>• No improvement after bolus                             <ul style="list-style-type: none"> <li>○ Dopamine 5-20 mcg/kg/min IV drip. Titrate in 5 mcg/kg/min increments every 5 minutes to an SBP between 90-100 mmHg and a pulse of 80-100 bpm.</li> </ul> </li> </ul>

**Special Considerations**

- Do not wait for decompensated phase of shock to manifest before intervening.
- Septic and Neurogenic (Spinal) shock patients may not be pale, cool and diaphoretic. Neurogenic shock patients may have normal or bradycardic heart rates.
- History of onset/ duration of symptoms, fluid loss, fever, infection, trauma, history of allergic reaction and cardiac disease.
  - Bleeding can occur from a variety of sources, many of them hidden. Often a patient’s past medical history will suggest an etiology.
  - Tachycardia and tachypnea should always raise the question of hidden sources of bleeding.


**Respiratory Distress (A11)**

**BLS Treatment**

- Routine Medical Care – Adult (see S04)
- Position of comfort
  - Determine Code status

**ALS Treatment**

- Routine Medical Care – Adult (see S04)

<p><b>Suspected Acute Cardiogenic Pulmonary Edema</b></p> <ul style="list-style-type: none"> <li>• Apply CPAP if available (see Procedure M12)</li> <li>• <b>Nitroglycerin</b> 0.4 mg SL or TM q 5 minutes x 6 doses                             <ul style="list-style-type: none"> <li>○ Discontinue if SBP &lt; 100 mmHg</li> <li>○ Avoid NTG if patient takes erectile dysfunction medication (see Suspected Cardiac Ischemia A08)</li> </ul> </li> <li>• <b>Furosemide</b> 40 mg SIVP only if patient is already prescribed furosemide or bumex</li> <li>• <b>Morphine Sulfate</b> 2 mg SIVP if SBP &gt; 100 mmHg                             <ul style="list-style-type: none"> <li>○ q 3-5 minutes to a maximum of 15 mg if no signs of hypotension or respiratory compromise</li> </ul> </li> </ul> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p> Avoid <b>furosemide</b> and <b>morphine</b> when sepsis, pneumonia or dehydration is suspected. These medications will worsen the patient's condition</p> </div> <ul style="list-style-type: none"> <li>• <b>Dopamine</b> 5-20 mcg/kg/min IV drip. Titrate in 5 mcg/kg/min increments every 5 minutes to an SBP between 90-100 mmHg and a pulse of 80-100 bpm.</li> </ul>	<p><b>Bronchospasm (Diffuse Wheezing)</b></p> <ul style="list-style-type: none"> <li>• <b>Albuterol</b> 2.5 – 5 mg via HHN or other FDA approved device dosage per manufacturer's information, q 15 minutes or continuously prn                             <ul style="list-style-type: none"> <li>○ If severe distress and tidal volume decreased, administer <b>Albuterol</b> via in-line BVM or ET</li> <li>○ Discontinue if HR &gt; 160 bpm, chest pain, dysrhythmias, or acute onset of new symptoms</li> </ul> </li> <li>• Consider <b>Epinephrine SQ</b>. See <u>Allergic Reaction/Anaphylaxis (A12)</u></li> </ul>
<b>Base Hospital Order</b>	
<div style="border: 1px solid black; padding: 10px;"> <p>For severe distress, see <u>Allergic reaction/Anaphylaxis (A12)</u>  <b>Epinephrine IV by Base Hospital Physician order only.</b></p> </div>	
<b>Allergic Reaction/Anaphylaxis</b>	<b>Smoke Inhalation</b>
<u>See Allergic reaction/Anaphylaxis (A12)</u>	<u>See Smoke Inhalation Protocol (A19)</u>
<b>Suspected Pulmonary Embolus (PE)</b>	<b>Decompression Illness</b>
<ul style="list-style-type: none"> <li>• Place in position of comfort</li> <li>• Ensure high flow oxygen</li> </ul>	<ul style="list-style-type: none"> <li>• Left Lateral Trendelenburg (on left side, body tilted with head lower than torso)</li> <li>• Transport to ED for stabilization. Do not transport directly to hyperbaric chamber.</li> </ul>

**Special Considerations**

- Both severe fluid overload and severe bronchospasm may present with diminished lung sounds. Differentiating between conditions will be based on history.
- **Epinephrine** should be reserved for those patients who are unable to generate adequate tidal volume to deliver aerosolized drug to the bronchial tree.
- Do not use **epinephrine** excessively, it tends to thicken secretions, deplete glycogen stores, and increase apprehension. Use lower dosage of **Albuterol** for mild to moderate distress and higher dosage for severe distress.

**Allergic Reaction/Anaphylaxis (A12)****BLS Treatment**

- Routine Medical Care – Adult (see S04)
  - Treat for signs and symptoms of shock, if necessary (see Shock A10)

**ALS Treatment**

- Routine Medical Care – Adult (see S04)
- Rash and/or itching
  - **Diphenhydramine** 50 mg IVP/IM
- Dyspnea
  - **Albuterol** 2.5 – 5 mg via HHN or other FDA approved medication delivery device q 15 min or continuously prn
    - If severe distress and tidal volume decreased, administer Albuterol via in-line BVM or ET
    - Discontinue if HR > 160 bpm, chest pain, dysrhythmias, or acute onset of new symptoms
- Shock
  - Consider 250 ml **Normal Saline** bolus IV. May repeat one time.
  - **Epinephrine**: Use one injector. Use anterior lateral thigh. (For administration technique see Nerve Agent antidote administration WMD-01) may repeat one time.

**Base Hospital Physician Order**

- Stridor, severe shock and impending respiratory arrest
- **Epinephrine (1:10,000) 0.1mg** very slow IVP/IO, only after direct order from the base hospital physician. Draw up the medication from the preload Epinephrine syringe.
- Using a 3 ml syringe, withdraw 1 mls of Epinephrine 1:10,000 from the preload Epinephrine Syringe.

**Suspected Stroke / Transient Ischemic Attack (A13)**

**BLS Treatment**

- Routine Medical Care – Adult (see S04)
  - Recovery position with head elevated.

**ALS Treatment**

- Routine Medical Care – Adult (see S04)
- 18G catheter minimum for CT scan, AC placement if possible. No more than 2 IV attempts.
- Perform BG check. If < 80 mg/dL, see Hypoglycemia A03

**Cincinnati Prehospital Stroke Scale**

(Score 1 point for each Yes answer)

Facial droop (Yes/No)
Arm drift (Yes/No)
Abnormal speech (Yes/No)

- Record total Stroke Scale Score (range 0-3)
- Record **last time** seen normal and **calculate** duration of symptoms



Do not confuse “Time awakened with symptoms” with “time last seen normal”

- If Stroke Scale Score is > 0 and duration of symptoms < 3 hours then:
  - Initiate “**STROKE ALERT**”
  - Immediate Transport to designated **Primary Stroke Center**: Patient preference shall be honored as practical
- If Stroke Scale Score is 0 or duration of symptoms > 3 hours then:
  - Transport patient to hospital of preference

**Special Considerations**

If time is available, and patient or family can provide the information assess the patient using the criteria listed in the Fibrinolytic Evaluation listed in the table below.

<i>Fibrinolytic Evaluation (ASA/NSA Standards)</i>	
Use of anticoagulants	History of Stroke/TIA/Brain Tumor
Oriented	Known Bleeding Disorder
Age > 18 yrs	Active bleeding, surgery, or trauma < 3 weeks
Jaundice, Hepatitis, kidney failure	Terminal illness

**Tachycardia with Pulses (A14)**

**BLS Treatment**

- Routine Medical Care – Adult (see S04)
- Treat for signs & symptoms of shock, as appropriate (see Shock A10)
  - CPR as appropriate

**ALS Treatment**

- Routine Medical Care – Adult (see S04)

**Tachycardia (HR > 150)**

<i><b>Narrow Complex: Supraventricular</b></i>	<i><b>Wide Complex: Ventricular</b></i>
<p style="text-align: center;"><b>Stable</b></p> <ul style="list-style-type: none"> <li>• Valsalva maneuver</li> <li>• <b>Adenosine</b> 6 mg IVP with 20 ml rapid flush.                             <ul style="list-style-type: none"> <li>○ May repeat twice with 12 mg IVP each</li> </ul> </li> </ul> <p style="text-align: center;"><b>Unstable</b></p> <ul style="list-style-type: none"> <li>• Consider Adenosine 6 mg IVP</li> <li>• Synchronized Cardioversion                             <ul style="list-style-type: none"> <li>○ Consider sedation with <b>Midazolam</b> 2 mg IVP q 2 min. to a max. dose of 5 mg.</li> <li>○ Synchronized Counter Shocks: 100 J &gt; 200 J &gt; 300 J &gt; 360 J                                     <ul style="list-style-type: none"> <li>➤ Automated or biphasic defibrillators should be set to the manufacturer’s clinical equivalent.</li> </ul> </li> <li>○ If unable to gain capture, turn off synchronization and defibrillate.</li> </ul> </li> </ul> <p style="text-align: center;"><b>Critical</b> (Unconscious and no peripheral pulses)</p> <ul style="list-style-type: none"> <li>• Synchronized Cardioversion                             <ul style="list-style-type: none"> <li>○ Synchronized Counter Shocks</li> <li>○ If unable to gain capture, turn off synchronization and defibrillate.</li> </ul> </li> </ul>	<p style="text-align: center;"><b>Stable</b></p> <ul style="list-style-type: none"> <li>• Consider <b>Lidocaine</b> 1-1.5 mg/kg IVP can repeat at 0.5-0.75 mg/kg to a max. total dose of 3 mg/kg IVP.</li> <li>• If aberrancy resolves, consider <b>Lidocaine</b> Drip at 2-4 mg/min</li> <li>• If unresponsive, consider possibility of SVT with aberrancy.</li> </ul> <p style="text-align: center;"><b>Unstable</b></p> <ul style="list-style-type: none"> <li>• Consider sedation with <b>Midazolam</b> 1-2 mg IVP q 2 min. to a max. dose of 5 mg.                             <ul style="list-style-type: none"> <li>○ Avoid in unconscious patients and patients with hypotension (SBP &lt; 90)</li> </ul> </li> <li>• Synchronized Cardioversion                             <ul style="list-style-type: none"> <li>○ Critical patients: Defibrillate if any delay in synchronized cardioversion</li> <li>○ Synchronized Counter Shocks: 100 J &gt; 200 J &gt; 300 J &gt; 360 J                                     <ul style="list-style-type: none"> <li>➤ Automated or biphasic defibrillators should be set to the manufacturer’s clinical equivalent.</li> </ul> </li> <li>○ If unable to gain capture turn off synchronization and defibrillate.</li> </ul> </li> <li>• <b>Lidocaine</b> 1-1.5 mg/kg IVP can repeat at 0.5-0.75 mg/kg to a max. of 3 mg/kg total or 2-3 mg/kg can repeat at 1-1.5 mg/kg to a max of 6 mg/kg total ET if IV/IO unavailable.</li> </ul>

**Poisoning and Overdose (A15)**

**BLS Treatment**

- Protect yourself. Wear appropriate PPE.
- Routine Medical Care – Adult (see S04)
- Consult with on-scene Hazardous Materials Specialists or Base Hospital as needed to identify Toxin/Toxicant/Substance
- Decontamination should be done by trained personnel. Apply triage tag with contamination status.
- Treat for signs and symptoms
- Identify substance type, amount, and time of ingestion/exposure


<b>Envenomation</b>	
<i>Agent</i>	<i>Treatment</i>
Bee Sting Wasp Sting	<ul style="list-style-type: none"> <li>• Remove stinger by scraping or flicking.</li> <li>• Squeezing or tweezers are contraindicated</li> <li>• Cold packs may be applied to relieve pain</li> </ul>
Spider Bite Scorpion Sting	<ul style="list-style-type: none"> <li>• Cold packs may be applied to relieve pain</li> </ul>
Snake Envenomation	<ul style="list-style-type: none"> <li>• DO NOT apply cold pack, tourniquet, incise wound, or attempt to suck out venom</li> <li>• Avoid movement with the affected extremity, splint as if fractured</li> <li>• Keep extremity at or below heart level</li> <li>• Monitor distal pulse</li> <li>• Circle any swelling around bite marks with a pen and note time</li> <li>• Remove jewelry or restrictive clothing on the affected extremity</li> </ul>

**ALS Treatment**

- Routine Medical Care – Adult (see S04)
- Withhold charcoal if rapidly decreasing level of consciousness
  - Consider pain management (see Pain Management A17)

Poisoning and Overdose (A15)

Ingestions	
Agent	Treatment
General Ingestion	<ul style="list-style-type: none"> <li>• <b>Activated Charcoal</b> slush 1g/kg PO if time of ingestion is less than 1 hour. Maximum dose is 50 gm.</li> </ul> <p><b>Charcoal</b> is contraindicated if patient lacks gag reflex cannot self-administer or has ingested substance not bound by charcoal (caustics, lithium, metals, ethylene glycol, Iron, Methanol, other Alcohols, and Hydrocarbons).</p>
Narcotics/Opioids	<b>Naloxone</b> 1-4 mg IVP/IM/IN. May repeat twice every 2-3 minutes (max dose 10 mg). (For IN use Procedure M14 IN Administration)
Suspected Ecstasy, Rohypnol, GHB	Ensure airway protection and monitor for signs of aspiration, Monitor body temperature. Use cooling measures as indicated.
Tri-Cyclic Antidepressants	<p><b>Sodium Bicarbonate</b> 1mEq/kg IVP (max dose 100 mEq) for:</p> <ul style="list-style-type: none"> <li>• Hypotension</li> <li>• Seizure</li> <li>• QRS widening &gt;0.10 s</li> </ul>
Organophosphates/Cholinergics/ Pesticides	<p><b>Atropine</b> 2 mg IVP (may repeat every 5 minutes until asymptomatic Normal Saline bolus as necessary for Hypovolemia.</p>
Major Tranquilizers/Neuroleptics	<b>Diphenhydramine</b> 50 mg IVP/IM for dystonic reactions
Cyanide	<b>Sodium Thiosulfate</b> 25% solution, 12.5 g (50 ml) IV slowly over 10 minutes. Can be administered via infusion over 10 minutes (M13)

Base Hospital Order	
Agent	Treatment
Organo-phosphates Cholinergics Pesticides	<ul style="list-style-type: none"> <li>• <b>Pralidoxime Chloride</b> 300 mg/ml via auto-injector in lateral thigh. Use auto-injector #2 of the Mark-I Nerve Agent Antidote Kit.</li> <li>• Continuation of <b>Atropine</b> administration at 2 mg IVP. Provide base with a total amount (mg) available on-hand when making base contact. Multi-dose vial should be used, if available.</li> </ul>
Tricyclic Anti-Depressants	<ul style="list-style-type: none"> <li>• Additional <b>Sodium Bicarbonate</b></li> </ul>
Calcium Channel Blockers	<ul style="list-style-type: none"> <li>• <b>Glucagon</b> 1 mg IM.</li> <li>• <b>Calcium Chloride</b> 10% 20-30 mg/kg IVP given over several minutes</li> </ul> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">  <p style="text-align: center;"><b>Calcium Chloride</b> contraindicated if patient takes digoxin.</p> </div> <ul style="list-style-type: none"> <li>• Manage Symptomatic Bradycardia as necessary</li> </ul>
Beta Blockers	<ul style="list-style-type: none"> <li>• <b>Glucagon</b> 1 mg IM.</li> <li>• Manage Symptomatic Bradycardia as necessary</li> </ul>

3.20

Trauma (A16)

**BLS Treatment**

- Routine Medical Care – Adult (see S04)
- Oxygen as necessary. Assist ventilations as necessary.
- CPR as necessary
- Control external bleeding
- Treat for signs and symptoms of shock as necessary (see Shock A10)
- Immediately evaluate the need for rapid transport to a Trauma Center
- Spinal precautions as appropriate (see Spinal Immobilization M11)
  - Maintain body temperature

<i>Injury</i>	<i>Treatment</i>
Suspected Pelvic Fracture	<ul style="list-style-type: none"> <li>• Stabilize with bulky dressings</li> <li>• Secure with a Pelvic Wrap (bed sheet or equivalent device), if patient condition and time allows</li> </ul>
Impaled Objects	<ul style="list-style-type: none"> <li>• <u>Do not remove impaled object</u> unless it creates an airway obstruction or interferes with CPR or transport.</li> <li>• Stabilize object with bulky dressing and cover with a dry dressing.</li> </ul>
Extremity Fracture or Dislocation	<ul style="list-style-type: none"> <li>• Extremities include hand, arms, clavicle, legs, and feet</li> <li>• Splint, Elevate, and apply cold pack</li> <li>• If the extremity is pulseless or severe deformity complicates transport, <b>apply gentle traction along the long axis of the bone</b> to attempt to restore circulation and/or splint.</li> </ul>
Abdominal Evisceration	<ul style="list-style-type: none"> <li>• Cover eviscerated contents with moist dressing</li> </ul>
Chest Trauma	<ul style="list-style-type: none"> <li>• Apply occlusive dressing on Open Chest Wounds (ensure relief valve or flap)</li> <li>• Splint as necessary</li> </ul>
Hip Fracture/Dislocation	<ul style="list-style-type: none"> <li>• Stabilize with bulky dressings</li> </ul>
Amputation	<ul style="list-style-type: none"> <li>• Place amputated part in a dry, sterile dressing, and then place in a sealed plastic bag. Cool sealed bag with cold packs. Do not delay transport if severed part is not located when the patient is ready for transport.</li> <li>• Tourniquets <u>NOT</u> indicated. Maintain direct pressure.</li> </ul>
Patients with Head Trauma and ALOC	<ul style="list-style-type: none"> <li>• Reverse Trendelenburg position as appropriate</li> <li>• Ventilate patient 12 times per minute (every 5 seconds) with 100% oxygen. Avoid hyperventilation.</li> </ul>

**ALS Treatment**

- Routine Medical Care – Adult (see S04)
  - Consider Pain Management (see Pain Management A17)
  - Document Vital Signs to include GCS and Oxygen Saturation on all identified trauma patients.

3.21

Trauma (A16)

<i>Injury</i>	<i>Treatment</i>
Traumatic Arrest	<ul style="list-style-type: none"> <li>• <u>Asystole</u>: determine death.</li> <li>• <u>PEA</u>: rate less than 40 as a result of Blunt Trauma, determine death.</li> <li>• Refer to appropriate protocol for other rhythm disturbances</li> </ul>
Suspected Pelvic Fracture or Abdominal Evisceration	<ul style="list-style-type: none"> <li>• Establish 2 large bore IV's of Normal Saline</li> <li>• <i>Pelvic Fracture</i>: Morphine ONLY for pain management. See (A-17)</li> </ul>
Chest Trauma	<ul style="list-style-type: none"> <li>• Needle thoracostomy as indicated</li> </ul>
Head Trauma	<ul style="list-style-type: none"> <li>• Consider intubation ONLY if respirations &lt; 8 per minute OR airway compromise (emesis, blood, facial trauma, etc.)</li> <li>• If capnography available, ventilate to keep End Tidal CO between 35-40 mmHg</li> </ul>

**Base Hospital Order**

- **Crush Injury Syndrome**
- Criteria for Crush Injury Syndrome:
- Extensive areas of involvement, such as lower extremities and pelvis
- Compression for four to six hours. Syndrome may develop in one hour in severe cases.
- Prior to release of compression:
- Establish 2 large bore IV's of Normal Saline
- **Albuterol** 5 mg in 6 ml NS via HHN/Mask/BVM
- **250 ml NS bolus**
- Administer **Morphine Sulfate** 2 mg slow IVP if SBP >= 100 mmHg. Titrate 2 mg slow IVP every 3-5 minutes to a maximum of 15 mg. Monitor level of consciousness, blood pressure, and respirations. (If multi-system trauma, ensure Base Hospital is notified prior to administration)
- After release of compression:
- **Sodium Bicarbonate** 1 mEq/kg IVP
- If hyperkalemia is suspected (entrapment > 4 hrs with abnormal ECG – peaked T-wave, absent P-wave, or widened QRS complex), consult Base for:
- **Calcium Chloride** 1 gm IVP
- **Sodium Bicarbonate infusion** 1 mEq/kg in 1000 ml NS wide open



## Gynecological and Obstetrical Emergencies (A18)

### BLS Treatment

- Routine Medical Care – Adult (see S04)
- Document history, medications, last menstrual period, pregnancy status/stage of pregnancy
- Treat for signs and symptoms of shock, as necessary (see Shock A10)
- Vaginal Pain/Discharge
  - Have patient apply loose bulky dressing

### ALS Treatment

- Routine Medical Care – Adult (see S04)
- Vaginal Bleeding
  - If in shock, see Shock (A10)
- Spontaneous Abortion
  - If fetus > 20 weeks old or heavier than 1 pound (500 grams) see Neonatal Resuscitation P01
  - If fetus is non-viable, save and transport all remains and tissue
- Prolapsed Cord
  - Place patient in “knees to chest” position
  - Place a gloved hand into vaginal canal in attempt to take pressure off cord
    - Do not attempt to reposition cord
    - Do not remove hand once properly positioned
- Breech Presentation/Obstructed Delivery
  - Allow delivery to proceed passively until baby’s waist appears. Gentle rotate body until face down.
  - If the head does not readily deliver then place a gloved hand in the vaginal canal to relieve pressure on cord and open a passage for the newborn if possible.
- Pregnancy Induced Hypertension (PIH) (formerly pre-eclampsia/eclampsia)
  - Observe for seizures, hypotension, or coma
  - For seizure management see Seizure A02
  - PIH should be suspected when the BP is 140/90 or more.
- Suspected Placenta Previa
  - Treat for signs and symptoms of shock as necessary (see Shock A10)
- Suspected Abruptio Placenta
  - Immediately place two large-bore IV lines
  - Treat for signs and symptoms of shock as necessary (see Shock A10)
- Suspected Sexual/Domestic Assault
  - Do not permit patient to wash or douche. Preserve clothes, towels, sheets etc in *paper bag*. Maintain chain of custody
  - Calm, reassure, transport to a SART ED facility for assessment Contact Law Enforcement, if not already on scene

## Smoke Inhalation (A19)

### BLS Treatment

- Routine Medical Care – Adult (see S04)
- Administer 100% oxygen via NRB
- Remove victim from the source of exposure
- Evaluate patient for facial burns, hoarseness, black sputum, and soot in nose or mouth
- Completely remove victim's clothing prior to transport
- Perform spinal immobilization if indicated
- Assess and treat for thermal and/or traumatic injuries (see A06 – Burns or A16 – Trauma)
- Control airway early, BVM with airway adjuncts as appropriate
- Treat bronchospasm as warranted (see A11 – Respiratory Distress)

### ALS Treatment

- Routine Medical Care – Adult (see S04)
- Control airway early. Intubate or place Combitube, if indicated.
- Establish IV NS. Consider fluid bolus.
- If patient is unconscious, unresponsive, hypotensive, or has soot in mouth or nose with severe ALOC
- Administer **Sodium Thiosulfate, 25% solution** 50 ml (12.5 g) IV slowly over 10 minutes or via IV infusion per drip rate see M14.

### Special Considerations

- This protocol should only be used in patients with serious signs and symptoms
- Pulse oximetry values may be unreliable in Smoke Inhalation (SI) patients
- Cyanide and/or the combination of cyanide and carbon monoxide may be responsible for the majority of SI deaths
- SI should be particularly suspected in patients rescued from closed-space structure fires
- Sodium Thiosulfate should NOT be given prophylactically

## Psychiatric Emergencies

### BLS Treatment

#### Routine Medical Care –Adult (see S04)

Calm and reassure patient.

Determine underlying medical cause and treat as appropriate

Consult with law enforcement as needed

#### **5150 holds**

*No medical complaint or injury*

- **Patients placed on an involuntary 5150 hold having no medical complaint should *not* be transported in a 911 System Ambulance.** If the law enforcement jurisdiction determines that ambulance transportation is the best for the patient; law enforcement personnel shall take full responsibility of the patient including securing the patient in restraints.

*Patients with a Medical Complaint/Injury*

- Treat associated Signs and Symptoms as appropriate. (See Poisoning and Overdose A15) or other applicable protocols.
- Transport to an emergency department with psychiatric capabilities. (See Policy 602)
- Exception: patients in extremis (at or near the point of death) should be transported to the closest facility even if it is a non-psychiatric capable facility.

# Pediatric Protocols

## Santa Clara County Pediatric Protocols

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P01	Neonatal Resuscitation	4.1
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P13	Apparent Life-Threatening Event (ALTE)	4.20
P14	Hypoglycemia	4.21
P15	Seizure	4.22
P16	Allergic Reaction / Anaphylaxis	4.23
P17	Smoke Inhalation	4.24

## Authorized Medications – Pediatric, age less than 15

MEDICATIONS	STANDARD DOSE
<b>Activated charcoal</b>	1 g/kg PO, or 25 g if > 1 year old (with or without Sorbitol)
<b>Adenosine</b>	0.1 mg/kg rapid IVP/IO. (max dose 6 mg)
<b>Albuterol</b>	2.5 mg in 3 cc NS via FDA approved drug nebulizer device
<b>Atropine sulfate</b>	0.02 mg/kg IVP/IO ET if IV IO unable 0.4-1mg/ml concentration for ET
<b>Calcium Chloride 10%</b>	20-30 mg/kg IVP/IO given over several minutes
<b>Dextrose 10% (neonate)</b>	3 ml/kg IVP/IO
<b>Dextrose 25% (neonate or &lt; 4 y/o)</b>	2 ml/kg IVP/IO
<b>Dextrose 50% (&gt; 4 y/o)</b>	1 ml/kg IVP/IO
<b>Diphenhydramine (Benadryl)</b>	1 mg/kg IM/IVP. Max dose = 50 mg.
<b>Dopamine</b>	5-20 mcg/kg/min titrated by 5 mcg/kg/min increments to effect
<b>Epinephrine Autoinjector 0.15 mg.</b>	Allergic reaction/anaphylaxis: 1 injector SQ
<b>Epinephrine 1:10,000</b>	0.01 mg/kg IVP/IO (max initial dose 1 mg)
<b>Glucagon</b>	Calcium channel/beta blocker overdose: Glucagon 0.05 mg/kg IM Hypoglycemia: 0.1 mg/kg IM (max dose 1 mg)
<b>Glucose paste</b>	1-tube (approx. 25 gm) PO, 2 tubes max
<b>Lidocaine</b>	1 mg/kg IVP/IO or 3 mg/kg ET if IO/IV unable
<b>Midazolam (Versed)</b>	Pre-cardioversion/TCP sedation 0.05 – 0.1 mg/kg IVP/ (max dose 2 mg) Seizure: 0.1 mg/kg slow IVP (max dose 4 mg) or 0.1 mg/kg IM (max dose 5 mg) or IN
<b>Morphine sulfate</b>	0.05 mg/kg IVP or 0.1 mg/kg IM
<b>Naloxone (Narcan)</b>	0.1 mg/kg IVP/IO/IM/IN
<b>Normal Saline Bolus</b>	Neonates: 10 ml/kg (max 60 ml/kg) Child > 1 year: 20 ml/kg (max 60 ml/kg)
<b>Sodium bicarbonate</b>	1 mEq/kg IVP/IO
<b>Sodium Thiosulfate</b>	25% solution, 1.65 ml/kg to a max dose of 50mL (12.5 g) slowly IV over 10 minutes. Can be administered via NSS using the standardized drip rate schedule M13.

## Neonatal Resuscitation (P01)

### BLS Treatment

- Routine Medical Care – Pediatric (see S05)
- General Considerations
  - The vast majority of newborns require no resuscitation beyond maintenance of temperature, suctioning, and mild stimulation.
  - If the mother presents with complications during childbirth, immediately transport to the hospital using every reasonable and safe effort to delay birth.
  - In any case of neonatal resuscitation, keep all Prehospital delays to a minimum.
- Neonatal Resuscitation
  - Assess and document responsiveness, breathing, and pulse. (by palpating base of umbilical cord, brachial or femoral artery or auscultation of apical heart sounds)
  - Record delivery time when patient status allows.
  - Place newborn supine in neutral position. Avoid hyperextension or flexion of the neck.
- Meconium staining observed during delivery
  - After delivery, provide mild stimulation (drying, warming, suctioning) as needed.
- Respirations
  - If inadequate or gasping respirations, assist ventilations (40-60 breaths/min) via BVM with 100% oxygen for approximately 30 seconds, then reassess.
  - If shallow or slow respirations, provide 100% oxygen 15 Lpm by NRB mask. Assist with BVM as needed.
  - If normal breathing, check heart rate.
- Heart rate < 60 bpm, or between 60-80 bpm with no increase with ventilations
  - Continue assisted ventilations
  - Begin chest compressions (120 per minute)
- Heart rate > 80 bpm
  - Continue assisted ventilations and reassess.
- Avoid hypothermia. Dry the newborn, wrap in towel, head cap, or blanket and maintain warmth.
- Clamp and cut the cord.

### ALS Treatment

- Routine Medical Care – Pediatric (see S05)
- Meconium staining
  - After delivery if newborn is not vigorous, perform deep ET suction, using appropriate suction adapter if available.

Neonatal Resuscitation (P01)

HEART RATE < 60 bpm	HEART RATE 60-80 bpm	HEART RATE > 80 bpm
<ul style="list-style-type: none"> <li>• CPR using current AHA guidelines (push hard, push fast, release completely to allow chest recoil, minimize interruptions in chest compressions,</li> <li>• <b>Epinephrine</b> <ul style="list-style-type: none"> <li>○ (1:10,000) 0.01 mg/kg IVP/IO.</li> <li>○ Repeat q 3-5 minutes prn</li> </ul> </li> <li>• If pulse persistently &lt; 80, consider <b>Naloxone</b> 0.1 mg/kg IVP/IN/IO/ET if IV/IO/IN unable</li> </ul>	<ul style="list-style-type: none"> <li>• Continue assisted ventilation.</li> <li>• If heart rate does not increase with ventilations:                             <ul style="list-style-type: none"> <li>○ <b>Epinephrine</b> <ul style="list-style-type: none"> <li>➤ (1:10,000) 0.01 mg/kg IVP/ IO <u>OR</u></li> <li>➤ Repeat q 3-5 minutes prn</li> </ul> </li> <li>○ If pulse persistently &lt; 80, consider Naloxone 0.1 mg/kg IVP/IO</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Check skin color. If peripheral cyanosis, give oxygen by mask or blow by.</li> <li>• Reassess heart rate, respirations, and skin color. Continue to provide warmth</li> </ul>

Special Considerations

- For two- rescuer CPR, perform chest compressions with both thumbs (with hands encircling the back), at the lower half of the sternum and intermammary line at a depth of 1/3 the chest cavity
- Forcefully compress the sternum with your thumbs as you squeeze the thorax with your fingers.

### Pediatric Altered Mental Status (P02)

#### BLS Treatment

- Routine Medical Care – Pediatric (see S05)
- Document history, medications, and any neurologic deficits
- Spinal immobilization as appropriate (see Spinal Immobilization M11)
- Identify and treat for possible causes: hypoxemia, trauma, hypothermia, toxins, cardiac, etc.
- Suspected Poisoning/Overdose, see Poisoning and Overdose P11
- Suspected Hypoglycemia, see Hypoglycemia P14
- Possible Seizure, see Seizure P15

#### ALS Treatment

- Routine Medical Care – Pediatric (see S05)
- Check blood sugar level
- Suspected Poisoning/Overdose, see Poisoning and Overdose P11
- Suspected Hypoglycemia, see Hypoglycemia P14
- Possible Seizure, see Seizure P15

#### Special Considerations

- Common etiologies of Altered Mental Status include: diabetic problems (hypoglycemia or hyperglycemia), alcohol or drug intoxication, metabolic abnormalities, seizures or post-ictal states, toxic exposures, hypoxia, sepsis, stroke, and head trauma.

### Pediatric Bradycardia (P03)

#### BLS Treatment

- Routine Medical Care – Pediatric (see S05)
  - NOTE: Hypoxia is the leading cause for most pediatric bradycardias.
  - If bradycardia is not causing severe cardiorespiratory compromise, transport immediately
- Treat for signs and symptoms of shock as necessary
- Identify and treat for possible causes: hypoxemia, trauma, hypothermia, toxins, heart transplant, etc.
- CPR as necessary
  - Diminished perfusion and heart rate < 60 per minute

#### ALS Treatment

1. Routine Medical Care – Pediatric (see S05)
2. Diminished Perfusion
  - a. **Epinephrine**
    - i. (1:10,000, 0.1 ml/kg) 0.01 mg/kg IVP/IO.
    - ii. Repeat q 3-5 minutes at the same dose
  - b. If no response to Epinephrine:
    - i. **Atropine** 0.02 mg/kg IVP/IO (minimum dose 0.1 mg)
      1. Child <= 10 years: max dose 0.5 mg
      2. Child > 10 years: max dose 1 mg
      3. If age >= 12 years, consider transcutaneous pacing (see TCP M10).

#### Special Considerations

- For structural cardiac disease (AV node disease etc.), Atropine should be administered first in the unstable or poorly perfused patient. For ischemic/hypoxic bradycardia Epinephrine is recommended by Pediatric Advanced Life Support (PALS).
- Special conditions may apply in the setting of severe hypothermia. (see Environmental Emergencies: Hypothermia P06)

**Pediatric Burns (P04)**

**BLS Treatment**

- Routine Medical Care – Pediatric (see S05)
  - Treat for signs and symptoms of shock as necessary

Chemical	Thermal
<ul style="list-style-type: none"> <li>• <u>Protect yourself.</u> Wear appropriate PPE.</li> <li>• Consult with on scene Hazardous Materials Specialists</li> <li>• Decontaminate as necessary using the guidelines below. Apply triage tag with appropriate decontamination status.  <p style="text-align: center;">DRY</p> <ul style="list-style-type: none"> <li>• Brush powder off skin then flush with copious amounts of water or saline.  <p style="text-align: center;">LIQUID</p> <ul style="list-style-type: none"> <li>• Flush immediately with copious amounts of water for 20 minutes.  <p style="text-align: center;">EYES</p> <ul style="list-style-type: none"> <li>• Flush with copious amounts saline for at least 20 minutes in each eye.</li> </ul> </li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Cool burn with water</li> <li>• Cover wound with burn sheet or sterile dressing <ul style="list-style-type: none"> <li>○ Do not attempt to remove burning agents adhering to skin</li> </ul> </li> <li>• Protect patient against hypothermia</li> </ul>
Electrical / Lightning	Radiological
<ul style="list-style-type: none"> <li>• <u>Reverse triage:</u> Pulseless, apneic patients get <u>first</u> priority</li> <li>• Apply dry dressings to entry and exit wounds</li> </ul>	<ul style="list-style-type: none"> <li>• <u>Protect yourself.</u> Wear appropriate PPE.</li> <li>• Consult with on-scene Hazardous Materials Specialists</li> <li>• Decontaminate as necessary. Apply triage tag with appropriate contamination status.</li> </ul>

**ALS Treatment**

- Routine Medical Care – Pediatric (see S05). Ensure early intubation as warranted. Note presence of edema, soot in airway, singed hair.
  - Consider Pain Management (see Pain Management P07)

**Special Considerations**

- Not all burns warrant transport.
- Consider hazardous fumes when patient enclosed in confined space or presenting with altered mental status.
- Do not apply ice directly to skin.
- Transport moderate and severe burn patients to Santa Clara Valley Medical Center

**Pulseless Arrest – Pediatric (P05)**

**BLS Treatment**

- Routine Medical Care – Pediatric (see S05)
- CPR according to current AHA guidelines (Minimize delays and interruptions of compressions during resuscitation. Push hard and fast but allow complete chest recoil. If BLS airway management (BVM/OPA) is working, establish IV/IO prior to inserting an advanced ALS airway. Avoid hyperventilation.
- Identify and treat for possible causes: hypoxemia, trauma, hypothermia, toxins, cardiac, etc.
- Allow parents to be present for resuscitative efforts, if practical
- Provide family psychosocial support if CPR not indicated or not successful
  - If suspected non-accidental cause, preserve evidence without raising suspicion of parents or caregivers. Request law enforcement response.

**ALS Treatment**

- Routine Medical Care – Pediatric (see S05)

Asystole	Pulseless Electrical Activity (PEA)	Ventricular Fibrillation or Pulseless Ventricular Tachycardia
<ul style="list-style-type: none"> <li>• Confirm asystole in two leads</li> <li>• <b>Epinephrine</b> <ul style="list-style-type: none"> <li>○ (1:10,000, 0.1 ml/kg) 0.01 mg/kg IVP/IO (max initial dose 1mg) q 3-5 minutes.</li> </ul> </li> <li>• Consider a <b>Normal Saline</b> 20 ml/kg bolus. May repeat twice.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Epinephrine</b> <ul style="list-style-type: none"> <li>○ (1:10,000, 0.1 ml/kg) 0.01 mg/kg IVP/IO (max initial dose 1mg) q 3-5 minutes.</li> </ul> </li> <li>• Consider a <b>Normal Saline</b> 20 ml/kg bolus. May repeat twice.</li> <li>• See Base Hospital Order below for further treatment</li> </ul>	<ul style="list-style-type: none"> <li>• Defibrillate: at 4J/kg to a max 360 J or equivalent biphasic energy</li> <li>• <b>Epinephrine</b> <ul style="list-style-type: none"> <li>○ (1:10,000 0.1 ml/kg) 0.01 mg/kg IVP/IO (max initial dose 1 mg) q 3-5 min.</li> </ul> </li> <li>• Defibrillate at 4 J/kg (max 360 J) or equivalent biphasic energy                             <ul style="list-style-type: none"> <li>○ Defibrillate within 30-60 seconds after each medication throughout arrest</li> </ul> </li> </ul>

**Base Hospital Order**

- Pulseless Electrical Activity (PEA)
  - **Sodium Bicarbonate** 1 mEq/kg IVP or IO. May repeat in 10 minutes, if necessary.

**Special Considerations**

- During CPR when advanced airway is in place, deliver compressions at 100 bpm, without stopping for ventilations. Ventilations should be delivered at no more than 8-10 breaths per minute.
- If suspected non-accidental cause, preserve potential evidence without raising suspicion of parents or caregivers.
- Acidosis in children is primarily a problem of ventilation and oxygenation. Sodium Bicarbonate should not be used during brief resuscitation episodes but may be beneficial when other therapies are ineffective and resuscitation is prolonged (> 10 minutes).
- If field pronouncement is made ensure that law enforcement and appropriate agencies are advised.

**Pediatric Environmental Emergencies (P06)**

**BLS Treatment**

- Routine Medical Care – Pediatric (see S05)
- Assess and document body temperature with digital thermometer
  - NOTE: core temperature can only be obtained reliably with a rectal thermometer. Use clinical judgment when evaluating degree of hypothermia.
- Treat signs and symptoms of shock as necessary
- Heat Illnesses
  - Ensure passive cooling by placing the patient in a cool environment, applying cold packs to the axilla and groin, remove clothing, sponge with moist cool towels, etc. Do not cause shivering.
  - If the patient is alert and oriented with moist skin, administer drinking water or an oral electrolyte solution (avoid highly sugary drinks), as tolerated by the patient.
  - If the patient is disoriented, actively seizing, or skin signs are hot and dry:
    - For seizures, see Seizure P15
    - Aggressively cool patient using water, fans, air-conditioning, and/or ice packs to axilla, groin, and neck.
    - Discontinue if shivering occurs or patient becomes alert and oriented.
- Hypothermia
  - Initiate passive re-warming by placing patient in warm environment, applying heat packs to the axilla and groin, and removing wet clothing.
  - Signs and symptoms of severe hypothermia (core temp. < 86 deg F)

Stupor	Hypotension
Unconsciousness	Diminished respiratory rate/effort
Loss of shivering reflex	Pupillary dilation
A-Fib or bradycardia	Paradoxical undressing



Handle patient carefully. Avoid unnecessary jostling or sudden impact

- Near Drowning
  - Consider spinal immobilization, particularly if history of diving
  - Warming measures: move patient to a heated environment, remove wet clothing, cover with blankets
  - If patient has not responded to warming measures and exhibits signs of shock, see Shock P09

**Pediatric Environmental Emergencies (P06)**

ALS Treatment

- Routine Medical Care – Pediatric (see S05)

Hyperthermia	Hypothermia
<ul style="list-style-type: none"> <li>• Transport if:                             <ul style="list-style-type: none"> <li>○ Signs of heat stroke</li> <li>○ IV fluids administered</li> <li>○ No improvement in patient condition</li> </ul> </li> <li>• Consider non-transport if:                             <ul style="list-style-type: none"> <li>○ Alert and oriented throughout event</li> <li>○ Parent/guardian does not wish patient to go to the hospital via ambulance</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• If possible, tape heat packs to IV bag and coiled excess IV tubing.</li> <li>• Consider other causes of altered mental status (see <u>Altered Mental Status P02</u>)                             <ul style="list-style-type: none"> <li>➤ Beware of dysrhythmias</li> <li>➤ In severely hypothermic patients (core temp &lt; 30 deg C or 86 deg F):                                     <ul style="list-style-type: none"> <li>➤ <u>Withhold</u> IV medications until core temp rises</li> <li>➤ Limit defibrillation energy for VF/VT to 3 J/kg maximum</li> </ul> </li> </ul> </li> <li>• Transport Decision                             <ul style="list-style-type: none"> <li>➤ Do not transport if mildly hypothermic or parent/guardian does not wish transport.</li> <li>➤ Transport indicated if:                                     <ul style="list-style-type: none"> <li>▪ Altered mental status</li> <li>▪ Signs and symptoms of severe hypothermia</li> <li>▪ No access to warm environment</li> </ul> </li> </ul> </li> </ul>

**Pediatric Pain Management (P07)**

**Assess need for Analgesia**

- Use appropriate age related tool to assess and document level of pain (1-10 scale).
  - < 3 years old .... Behavioral or FACES tool
  - 3-7 years old .... FACES or visual analog scale
  - 8-14 years old .. Visual analog scale

Behavioral Tool

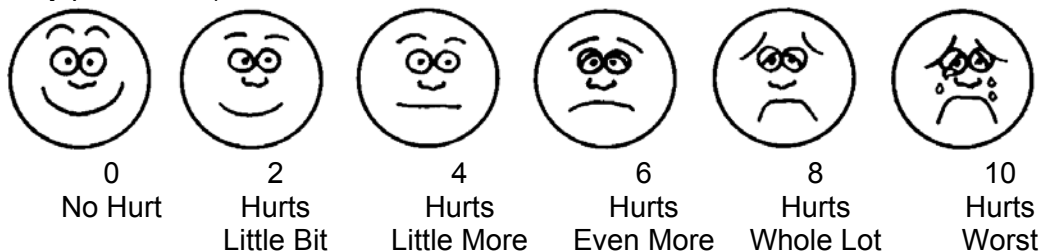
Document all results as a fraction (e.g. 2/10 or 6/10)

Face	0 No particular expression or smile	1 Occasional grimace or frown, withdrawn, disinterested	2 Frequent to constant frown, clenched jaw, quivering chin
Legs	0 Normal or relaxed position	1 Uneasy, restless, tense	2 Kicking, or legs drawn up
Activity	0 Lying quietly, normal position, moves easily	1 Squirming, tense, shifting back and forth	2 Arched, rigid, or jerking
Cry	0 No cry (awake or asleep)	1 Moans or whimpers; occasional complaint	2 Cries steadily, screams, sobs, frequent complaints
Consolability	0 Content, relaxed	1 Reassured by "talking to", hugging; distractible	2 Difficult to console or comfort

Add numbers together, 0 = no pain, 10 = extreme pain

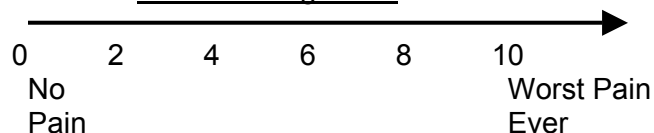
Wong/Baker FACES Pain Rating Scale

(From Wong D.L., Hockenberry-Eaton M., Wilson D., Winkelstein M.L., Schwartz P.: *Wong's Essentials of Pediatric Nursing*, ed. 6, St. Louis, 2001, p.1301. Copyrighted by Mosby, Inc. Reprinted by permission)



Brief instructions: Point to each face using the words to describe the pain intensity. Ask the child to choose the face that describes their pain. Record the associated number.

Visual Analog Scale



**Pediatric Pain Management (P07)**

**BLS Treatment**

- Routine Medical Care – Pediatric (see S05)
- Treat associated injuries and signs and symptoms
  - Psychosocial coaching: reassure, distract, play with patient, etc.

**ALS Treatment**

- Determine if patient meets criteria for pharmaceutical pain control
  - Transport time > 10 minutes and:
    - Significant extremity injuries
    - Burns
    - Crush injuries
    - Severe back and spinal pain
  - AND pain is unrelieved with BLS or psychosocial coaching
- Routine Medical Care – Pediatric (see S05)
- Pediatric Morphine Dose Chart

Morphine Sulfate IVP (0.05 mg/kg)	Morphine Sulfate IM (0.1 mg/kg)
5 kg = 0.25 mg	5 kg = 0.5 mg
10 kg = 0.5 mg	10 kg = 1 mg
20 kg = 1 mg	20 kg = 2 mg
30 kg = 1.5 mg	30 kg = 3 mg
40 kg = 2 mg	40 kg = 4 mg
50 kg = 2.5 mg	50 kg = 5 mg
Maximum single dose = 2.5 mg May repeat once in 5 minutes	Maximum single dose = 5 mg May repeat once in 20 minutes

- Ensure that Naloxone is immediately available when administering Morphine Sulfate
  - 0.1 mg/kg IVP/IO/IM
  - May repeat once

**Base Hospital Order**

- Morphine administration for:
  - Non-traumatic abdominal pain
  - Head, thoracic, abdominal trauma
  - ALOC
  - Abnormal vital signs
  - < 10 minute transport

**Pediatric Respiratory Distress (P08)**

**BLS Treatment**

- Routine Medical Care – Pediatric (see S05)
- Position of comfort
- If possible, identify and treat underlying cause.
  - If foreign body obstruction suspected, perform obstructed airway maneuvers per AHA standards

**ALS Treatment**

- Routine Medical Care – Pediatric (see S05)
- CPAP masks will not fit smaller pediatric faces

<i>Upper Airway Obstruction (Stridor/Croup) Moderate to Severe Distress</i>	<i>Allergic Reaction and Anaphylaxis</i>
<ul style="list-style-type: none"> <li>• Cool mist therapy with nebulized <b>Normal Saline</b></li> <li>• Do not try to visualize pharynx</li> </ul>	<ul style="list-style-type: none"> <li>• See <u>Allergic Reaction / Anaphylaxis P16</u></li> </ul>
	<ul style="list-style-type: none"> <li>• Tracheostomy                             <ul style="list-style-type: none"> <li>○ See <u>Stoma and Tracheostomy Care M05</u></li> </ul> </li> </ul>
<i>Lower Airway (Wheezing)</i>	<i>Smoke Inhalation</i>
<ul style="list-style-type: none"> <li>• <b>Albuterol</b> 2.5 mg in 3 ml NS via nebulizer, q 15 min or continuously prn <u>and</u> HR &lt; 200 bpm                             <ul style="list-style-type: none"> <li>○ If severe distress and tidal volume decreased, administer Albuterol via in-line BVM or ET</li> </ul> </li> </ul> <p>For Severe Respiratory Distress</p> <ul style="list-style-type: none"> <li>• <b>Epinephrine Auto-injector</b> <ul style="list-style-type: none"> <li>○ 0.15 mg (one injector)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Treat appropriate cardiac rhythm</li> <li>• Consider fluid bolus</li> <li>• <b>Sodium Thiosulfate</b>, 25% solution 0.4 g/kg (to a max. of 12.5 g) IV slowly over 10 minutes if patient has any of the following:                             <ul style="list-style-type: none"> <li>○ Unconscious, unresponsive</li> <li>○ Hypotension</li> <li>○ Soot in mouth or nose with severe ALOC</li> <li>○ Thiosulfate can be administered as a solution using the standard drip rate schedule in M13</li> </ul> </li> </ul>

**Special Considerations**

- In upper airway disorders (i.e. epiglottitis, croup, foreign body airway obstruction), invasive airway maneuvers should only be attempted if patient is in respiratory arrest, as aggravation of irritated tissues can cause further airway obstruction.
- Epinephrine should be reserved for those patients who are unable to generate adequate tidal volume to deliver aerosolized drug to the bronchial tree. Do not use Epinephrine excessively, it tends to thicken secretions, deplete glycogen stores, and increase apprehension.
- Base Hospital Contact for additional resources as necessary

### Pediatric Respiratory Distress (P08)

- Signs and symptoms of moderate to severe respiratory distress include:

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  - Cyanosis
  - Inability to speak > 2 syllable units
  - Shortness of breath
  - SBP < 70 mmHg
  - Accessory muscle use
  - Severe wheezing
  - Capillary refill > 2 seconds

**Pediatric Shock (P09)**

**BLS Treatment**

- Routine Medical Care – Pediatric (see S05)
- For suspected allergic reaction or anaphylaxis, see Allergic Reaction / Anaphylaxis P16
- Identify and treat for possible causes: hypoxemia, trauma, hypothermia, toxins, cardiac, etc.
- Control any bleeding with direct pressure only
- Shock position

**ALS Treatment**

- Routine Medical Care – Pediatric (see S05)

<i>Cardiogenic Shock</i>	<i>Hypovolemic, Septic, Spinal Shock</i>
<ul style="list-style-type: none"> <li>• If dysrhythmia present, see appropriate dysrhythmia protocol</li> </ul>	<ul style="list-style-type: none"> <li>• Consider <b>Normal Saline</b> bolus IVP/IO prn to a maximum of 60 ml/kg                             <ul style="list-style-type: none"> <li>○ Neonates: 10 ml/kg</li> <li>○ Child &gt; 1 year: 20 ml/kg</li> </ul> </li> </ul>

**Base Hospital Order**

- **Dopamine** 5 mcg/kg/min IV Drip
  - Titrate in 5 mcg/kg/min every 5-10 minutes to a max rate of 20 mcg/kg/min

**Special Considerations**

- History of onset/ duration of symptoms, fluid loss, fever, infection, trauma, history of allergic reaction and cardiac disease.
- Important signs of shock to watch for;
  - ALOC. Cool, Clammy and/or mottled skin
  - Pallor due to decreased skin perfusion capillary refill > 2 seconds
  - Sunken fontanel
  - Lack of tears
  - Decreased urine output, confirm number of diapers used
  - Lack of brachial and/ or radial pulses
  - Bleeding can occur from a variety of sources, many of them hidden. Often a patient’s past medical history will suggest an etiology.
  - Tachycardia and tachypnea should always raise the question of occult bleeding.
  - Prehospital care is primarily supportive and focused on maintaining adequate oxygenation, fluid replacement, and monitoring vital signs.

**Pediatric Tachycardia with pulses (P10)**

**BLS Treatment**

- Routine Medical Care – Pediatric (see S05)
- Treat signs and symptoms of shock as necessary
- CPR as appropriate

**ALS Treatment**

- Routine Medical Care – Pediatric (see S05)

*SINUS TACHYCARDIA – Narrow Complex (Rate < 220/min)*

- Consider causes: hypoxemia, hyperthermia (fever), metabolic stress, toxins/poisons/drugs, pain or anxiety

<p><i>SUPRAVENTRICULAR TACHYCARDIA</i>  <i>Narrow Complex (QRS duration &lt;0.08 secs.)</i>  <i>Rate &gt; 220/min (infants), &gt;180/min (children)</i></p>	<p><i>VENTRICULAR TACHYCARDIA</i>  <i>Wide Complex (QRS duration &gt; 0.08 secs.)</i>  <i>Rate &gt; 150/min</i></p>
<ul style="list-style-type: none"> <li>• Unstable – diminished perfusion and child is poorly responsive or unconscious                             <ul style="list-style-type: none"> <li>○ Consider pre-cardioversion sedation, but do NOT delay cardioversion                                     <ul style="list-style-type: none"> <li>➢ Midazolam 0.05 – 0.1 mg/kg IV/IO (max dose 2 mg)</li> </ul> </li> <li>○ Synchronized Counter Shocks: 0.5-1 J/kg, 2 J/kg</li> </ul> </li> <li>• Stable – DO NOT DELAY TRANSPORT                             <ul style="list-style-type: none"> <li>○ If child has normal perfusion: attempt vagal maneuvers</li> <li>○ Consider Normal Saline bolus 20 ml/kg</li> <li>○ If child has diminished perfusion, but is responsive:                                     <ul style="list-style-type: none"> <li>➢ <b>Adenosine</b> 0.1 mg/kg rapid IVP/IO. (max dose 6 mg)</li> <li>➢ If no response, repeat Adenosine 0.2 mg/kg rapid IVP/IO (max dose 12 mg)</li> <li>➢ If still no improvement, consider Synchronized Counter Shocks (see “Unstable” section above)</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Unstable – diminished perfusion and child is poorly responsive or unconscious                             <ul style="list-style-type: none"> <li>○ Consider pre-cardioversion sedation, but do NOT delay cardioversion                                     <ul style="list-style-type: none"> <li>➢ <b>Midazolam</b> 0.05-0.1 mg/kg IVP/IO/IN (max dose 2 mg)</li> </ul> </li> <li>○ Synchronized Counter Shocks: 0.5-1 J/kg, 2 J/kg</li> </ul> </li> <li>• Stable – DO NOT DELAY TRANSPORT                             <ul style="list-style-type: none"> <li>○ <b>Normal Saline</b> bolus 20 ml/kg</li> <li>○ If child has normal perfusion: attempt vagal maneuvers</li> <li>○ If child has diminished perfusion, but is responsive:                                     <ul style="list-style-type: none"> <li>➢ <b>Lidocaine</b> 1 mg/kg IVP. May repeat once at 0.5-1 mg/kg IVP</li> <li>➢ If still no improvement, consider Synchronized Counter Shocks (see “Unstable” section above)</li> </ul> </li> </ul> </li> </ul>

**Special Considerations**

- Typical heart rates for PSVT in infants and children:
  - Infants: 220 to 300/min.
  - Children 1-5 years: 200/min.
  - Children 5-10 years: 180 to 200/min.
- Identify and treat possible causes; Hypoxemia, hypothermia, hypovolemia, metabolic disorders, toxins/poisons/drugs, tamponade, tension pneumothorax, thrombosis, pain.
- The most common arrhythmia for children is paroxysmal supraventricular tachycardia (PSVT).
  - Presentation in infancy is characterized by poor feeding, rapid breathing, or irritability.
  - The infant may appear very ill and be misdiagnosed with sepsis.
- Cardioversion should not be delayed if vascular access or medications are not readily available in the unstable child.

**Pediatric Overdose and Poisoning (P11)**

**BLS Treatment**

- Routine Medical Care – Pediatric (see S05)
- Consult with on-scene Hazardous Materials Specialists or Base Hospital as needed to identify toxin/toxicant/substance
- Decontamination should be done by trained personnel. Apply triage tag with contamination status as needed.

**Envenomation**

- If patient does not exhibit signs and symptoms of envenomation within 30 minutes of being bitten, the probability of having received venom through the snake bite decreases.
- Leave any suction device in place
- If constricting bandage applied prior to EMS arrival, leave in place if;
  - No vascular compromise
  - Able to pass two fingers between skin and bandage
- Measuring circumference of the bite and proximal extremity with a snake envenomation can be used as a baseline for determining the progress of swelling

<i>Agent</i>	<i>Treatment</i>
Bee Sting Wasp Sting	<ul style="list-style-type: none"> <li>• Be alert for signs and symptoms of anaphylaxis. (see <u>Allergic Reaction / Anaphylaxis P16</u>)</li> <li>• Remove stinger by scraping or flicking.</li> <li>• Squeezing or tweezers are contraindicated</li> <li>• Cold packs may be applied to relieve pain</li> </ul>
Spider Bite Scorpion Sting	<ul style="list-style-type: none"> <li>• Be alert for signs and symptoms of anaphylaxis. (see <u>Allergic Reaction / Anaphylaxis P16</u>)</li> <li>• Cold packs may be applied to relieve pain</li> </ul>
Snake Envenomation	<ul style="list-style-type: none"> <li>• Be alert for signs and symptoms of anaphylaxis. (see <u>Allergic Reaction / Anaphylaxis P16</u>)</li> <li>• DO NOT apply cold pack, tourniquet, incise wound, or attempt to suck out venom</li> <li>• Avoid movement with the affected extremity, splint as if fractured</li> <li>• Keep extremity at or below heart level</li> <li>• Monitor distal pulse</li> <li>• Circle any swelling around bite marks with a pen and note time</li> <li>• Additionally, mark and measure the circumference of the extremity proximal to the bite and note time</li> <li>• Remove jewelry or restrictive clothing on the affected extremity</li> </ul>

- Treat for signs and symptoms
- Protect yourself. Wear appropriate PPE.
- Identify substance type, amount, and time of ingestion/exposure

**ALS Treatment**

- Routine Medical Care – Pediatric (see S05)
- Withhold Charcoal if rapidly decreasing level of consciousness
- Consider pain management as necessary
- Do NOT delay transport to administer antidote

**Pediatric Overdose and Poisoning (P11)**

<i>Antidotes</i>									
<i>Agent</i>	<i>Treatment</i>								
General Ingestion	<ul style="list-style-type: none"> <li>• <b>Activated Charcoal</b> slush 1 g/kg PO, or 25 g if &gt; 1 year old, if time of ingestion &lt; 1 hour ago</li> </ul> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px; text-align: center;">CAUTION</div> <div> <p>Avoid <b>charcoal</b> in these circumstances:</p> <ul style="list-style-type: none"> <li>○ Patient lacks gag reflex</li> <li>○ Patient unable to self-administer</li> <li>○ Ingested substance not bound by charcoal, for example:</li> </ul> <table border="1" style="margin-left: 20px;"> <tr> <td>Cautics</td> <td>Iron</td> </tr> <tr> <td>Lithium</td> <td>Methanol</td> </tr> <tr> <td>Metals</td> <td>Other alcohols</td> </tr> <tr> <td>Ethylene glycol</td> <td>Hydrocarbons</td> </tr> </table> </div> </div>	Cautics	Iron	Lithium	Methanol	Metals	Other alcohols	Ethylene glycol	Hydrocarbons
Cautics	Iron								
Lithium	Methanol								
Metals	Other alcohols								
Ethylene glycol	Hydrocarbons								
Narcotics / Opioids	<ul style="list-style-type: none"> <li>• <b>Naloxone</b> 0.1 mg/kg IVP/IO/IM/ET (max dose 5 mg). <ul style="list-style-type: none"> <li>○ May repeat twice every 2-3 minutes</li> <li>○ Methadone overdose may require repeated doses</li> </ul> </li> </ul>								
Major Tranquilizers / Neuroleptics	<ul style="list-style-type: none"> <li>✓ <b>Diphenhydramine</b> 1 mg/kg IM/IVP up to a maximum of 50 mg for dystonic reactions</li> </ul>								
Cyanide Poisoning	<ul style="list-style-type: none"> <li>✓ <b>Sodium Thiosulfate</b>, 25% solution 1.65 ml/kg IV to a max. of 50 ml</li> </ul>								

Base Hospital Order

<i>Antidotes</i>	
<i>Agent</i>	<i>Treatment</i>
Tricyclic Anti-Depressants	<ul style="list-style-type: none"> <li>• <b>Sodium Bicarbonate</b> 1 mEq/kg IVP/IO (max dose 100 mEq) for: <ul style="list-style-type: none"> <li>○ Hypotension</li> <li>○ Seizure (see protocol P03)</li> <li>○ QRS widening &gt; 0.10 s</li> </ul> </li> </ul>
Organo-phosphates Cholinergics Pesticides	<ul style="list-style-type: none"> <li>✓ <b>Atropine</b> 0.02 mg/kg IVP (max dose 1 mg). <ul style="list-style-type: none"> <li>○ Repeat q 5 minutes until asymptomatic</li> </ul> </li> <li>✓ <b>Normal Saline</b> bolus as necessary for hypovolemia. May repeat once.</li> </ul>
Calcium Channel Blockers	<ul style="list-style-type: none"> <li>• <b>Glucagon</b> 0.05 mg/kg IM. May repeat to a total of 1 mg.</li> <li>• <b>Calcium Chloride</b> 10% 20-30 mg/kg IVP/IO given over several minutes</li> <li>• <b>Atropine</b> 0.02 mg/kg IVP/IO for symptomatic bradycardia <ul style="list-style-type: none"> <li>○ Minimum dose 0.1 mg, maximum dose 1 mg</li> </ul> </li> </ul>
Beta Blockers	<ul style="list-style-type: none"> <li>• <b>Glucagon</b> 0.05 mg/kg IM. May repeat to a total of 1 mg.</li> <li>• <b>Atropine</b> 0.02 mg/kg IVP/IO for symptomatic bradycardia <ul style="list-style-type: none"> <li>○ Minimum dose 0.1 mg, maximum dose 0.5 mg</li> </ul> </li> </ul>

## Pediatric Overdose and Poisoning (P11)

### Special Considerations

- Transport indicated for all poisoning/overdose patients except alert and oriented, asymptomatic patients under the following circumstances:
  - Ethyl alcohol intoxication
  - Marijuana inhalation/ingestion
  - Capsicum/pepper spray (unless directed by law enforcement)
- Base Hospital Contact for consult and further orders

**Pediatric Trauma (P12)**

**BLS Treatment**

- Routine Medical Care – Pediatric (see S05)
- Control external bleeding
- Treat for signs and symptoms of shock as necessary (see Shock P09)
- Immediately evaluate the need for rapid transport to a Trauma Center
- Spinal precautions as appropriate
- Maintain body temperature

<i>Injury</i>	<i>Treatment</i>
Suspected Pelvic Fracture	<ul style="list-style-type: none"> <li>• Stabilize with bulky dressings</li> <li>• Secure with a Pelvic Wrap (bed sheet or equivalent device) if patient condition and time allows</li> </ul>
Impaled Object	<ul style="list-style-type: none"> <li>• Do not remove impaled object unless it creates an airway obstruction or interferes with CPR or transport.</li> <li>• Stabilize object with bulky dressing and cover with a dry dressing.</li> </ul>
Extremity Fracture or Dislocation	<ul style="list-style-type: none"> <li>• Extremities include hand, arms, clavicle, legs, and feet</li> <li>• Splint, Elevate, and apply cold pack</li> <li>• If the extremity is pulseless or complicates transport, apply gentle traction along the long axis of the bone to attempt to restore circulation and/or splint.</li> </ul>
Abdominal Evisceration	<ul style="list-style-type: none"> <li>• Cover eviscerated contents with moist dressing</li> </ul>
Chest Trauma	<ul style="list-style-type: none"> <li>• Apply occlusive dressing on open chest wounds (ensure relief valve or flap)</li> <li>• Splint as necessary</li> </ul>
Femoral Head Fracture/Dislocation (“Hip Fracture”)	<ul style="list-style-type: none"> <li>• Stabilize with bulky dressings</li> </ul>
Amputation	<ul style="list-style-type: none"> <li>• Place amputated part in a dry, sterile dressing, and then place in a sealed plastic bag. Cool sealed bag with cold packs. Do not delay transport if severed part is not located when the patient is ready for transport.</li> <li>• Tourniquets <u>NOT</u> indicated. Maintain direct pressure.</li> </ul>
Patients with Head Trauma and ALOC	<ul style="list-style-type: none"> <li>• Reverse Trendelenburg position as appropriate</li> <li>• Ventilate patient 12 times per minute (every 5 seconds) with 100% oxygen. Avoid hyperventilation.</li> </ul>

**Pediatric Trauma (P12)**

ALS Treatment

- Routine Medical Care – Pediatric (see S05)
- Consider pain management as appropriate

<i>Injury</i>	<i>Treatment</i>
Suspected Pelvic Fracture or Abdominal Evisceration	<ul style="list-style-type: none"> <li>• Establish 2 large bore IVs of Normal Saline</li> <li>• Pelvic Fracture: Morphine ONLY for pain management</li> </ul>
Chest Trauma	<ul style="list-style-type: none"> <li>• Pleural decompression as indicated (see <u>Pleural Decompression M02</u>)</li> </ul>
Traumatic Arrest	<ul style="list-style-type: none"> <li>• Attempt to identify and treat underlying causes: hypovolemia, tension pneumothorax, etc.</li> </ul>

Special Considerations

- If suspected non-accidental cause, preserve evidence without raising suspicion of parents or caregivers

**Apparent Life-Threatening Event (P13)****Definition**

- An Apparent Life-Threatening Event (ALTE) was formally known as a “near-miss SIDS” episode
- An ALTE 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)
  - Marked change in muscle tone (limpness, flaccidity)
  - Choking or gagging
- Usually occurs in infants < 12 months old. However, any child < 2 years who exhibits symptoms of apnea may be considered an ALTE.
- 50% have a possibly identifiable etiology (e.g. abuse, SIDS, swallowing dysfunction, infection, bronchitis, seizures, CNS anomalies, tumors, cardiac disease, chronic respiratory disease, upper airway obstruction, metabolic disorders, anemia, etc.)

**BLS Treatment**

- Routine Medical Care – Pediatric (see S05)
- Assume the history is accurate as reported
- 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, if any
- Obtain a detailed 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)
- Perform a comprehensive physical exam, including the general appearance of the child, skin color, extent of interaction with environment, and evidence of trauma
- Treat any identifiable causes
- Transport

**ALS Treatment**

- Routine Medical Care – Pediatric (see S05)

**Base Hospital Consult**

If the parent/guardian is refusing medical care and/or transport, consult with the Base Hospital physician prior to completing a Refusal of Care

**Pediatric Hypoglycemia (P14)**

**BLS Treatment**

- Routine Medical Care – Pediatric (see S05)
- If patient has an altered mental status AND history of diabetes
  - Administer 1 tube of Oral Glucose, ONLY if patient can self-administer

**ALS Treatment**

- Routine Medical Care – Pediatric (see S05)
- Check blood glucose level

Patient > 4 years old and BSL < 80 mg/dL	Patient < 4 years old (but not neonate) and BSL < 60 mg/dL	Neonatal patient and BSL < 45 mg/dL
<ul style="list-style-type: none"> <li>• <b>Dextrose 50%</b> 1 ml/kg IVP</li> <li>• Repeat once if necessary</li> <li>• If no IV access                             <ul style="list-style-type: none"> <li>○ <b>Glucagon</b> 0.1 mg/kg IM up to a max dose of 1 mg.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Dextrose 25%</b> 2 ml/kg IVP/IO                             <ul style="list-style-type: none"> <li>○ Mix 1 ml <b>D50W</b> with 1 ml NS or sterile water to attain <b>D25</b></li> </ul> </li> <li>• Repeat once if necessary</li> <li>• If no IV access                             <ul style="list-style-type: none"> <li>○ <b>Glucagon</b> 0.1 mg/kg IM up to a max dose of 1 mg.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Dextrose 10%</b> 3 ml/kg IVP or IO                             <ul style="list-style-type: none"> <li>○ Mix 1 ml <b>D50W</b> with 4 ml NS or sterile water to attain <b>D10</b></li> </ul> </li> <li>OR</li> <li>• <b>Dextrose 25%</b> 2 ml/kg IVP or IO</li> <li>• May repeat once if necessary</li> <li>• If no IV access                             <ul style="list-style-type: none"> <li>○ <b>Glucagon</b> 0.1 mg/kg IM up to a max dose of 1 mg.</li> </ul> </li> </ul>

## Pediatric Seizure (P15)

### BLS Treatment

- Routine Medical Care – Pediatric (see S05)
- Recovery position with head elevated, if no suspected spinal injury or mechanism
- Consider cooling measures if febrile (loosen blankets and/or remove excessive clothing)
- Protect patient during active seizure

### ALS Treatment

- Routine Medical Care – Pediatric (see S05)
- Check blood glucose level. If hypoglycemic, see Hypoglycemia P14
- Active seizure > 5 min or repeated seizing without lucid intervals
  - **Midazolam** 0.1 mg/kg slow IVP/IN (max dose 4 mg) (Use Procedure M14 for IN administration)
    - May repeat once in 15 minutes for persistent or recurrent seizure
  - If no IV access
    - **Midazolam** 0.1 mg/kg IM (max dose 5 mg)

### Special Considerations

- Status epilepticus is a true medical emergency defined as either continuous seizures lasting at least 5 minutes or two or more discrete seizures between which there is incomplete recovery of consciousness.
- ALL first time seizures and seizures associated with a fever should be evaluated by a physician.
- Continuous ECG, pulse oximetry, and blood pressure monitoring (every 5 minutes) are mandatory, during, and after, administration of Midazolam.

**Pediatric Allergic Reaction / Anaphylaxis (P16)**

**BLS Treatment**

- Routine Medical Care – Pediatric (see S05)
- Position of comfort
- If possible, identify underlying cause

**ALS Treatment**

- Routine Medical Care – Pediatric (see S05)
- **Diphenhydramine** 1 mg/kg IM/IVP. Max dose = 50 mg.
- Albuterol 2.5 mg in 3 ml NS via nebulizer, q 15 minutes prn and HR < 200 bpm
  - If severe distress and tidal volume decreased, administer Albuterol via in-line BVM or ET
- If severe distress and signs of shock
  - **Epinephrine Auto injector.** (0.15 mg) SQ

**Base Hospital Physician Order**

For Stridor, severe respiratory distress or shock

**Epinephrine** 0.01 mg/kg (1:10,000) IVP/IO (max dose 0.3 mg) per Base Hospital Physician Order only.

Withdraw Epinephrine from the preload using a 3 ml syringe.

**Special Considerations**

- **Epinephrine** should be reserved for those patients who are unable to generate adequate tidal volume to deliver aerosolized drug to the bronchial tree. Do not use Epinephrine excessively, it tends to thicken secretions, deplete glycogen stores, and increase apprehension.
- Base Hospital Contact for additional resources as necessary
- Signs and symptoms of severe distress and signs of shock include:

<ul style="list-style-type: none"> <li>• Cool, clammy, mottled skin</li> <li>• Pallor due to decreased skin perfusion</li> <li>• Altered sensorium due to decreased perfusion to the brain</li> </ul>	<ul style="list-style-type: none"> <li>• SBP &lt; 70 mmHg</li> <li>• Capillary refill &gt; 2 sec</li> </ul>
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- Signs and symptoms of moderate to severe respiratory distress include:

<ul style="list-style-type: none"> <li>• Cyanosis</li> <li>• Inability to speak &gt; 2 syllable units</li> <li>• Shortness of breath</li> <li>• SBP &lt; 70 mmHg</li> </ul>	<ul style="list-style-type: none"> <li>• Accessory muscle use</li> <li>• Severe wheezing</li> <li>• Capillary refill &gt; 2 seconds</li> </ul>
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## Smoke Inhalation (P17)

### BLS Treatment

- Routine Medical Care – Pediatric (see S05)
- Administer 100% oxygen via NRB
- Remove victim from the source of exposure
- Evaluate patient for facial burns, hoarseness, black sputum, and soot in nose or mouth
- Completely remove victim's clothing prior to transport
- Perform spinal immobilization if indicated
- Assess and treat for thermal and/or traumatic injuries (see P04 – Burns or P12 – Trauma)
- Control airway early, BVM with airway adjuncts as appropriate
- Treat bronchospasm as warranted (see P08 – Respiratory Distress)

### ALS Treatment

- Routine Medical Care – Pediatric (see S05)
- Control airway early. Intubate or place Combitube, if indicated.
- Establish IV NS. Consider fluid bolus.
- If patient is unconscious, unresponsive, hypotensive, or has soot in mouth or nose with severe ALOC
- Administer **Sodium Thiosulfate**, 25% solution 1.65 ml/kg max dose 50 mls (12.5g) IV slowly over 10 minutes
- **Sodium Thiosulfate** can be administered as an infusion over 10 minutes using a standardized drip rate (see M13)

### Special Considerations

- This protocol should only be used in patients with serious signs and symptoms
- Pulse oximetry values may be unreliable in Smoke Inhalation (SI) patients
- Cyanide and/or the combination of cyanide and carbon monoxide may be responsible for the majority of SI deaths
- SI should be particularly suspected in patients rescued from closed-space structure fires
- **Sodium Thiosulfate** should NOT be given prophylactically

# Procedures

## Santa Clara County Procedures

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**Advanced Airway Management – Adult /Pediatrics (M01)**

**Introduction**

Endotracheal intubation is the preferred method of airway management in adults who are suffering from respiratory arrest or failure. In pediatric patients Bag Valve Mask (BVM) ventilation is the preferred method of airway management. Endotracheal intubation is allowable only when BVM cannot be effectively used. BLS personnel may use any of the simple adjuncts but the use endotracheal or esophageal/tracheal double lumen airway devices (ETDLA) is reserved for ALS personnel

Definition: Intubation Attempt – An intubation attempt is defined as the introduction of an endotracheal tube past the patient’s teeth.

- Size of ET tube
- Number of attempts
- ET Tube measurement (cm) at teeth
- Ventilation compliance
- Capnography used
- Equality of lung sounds
- Method for securing ET tube
- Visualization of vocal cords
- Suction required
- Chest rise with ventilation
- Bulb syringe check
- ETCO<sub>2</sub>/Capnography reading (color or measurement)
- Absence of epigastric sounds
- Any complications with intubation procedure

**Adult Intubation**

**Indications**

- ✓ Airway obstruction
- ✓ Respiratory arrest
- ✓ Respiratory failure
- ✓ Airway obstruction
- ✓ Glasgow Coma Scale <=8
- ✓ Need for prolonged ventilatory support
- ✓ Severe hemorrhage with poor perfusion
- ✓ Severe flail chest or pulmonary contusion
- ✓ Multiple trauma and abnormal mental status where BVM cannot be used effectively
- ✓ Inhalation Injury with erythema/edema at cords
- ✓ Protection from aspiration

**Contraindications**

- Isolated medical respiratory arrest with suspected hypoglycemia or narcotic overdose
- Maxillo-facial trauma with unrecognizable facial landmarks
- Patients actively seizing
- Patients with an active gag reflex

**Equipment (adult/pediatric)**

- Laryngoscope handle
- MacIntosh blades (sizes 2, 3, 4)
- Miller blade – (sizes 0, 1, 2, 3, 4) extra bulbs –
- Suction device and catheter

**Advanced Airway Management – Adult /Pediatrics (M01)**

- ET tubes 2.5–9.0 (3 each size)
- Stylet
- Water soluble lubricant
- Pulse oximetry
- End tidal CO2 monitor (colorimetric or capnography)
- OPA: sizes 000-6 12 cc Syringe
- Magill forceps (adult/pediatric)
- Extra batteries
- Stethoscope
- 1" Waterproof tape/tube holder
- Bag-valve-mask (BVM)

**Preparation**

- Maintain C-spine immobilization as indicated
- Assure an adequate BLS airway. Note if gag reflex.
- Pre-oxygenate with 100% oxygen and BVM
- Monitor pulse oximetry for hypoxemia and bradycardia
- Check laryngoscope for light and blade size
- Estimate blade size
  - With laryngoscope blade held next to patient's face the blade should reach between lips and larynx
  - If in doubt choose a blade too long than too short
- Check suction
- Select ET size and length
- Stylet should NOT extend beyond distal ET
- Test cuff with air
- Apply lubricant to cuff area.
- Position patient into sniffing position if no c-spine precautions

**Procedure**

- Oxygenate prior to performing suctioning whenever possible.
- Use assistant to apply cricoid pressure and do not release until cuff (if equipped) is inflated
- Separate lips away from the teeth.
- Insert blade into right corner of mouth
- While inserting the blade sweep the tongue to the left side of the mouth
- Proceed until epiglottis is visualized. If using Miller blade the epiglottis may not be visible
- Suction as needed. Note color, viscosity, and contents of suctioned material
- Lift laryngoscope blade toward an imaginary point 10 feet directly above patient's feet
- When cords are visualized pass ET tube into right corner of mouth and insert between vocal cords.
  - Be certain to observe the tube pass the cords.
- Intubation attempts should not last >30 seconds
- Position tube depth and inflate cuff if equipped.

### Advanced Airway Management – Adult /Pediatrics (M01)

- Apply CO2 detector.
  - If the end-tidal CO2 indicator demonstrates exhaled carbon dioxide (changes from purple to yellow color), the tube should be secured.
  - If the end-tidal CO2 indicator does not change color (remains purple), no carbon dioxide is being exhaled.
    - In a patient with pulses, no color change indicates incorrect endotracheal tube placement (esophageal). The tube should be removed and reintubation attempted.
    - In a patient without pulses, this may represent correct placement but requires further confirmation with esophageal detector bulb.
- Apply capnography device to ETT and monitor CO2 continuously.
- Assess tube placement with esophageal detector bulb
  - If the esophageal detector bulb rapidly inflates (< 5 seconds) this indicates tracheal placement, and the tube should be secured.
  - If the esophageal detector bulb inflates slowly or there is no air return, the patient should have the tube removed and reintubation should be attempted.
- If placement is confirmed as above then give several breaths via bag while listening to the stomach (absence of gastric sounds) and then each lung. Note presence and symmetry of lung sounds and chest rise. If chest does not rise, extubate and re-intubate.
- Secure the tube with tape or ET holder and ventilate. Mark the TUBE at the level of the lips.

Continued monitoring includes both physical exam findings and use of a colorimetric end-tidal CO2 indicator or capnography. Reassessment should occur after any patient movement or transfer of care, and should include esophageal detector bulb in pulseless patients who are not exhaling carbon dioxide.

- Attach capnography strip to PCR.

#### Pediatric Intubation Indications

- See adult indications above.

#### Contraindications

- See adult contraindications above
- Effective BVM ventilation
- Spontaneous respirations
- Head injury
- Delayed transportation due to one prior intubation attempt. One additional attempt is allowed en route.

#### Equipment

See adult equipment above.

- Backboard, cervical collar or other immobilization device to limit neck extension

#### Procedure

- See Adult Procedure above
- Head and neck position
  - Children age > 2 years (without C-spine injury)

**Advanced Airway Management – Adult /Pediatrics (M01)**

- Head extension with pillow under occipital
- Chin lifted into sniffing position
- Infants age < 2 years
  - Occipital naturally extends head
- > Chin lifted to sniffing position
- Suggested laryngoscope blades
  - Child <8 y/o: #2 Macintosh blade (curved)
  - Term infant: #1 Miller blade (straight)
  - Premature infant: #0 Miller blade (straight)
- Use un-cuffed endotracheal tubes in ages < 8 years
- Limit intubation attempt to 20 seconds in newborns
- Use immobilization device to prevent neck extension and tube dislodgement.

## Pleural Decompression (M02)

### Introduction

Pleural decompression, a rarely used and highly invasive procedure, is reserved for patients with a suspected tension pneumothorax who are experiencing rapidly deteriorating vital signs.

### Indications

Severe respiratory distress, diminished breath sounds on affected side, tracheal deviation away from affected side, and rapidly deteriorating vital signs such as decreased BP, increased pulse and respirations thought to be due to a tension pneumothorax. Other clinical signs may include jugular venous distension, hyper-resonance to percussion on affected side and altered LOC.

### Contraindications

Any condition not due to a pneumothorax.

### Equipment

- Pleural decompression kits
- Betadine solution and alcohol prep pads
- 10-14 gauge angiocatheter
- 20cc syringe
- One-way valve or gloves (Asherman or similar device)
- Tape

### Procedure

- Approved sites:
  - 2nd or 3rd intercostals space, mid-clavicular line
  - 4th or 5th intercostals space, mid-axillary line
- Prep site with alcohol and Betadine solution.
- Position angiocatheter with needle directly over the rib.
- While aspirating with the syringe, firmly but carefully advance the needle at a perpendicular angle to skin just superior to the rib.
- Advance until syringe fills with air and a distinct “give” is felt. **Caution:** avoid the inferior side of the rib while advancing the angiocatheter to limit injury to the neurovascular bundle.
- Remove the angiocatheter needle.
- Attach the one-way valve device to the catheter, secure to chest with tape.
- Reassess breath sound and continuously monitor cardio-respiratory status.

### Complications

- Lacerated lung
- Pneumothorax
- Subcutaneous emphysema
- Hemorrhage secondary to damage to the intercostals artery or veins

### Documentation

- S&S along with clinical criteria before pleural decompression
- Site of the decompression
- Patient’s response and outcome
- **Fax PCR to EMS Agency within 24 hrs**

### Endotracheal Medication Administration M03

#### General

The efficacy of medications administered via endotracheal tube is, at best, unknown. Use this route of administration **only** if no other means (IV/IO/IN/IM) is possible. See Airway Management M01 for intubation procedure.

#### Procedure

- Place the tip of a needle or catheter as deep as possible into the endotracheal tube or ETDLA device that is in the trachea.
- If the medication is not pre-diluted or not using atomization device to administer, dilute the medication with normal saline. Total fluid volume per dose should not exceed:
  - 5 cc (pediatric)
  - 10 cc (adult)
- Ventilate the patient fully 5-6 times after each medication administration.
- Optionally, an endotracheal atomization device may be used.

## Pulse Oximetry (M04)

### Introduction

Pulse oximetry is used in the out-of-hospital environment for patient assessment and evaluation of response to treatment. The normal oxygen saturation (SO<sub>2</sub>) is 96-99%. An SO<sub>2</sub> ≤ 94% must be explained by an acute or chronic condition.

### Indications

- Pulse oximetry should be used freely. If patient condition allows, obtain a Room Air (RA) reading before administering oxygen.
- The following patients require pulse oximetry:
  - All patients on cardiac monitoring
  - All patients with neurologic, respiratory, or cardiovascular complaints
  - All patients with abnormal vital signs
  - All patients who receive respiratory depressants (e.g. **Morphine, Diazepam, Midazolam**, etc.)
  - Critical trauma patients
- **NOTE:** Oxygen administration is not to be excluded based on a saturation value obtained by pulse oximetry. Patients with conditions including, but not limited to: ischemic chest pain, trauma, respiratory conditions, congestive heart failure, etc. should receive high flow oxygen regardless of saturation reading. Like other physiologic parameters, pulse oximetry is used only as a guide in providing overall care to the patient.

### Procedure

- Remove nail polish, if necessary. Utilize adhesive sensor or apply sensor to the side of the finger, if needed.
- Attach pulse oximeter
- Allow equilibration time
- Note and record pulse rate and SO<sub>2</sub> level
- Monitor constantly and record SO<sub>2</sub> levels at appropriate intervals
- Note and investigate SO<sub>2</sub> readings ≤ 94% or changes in SO<sub>2</sub> reading ≥ 5%. Contact Base Hospital if any doubt exists.
- Administer supplemental O<sub>2</sub> for any patient with an unexplained SO<sub>2</sub> ≤ 94% or any patient with an SO<sub>2</sub> ≤ 90%.

### Clinical and Technical Issues

- Motion at the sensor site may mimic pulsatile activity
- Low perfusion states may result in no SO<sub>2</sub> reading
- Edema may result in falsely low readings
- Anemia (low hemoglobin level) may result in inaccurate reading
- Presence of carbon monoxide poisoning results in inaccurate SO<sub>2</sub> readings
- Methemoglobin may result in inaccurate SO<sub>2</sub> readings

## Stoma and Tracheostomy Care – Adult & Pediatric (M05)

### Introduction

Due to our aging population, advances in ventilator technology, and the tendency to treat more medical conditions from home, EMS personnel are increasingly more likely to encounter patients with stomas or tracheostomies in respiratory distress.

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. Suctioning of surgical airways is often required to attempt to clear and maintain an open airway. Administration of inhaled medications will need to be given via the stomas or tracheostomy tubes.

Tracheostomy tube replacement: A dislodged tracheostomy tube should not be replaced, unless the paramedic has the skill and training to do so.

### Suctioning

#### Equipment:

- Appropriate sized suction catheter (Pediatrics use 8-10 F)
- Suction unit with adjustable suction capacity
- BVM with oxygen supply
- 5 cc syringe filled with sterile saline

#### Contraindications:

- Use of demand valve

#### Procedure:

- Adjust suction to 120-150 mmHg for adults; decrease suction to 80-100 mmHg for pediatrics.
- Apply sterile gloves
- Flush suction catheter with saline to lubricate tip and establish patency of suction catheter.
- Remove the T-tube if a tracheostomy patient is on humidified oxygen.
- Ventilate the patient with 100% oxygen several times.
- 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.
- Apply suction by occluding the thumb hole while slowly withdrawing the catheter in a twisting motion. Suction of a tracheostomy tube should take no longer than 10 seconds for the adult patient, and 3-4 seconds for the pediatric patient.
- If mucus plugs or thick secretions are present, the instillation of 3-5 cc of sterile saline may be helpful.
- Hyperventilate with 100% oxygen.
- Check breath sounds.
- 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 and Tracheostomy Care – Adult & Pediatric (M05)****Albuterol Administration****Equipment:**

- **Albuterol**
- Sterile **normal saline**
- Hand-held nebulizer or other FDA approved drug delivery device
- Oxygen tubing and supply
- Additional reservoir tubing (optional)

**Procedure:**

- Assure clear airway. Suction if necessary.
- Assemble hand held nebulizer as for patient with intact upper respiratory tract.
- Attach trach collar to reservoir tubing.
- Connect oxygen delivery tubing to oxygen source at sufficient flow rate to produce misting.
- Fit trach collar over stoma or tracheostomy tube.
- Instruct patient to breathe slowly and deeply.
- Optional: mouthpiece may be replaced by additional reservoir tubing.

**Stoma Intubation****Equipment:**

- Appropriate sized cuffed and uncuffed ET tubes
- BVM
- Appropriate sized suction catheters
- Oxygen supply
- Suction equipment with adjustable suction capacity

**Contraindication:**

- Use of demand valve

**Procedure:**

- Select the largest ET tube that will fit through the stoma without force. Check the cuff, unless an uncuffed tube is being used on a pediatric patient.
- Hyperventilate with 100% oxygen using a BVM with the face mask fitted over the stoma. Do **NOT** use a demand valve.
- Wear sterile gloves. Do not use a stylet. It is not necessary to lubricate the tube.
- Suction, if necessary.
- Pass the ET tube and inflate the cuff. The pharynx has been bypassed, so the tube will protrude from the neck several inches.
- Hold the tube in place, watch for chest rise with ventilation.
- Secure the tube and hyperventilate.
- Auscultate the lung fields. Check the neck for subcutaneous emphysema indicating false passage.
- Allow no longer than 30 seconds for the procedure.

## Orogastric Tube Insertion (M06)

### Indications

Orogastric tube insertion may be indicated when the unconscious patient's stomach is severely distended due to aggressive BVM ventilation during resuscitation. Relieving intrabdominal pressure may improve ventilation of patient. **Placement of an Orogastric tube is permitted only in patients who are intubated.**

### Contraindications

Severe Facial Trauma  
Delayed Transport  
Coagulation Abnormality  
Caustic Ingestion

Basilar Skull Fracture,  
Esophageal Obstruction  
Large Esophageal Varices  
Conscious Patient

### Equipment

Double lumen orogastric tube  
Water-soluble lubricant

### Procedure

- Intubate patient (see Airway Management M01)
- Use a 5 French (for infants) or 10 French (all other children under 8 years old) orogastric tube is placed in the stomach after the ET is secured.
- Measure the length of tube to be inserted by placing the tip of the tube over the approximate area of the stomach and extending it to the corner of the patient's mouth.  
\*Note the marks on the tube used for measurement.
- Lubricate the tip and the first 2-3 inches of the tube with a water-soluble lubricant.
- Gently and slowly advance the tube.
- After the tube has been fully inserted its predetermined length; secure tube with tape to the cheek or ET tube.
- Tube position can be confirmed by instilling 20 cc of air through a syringe into the tube and listening under the left sub costal region for a rush of air, or by aspiration of gastric secretions through the tube.
- Do not administer and fluids or medications down OG tube until an x-ray can be obtained to confirm proper placement

### Complications

- Perforation of the esophagus
- GI bleed
- Coiling of the tube in the posterior pharynx

## Pre-Existing Vascular Access Devices (M07)

### Introduction:

Pre-Existing Vascular Devices (PVADs) offer an alternate route for medication administration in emergent situations. Though these look very complicated they can provide easy access for providing rapid pharmacological treatment. The following simple steps must be followed to ensure patient safety and prevent damage to catheter or shunt.

### Indications:

- Functional pre-existing vascular access device.
- Critical patients in immediate need of IV fluids and medication.
- Any patient who is not in an immediately life threatening situation, but is conscious and is able to explain accessing the device to the paramedic.

### Contraindications:

- Non-functional PVAD due to blood clots, catheter displacement, or damage to device.
- Subcutaneous PVAD i.e. PortaCath (does not include dialysis access sites).
- Subcutaneous dialysis fistula or graft that is less than 6 weeks old. (May be used for patients in extremis)

### Equipment

- IV fluid
- IV tubing
- Pressure bag (Used for dialysis grafts and fistulas only)
- 10 cc syringe (at least 2, with one filled with normal saline flush)
- 18 gauge or larger angiocatheter, or equivalent
- Alcohol or **Betadine** wipes

### Procedure

#### Indwelling Catheters (i.e. Hickman, PICC lines)

- Identify location of catheter insertion and inspect for signs of damage, clots, and infection.
- Locate different ports on multi-lumen catheters and identify the colors.
- Blue or clear color typically identifies venous access.
- Prepare 2 syringes, one with 10ccs of normal saline flush.
- Unclamp or release the stops on the single catheter port you will be accessing.
- Using aseptic technique, withdraw 5 to 10 cc of fluid from the catheter using a syringe or in some cases a needleless access device. Aspiration should stop when blood reaches the port. This preparation procedure is done to clear any additional **Heparin** that the catheter would have contained.
- Maintaining asepsis, vigorously flush the PVAD port with 5 to 10 cc of normal saline using a syringe or needleless access device. Note any signs of resistance or infiltration.
- Attach flushed IV tubing, continuing aseptic technique, to access port. Tape the tubing hub or needleless access device to the PVAD to prevent accidental disconnection.
- Wrap cloth tape around IV tubing then use a clothes pin or paper clip to secure tubing to pt's clothing. This will prevent any pulling on the IV tubing from dislodging the indwelling catheter

**Pre-Existing Vascular Access Devices (M07).****Procedure for Dialysis Shunts, Fistulas, and Grafts**

- Dialysis shunts should be accessed using the above procedure. However, the use of a pressure bag to infuse IV fluids into grafts or fistulas should be considered to prevent pressurized blood from filling the IV tubing.
- Fistulas and grafts are subcutaneous arterial to venous anastomoses using the patient's own vasculature or artificial graft material. They are associated with many complications and should only be accessed for patients in extremis who have no other access sites.
- Assemble supplies and have IV bag and tubing flushed and placed inside a slightly inflated pressure bag.
- Locate venous side of the fistula by applying pressure to center of the graft loop, occluding much of the blood flow. Next, feel both sides of the graft. The strongly pulsating side of the loop will be the arterial or supply side and the other will be the venous or return side.
- Once return side is determined, obtain access using aseptic technique and no smaller IV than an 18 gauge needle. Be prepared for blood to spurt out from access point since the fistula is normally under pressure.
- Control bleeding with sterile gauze over hub of IV cannula.
- Quickly connect IV tubing. Do not completely tamponade fistulas or grafts as they may become clotted or rupture.
- Once IV tubing is connected inflate pressure bag to compensate for fistula pressure. This will provide an access route for medications that must be pushed rapidly.
- Further inflation of the pressure bag can deliver IV fluids at an appropriate drip rate.

**Complications**

- Damage to vascular device
- Infection

## Intraosseous Infusion (M08)

### Introduction:

Intraosseous infusion provides an effective alternative means of providing fluids and medications to severely ill patients for whom an intravenous line is unsuccessful after 2 attempts.

### Indications:

- Any ALS patient for whom immediate fluid or medication treatment is indicated. In addition, patients must have at least one of the following:
  - An altered mental status
  - Respiratory compromise
  - Hemodynamic instability
- For patients who are aged 9 years to age 18 years care should be taken to avoid growth plate areas when inserting the IO needle. In the pediatric and adolescent patient the growth plates are present at both ends of the long bones.

### Contraindications:

- IO is generally not indicated in patient who is awake.
- IO administration is not allowed in patients who do not require *immediate* fluid or medication therapy, or in whom an intravenous line can be established in a timely fashion. **IO insertion will never be performed for prophylaxis.**
- Fracture of bone selected for IO infusion.
- Previous orthopedic procedures in bone selected for IO infusion,
- Preexisting medical condition (tumor at the insertion site, significant peripheral vascular disease (etc)
- Severe burn or infection at site of insertion
- Previous IO attempt at chosen site
- Successful insertion of IV line after 1 or 2 attempts
- Inability to identify landmarks required to perform procedure.

### Equipment

- Alcohol and **Betadine** pads/swabs
- Intraosseous needle
- Pressure bag
- IV Infusion set, flushed and ready to go
- 10cc syringes (2)
- 10cc empty syringe for aspiration
- 10 cc syringe filled with normal saline for immediate flush
- 3 way stop-cock

### Procedure

- Select insertion site on antero-medial leg, 1 to 3 cm below tibial tuberosity.
- Clean skin with **Betadine**
- **If conscious the patient will be administered Lidocaine IO, 40 mg in adult patients and 0.5 mg/kg (max dose 40 mg) in pediatric patients, for local anesthesia prior to fluid administration.**
- Use an FDA approved device for insertion and follow the manufacturer's instructions for use.
- Remove stylet and apply 3 way stop-cock.

**Intraosseous Infusion (M08)**

- Aspirate 5-10 cc of marrow with empty syringe. Note: inability to aspirate does not necessarily mean that the needle is improperly placed.
- Flush with pre-filled syringe and infuse with pre-flushed IV set. Avoid any delay as the needle can quickly clot closed.
- Check for evidence of infiltration.
- Administer fluids using either a syringe or a 250 ml bag of NS under pressure, in 10 ml increments.

**Complications**

- Embolism
- Subcutaneous infiltration
- Fracture
- Osteomyelitis (bone infection)

**Documentation**

- IV attempts
- IO attempts
- Volume infused upon transfer of patient care to the hospital

## 12 Lead Electrocardiogram (M09)

### Introduction

12-lead electrocardiograms (EKGs) are used for a patients in whom Prehospital personnel suspect cardiac ischemia is the origin of the patient’s distress. Our goal is to direct the patient from the field to the most appropriate facility that can care for their health issue in the most timely manner. This is especially important for patients who may be experiencing an ST-elevation MI (STEMI). The transmission or reporting of the ST-elevation MI can decrease “door-to-intervention” times for these patients, thus salvaging or sparing heart muscle. .

12-lead EKGs can and should be used with the Suspected Cardiac Ischemia (A08) protocol.

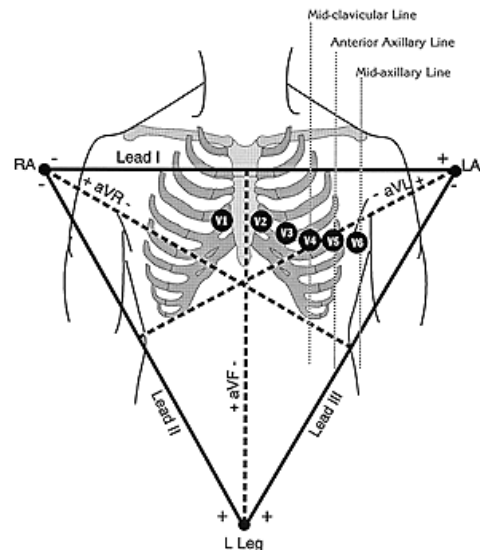
### Indications

Any patient with known or suspected Acute Coronary Syndrome (ACS). These patients typically present with some or all of the following:

- 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
- EKG criteria for STEMI ALERT: Machine interpretation “**\*\*\*ACUTE MI\*\***”, **\*\*\*ACUTE MI SUSPECTED\*\*\***

### Procedure

- Attach EKG leads to the patient (limb leads to the upper arms and ankles, and six chest leads).
- 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 MIs)
- If the EKG monitor reading states “**\*\*\*ACUTE MI\*\***” or “**ACUTE MI SUSPECTED**”.
- immediately notify the receiving hospital with a **STEMI ALERT**
- Serial 12-lead EKGs, en-route, are encouraged
- Document the reading on the monitor **exactly** as it is **stated by the monitor**.



## Transcutaneous Pacing (M10)

### Introduction

Transcutaneous pacing allows for temporary cardiac pacing through pacing pads on the skin for treatment of symptomatic bradyarrhythmias. Consider alternate causes of dysrhythmias prior to initiation of TCP including hypoxia, hypothermia, head injury, aneurysm, and drug overdose.

### Indications

- Symptomatic bradycardia (see Adult and Pediatric Bradycardia – A05 and P03) defined as heart rate less than 60 bpm and signs of diminished perfusion related to bradycardia and unresponsive to atropine treatment.
- Symptomatic “failed” permanent pacemakers.
- Symptomatic second degree AV block Type II or third degree AV block
- Symptomatic bradycardia in post heart transplant patient (denervated transplant heart).

### Contraindications (unless approved by the base physician)

- Non-intact skin at the site of the electrode placement
- Age < 12 years old
- Asystole, confirmed in 3 leads

### Equipment

- Pacemaker/monitor (and defibrillator)
- 2 sets of electrodes: rhythm monitoring & pacing

### Procedure

- Strongly consider sedation as necessary for pacing discomfort. **Midazolam** and/or **Morphine Sulfate** IV. Sedation is not mandatory.
- Turn monitor on to “pacing” mode.
- Apply monitor cable leads to patient to determine rhythm.
- Apply pacing pads. Anterior pad just to the left of the sternum and the posterior pad on the patient’s back to the left of the spine.
- Attach pads to the instrument cable and attach cable to pacer, carefully check all connections
- Set initial pacing rate at 80 bpm.
- Select output level: begin at 0 mA and increase by 10 mA until capture/pulses are noted, then increase output by an additional 10 mA. (In cardiac arrest setting, start at max power setting and decrease the output after capture is achieved.)
- Assessment of capture: look at the ECG tracing on the monitor for pacer spikes that are each followed by a QRS complex. Assess quality of pulse and blood pressure.
- If capture is maintained but the patient remains symptomatic of inadequate tissue perfusion (B/P < 90 systolic, altered level of consciousness consider increasing the rate by 10 bpm until 100 bpm is reached.
- If perfusion remains a problem, consider IV fluids and dopamine. If perfusion remains a problem, contact the base physician for consultation and/or alteration of TCP settings.

### Complications

- Failure to recognize VF due to the size of pacing artifact on the ECG screen.
- Induction of other dysrhythmias.
- Soft tissue discomfort may result from pacing. Ensure adequate analgesia and sedation.

### Spinal Immobilization (M11)

**Note:** Spine Injury Criteria based on “Spine Injury – Clinical Criteria for Assessment and Management” by Peter Goth, MD

- If there is any reasonable possibility that a patient may have suffered spinal injury, the spine must be promptly immobilized. Consider immobilization in a patient who sustains trauma that has any possibility of injury to the spine.
- Field personnel should follow the recommended procedure for spinal immobilization contained in the Basic Trauma Life Support (BTLS), Prehospital Trauma Life Support (PHTLS), or Pediatric Education for Prehospital Personnel (PEPP).
- Patients who do not meet criteria but later develop any symptoms require immediate and complete immobilization.
- **Pediatric Patients and Car Seats**
  - Infants restrained in a rear-facing car seat may be immobilized and extricated in the car seat. The child may remain in the car seat if the immobilization is secure and his/her condition allows (no signs of respiratory distress or shock).
  - Children restrained in a car seat with a high back may be immobilized and extricated in the car seat. Once extricated from the vehicle, the child should be placed on a backboard and immobilized.
  - Children restrained in a booster seat (without a back) need to be extricated and immobilized following standard spinal immobilization procedures. They should not be extricated using the booster seat.
- **The Spinal Injured Athlete** (reference: Prehospital Care of the Spinal Injured Athlete, National Athletic Trainers’ Association, 1998)
  - In general, do not remove the shoulder pads or helmet of a football player.
  - Only the facemask should be removed (a specialized tool is required for this procedure).
  - To place a backboard under the patient:
    - If supine, lift straight up, do not log-roll
    - If prone, log-roll directly on to the board
  - Attempt to place a cervical collar. This task may not be possible. If the pads fit closely to the helmet, they will minimize motion of the head.
  - Use towel rolls or foam head blocks and tape to immobilize the head.
- **Removal of Spinal Immobilization**
  - Paramedics must not remove spinal immobilization placed by another paramedic unless the immobilization compromises the patient’s life or limb.

## Continuous Positive Airway Pressure (M12)

### Introduction:

Prehospital CPAP treatment in patients with Acute Pulmonary Edema can improve oxygenation significantly and lower respiratory rate, heart rate, and systolic blood pressure. Continuous positive airway pressure (CPAP) may reduce the need for intubation and mechanical ventilation in patients with acute hypoxemic respiratory insufficiency. Noninvasive ventilation (NIV) has been associated with lower rates of endotracheal intubation in populations of patients with acute respiratory failure.

### Indications

- Age > 8 years old
- History of CHF with Pulmonary Edema and one or more of the following:
  - Pedal Edema > Taking Digoxin or Lasix
  - Orthopnea > Severe or sudden onset SOB
  - Anxious > Rales or coarse wheezes
  - Diaphoresis > Hypertension

### OR

- Near Drowning
- Severe respiratory distress

### Contraindications:

- Absolute Contraindications: (DO NOT USE)
  - Age < 8 years old
  - Respiratory or cardiac arrest
  - Agonal respiration
  - Severely depressed level of consciousness
  - Systolic BP < 90 mmHg
  - Signs and symptoms of pneumothorax
  - Inability to maintain airway patency
  - Major trauma, especially head injury with increased ICP or significant chest trauma
  - Facial anomalies or trauma (e.g. burns, fractures)
  - Vomiting
- Relative contraindications (USE CAUTIOUSLY)
  - History of asthma and/or COPD
  - History of pulmonary fibrosis
  - Decreased LOC
  - Claustrophobia or unable to tolerate mask (after first 1-2 minutes trial)

## Continuous Positive Airway Pressure (M12)

### Equipment

Boussignac CPAP system

Oxygen tank with flow rate regulator that can achieve 25 L/min (25 LPM flow will achieve CPAP of 8-10 cm H<sub>2</sub>O)

### Procedure:

- Place patient in a seated position with legs dependent
- Monitor ECG, VS (BP, HR, RR, SpO<sub>2</sub>)
- Attach hose to an O<sub>2</sub> tank capable of 25 LPM flow rate and place mask on patient.
- A liter flow of 25 LPM will provide approximately 8-10 cms of water pressure
- Provide patient reassurance that this will alleviate breathing problems,
- NTG spray can be given through the open port, or simply remove the mask long enough to spray,

### Complications:

- ✓ Hypotension
- ✓ Pneumothorax
- ✓ Corneal drying

### Goals of CPAP

Normally the patient should improve in the first five minutes of CPAP

Signs of improvement include:

- ✓ Elimination of dyspnea
- ✓ Decreased respiratory rate
- ✓ Decreased heart rate
- ✓ Increased SpO<sub>2</sub>
- ✓ Stabilized BP

### Failure to improve:

Should the patient fail to improve with CPAP, remove the CPAP device and assist ventilations with BVM or intubate patient.

Signs and symptoms of failure to improve include the following:

- Sustained or increased heart rate
- Sustained or increased respiratory rate
- Sustained or increased BP
- Sustained or decreasing pulse oximetry readings, and/or
- Decreased level of consciousness.

### Documentation:

- ✓ The use of CPAP must be documented on the PCR
- ✓ VS (BP, HR, RR and SpO<sub>2</sub>) must be documented every 5 minutes **6.21**

### **Continuous Positive Airway Pressure (M12)**

- ✓ In the narrative section of the PCR, document the patient's response to CPAP.
- ✓ Any adverse event related to the use of CPAP.
- ✓ Indicate that CPAP is being used when giving the ring down report so the ED can be ready to maintain the procedure on arrival to ED.

**Sodium Thiosulfate Infusion (M13)**

**Key points for administration:**

- This table is set up for a 10 minute administration time.
- Use maxi-drip tubing with a 250 ml bag of NSS
- Draw up the weight based dosage of the Na Thiosulfate.
- Withdraw and discard from the 250 ml bag of NSS the amount equivalent to the dosage amount of Thiosulfate and enough solution to equate to the Total Volume (120 mls.) NSS and NA Thiosulfate.
- Administer at 30 drops per 15 seconds.
- Any patient weighing more than 30 Kg. will receive the same dosage as the 30Kg. weight child

<b>Weight in Kg</b>	<b>Thiosulfate Dosage</b>	<b>Total volume</b>	<b>Drip Rate/15 secs</b>
<b>5 Kg</b>	<b>8 mls.</b>	<b>120 mls</b>	<b>30drops</b>
<b>10 Kg</b>	<b>15 mls.</b>	<b>120 mls</b>	<b>30drops</b>
<b>15 Kg</b>	<b>25 mls.</b>	<b>120 mls</b>	<b>30drops</b>
<b>20 Kg</b>	<b>33 mls.</b>	<b>120 mls</b>	<b>30drops</b>
<b>30 Kg</b>	<b>50 mls.</b>	<b>120 mls</b>	<b>30drops</b>

## Intranasal Administration of Medications using the MAD Atomizer\*

### Introduction

#### **Intranasal administration of certain medications has advantages over other routes.**

- The nasal cavity provides a direct route into the blood stream for medications that easily cross mucous membranes
- For many medications the rates of absorption and plasma concentrations are relatively comparable to that of IV administration,
- Ease and convenience. This method of drug administration is relatively painless, does not require sterile technique, or intravenous catheters.
- Due to the close proximity of the olfactory nasal mucosa to the central nervous system, CSF drug concentrations may exceed plasma concentrations making this an attractive method of achieving adequate CSF Drug concentrations for centrally acting medications.
- Provides a much safer route of administration for Nalaxone to high risk patient populations.

### Indications

Seizure: Indicated for patients who are actively seizing, and in whom no IV or IO is established,

Suspected opiate overdose: Indicated for patients who are unconscious/unresponsive in whom an opiate overdose is suspected and in whom no IV or IO is established..

### Contraindications

Any patient who is alert and oriented.

### Equipment

MAD Intranasal Atomizer  
Midazolam 5 mg/2 mls  
Narcan 2 mg/ml

### Procedure

Assess ABC's and support ventilation as needed

For suspected Opiate Overdose,

- load syringe with Narcan 2 ml. and attach MAD Intranasal Atomizer to syringe
- Place atomizer in nostril.
- Administer 1 ml briskly in each nostril
- Continue to support respirations as needed.

For active seizures:

- Load syringe with 5 mg of Midazolam and attach MAD Intranasal Atomizer to syringe
- Place atomizer in nostril
- Administer ½ ml of medication in each nostril.

### Intranasal Administration of Medications using the MAD Atomize

#### Problems associated with intranasal administration:

1. **Damage to the nasal mucosa** –if the patient has preexisting damage to the mucosa, the medication may not be effective.
2. **Upper Respiratory Infection (URI) secretions:** Patients how have increased secretions from URI or blood nose, may not absorb the medication as well as there will be decreased contact with nasal mucosa.
3. **Perfusion:** Severe hypotension, severe vasoconstriction, will reduce blood flow to the nasal mucosa and may prevent adequate absorption.
4. **Important note:** If a patient fails to awaken after intranasal Narcan or fails to stop seizing following intranasal Midazolam, they may still respond to intravenous administration of these drugs.

#### Documentation

Indication for the use of the medication

Dosage and rout of administration

Patient's response to the medication.

**\* This document prepared from San Jose Fire Department Trial Study procedure document.**

# **Operational Guidelines**

**Santa Clara County Operational Policy Highlights**

Policy / Reference #	Key Points	Page
605	Pre-hospital Trauma Triage	7.01
502	Refusal of Care	7.04
604	Do Not Resuscitate (DNR) / Advanced Directives	7.06
601	Physician at Scene	7.07
OP20	Fire Service Rehabilitation (for wild and brush fire personnel	7.08

**Prehospital Trauma Triage (From Policy 605)**Physiologic Criteria:

1. Glasgow Coma Scale < 14
2. Systolic BP < 90 mmHg
3. Respiratory rate < 10 or > 29 per minute
4. Pediatric considerations:
  - a. Systolic BP < 60 mmHg for child ≤ 6 years
  - b. Systolic BP < 90 mmHg for child > 6 years
  - c. Respiratory rate <10 or >29
  - d. Respiratory rate <20 in an infant less than 1 year.

Anatomic Criteria:

1. Penetrating injuries to head, neck, chest, back, abdomen, groin, or extremities proximal to the elbow or knee
2. Two (2) or more proximal long bone fractures
3. Traumatic paralysis or paresthesia
4. Flail or crushed chest
5. Amputations proximal to the wrist or ankle
6. Suspected pelvic fractures
7. CNS changes witnessed by Prehospital personnel that include
  - a. post-traumatic seizure
  - b. transitory or prolonged LOC
  - c. hemiparesis
8. Crushed, degloved or mangled extremity.
9. Open or depressed skull injury.

Major Trauma Victim Mechanism of Injury Criteria:

1. High risk auto crash as evidenced by:
  - a. Estimated impact speed > 40 mph,
  - b. Major auto deformity > 12 inches occupant site or 18 inches any other site
  - c. Significant structural damage to the vehicle caused by contact with patient's body, such as damage to the steering wheel and/or column, windshield, etc.
  - d. Ejection (partial or complete) from the vehicle
  - e. Death of a passenger in the same vehicle, who suffered the same or similar mechanism
  - f. Prolonged extrication is required to free the victim
  - g. Rollover with unrestrained occupant
2. Falls
  - a. Adults 15 feet (one story equals 10 feet).
  - b. Pediatrics: greater than 10 feet or twice the height of a child who is less than 6 years old.

### Prehospital Trauma Triage (From Policy 605)

3. Auto vs. pedestrian/bicyclist thrown, run over, or with significant (>20 mph) impact.
4. Motorcycle crash > 20 mph.
5. Cycle \*\* crash with rider thrown a significant distance to sustain probable injury.  
\*\*The term "cycle" may include motorcycle, bicycle, ATV, etc.

### Special Considerations

There are other factors that might lower the threshold at which patients should be treated in Trauma Centers. The following should be considered in prehospital trauma triage:

1. Age:  
Patients over age fifty-five (55) have an increased risk of death from even moderately severe injuries.

#### Pediatric Considerations:

Trauma triage of the pediatric patient requires that the practitioner be knowledgeable of the uniqueness of children's anatomy and their physiologic needs. Interventions must be varied to meet the subtle anatomic and physiologic differences between children and adults. Children sustain more head and multi-systems injuries that do adults due to the fact that traumatic force applied to a child's body is distributed over less body mass.

#### Co-morbid Factors:

- a. The presence of cardiac, respiratory, or metabolic disease are also factors that may merit the triage of patients with moderately severe injury to Trauma Centers.
- b. Alcohol, drug influence and/or foreign language speaking patients are examples of factors that may make an accurate neurological assessment difficult. The paramedic should maintain a higher index of suspicion in these cases.
- c. Patients on anti-coagulants or with bleeding disorders
- d. Patients with end stage renal disease requiring dialysis
- e. Time sensitive extremity injury

EMS provider judgment to transport patient to a trauma center

#### Burns:

- A. without other trauma mechanism: Triage to burn facility (Valley Medical Center)
- B. With trauma mechanism: Triage to closest appropriate trauma center

### Major Trauma Victim – Ambulance Transport

- a. Transport all Major Trauma Victims to a designated Trauma Center.
- b. If a Major Trauma Victim refuses transport to a Trauma Center, Base Hospital contact must be made for Base Hospital Physician consultation.
- c. Patients who are not deemed a Major Trauma Victim according to the criteria established herein should be transported to an appropriate acute care hospital with emergency services.

Prehospital Trauma Triage (From Policy 605)

**Triage Decisions**

- a. Base Hospital contact should be made whenever there are questions or problems regarding triage or transport to a designated Trauma Center.
- b. If the patient meets trauma triage criteria as described herein, but the paramedic believes that transport to the Trauma Center is not indicated, Base Hospital contact is required for transport to a non-trauma center.

**Refusal of Care (From Policy 502)**Definitions:

1. Adult – 18 years of age or older
2. Minor legally able to make medical decisions:
  - a. Any minor emancipated by one or more of the following:
    - i. Valid marriage (whether dissolved or not)
    - ii. Active duty in the military
    - iii. Court declaration of emancipation with a valid copy of the declaration or DMV identification card declaring emancipation
    - iv. Any minor 15 years of age or older, living separate and apart from parent or guardian, and managing his/her own financial affairs
3. Competent – Able to understand the nature and consequences of refusing medical care
4. Informed decision – A decision made based on sufficient information to make a reasonable choice regarding care/transport. This information must include the risks and benefits associated with recommended care/transport and alternatives.
5. Qualified relative/caregiver r– An adult with whom a minor lives, who is a spouse, parent, stepparent, brother, sister, stepbrother, stepsister, half-brother, or half-sister of a minor.
6. Patient – A person, for whom EMS was activated and has any medical complaint or who, in the judgment of the prehospital care provider, has any illness or injury.

Persons Eligible to Refuse Care:

1. Competent adults
2. Competent minors legally able to make medical decisions
3. Competent legal representatives of the patient, including qualified relatives/caregivers

NOTE: At no time may a spouse or relative who is not the legal representative of the patient make a decision to refuse evaluation, treatment or transportation for the patient.

Persons NOT Eligible to Refuse Care:

1. An adult who is not competent
2. A legal representative who is not competent
3. A minor not legally able to make medical decisions
4. A suicidal person, attempted or threatened suicide, and must be recent and related to the call
5. Any person on a 5150 hold

Procedure:

1. Provide sufficient information to the patient or legal representative so as to provide a basis for the patient to make an informed decision.
2. Document that the patient understands the information provided

**Refusal of Care (From Policy 502)**

3. If a life or limb threatening condition exists, and the patient continues to refuse treatment, the patient must sign an Against Medical Advice (AMA) form. In such cases, the patient may be encouraged to speak with the Base Hospital as appropriate.
4. If the patient refuses to sign an AMA, document the refusal to sign and have at least one objective witness sign the PCR.
5. If the incident which warranted the 9-1-1 call is not life or limb-threatening, and both the patient and the EMS personnel agree that 9-1-1 services are not needed, the patient can be released at scene without an AMA form signed.

**Do Not Resuscitate (DNR) / Advanced Directives (From Policy 604)**Procedure:

- A. If the patient is pulse-less and apneic on Prehospital personnel arrival:
  1. Confirm DNR status:
    - a. A copy of a signed DNR form (attach to PCR, if practical)
    - b. DNR medallion
    - c. A copy of a signed DNR order from the patient's medical record
    - d. California Durable Power of Attorney For Health Care (DPAHC)
    - e. Out-of-state DNR form: Continue BLS measures and contact Base Hospital for direction
    - f. Notify law enforcement upon termination of efforts.
  2. Continue resuscitative measures while confirming DNR status. Once confirmed immediately discontinue treatment.
  3. If the patient is conscious and states he/she wishes resuscitative measures, any existing DNR orders must be ignored.
- B. If the patient is not pulseless and apneic on Prehospital personnel arrival.
  1. Provide supportive care.
  2. Do not perform resuscitative measures including:
    - a. Chest compressions
    - b. Defibrillation
    - c. Assisted ventilation
    - d. Intubation (Endotracheal or Dual Lumen)
    - e. Cardiotonic drugs (e.g. dopamine, epinephrine, atropine)
  3. Supportive care consists of
    - a. Oxygen by nasal cannula or mask (no BVM)
    - b. Pain management
    - c. Intravenous hydration (no IO)
    - d. Relief of airway obstruction
    - e. Control of major hemorrhage
    - f. Treatment of anaphylaxis
    - g. Chest pain.

**Physician at Scene (From Policy 601)**Definition:

1. Identification – Confirmation of California licensure as an MD or DO includes:
  - a. Valid California physician's medical license, including license number and business address
  - b. An individual identified by the office or clinic staff or personally known to the prehospital personnel.

Physician Involvement:

1. Relinquish patient care:
  - a. Prehospital personnel will assume medical control of the patient
2. Assist in patient care:
  - a. Prehospital personnel will assume medical control of the patient
  - b. Physician may offer advice and assist in procedures within Paramedic Scope
  - c. If necessary, the physician may consult with the Base Station physician for further orders. Prehospital personnel may NOT take orders directly from the on-scene physician.
3. Manage patient care:
  - a. The physician will maintain responsibility for patient care until the patient is accepted at an appropriate facility.
  - b. The physician MUST accompany the patient during transport.

Conflict Resolution should be handled via Base Station consult. Any conflict shall be reported to the EMS Agency via an Unusual Occurrence Report.

Documentation:

1. Physician's full name
2. California medical license number
3. Business telephone number
4. Level of patient care involvement
5. All procedures and treatments performed by the on-scene physician. A copy of the patient's treatment record, if applicable, is acceptable.

**7.07**

**Fire Service Rehabilitation**

- Report to Rehabilitation Area
- Assist Firefighters in Removing Protective Gear including breathing apparatus, helmet, hood, and turnout jacket. Assist in maintaining normal body temperature by providing moist/cool towels, fans, misting systems, etc.
- Provide Oral Hydration unless the individual is nauseated. Encourage intake of 32 to 96 oz of electrolyte solution.
- If available, provide an Oral Glucose and Potassium Source such as citrus fruits, bananas, cookies, etc.
- After 10 minutes of rest, hydration, and passive cooling; Assess Vital Signs including pulse, blood pressure, and temperature (if pulse is greater than 110 beats per minute).
- Either (1) Reassess Vital Signs in 10 minutes or (2) Ensure Physician Evaluation On-Scene or Transport to the Hospital if any of the criteria in Table 1 are present.
- After an additional 10 minutes of rest and hydration, either (1) Reassess Vital Signs in 10 minutes or (2) Ensure Physician Evaluation On-Scene or Transport to the Hospital if any of the criteria in Table 2 are present.

Table 1 Table 1 (First Vitals) Transport/Physician Evaluation Required		Table 2 Table 2 (Second & Third Vitals) Transport/Physician Evaluation Required	
Pulse	greater than 120	Pulse	greater than 100
BP	systolic greater than 200 systolic less than 90 diastolic greater than 100	BP	systolic greater than 150 systolic less than 100 diastolic greater than 90
Temp	tympanic greater than 101 F	Temp	tympanic greater than 101 F
Signs or Symptoms		Signs or Symptoms	
Chest Pain	Shortness of Breath	Chest Pain	Shortness of Breath
Altered LOC	Irregular Pulse	Altered LOC	Irregular Pulse
Pulse >150		Pulse >150	
Diastolic BP of >130mmHg		Diastolic BP of >130mmHg	

- After an additional 10 minutes of rest and hydration, (1) Release the Firefighter or (2) Ensure Physician Evaluation On-Scene or Transport to the Hospital if any of the criteria in Table 2 are present.

# **Weapons of Mass Destruction**

**Weapons of Mass Destruction Guidelines**

Policy #	Guideline	Page
WMD01	Nerve Agent Antidote Administration	8.3
WMD02	Coping with an Attack	8.7
WMD03	Biological Attacks	8.8
WMD04	Chemical Attacks	8.17
WMD05	"Dirty Bomb" Attack	8.21

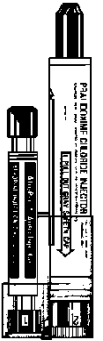
**Nerve Agent Antidote Administration (WMD01)**

**INTRODUCTION**

Nerve Gas auto-injectors are to be used when EMS personnel are exposed to nerve agents (Sarin, Soman, Tabun, Vx) and have signs and symptoms of nerve agent exposure, or when EMS personnel treat victims in an MCI situation in the hot zone.

**EQUIPMENT**

- Mark I autoinjector antidote kit containing:
  - **Atropine** autoinjector (2 mg in 0.7 ccs)
  - **Pralidoxime Chloride** autoinjector - **2-PAM** (600 mg in 2 cc's)
- Additional **Atropine** (2 mg) autoinjectors



MARK I antidote kit

**PROCEDURE**

If you experience any or all of the nerve agent poisoning symptoms, you must IMMEDIATELY self-administer the nerve gas antidote

**Injection Site Selection**

- The injection site for administration is normally in the **outer thigh muscle** (Figure 1). It is important that the injections be given into a large muscle area.
- If the individual is thinly-built, then the injections should be administered into the **upper outer quadrant of the buttocks** (Figure 2).

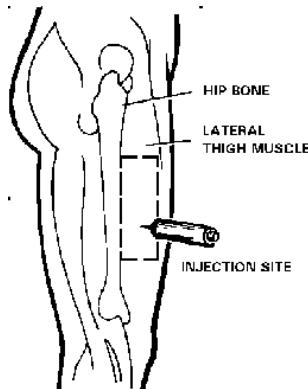


Figure 1 - Thigh injection site

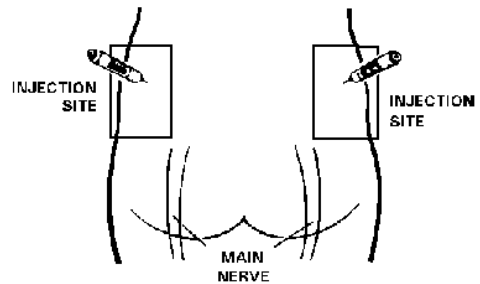
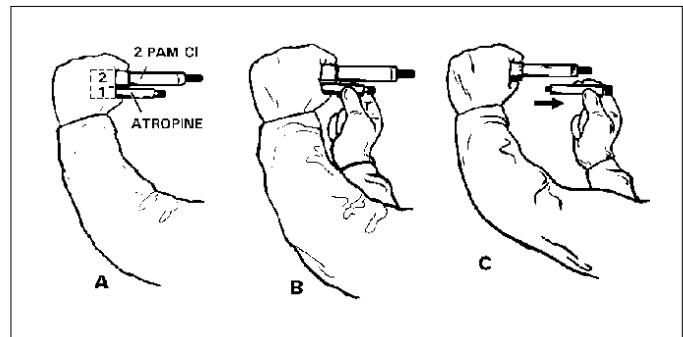


Figure 2 - Buttocks injection site

**Arming The Autoinjector:**

- Immediately put on your protective mask.
- Remove the antidote kit
- With your non-dominant hand, hold the autoinjectors by the plastic clip so that the larger autoinjector is on top (Figure 3A) and both are positioned in front of you at eye level.
- With your dominant hand grasp the **Atropine** autoinjector (the smaller of the two) with the thumb and first two fingers (Figure 3B). **DO NOT** cover or hold the needle end with your hand, thumb, or fingers-you might accidentally inject your self. An accidental injection into the hand **WILL NOT** deliver an effective dose of the antidote, especially if the needle goes through the hand.
- Pull the injector out of the clip with a smooth motion (Figure 3C). **The autoinjector is now armed.**

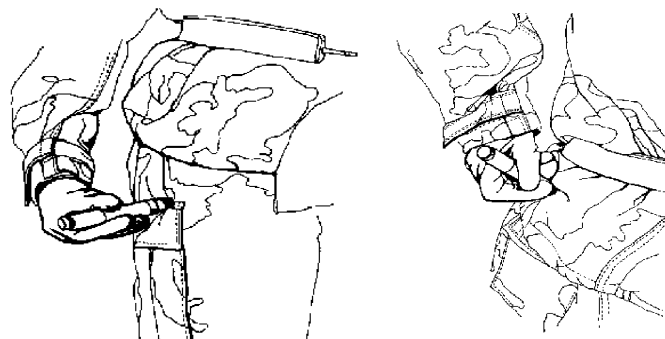


**Figure 3 - Removing Atropine autoinjector from the clip.**

**Administering the antidote to yourself:**

The Santa Clara County EMS Agency, due to regulatory constraints, does not directly authorize self-administration of medications. Any agency or provider which elects to utilize these procedures for the purpose of self-administration should obtain approval and authorization from their own risk management and/or medical director.

- Hold the autoinjector with your thumb and two fingers (pencil writing position). Be careful not to inject yourself in the hand!
- Position the green (needle) end of the injector against the injection site (thigh or buttock) (Figure 4). **DO NOT** inject into areas close to the hip, knee, or thigh bone.



**Figure 4: Thigh and buttock sites for self-administration**

- Apply firm, even pressure (not jabbing motion) to the injector until it pushes the needle into your thigh (or buttocks). Using a jabbing motion may result in an improper injection or injury to the thigh or buttocks.
- Hold the injector firmly in place for at least 10 seconds. Firm pressure automatically triggers the coiled spring mechanism. This plunges the needle through the clothing into the muscle and at the same time injects the antidote into the muscle tissue.
- Carefully remove the autoinjector from your injection site.
- Next pull the **2 PAM** injector (the larger of the two) out of the clip (Figure 5)
- Inject yourself in the same manner as the steps above, holding the black (needle) end against your outer thigh (or buttocks) (Figure 4).
- Massage the injection sites, if time permits.
- After administering the first set of injections, wait 5 to 10 minutes. After administering one set of injections, you should initiate decontamination procedures, as necessary, and put on any remaining protective clothing.

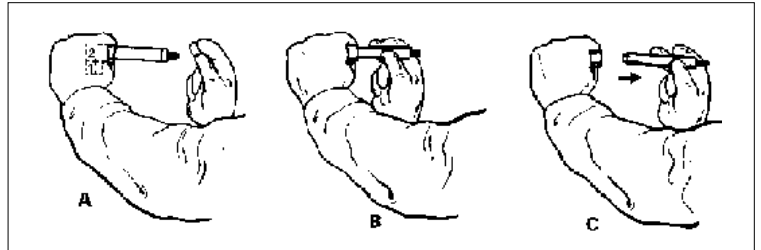


Figure 5 - Removing 2 PAM autoinjector from clip.

**Atropine only** should be repeated as needed. (Note: multiple doses of **Atropine** may be needed – see Dosage Scheme for Mark I Administration below.)

#### Administering the antidote to another in the Hot Zone:

- Ensure appropriate personal protective actions and patient protection to eliminate or reduce additional contamination/exposure.
- Squat, DO NOT kneel, when masking the casualty or administering the nerve agent antidotes to the casualty. Kneeling may force the chemical agent into or through your protective clothing.
- Position the casualty on his or her side (swimmers position).
- Position yourself near the casualty's thigh.
- The procedure for site selection and medication administration is the same as outlined above.

**Atropine only** should be repeated as needed. (Note: multiple doses of **Atropine** may be needed – see Dosage Scheme for Mark I Administration below.)

**DOSAGE SCHEME FOR MARK I ADMINISTRATION** - via autoinjector for self administration or use in the hot zone

<b>Signs &amp; Symptoms</b>		<b># of autoinjectors to use:</b>
Vapor: small exposure <ul style="list-style-type: none"> <li>• Pinpoint pupils</li> <li>• Runny nose</li> <li>• Mild SOB</li> </ul>	Seconds	MARK I autoinjector antidote kit – <b>1 dose initially</b> (containing <b>Atropine</b> and 2-PAM) May repeat x1 in 10 minutes
Liquid: small exposure <ul style="list-style-type: none"> <li>• Sweating</li> <li>• Twitching</li> <li>• Vomiting</li> <li>• Feeling weak</li> </ul>	Minutes to Hours	MARK I autoinjector antidote kit – <b>1 dose initially</b> (containing <b>Atropine and 2-PAM</b> ) May repeat x1 in 10 minutes
Both: large exposure <ul style="list-style-type: none"> <li>• Convulsions</li> <li>• Apnea</li> <li>• Copious secretions</li> </ul>	Seconds to Hours	MARK I autoinjector antidote kit – <b>3 doses initially</b> (containing <b>Atropine</b> and 2-PAM)

**Coping with an Attack (WMD02)**

**A QUICK GUIDE TO DEALING WITH BIOLOGICAL, CHEMICAL, AND “DIRTY BOMB” ATTACKS**

Adapted from a document by Patricia Coomber, PhD (LtCol, USAF) and Robert Armstrong, PhD (COL, USAR) at the Center for Technology and National Security Policy, National Defense University, Fort McNair, Washington DC (<http://www.ndu.edu/ctnsp/index.html>) [This document may be reproduced locally]

<p><b>PRE-ATTACK</b></p> <ul style="list-style-type: none"> <li>• Stockpile 3 days of non-perishable food</li> <li>• Stockpile 3 days of water (3 gallons for each person)</li> <li>• Develop family contact plan (how to get in touch via phone, Internet, or other method)</li> <li>• Stockpiling antibiotics is NOT recommended</li> <li>• Purchasing a gas mask is NOT recommended</li> </ul> <p><b>POST-ATTACK</b></p> <ul style="list-style-type: none"> <li>• If possible, remain at home</li> <li>• You have time --- treatment does not have to start immediately</li> <li>• Listen to local news</li> <li>• If needed, you will be told where to obtain treatment</li> <li>• Do NOT immediately rush to the Emergency Room</li> </ul>	<p><b>PRE-ATTACK</b></p> <ul style="list-style-type: none"> <li>• Stockpile 3 days of non-perishable food</li> <li>• Stockpile 3 days of water (3 gallons for each person)</li> <li>• Develop family contact plan (how to get in touch via phone, Internet, or other method)</li> <li>• Purchasing a gas mask is NOT recommended</li> </ul> <p><b>POST-ATTACK</b></p> <ul style="list-style-type: none"> <li>• IMMEDIATELY leave the chemical attack area</li> <li>• IMMEDIATELY remove contaminated clothing and shower or flush with water if you were exposed</li> <li>• Avoid puddles of liquid</li> <li>• Chemical clouds blow away quickly</li> <li>• Do NOT immediately rush to the Emergency Room unless you have breathed in chemical fumes, or have contamination on your skin</li> </ul>	<p><b>PRE-ATTACK</b></p> <ul style="list-style-type: none"> <li>• Stockpile 3 days of non-perishable food</li> <li>• Stockpile 3 days of water (3 gallons for each person)</li> <li>• Develop family contact plan (how to get in touch via phone, Internet, or other method)</li> <li>• Stockpiling antibiotics is NOT recommended</li> <li>• Purchasing potassium iodide tablets, a geiger counter or a gas mask is NOT recommended</li> </ul> <p><b>POST-ATTACK</b></p> <ul style="list-style-type: none"> <li>• You have time --- the amount of radiation from a “dirty bomb” is unlikely to cause radiation sickness or cancer</li> <li>• Follow instructions of emergency personnel</li> <li>• Leave the area by foot; do NOT use public transportation, to avoid contaminating buses, subways</li> <li>• Do NOT immediately rush to the Emergency Room</li> </ul>
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If you suspect disease from a potential bioterrorism event, immediately call your on-duty supervisor and alert the Santa Clara County EMS Agency Duty Chief

**BIOLOGICAL ATTACK**

Adapted from a document by Patricia Coomber, PhD (LtCol, USAF) and Robert Armstrong, PhD (COL, USAR) at the Center for Technology and National Security Policy, National Defense University, Fort McNair, Washington DC (<http://www.ndu.edu/ctnsp/index.html>) [This document may be reproduced locally]

**Threat: Smallpox**

(Viral Infection)

Enters the body by being breathed in

**Contagious: YES****Immediate Action:**

- Stay at home; tune to radio or television for instructions.
- DO NOT go to an emergency room unless you are sick.
- Smallpox is contagious, health officials may advise wearing a face mask when you go out.
- Infected person should be isolated.
- After smallpox exposure, victim has a few days to get the vaccine (see treatment/prevention column.)

**Symptoms:**

- Rash appears 2-3 days after infection.
- Within 1-3 days after rash appears, the rash becomes raised bumps and pus-filled blisters.
- Blisters crust, scab, and fall off after 3 weeks, leaving a pitted scar.
- Victim is infectious until all scabs fall off.

**Treatment (if exposed):**

- Before exposure, smallpox vaccine can prevent the disease.
- After exposure, vaccination within 3 days will completely prevent or significantly modify effects of disease in most people.
- Vaccination 4-7 days after exposure may modify severity of disease.
- Persons treating smallpox victims should be vaccinated and wear gloves, gowns, and masks.
- Insure that clothing, towels, bed sheets, etc. are not used by uninfected persons.
- Bleach will kill the virus on surfaces. Do NOT drink bleach or use on skin.

**Threat: Anthrax****Contagious: NO**

(Bacterial infection)

Enters the body through:

- cuts in skin (cutaneous form)
- being breathed in (inhalation form)
- the mouth (ingested form - for example, on contaminated food)

**Immediate Action:**

- Stay at home; tune the radio or television for instructions.
- DO NOT go to an emergency room unless you are sick.
- Antibiotics for anthrax are effective in the first 1-6 days.
- Antibiotics must be prescribed/administered by medical personnel.

**Symptoms:**

- Symptoms usually occur within 7 days.
- Skin anthrax starts with bump like an insect bite; in 1-2 days becomes a swelling, then painless open sore.
- Anthrax breathed into the body (inhalation anthrax) has flu-like symptoms.
- Ingested anthrax has symptoms like food poisoning.

**Treatment: (if exposed)**

- Antibiotics are effective if started within 1-6 days after infection .
- Vaccination may also be recommended in some cases.
- Anthrax is not contagious.
- Bleach can kill the bacteria on surfaces. Do NOT drink bleach or use on skin.

**Threat: Plague****Contagious: YES**

(Bacterial infection)

Enters through the body:

- being breathed in (inhalation form)
- bites from fleas from infected rodents

**Immediate Action:**

- Stay at home; tune to radio or television for instructions.
- DO NOT go to an emergency room unless you are sick.
- Begin prescribed antibiotics as soon as possible.
- Infected persons should be isolated.
- Inhalation form of plague is contagious – persons with a cough or sneezing should be considered infectious.
- Health officials may ask you to wear a mask over your nose or mouth when you go out.

**Symptoms:**

- Symptoms occur within 1-6 days after exposure.
- High fever, painful/swollen lymph nodes (armpits and neck), cough, and difficult breathing.

**Treatment: (if exposed)**

- Rapid use of antibiotics is effective.
- Infected persons should be isolated.
- Heat, sunlight, bleach will kill the plague bacteria on surfaces. Do NOT drink bleach or use directly on skin.
- Mask should be worn at all times when dealing with infected persons.

**Threat: Tularemia****Contagious: NO**

(Bacterial Infection)

Enters the body thru:

- tick bite
- being breathed in (inhalation form)
- the mouth (ingested form from contaminated food)

**Immediate Action:**

- Stay at home; tune to radio or television for instructions.
- DO NOT go to an emergency room unless you are sick.
- Victims have 3-5 days to start antibiotics.
- Antibiotics must be prescribed/administered by medical personnel.
- Even without antibiotics, death is unlikely.

**Symptoms:**

- Fever, chills, headaches, weakness occur in 3-5 days.
- Eye infections will occur first in most cases.

**Treatment: (if exposed)**

- Antibiotics are very effective and should be started within 3-5 days of infection.
- Standard disinfectants and mild heat will kill the organism.

**Threat: Botulism****Contagious: NO**

(Bacteria which produces a poison or toxin)

The toxin cannot penetrate intact skin, it enters the body through:

- cuts in the skin (cutaneous form)
- being breathed in (inhalation form)
- the mouth (ingested form from contaminated food)

**Immediate Action:**

- Stay at home; tune radio or television for instructions.
- DO NOT go to an emergency room unless you are sick.
- If you have been exposed, obtain antitoxin treatment from medical staff as soon as possible.

**Symptoms:**

- Blurred vision and difficulty swallowing or speaking occur within 2-3 days.

**Treatment: (if exposed)**

- Medical authorities must administer antitoxin.
- Treatment requires hospitalization.
- Soap and water will inactivate toxin. Do NOT drink bleach or use on skin.

**Threat: Hemorrhagic Fevers**

**Contagious: YES**

(Viral infection)

Infection spreads through the body fluids (blood, urine, stool, saliva) from infected persons

**Immediate Action:**

- Stay at home; tune radio or television for instructions.
- DO NOT go to an emergency room unless you are sick.
- If infected, seek immediate medical care.

**Symptoms:**

- Fever, muscle aches, diarrhea begins within 3-5 days of infection.

**Treatment: (if exposed)**

- Medical personnel will administer antiviral drugs.
- Some hemorrhagic fevers respond to antiviral drugs.
- Infected persons should be quarantined.
- Bleach will kill the organisms on surfaces. Do NOT drink bleach or use on skin.

**Threat: Ricin** **Contagious: NO**

(Poison, or toxin, from castor beans)

Enters the body through:

- Cuts in the skin (cutaneous form)
- Being breathed in (inhalation form)
- The mouth (ingested form from contaminated food)

**Immediate Action:**

- Stay at home; tune radio or television for instructions.
- DO NOT go to an emergency room unless you are sick.
- There is no vaccine or antitoxin available.

**Symptoms:**

- Fever, tight chest, cough and respiratory problems occur within a few hours if ricin is breathed in.
- If taken in by mouth (ingested form) can cause intestinal bleeding and damage to kidneys and liver.

**Treatment: (if exposed)**

- No vaccine or antitoxin is available, patients given supported care.
- The toxin is inactivated by bleach or soap and water. Do NOT drink bleach or use on skin.

## FAQ's for a BIOLOGICAL ATTACK

### **What should I do to protect my family and myself if a biological agent were released in my community?**

Emergency management teams will let you know if you need to evacuate the area. Self-isolation will protect you and your family from contagious diseases. Most agents are destroyed by bleach, or in some cases soap and water. Do NOT drink bleach or use on skin.

### **What should I do if I'm in a building during a biological attack?**

Stay in your area so you don't kick up dust. Cover your mouth with a handkerchief or clothing. If a letter or package is the source of the biological material, close the doors and windows of the room where the source is located and turn off air conditioning, heating and fans. Shout only as last resort- shouting can cause you to inhale dangerous amounts of dust.

### **Is there a way to distinguish anthrax from a cold or flu?**

A runny nose is a rare symptom of anthrax. A person who has a runny nose along with other common flu-like symptoms is far more likely to have the common cold or flu than to have anthrax. Flu-like symptoms outside the "flu season" should trigger medical attention.

### **If smallpox is released in a cloud (aerosol) form, how long does the virus survive?**

The smallpox virus is fragile. In lab experiments, when smallpox is put into a cloud form, 90% of the smallpox virus die within 24 hours; in the presence of sunlight this percentage is even greater.

### **Is smallpox contagious before the symptoms show?**

A person with smallpox is sometimes contagious with onset of fever, but the person becomes most contagious with the onset of rash. The infected person spreads the disease into the air with his breath and from the scabs. Infected persons are contagious until the last smallpox scabs fall off.

### **If someone is exposed to smallpox, is it too late to get a vaccination?**

Vaccination within 3 days of exposure will completely prevent or significantly reduce the severity of the disease in the vast majority of people. Vaccination 4 to 7 days after exposure likely offers some protection from disease or may modify the severity of disease.

### **Should I keep a stockpile of antibiotics?**

No. There is no single pill that can protect against all types of biological agents, and antibiotics have a limited "shelf life" before they lose their strength. Also, antibiotics can cause side effects, and unless you store and take the drug properly, it may not work or may cause you to become ill. For most bacterial agents, the antibiotic regime must be specific for the agent and prescribed by medical personnel.

### **Is it safe to drink water from the tap?**

It would be extremely difficult for a terrorist to contaminate our drinking water supplies to cause widespread illness. Anything deliberately put into the water supply would be greatly diluted, and water treatment facilities routinely filter the water supply and add chlorine in order to kill harmful germs. However, citizens can protect themselves **by boiling their drinking water**, which would kill any microorganisms that may have survived the municipal filtration systems.

**How can I recognize a bioterrorism hoax?**

If you are not sure whether a bioterrorism report is true or not, check with credible sources, such as CDC's Health-Related hoaxes and rumors web site at [http://www.cdc.gov/hoax\\_rumors.htm](http://www.cdc.gov/hoax_rumors.htm)

A number of Internet sites are available regarding urban legends and hoaxes, such as the Urban Legend Reference Page at <http://www.snopes2.com> and the Computer Incident Advisory Committee, and Department of Energy's HoaxBusters site at <http://hoaxbusters.ciac.org>. You can also get more information from Centers for Disease Control and Prevention Public Resource Hotline (CDC):

- English (888) 246-2675
- Espanol (888) 246-2857
- TTY (886) 874-2646

**Should I purchase disposable masks as part of a home emergency disaster kit?**

Having disposable masks in a home emergency disaster kit is not a bad idea, but they are not absolutely necessary. In an emergency, you can get the same amount of protection by placing an article of clothing—a shirt or blouse, or a handkerchief—over your mouth and nose. It will be likely several days before we recognize that a biological weapon has been used against us. In some cases, even several days after an attack, medical authorities may want you to wear a simple paper mask when you go outside, so having them on-hand would be convenient. (Listen to the radio and television for instructions.) Paper masks offer little, if any, protection against chemical weapons, though. In an emergency, simply covering your mouth and nose with clothing until you are out of the danger area is a better idea. Remove the covering and breathe fresh air once you are out of the chemical cloud. In any situation where there is a lot of dust and debris for example, following any type of explosion it is a good idea to cover your mouth and nose to prevent your lungs from being damaged.

## **CHEMICAL ATTACK**

Adapted from a document by Patricia Coomber, PhD (LtCol, USAF) and Robert Armstrong, PhD(COL, USAR) at the Center for Technology and National Security Policy, National Defense University, Fort McNair, Washington DC (<http://www.ndu.edu/ctnsp/index.html>) [This document may be reproduced locally]

### **Threat: Nerve Agents**

### **Contagious: NO**

(VX, Sarin, Tabun)

Can be liquid or gas

Enters the body through:

- Skin and eyes
- Breathing in (inhalation)
- The mouth (ingested form from contaminated food)

### **Immediate Action:**

- Immediate actions for all chemical agents are very similar.
- If you are exposed, the effects will appear fairly rapidly.
- People around you may begin fainting, vomiting and have difficulty breathing.
- Birds and insects may die quickly and fall from the sky.
- IMMEDIATELY leave the area.
- Avoid puddles of liquid.
- If the attack was outside, you should get into a building or car.
- If the attack was inside, get to the outside.
- If you were directly exposed, remove clothing (place in plastic bags, if possible).
- Removing contaminated clothing is more important than modesty.
- Do not remove contaminated clothing over your head; cut or tear it off to avoid contact with the eyes, nose, and mouth.
- Thoroughly flush all areas where agent contacted your skin, using nearest water available.
- Hazmat/fire crews are trained for immediate response and medical treatment is available at most hospitals.

### **Symptoms:**

- First, pupils of then eyes shrink to pinpoints and victim begins sweating and twitching.
- Then, victim experiences runny nose, watery eyes, drooling, excessive sweating, difficult breathing, dimness of vision, nausea, vomiting.

### **Treatment: (if exposed)**

- Remove clothing and flush eyes and skin with plenty of water.
- Seek medical attention immediately; there are antidotes for specific chemical agents.
- Atropine, a drug normally used in hospitals to treat cardiac arrest, is an effective nerve gas antidote, but should be administered only by qualified personnel.

**Threat: Sulfur Mustards****Contagious: NO**

Generally thick liquid, yellow or brown in color, with a slight garlic or mustard odor

Enters the body through:

- skin and eyes
- breathing in (inhalation)
- the mouth (ingested form from contaminated food)

**Immediate Action:**

- Immediate actions for all chemical agents are very similar.
- If you are exposed, the effects will appear fairly rapidly.
- People around you may begin fainting, vomiting and have difficulty breathing.
- Birds and insects may die quickly and fall from the sky.
- IMMEDIATELY leave the area.
- Avoid puddles of liquid.
- If the attack was outside, you should get into a building or car.
- If the attack was inside, get to the outside.
- If you were directly exposed, remove clothing (place in plastic bags, if possible).
- Removing contaminated clothing is more important than modesty.
- Do not remove contaminated clothing over your head; cut or tear it off to avoid contact with the eyes, nose, and mouth.
- Thoroughly flush all areas where agent contacted your skin, using nearest water available.
- Hazmat/fire crews are trained for immediate response and medical treatment is available at most hospitals.

**Symptoms:**

- Mustard gas is a blistering agent, burning exposed eyes and skin; and lungs, mouth and throat if it is breathed in (inhaled).
- Symptoms are not usually noticed until 1-6 hours after exposure.

**Treatment: (if exposed)**

- Remove clothing and flush the eyes and skin with plenty of water.
- Seek medical attention immediately, there are antidotes for specific chemical agents.

**Threat: Hydrogen Cyanide      Contagious: NO**

Hydrogen Cyanide is an extremely flammable, colorless gas or liquid

Enters the body through:

- Skin and eyes
- Breathing in (inhalation)
- The mouth (ingested form from contaminated food)

**Immediate Action:**

- Immediate actions for all chemical agents are very similar.
- If you are exposed, the effects will fairly rapid.
- People around you may begin fainting, vomiting and have difficulty breathing.
- Birds and insects may die quickly and fall from the sky.
- IMMEDIATELY leave the area.
- Avoid puddles of liquid.
- If the attack was outside, you should get into a building or car.
- If the attack was inside, get to the outside.
- If you were directly exposed, remove clothing (place in plastic bags, if possible).
- Removing contaminated clothing is more important than modesty.
- Do not remove contaminated clothing over your head; cut or tear it off to avoid contact with the eyes, nose, and mouth.
- Thoroughly flush all areas where agent contacted your skin, using nearest water available.
- Hazmat/fire crews are trained for immediate response and medical treatment is available at most hospitals.

**Symptoms:**

- Symptoms include burning and redness of the skin and eyes.
- Breathing in (inhalation of) Hydrogen Cyanide causes confusion, drowsiness, shortness of breath, leading to collapse.

**Treatment: (if exposed)**

- Get fresh air immediately.
- Flush skin and/or eyes with plenty of water.
- Seek medical attention immediately; there are antidotes for specific chemical agents.

**Threat: Chlorine****Contagious: NO**

Chlorine is a greenish-yellow gas with stinging odor

Heavier than air, so it will settle in low spots

Enters the body through:

- Skin and eyes
- Breathing in (inhalation)
- The mouth (ingested from contaminated food)

**Immediate Action:**

- Immediate actions for all chemical agents are very similar.
- If you are exposed, the effects will appear fairly rapidly.
- People around you may begin fainting, vomiting and have difficulty breathing.
- Birds and insects may die quickly and fall from the sky.
- IMMEDIATELY leave the area.
- Avoid puddles of liquid.
- If the attack was outside, you should get into a building or car..
- If the attack was inside, get to the outside
- If you were directly exposed, remove clothing (place in plastic bags, if possible).
- Removing contaminated clothing is more important than modesty.
- Do not remove contaminated clothing over your head; cut or tear it off to avoid contact with the eyes, nose, and mouth.
- Thoroughly flush all areas where agent contacted your skin, using nearest water available.
- Hazmat/fire crews are trained for immediate response and medical treatment is available at most hospitals.

**Symptoms:**

- Chlorine is very harmful to the eyes and skin and can cause tearing, blurred vision, difficulty breathing, and burns.

**Treatment: (if exposed)**

- Get fresh air immediately.
- Flush skin and/or eyes with plenty of water.
- Seek medical attention immediately; there are antidotes for specific chemical agents.

## **FAQs for Chemical Attack**

### **Should I purchase a gas mask as protection?**

No. A mask would only protect you if you were wearing it when a chemical (or biological) attack occurs. A release of chemical (or biological) agents is most likely to be done without anyone knowing it, so you would not know ahead of time to put on your mask. Wearing a mask continuously or “just in case” an attack occurs, is impractical, if not impossible. Masks that are not properly fitted will NOT give adequate protection. For example, it is difficult to obtain a proper seal with the mask if you have facial hair such as a beard or sideburns. Protective masks do not fit small children. There are reports of accidental suffocation when people have worn masks incorrectly, as happened to some Israeli civilians during the Persian Gulf War.

### **Should I keep a stockpile of water?**

You can only live a few days without water, so it is very important that you create an emergency supply of safe water. One gallon of safe water per person per day is the bare minimum for survival. Most surplus stores can sell you inexpensive, 50-gallon plastic drums. Properly chlorinated tap water can be safely stored for up to three months. Water purification tablets are also readily available from many surplus and camping supply stores.

### **What are the signs of chemical attack?**

Many chemical agents cannot be seen or smelled. Observe the following rule of thumb: If a single person is on the ground, choking or seizing, this individual is probably having a heart attack or some type of seizure. However, if several people are down, coughing, vomiting, or seizing, they could be reacting to the presence of a toxic substance. Leave the area immediately, call 911, and tell the dispatcher a hazardous gas may be present.

### **What should I do during a chemical attack?**

#### **If the attack occurs indoors:**

Exit the building immediately. Avoid puddles of liquid. Once outside, if you were directly exposed to a toxic substance, discarding your modesty and shedding your clothes could save your life. Taking off your outer clothing can remove roughly 80% of the contamination hazard. Look for nearby fountain, pool, or other source of water to quickly and thoroughly rinse any skin that may be exposed (e.g. jump in a pool). Water alone is an effective decontaminant. Try to remain calm. Rescuers will give medical attention to the most seriously injured individuals first.

#### **If the attack occurs outdoors:**

Birds and other small animals would very quickly be overcome by a poison gas, so if birds and insects are dropping from the sky, this is an indication of a possible chemical attack. The most important thing to do is to get a physical barrier between you and the toxic cloud. Get indoors quickly — into a building or a car. Shut all windows and doors and turn off air conditioning or heater. Plug any air drafts (e.g. under doors). Call 911 and notify authorities that a hazardous gas may be present. The wind will carry the toxic hazard away within a relatively short period of time. Stay indoors, and turn on the television or radio for news. Authorities will notify you when it is safe to go outside. If you are at home, put your clothes in a plastic bag and take a shower to remove any contamination to which you may have been exposed.

### **"DIRTY BOMB" ATTACK**

Adapted from a document by Patricia Coomber, PhD (LtCol, USAF) and Robert Armstrong, PhD (COL, USAR) at the Center for Technology and National Security Policy, National Defense University, Fort McNair, Washington DC (<http://www.ndu.edu/ctnsp/index.html>)  
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**Threat: "Dirty bomb"**

**Contagious: NO**

#### **Immediate Action:**

##### ***AT THE BLAST SITE:***

- Follow instructions of the emergency personnel.
- Stay calm — you have time — decontamination does not need to begin immediately.
- REMAIN in the area until released by emergency personnel.
- Cover your mouth and nose with a handkerchief.

##### ***NEAR THE BLAST SITE:***

- Stay calm — you have time — decontamination does not need to begin immediately.
- Cover your mouth and nose with a handkerchief or other material.
- Proceed on foot away from the area.
- Do not take public transport, so that you will not contaminate buses, subways, railcars, etc.
- If you drive your car or truck, do not use the air conditioner or heater.
- At home, remove clothing while you are outside and place in a plastic bag.
- Shower twice, wash all hair thoroughly.
- News broadcast will instruct you on how to discard contaminated clothing and how to clean your car or truck.

#### **Symptoms:**

- Symptoms depend on amount of radiation received.
- Radiation doses are referred to as the number of "rem" just like temperature is referred to as the number of degrees.
- A chest x-ray is about 1/100<sup>th</sup> rem.
- An exposure of 5 – 75 rem produces few observable symptoms.
- An exposure of 75 – 200 rem cause vomiting, fatigue and appetite loss —recovery takes a few weeks.
- An exposure of more than 300 rem cause hair loss and an inability to fight infections — it is usually fatal.

#### **Treatment: (if exposed)**

- Treatments are available for some types of radiation exposure.
- Wash any open wound several times with soap and water.
- Anti-nausea drugs and painkillers can relieve some symptoms.
- Antibiotics can fight secondary infections.
- Blood transfusions may be needed.

## **FAQs for “Dirty Bomb” Attack**

### **What is a “Dirty Bomb?”**

A “Dirty Bomb” is a conventional explosive such as dynamite package with radioactive material that scatters when the bomb goes off. (The radioactive material would likely be material stolen from hospitals, nuclear power plants, or other industrial sites. It is not the same as an atomic bomb.) Most “dirty bomb” casualties will be from the initial blast of the conventional explosive. The radioactive material that is scattered as a result of the explosion causes the “dirty” part. The TNT in such a bomb may still be more dangerous than the radioactive material. Its destructive power would depend on the size of the conventional bomb, and the amount of the nuclear material used.

### **What is Radiation?**

Radiation is form of energy that is present all around us. Different types of radiation exist, some of which have more energy than others, and some of which cause more harm to people than others. The dose of radiation that a person receives is measured in units called rem. For example, the average person gets about 1/3 of a rem from natural exposure during a year, and approximately 1/100<sup>th</sup> of a rem from one chest x-ray. Radiation comes from man-made sources such as x-ray machines, from the sun and outer space, and from radioactive materials such as uranium in soil.

### **Will a “dirty bomb” make me sick?**

The effects of a “dirty bomb” can vary, depending on what type of radioactive material is used and on how much material is scattered. Although a “dirty bomb” could cause serious injuries from the explosion, it would be unlikely to have enough radioactive material in a form able to cause serious radiation sickness among large numbers of people. Just because people are near a radioactive source for a short time or get a small amount of radioactive material on them does not mean that they will get radiation sickness or cancer.

However, radioactive material is much more dangerous if it gets inside your body -- by eating or drinking, breathing, or through an open wound -- than if it remains outside your body. If you come into contact with radioactive material from a “dirty bomb,” take the following precautions: Do not eat, drink, or smoke, do not lick your lips, and do not touch your hand to your face or to uncover a wound until you have left the contaminated area and have properly been decontaminated by experts.

### **What types of terrorist events might involve radiation?**

Terrorist events could include introducing radioactive material into food or water supply (powdered or liquid radioactive material can be spread without using explosives), using explosives (like dynamite) to scatter radioactive materials (called a “dirty bomb”), bombing or destroying a nuclear facility, or exploding a small nuclear device. Although introducing radioactive material into the food or water supply would cause great concern, it probably would not cause much contamination or increase the risk of adverse health effects.

### **What are the signs of radiation attack?**

There will be signs of an explosion, but you cannot see or smell radiation.

**How fast do I have to leave the area?**

For the most likely “dirty bomb,” anyone who survives the explosion will actually have hours to evacuate. There is no need for panic. It takes hours to accumulate enough from a “dirty bomb” to cause radiation sickness or cancer.

**How can I protect myself during a radiation emergency?**

If you are advised to stay at home or office, you should do the following: Close all doors and windows, Turn off ventilators, air conditioners, and forced air-heating units that bring in fresh air from the outside. Only use units to re-circulate air that is already in the building. Close fireplace dampers, move to an inner room, keep your radio tuned to the emergency response network.

If you are advised to evacuate: follow the directions from your local officials, and if immediately available, take a flash light, portable radio, batteries, essential medicines, and cash and credit cards.

**You recommend NOT using public transportation when evacuation from a “dirty bomb” attacks, but what about using my private vehicle?**

If you drive your car or truck, some radioactive material may get inside and will have to be cleaned out. Listen to local news broadcasts for instructions about cleaning your vehicle. If you drive your private vehicle, do not run your heater or air conditioner. When you get home, remove your clothing while you are still OUTSIDE and place clothing in plastic bags. Listen to local news broadcasts for instructions on how to discard these contaminated clothes.

**I was miles from the detonation---am I going to be sick?**

Listen to emergency broadcasts information for instructions that will be depend on the size of the attack, direction of the wind, and components of the “dirty bomb.” It is extremely unlikely that anyone who survives the blast will become sick from radiation. In addition, your ability to have children will not be affected.

**Will I be able to decontaminate my home and continue to live in it during and after the attack?**

Yes. Decontamination is difficult but possible, and with reasonable effort and care you should be able to return to a normal safe life in your home.

**Should I buy a radiation detector?**

No. Unless you have been trained you won't be able to interpret the readings. Many of the geiger counters available commercially are worthless and un-calibrated.

**Should I purchase potassium iodide tablets for protection against radiation?**

No. Potassium iodide (KI) (available over-the-counter) protects people from thyroid cancer caused by radioactive iodine, a cancer-causing agent that can be released in nuclear explosions. KI should only be taken in radiation emergency that involves the release of radioactive iodine, and only radioactive iodine, such as an accident at a nuclear power plant or the explosion of a nuclear bomb. A “dirty bomb” will not contain radioactive iodine, so KI pills are of no use against the effects of a “dirty bomb.”