

11.03 SPECIAL CIRCUMSTANCES: CHEMICAL & RADIOLOGICAL AGENTS

RADIATION INJURY

<ul style="list-style-type: none">• Burns and / or blast injury.• Multiple health issues with lower dose exposures.
BLS Treatment
<ul style="list-style-type: none">• Position of comfort.• NPO.• Assess circulation, airway, breathing, and responsiveness.• Oxygen as indicated.• Provide Spinal Motion Restriction as indicated or position of comfort as indicated.• Appropriately splint suspected fractures/instability as indicated.• Bandage wounds/control bleeding as indicated.
ALS Treatment
<ul style="list-style-type: none">• For pain, administer Morphine.
Comments
<ul style="list-style-type: none">• Follow facility radiation exposure plan for patient decontamination and disposal of all contaminated waste.• In the nuclear bomb scenario casualty load will be excessive. Utilize austere care protocol and strict triaging to maximize available resources. Access all available disaster resources.

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CHEMICAL AGENT INJURY

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

<ul style="list-style-type: none"> Causes “SLUDGE” (Salivation, Lacrimation, Urination, Diaphoresis/Diarrhea, Gastric hypermotility, Emesis/Eye (small pupils, blurry vision). Severe exposures may result in decreased level of consciousness, fasciculation/muscle weakness, paralysis, seizures. 		
BLS Treatment		
<ul style="list-style-type: none"> Position of comfort. NPO. Assess circulation, airway, breathing, and responsiveness. Oxygen as indicated. Provide Spinal Motion Restriction as indicated or position of comfort as indicated. Appropriately splint suspected fractures/instability as indicated. Bandage wounds/control bleeding as indicated. 		
ALS Treatment		
<ul style="list-style-type: none"> Administer Atropine 2-5 mg IVP/IO. Repeat every 2 – 5 minutes until SLUDGE symptoms subside. For seizures: administer Midazolam. 		
Comments		
<p>Nerve agent poisoning can be very toxic. Large amounts of Atropine/2-PAM may be needed to treat symptoms. If the patient is initially symptomatic and no response is seen to the initial doses of medication, continue giving until a response is achieved. May need to access pharmaceutical disaster cache called, “CHEMPACK” to have sufficient supply of antidote to treat multiple patients. If available, administer DuoDote [Atropine/Pralidoxime (2-PAM)] Autoinjector IM in using dosing table below:</p>		
<p>DuoDote (2-PAM) Dosing Estimator <i>DuoDote = Atropine 2.1mg / Pralidoxime 600mg</i></p>		
Do NOT Use Atropine/2-PAM Injector	Use Between 1 – 3 Atropine/2-PAM Injectors IM	Use 3 Atropine/2-PAM Injectors IM
<ul style="list-style-type: none"> No signs of life Fits non-resuscitation group (expectant) due to other concomitant injury 	<p>Titrate dose based on 1 or more SLUDGE signs and:</p> <ul style="list-style-type: none"> Elderly Children appearing under age 14 Prolonged extrication (may require more than 3 autoinjectors) 	<ul style="list-style-type: none"> Exhibiting 2 or more SLUDGE signs OR Non-ambulatory

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

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

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MUSTARD (SULFUR MUSTARD)

Blistering agent affecting skin and mucous membranes.
BLS Treatment
<ul style="list-style-type: none">• Position of comfort.• NPO.• Assess circulation, airway, breathing, and responsiveness.• Oxygen as indicated.• Provide Spinal Motion Restriction as indicated or position of comfort as indicated.• Appropriately splint suspected fractures/instability as indicated.• Bandage wounds/control bleeding as indicated.• Preserve body temperature if blistered area is large.
ALS Treatment
<ul style="list-style-type: none">• Advanced airway if indicated.
Comments
<ul style="list-style-type: none">• Liquid or vapor mustard penetrates the skin and mucous membranes and damages cells within minutes of exposure, so decontamination must be done immediately after exposure.• Mustard agent can be very persistent; all surfaces with potential contamination must be carefully cleaned before considered decontaminated.

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

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

BLS Treatment

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

ALS Treatment

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

Comments

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

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CHLORINE

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

BLS Treatment

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

ALS Treatment

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

Comments

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

KEY ASSESSMENT FINDINGS

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

Cyanide

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Blocks O ₂ use in cell causing cellular asphyxia and death.
BLS Treatment
<ul style="list-style-type: none">• Position of comfort.• NPO.• Assess circulation, airway, breathing, and responsiveness.• Oxygen as indicated.• Provide Spinal Motion Restriction as indicated or position of comfort as indicated.• Appropriately splint suspected fractures/instability as indicated.• Bandage wounds/control bleeding as indicated.
ALS Treatment
<ul style="list-style-type: none">• Advanced airway as indicated.• If SBP < 90 mmH, administer IV/IO of Normal Saline fluid bolus.• Sodium Thiosulfate if available.
Comments
<ul style="list-style-type: none">• Patients from enclosed space fires are at risk of cyanide poisoning.• Notify hospital about possible cyanide poisoning and need for Cyanokit antidote.