

**PROTOCOL
Smoke Inhalation
(Suspected Carbon Monoxide Poisoning)**

Overview: Smoke inhalation injury is the result of various inhaled components of combustion and direct thermal injury to the airway. Signs and symptoms include evidence of exposure to fire, stridor, wheezing, acute upper airway obstruction, chemical pneumonia and non-cardiac pulmonary edema. Effects of the exposure may be immediate or delayed for several hours. Carbon monoxide poisoning is a common secondary complication to smoke inhalation or direct exposure to the gas. Signs and symptoms include evidence of exposure to fire or natural gases produced by incomplete combustion, headache, and dizziness, ringing in the ears, nausea, weakness, chest pain and changes in level of consciousness.

First Responder Care and BLS (NT) Care should be focused on assessing the situation and initiating care to assure the patient is maintaining an airway, is breathing, and has a perfusing pulse and beginning treatment for shock.

1. Render initial care in accordance with the Routine Patient Care Protocol
2. Assure scene safety
3. **OXYGEN:** preferably 15 L/min by mask. If the patient does not tolerate a mask, then administer 6 L/min by nasal canal.
4. Treat respiratory and/or cardiac symptoms per appropriate protocol.

BLS/ILS and ALS Care should be directed at conducting a thorough patient assessment, providing care to assure the patient is maintaining an airway, is breathing, has a perfusing pulse, begin treating for shock and preparing or providing patient transportation.

1. Render initial care in accordance with the Routine Patient Care Protocol and BLS care as above.
2. ILS/ALS may initiate IV line
3. **OXYGEN:** preferably 15 L/min by mask. If the patient does not tolerate a mask, then administer 6 L/min by nasal canal.
4. PROVENTIL (ALBUTEROL)/ATROVENT Combinations
 - a. If the patient has wheezing, administer a treatment of **Albuterol/Atrovent combination** nebulized via 6L of oxygen over 15 minutes. **Second and subsequent treatments will be Albuterol Only.**
5. **Paramedic Only: Patients with Stridor: administer a nebulized treatment of Racemic Epinephrine 2.25% in a 0.5ml unit dose mixed with 3ml of Normal Saline. Patients with Stridor from Smoke and Heat Injuries may need additional treatments if transport times are extended.**
6. Transport as soon as possible. Transportation can be initiated at any time during this sequence.

Critical Thinking Elements:

- Consideration should be given (in consultation with Medical Control) to transport suspected CO poisoning patients to a local facility with a hyperbaric chamber.
- Pts showing signs and symptoms of upper airway difficulty from an inhalation (Burn) should be intubated as soon as possible.
- Closest hyperbaric chamber is at St. Elizabeth Hospital in Appleton.

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Hazardous Materials Exposures

(including radiation exposure and response to mass exposure incidents)

Overview: Injuries from hazardous material incidents vary depending on the manner of exposure (inhalation, ingestion, injected or absorbed), the type of material involved (acids, ammonia, chlorine, hydrocarbon solvents, sulfides, organophosphates) and the amount of exposure (time and concentration). Harmful products are widely used in home gardening and cleaning, commercial agriculture and cleaning and industrial operations. Civil defense agencies have indicated the increasing threat concerning the use of "Weapons of Mass Destruction" (WMD) as a foreign and domestic terrorist tool. A WMD is an intentional hazardous material incident. Due to the magnitude and multiplicity of hazardous materials, this protocol focuses on a general approach to the patient involved in a hazardous material incident. The substance container may contain vital information for resuscitation of an exposed patient. Communication with Medical Control is the best way to obtain rapid and accurate advice on treatment guidelines for specific materials. Consider early notification of county hazmat team. This should be based on what is observed on scene, what MSDS may indicate, and what first responder teams' initial reaction to the situation is.

First Responder / BLS and ILS Care should be focused on assessing the situation and initiating Routine Patient Care to treat for shock. Remain uphill, upwind, and upstream and upgradient of the incident. Stay out of any established "HOT ZONE" unless trained, equipped and authorized to enter. Be alert to secondary devices meant to kill or injure Responders.

1. Render initial care in accordance with the Routine Patient Care Protocol. Identify what patient was exposed to, ensure responder safety, and obtain reliable information on what patient was exposed to.
2. Consider possible scene and patient contamination and follow Agency safety procedures.
3. Wearing protective gear, remove the patient's clothing. Contaminated clothing may cause continued exposure.
4. Irrigate the patient with water if a water source is available and if the product MSDS indicates use of water will not cause an adverse reaction. Body parts should be flushed at least 1 – 2 minutes.
5. Note nature and amount of vomiting and diarrhea; assure body fluid precautions are followed.
6. **OXYGEN:** preferably 15 L/min by mask. If the patient does not tolerate a mask, then administer 6 L/min by nasal canal. Be prepared to support the patient's respirations with ventilation via bag-valve-mask.
7. Transport: Consult Medical Control to determine contamination control measures on arrival or an alternate triage location. Assure receiving hospital is aware of the patient's contamination prior to arrival.

ALS Care should be directed at conducting a thorough patient assessment, providing care to assure the patient is maintaining an airway, is breathing, has a perfusing pulse, beginning treatment for shock and preparing or providing patient transportation.

1. Render initial care in accordance with the Routine Patient Care Protocol and BLS/ILS care as above.
2. Observe for "SLUDGE" reaction: salivation, lacrimation, urination, defecation, gastrointestinal cramping and emesis. Early indications of organophosphate poisoning include: headache, dizziness, weakness and nausea.
3. **ATROPINE:** If "SLUDGE" signs and symptoms are present and organophosphate poisoning is suspected CONTACT MEDICAL CONTROL and consider orders to administer **ATROPINE 2 mg IVP or 2 mg IM**. Repeat ATROPINE 1 mg IV every 5 minutes or until signs and symptoms

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“SLUDGE” subside. Usual ATROPINE dose limitation does not apply, but exceeding limitation requires Medical Control order.

4. PROVENTIL (ALBUTEROL): If the patient has been exposed to an irritant gas (acids, ammonia, chlorine, carbon monoxide) administer nebulizer treatment of **PROVENTIL (ALBUTEROL) 2.5 mg** in 3 cc Normal Saline over 15 minutes.
5. Transport: Consult Medical Control to determine contamination control measures on arrival or an alternate triage location. Assure receiving hospital is aware of the patient's contamination prior to arrival.

**PROCEDURE
MARK-1 Autoinjectors**

PROCEDURE STATEMENT: This protocol may be used by properly trained and licensed EMTs exposed to nerve gas (Sarin, Sman, Tabun, Vx) or organophosphates (insecticides). Mark I use is strictly intended for personal protection for Manitowoc County EMS Providers.

THIS PROTOCOL IS INTENDED FOR SHORT TERM SURVIVAL ONLY!

1. Equipment:
 - a. Mark I auto-injector antidote kit containing
 - i. 1 - Atropine auto-injector (2 mg in 0.07 ml)
 - ii. 1 - Pralidoxime chloride auto-injector - 2-PAM CL (600 mg in 2 ml)
2. Criteria for Use:
 - a. Mark I auto-injectors may be used:
 - i. If signs and/or symptoms* of nerve gas or organophosphate poisoning are present; or
 - ii. If known exposure to nerve gas or organophosphates has occurred prior to signs or symptoms.
3. In the event that EMS personnel are exposed to nerve gas or organophosphates and they meet the above criteria:
 - a. Mark I kits may either be self-administered or administered by another EMT.
 - b. The Mark I kit (one Atropine auto-injector and one 2-PAM CL auto-injector) should be rapidly administered.
 - c. Immediately evacuate the contaminated area.
 - d. If dermal exposure has occurred, decontamination is critical and should be done with standard decontamination procedures.
 - e. Request ALS transport or intercept. Intermediate (99) and Paramedic level providers carry Atropine as one of their standard medications. Continued pre-hospital treatment with Atropine is essential to survival.
4. Signs and Symptoms:
 - a. SLUDGEM + RESPIRATION + AGITATION
 - i. S - salivation (excessive drooling)
 - ii. L - lacrimation (tearing)
 - iii. U - urination
 - iv. D - defecation
 - v. G - GI upset (cramps)
 - vi. E - emesis (vomiting)
 - vii. M - muscle (twitching, spasm, "bag of worms")
 - b. RESPIRATION - difficulty breathing/distress (SOB, wheezing) AGITATION + CNS SIGNS (confusion, agitation, seizures, coma)
5. Procedure:
 - a. Remove Mark I kit from package.

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- b. Normal injection site is outer thigh muscle. It is important that the injection site is into a large muscle. Injection may go through clothing.
 - c. With your non-dominant hand, hold the auto-injector by the plastic clip so that the larger auto-injector is on top and both are positioned in front of you at eye level.
 - d. With your dominant hand grasp the Atropine auto-injector (the smaller of the two) with the thumb and first two fingers. DO NOT cover or hold the needle end with your thumb, hand or fingers - you might accidentally inject yourself.
 - e. An accidental injection into the thumb, hand or fingers WILL NOT deliver an effective dose of the antidote, especially if the needle passes entirely through the thumb, hand or fingers.
 - f. Pull the auto-injector out of the clip with a smooth motion. The auto-injector is now armed.
 - g. Hold the auto-injector with your thumb and two fingers (pencil writing position). Be careful not to inject yourself in the thumb, hand or fingers.
 - h. Position the green (needle) end of the auto-injector against the injection site.
 - i. DO NOT inject into areas close to the hip or knee.
 - j. Apply firm pressure (not a jabbing motion) to the auto-injector until it pushes the needle into the thigh. Using a jabbing motion may result in an improper injection or injury.
 - k. Hold the auto-injector firmly in place for at least 10 seconds. Firm pressure automatically triggers the coiled mechanism. This plunges the needle through the clothing into the muscle and at the same time injects the antidote into the muscle.
 - l. Carefully remove the auto-injector from the injection site and place into a sharps container.
 - m. Pull the 2-PAM CL auto-injector (the larger of the two) out of the clip.
 - n. Inject the thigh in the same manner as in steps D. through J., holding the black (needle) end against the injection site,
 - o. Massage the injection site if time permits.
6. After administering the antidote:
- a. Transport (ALS provider) to the appropriate hospital for further evaluation and treatment.

**MARK I KITS ARE NOT INTENDED FOR TREATMENT OF PATIENTS! MARK I KITS ARE FOR
"RESCUE" OF EMS PROVIDERS!**

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**PROTOCOL
Hypothermic Emergencies**

Overview: Injury and illness from environmental exposure varies depending on the manner of exposure (wet or dry) and the amount of exposure (time, temperature, wind chill factors and ambient air). Cold weather emergencies range from localized frostbite to severe hypothermia with unresponsiveness and unconsciousness. The patient's health and predisposing factors may increase the likelihood of environmental illness and injury. Patients suffering from trauma, shock, hypoglycemia and stroke are at greater risk of developing hypothermia. Newborns, infants, drug and alcohol abuse patients and the elderly have increased predisposition to hypothermia. The primary goal in the treatment of the patient at risk for hypothermia is to insulate the patient and prevent further heat loss.

First Responder Care and BLS (NT) Care should be focused on assessing the situation and initiating care to assure the patient is maintaining an airway, is breathing, and has a perfusing pulse and beginning treatment for shock.

1. Render initial care in accordance with the Routine Patient Care Protocol.
2. Create a warm environment for the patient. Remove wet or frozen clothing and cover the patient with warm blankets and prevent re-exposure to cold. Warm packs may be utilized for ears, nose, under the arms, groin, and neck and along thorax.
3. **OXYGEN:** preferably 15 L/min by mask. If the patient does not tolerate a mask, then administer 4-6 L/min by nasal canal. Be prepared to support the patient's respiration with ventilation via bag-valve-mask.
4. Treat other symptoms per appropriate protocol. If unconscious, treat according to Altered LOC protocol.
5. If frostbite is apparent, do not rub frostbitten or frozen body parts. Protect injured part (blisters) with light sterile dressings and avoid pressure to area.
6. If severe systemic hypothermia (temperature of 90 degrees F or less) is apparent, palpable a pulse for one minute. Gently warm the patient. Consult Medical Control prior to initiating CPR.

BLS/ILS and ALS Care should be directed at conducting a thorough patient assessment, providing care to assure the patient is maintaining an airway, is breathing, has a perfusing pulse, begin treating for shock and preparing or providing patient transportation.

1. Render initial care in accordance with the Routine Patient Care Protocol and BLS care as above. (ILS/ALS may initiate IV line and test blood glucose, use warm IV fluids if available)
2. **OXYGEN:** preferably heated humidified 15 L/min by mask. If the patient does not tolerate a mask, then administer 6 L/min by nasal canal. Be prepared to support the patient's respiration with ventilation via bag-valve-mask.
3. Treat other symptoms per appropriate protocol. If unconscious, treat according to Altered LOC protocol.
4. If severe systemic hypothermia (temperature of 90 degrees F or less) is apparent, observe for an organized cardiac rhythm and palpable a pulse for one minute. Gently warm the patient. Consult Medical Control prior to administering medications.
5. Transport as soon as possible. Transportation can be initiated at any time during this sequence.

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Critical Thinking Elements:

- Do not thaw frozen parts in the field if there is a chance of re-freezing. Protect frostbite areas from re-freezing.
- Patients with hypothermia should be considered at risk for developing ventricular fibrillation. It is imperative these patients be handled gently and not re-warmed aggressively.
- Severe hypothermia patients may appear dead. Consult Medical Control prior to administering medications.

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Heat Related Emergencies

Overview: Injury and illness from heat exposure varies depending on the manner of exposure (sun, humidity, exertion) and the amount of exposure (time, temperature, and ambient air). Heat exposure emergencies range from localized cramping to severe hyperthermia (heat stroke) with unresponsiveness and unconsciousness. The patient's health, predisposing factors and medications may increase the likelihood of heat-related illness and injury. The primary goal in the treatment of the patient at risk for hyperthermia is to cool the patient and restore body fluids.

First Responder Care and BLS (NT) Care should be focused on assessing the situation and initiating care to assure the patient is maintaining an airway, is breathing, and has a perfusing pulse and beginning treatment for shock.

1. Render initial care in accordance with the Routine Patient Care Protocol.
2. Move to cool environment. Remove clothing as necessary to make patient comfortable. Cold packs may be utilized for under the arms, groin, and neck and along thorax. Do not cool patient to a temperature that will cause the patient to shiver.
3. **OXYGEN:** preferably 15 L/min by mask. If the patient does not tolerate a mask, then administer 4-6 L/min by nasal canal. Be prepared to support the patient's respiration with ventilation via bag-valve-mask.
4. Treat other symptoms per appropriate protocol. If unconscious, treat according to Altered LOC protocol. Test Blood Glucose.

BLS/ILS and ALS Care should be directed at conducting a thorough patient assessment, providing care to assure the patient is maintaining an airway, is breathing, has a perfusing pulse, beginning treatment for shock and preparing or providing patient transportation.

1. Render initial care in accordance with the Routine Patient Care Protocol and BLS care as above. (ILS/ALS may initiate IV line)
2. **OXYGEN:** preferably 15 L/min by mask. If the patient does not tolerate a mask, then administer 4-6 L/min by nasal canal. Be prepared to support the patient's respiration with ventilation via bag-valve-mask.
3. Treat other symptoms per appropriate protocol. If unconscious, treat according to Altered LOC protocol.
4. IV FLUID THERAPY: (If the patient has an altered level of consciousness or hypotension.) Administer **NORMAL SALINE 200-300 cc fluid bolus**. May repeat if lungs remain clear.
5. Transport as soon as possible. Transportation can be initiated at any time during this sequence.

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Burns

Overview: Burn injuries vary depending on the type of burn (thermal, electrical, chemical) and the amount of exposure (time and depth). Burn injuries range from localized redness to deep tissue destruction and airway compromise. The primary goal in the treatment of the burn patient is to stop the acute burning process by removing the patient from direct contact with the source of the burn and maintaining patient's body fluids. Special attention should be given to limit further pain and damage of the burn to the patient. However, burn care should not interfere with life saving measures or decisions. Signs of burn injury include blisters, pain, tissue destruction, charred tissue and singed hair.

First Responder Care and BLS (NT) Care should be focused on assessing the situation and initiating care to assure the patient is maintaining an airway, is breathing, and has a perfusing pulse and beginning treatment for shock.

1. Render initial care in accordance with the Routine Patient Care Protocol and Routine Trauma Protocol.
2. **OXYGEN:** preferably 15 L/min by mask. If the patient does not tolerate a mask, then administer 6 L/min by nasal canal. Be prepared to support the patient's respiration with ventilation via bag-valve-mask.
3. THERMAL BURN TREATMENT:
 - a. If burn occurred within last 20 minutes, reverse the burning process by cooling the area by flushing the area with water or saline. The goal of cooling is to extinguish the burning process and not to systemically cool the patient. Fluid application should be held to a minimum and should be discontinued if the patient begins shivering.
 - b. Remove jewelry and loose clothing. Do not pull away clothing that is stuck to burn.
 - c. Cover wound with sterile towels.
 - d. Place one sterile sheet on stretcher. If the patient's posterior is burned, place burn pad on sterile sheet, absorbent side towards patient.
 - e. Place patient on stretcher.
 - f. Cover patient with additional sterile sheet and blanket to conserve body heat.
4. ELECTRICAL BURN TREATMENT:
 - a. Assure power service has been cut-off and remove patient from source of electricity.
 - b. Consider immobilization due to forces of electrical current and possible trauma.
 - c. Assess for entry and exit wounds. No cooling or flushing is necessary due to the type of burn. Cover with dry sterile/clean dressing.
 - d. Closely monitor the patient's pulse.
5. CHEMICAL BURNS:
 - a. Note chemical agent causing burn.
 - b. Consider possible scene and patient contamination and follow Agency safety procedures.
 - c. Wearing protective gear, remove the patient's clothing. Contaminated clothing may cause continued exposure.
 - d. Dry powder burn should be brushed off before applying water.
 - e. Irrigate the patient with water if a water source is available and if the product MSDS indicates use of water will not cause an adverse reaction. Body parts should be flushed at least 15 minutes.

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- f. Irrigate burns to the eye with at least one-liter of normal saline or steady water for 20 minutes. Alkaline burns should receive continuous irrigation throughout transport.

BLS/ILS and ALS Care should be directed at conducting a thorough patient assessment, providing care to assure the patient is maintaining an airway, is breathing, has a perfusing pulse, begin treating for shock and preparing or providing patient transportation.

1. Render initial care in accordance with the Routine Patient Care Protocol, Routine Trauma Protocol and BLS care as above. (ILS/ALS may initiate IV line)
2. **OXYGEN:** preferably 15 L/min by mask. If the patient does not tolerate a mask, then administer 6 L/min by nasal canal.
3. IV FLUID THERAPY: (If the patient has an altered level of consciousness or hypotension.)
 - a. Administer a 200-300 cc fluid bolus. May repeat if lungs remain clear.
4. Pain Medication (ALS) - **MORPHINE 2-4mg IV; or FENTANYL 50-100mcg (Paramedic only);**
or

Dilaudid 0.5-1.0mg IV (Manitowoc Fire Department Only and Valders Fire Department Only). May repeat in 0.5 – 1mg increments every 5 minutes as necessary to control pain, to a total of 2 mg, if systolic BP is 100 mmHg or above. Medical Control should be contacted after a total dose of 2 mg is given.

Do not administer narcotics until burn shock has been controlled. Do NOT give by IM route. Contact Medical Control for additional pain meds. Transport as soon as possible. Transportation can be initiated at any time during this sequence.

Critical Thinking Elements

- Treat other symptoms or trauma per appropriate protocol.
- Closely monitor the patient's airway and ventilations. Check for presence of singed facial or nasal hair, presence of hoarseness, wheezing or cough.
- Patients with airway compromise should be endotracheal intubated as soon as possible.
- Burned tissue should not be used for IV access unless no other site is available.
- Closely monitor patient response to IV fluids and assess for fluid overload and pulmonary edema.
- The goal of cooling is to extinguish the burning process and not to systemically cool the patient.
- Do not delay transportation of a "Load and Go" trauma patient to care for burns.

**PROTOCOL
Near Drowning**

Overview: Near drowning results from submersion in water or other liquid for a period of time that does not result in irreversible death. The time interval of submersion that causes irreversible death is dependent on several factors, such as the temperature of the water, the health of the victim and related trauma suffered during the event. All persons submerged one hour or less should be vigorously resuscitated in spite of apparent death. Initial care of the near drowning victim should begin in the water. Notify Dispatch to dispatch the dive team ASAP.

First Responder Care and BLS (NT) Care should be focused on assessing the situation and initiating care to assure the patient is maintaining an airway, is breathing, and has a perfusing pulse and beginning treatment for shock. Assure scene safety. Use appropriate personnel and equipment for rescue.

1. Render initial care in accordance with the Routine Patient Care Protocol and Routine Trauma Care Protocol.
2. Clear airway and ventilate with 100% Oxygen.
3. Initiate CPR, if indicated.
4. Establish and maintain spinal immobilization IF APPROPRIATELY TRAINED. Otherwise, simply maintain manual spinal control.
5. If patient is breathing apply **OXYGEN** 15 L/min by mask. If the patient does not tolerate a mask, then administer 6 L/min by nasal canal.
6. Treat respiratory and/or cardiac symptoms per appropriate protocol.
7. Remove wet clothing and dry the patient as much as possible. Assess patient for hypothermia.

BLS/ILS and ALS Care should be directed at conducting a thorough patient assessment, providing care to assure the patient is maintaining an airway, is breathing, has a perfusing pulse, beginning treatment for shock and preparing or providing patient transportation.

1. Render initial care in accordance with the Routine Patient Care Protocol, Routine Trauma Protocol and BLS care as above. (ILS/ALS will initiate IV line)
2. Treat respiratory and/or cardiac symptoms per appropriate protocol.
3. Transport as soon as possible. Transportation can be initiated at any time during this sequence.