

Poisoning/Overdose #1

Call Poison Control (1-800-222-1222) to receive medical guidance on patient care and to ensure that information regarding the toxin can be sent to the receiving ED prior to patient arrival.

EMT

1. Administer O₂, as appropriate
2. Manage airway as needed, see **Blue 3**
3. Request ALS
4. If respirations less than 12/minute AND **narcotic overdose** suspected
NEVER GIVE NALOXONE TO A NEONATE
 - a. **ADULT** and **PEDIATRIC** patients: naloxone 0.5 mg **IN**. Titrate to effect by providing 0.5 mg in one nostril:
 - i. The desired outcome is effective oxygenation and ventilation with one important parameter being a respiratory rate of greater than 12 breaths/minute. Continue to manage the airway while assessing for effect.
 - ii. If the patient remains apneic or continues to have ineffective oxygenation and ventilation 2-5 minutes after provision of the first dose of naloxone, provide a second dose of naloxone 0.5 mg in the other nostril.
 - iii. Repeat 0.5 mg of naloxone **IN** every 2-5 minutes in alternating nostrils.
 - b. **EMRs** and **EMTs** may use **IN** or **IM** naloxone via auto-injector at a dose available per commercially packaged product. Repeat dose (in opposite nostril if using **IN** route) if no response in 2-5 minutes. Lower dose strategies that allow titration of effect are preferred, whenever possible.
 - c. NOTE: Patients abruptly and fully awakened from narcotic overdose may become combative or suffer acute narcotic withdrawal symptoms. Some drugs are longer acting opioids (or formulated to be so), such as buprenorphine, methadone, and the fentanyl patch, and may require many repeated doses of naloxone which could exceed a total of 4 mg.
5. For suspected cyanide or CO poisoning, see Cyanide/CO Exposure protocol **Yellow 4**
6. For hypoglycemia, see Diabetic/Hypoglycemic Emergencies protocol, **Gold 6**
7. For seizures, see Seizure protocol, **Gold 8**

ADVANCED EMT/PARAMEDIC

8. Establish IV access
9. Alternative naloxone route of administration
 - a. Naloxone 0.1 - 2 mg **IV/IO/IM**; titrate to improved respiratory drive
 - b. **Pediatric** patients: 0.1 mg/kg naloxone if less than 20 kg; 0.1-2 mg **IV/IO/IM** if greater than 20 kg or 5 years or older; titrate to ~~to~~ improved respiratory drive
10. Cardiac Monitor
11. If patient is hypotensive, administer a fluid bolus
12. Obtain ECG, if so trained

PARAMEDIC

13. Ingested Poison: the role of charcoal in EMS is of limited value and should be provided **ONLY** under OLMC guidance. Contact OLMC to consider:
 - a. Activated charcoal with**OUT** sorbitol 1 gram/kg **PO**
 - b. Do **NOT** provide charcoal under the following circumstances:
 - i. Ingested caustic substance
 - ii. Hydrocarbons
 - iii. Seizures
 - iv. Patient is unable to swallow/protect airway



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Poisoning/Overdose #2

PARAMEDIC (cont.)

14. For absorbed toxins resulting in pain, see Universal Pain Management protocol, **Green 17** or analgesic for eye pain, see Ophthalmology protocol, **Green 23**
15. Suggested Treatments
- Symptomatic **bradycardia** (hypotension, altered mental status, syncope/pre-syncope, chest pain, dyspnea, acute heart failure, signs of shock, or cyanosis/pallor) due to beta- or calcium channel blocker overdose:
 - Adult:** Calcium gluconate 60 mg/kg **IV** over 5-10 minutes (MAX 3 gm/dose), may repeat every 10-20 min for 3-4 additional doses.
 - Pediatric:** Calcium gluconate 60 mg/kg **IV** over 30-60 minutes (max 3 gm/dose), may repeat every 10-20 min for 3-4 additional doses
 - Refer to Bradycardia Protocol, **Red 18**
 - Dystonic reaction:
 - Adult:** Diphenhydramine 25-50 mg **IV/IM**
 - Pediatric:** Diphenhydramine 1-2 mg/kg **IV/IM** (MAX dose 50 mg)
 - Organophosphates, see Nerve Agent/Organophosphate/Carbamate Poisoning protocol, **Yellow 3**
 - Severe agitation, see Agitation/Excited Delirium protocol, **Orange 3**
 - Tricyclic Antidepressant/**sodium-channel blocker overdose** with either hemodynamic instability or widened QRS complex on initial 12-lead ECG defined as:
 - Tachycardia (Adult: heart rate greater than 100 bpm; Pediatric as defined by age, see **Pink *****) **AND**,
 - QRS greater than 120 msec

-or-

 - An increase in QRS of 10 msec over serial ECGs (repeat every 10 min, if feasible) - Repeat ECG after treatment and every 10 minutes, if feasible, if QRS is less than 120 msec, and every 5 minutes, if feasible, if QRS is greater than 120 msec. Treat as follows:
 - ~~Adult & Pediatric: Administer~~ Sodium bicarbonate:
 - Adult:** 1 mEq/kg **IV push**. May repeat as needed with goal of QRS complex less than 120 msec.
 - Pediatric:** 1 mEq/kg **IV push**. May repeat as needed with goal of QRS complex less than 120 msec. (8.4% sodium bicarbonate must be diluted with D5W to 4.2% [0.5 mEq/mL] prior to administration in patients less than 2 years of age.)
 - Fluid bolus for hypotension
 - Contact **OLMC** to discuss additional fluid bolus versus initiating **NOREPInephine IV infusion**. NOREPInephine infusions must be administered via a Maine EMS approved medication pump.
 - Preparation** – mix NOREPInephine 8 mg in 250 mL NS [32 mcg/mL]
 - Dosing** - Starting dose of NOREPInephine is 0.03 mcg/kg/min. Titrate by 0.03 mcg/kg/min every 3-5 minutes. Usual dose is 0.03-0.25 mcg/kg/min. Usual MAX dose is 0.6 mcg/kg/min. Absolute MAX dose is 3 mcg/kg/min.
 - Titrate** to maintain SBP greater than 90 mmHg and/or MAP > 65 mmHg



continued

Poisoning/Overdose #3

Paramedic cont.

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4. Refer to Seizure protocol, **Gold 8**, for TCA-induced seizure activity
5. Consider magnesium sulfate for arrhythmia that does not respond to sodium bicarbonate.
 - a. **Adult:** 2 grams of magnesium sulfate **IV/IO** over 10 minutes
 - b. **Pediatric:** 25-50 mg/kg **IV/IO** (diluted to 20% or 2 gm/10mL) infusion over 10 minutes (MAX dose 2 grams).
6. Contact OLMC if further direction needed for conditions such as arrhythmia

PEARLS

- If possible, bring container/bottles, MSDS sheets, placard info, shipping manifest, and/or contents and note the following:
 - Route, time, quantity and substance(s)
 - Reason, if known: intentional or accidental
 - What treatments were provided prior to your arrival
- Pulse oximetry may NOT be accurate for toxic inhalation patients
- **For management of opioid overdose:**
- Recall, the patient suffering from opiate overdose requires immediate oxygenation and ventilation. This should be the priority for these patients and is accomplished by airway management. Naloxone may be administered, but only after initiation of airway management practices. **Do not give naloxone to a patient who is in cardiac arrest. This practice is not helpful and may be harmful as it distracts from the best performance of tasks that are necessary for the successful resuscitation of cardiac arrest. Refer to the 2019 Naloxone White Paper for more information.**
- Naloxone should be titrated to adequate respiratory drive and airway protection rather than a completely awakened state.
- Patients receiving naloxone should be transported to the hospital. Contact OLMC for patients refusing transport.
- **For tricyclic antidepressant/Sodium-channel blocker toxicity:**
- The most common drugs requiring boluses of sodium bicarbonate are as follows:
 - For adults, TCAs
 - For pediatrics, antihistamines, though it is not common to get to the point of administering sodium bicarbonate for pediatric patients.
- There are several classes of medications that can cause sodium channel blockade when taken in an overdose, causing QRS prolongation and requiring sodium bicarbonate administration. The classes of these medications (with some examples) are listed below:
 - Antidepressants (amitriptyline, nortriptyline, imipramine, doxepin)
 - Antiarrhythmics (quinine/quinidine, propafenone, flecainide)
 - Anesthetics (cocaine, lidocaine, bupivacaine)
 - Muscle Relaxants (cyclobenzaprine)
 - Antihistamines (diphenhydramine)
- Gather as much detailed information about the drug as possible and monitor the QRS as per protocol
- Sodium bicarbonate increases extracellular sodium, thereby overcoming sodium channel blockade of the tricyclic antidepressant and other sodium-channel blocking medications. This effect is transient and may be difficult to notice at first. Some patients may need repeated doses of sodium bicarbonate to fully correct QRS duration (under 120 msec). If no change to the QRS occurs, please repeat immediately. While some patients may require additional doses of sodium bicarbonate, this should not delay transport.
- Consider the importance of alerting OLMC.

Nerve Agent/Organophosphate/Carbamate Poisoning

PEARLS :

**WARNING: CONTACT WITH THESE TOXINS CAN BE FATAL TO RESCUERS.
CONSIDER SCENE SAFETY AND DECONTAMINATION**

- Assess for **SLUDGEM** symptoms (**S**alivation, **L**acrimation, **U**rination, **D**efecation, **G**I Distress, **E**mesis, **M**uscle twitching/**M**iosis [constricted pupils]) and the **Killer-B's** (**B**radycardia, **B**ronchorrhea, **B**ronchospasm)
- If you suspect a bioterrorism/WMD threat, see **Grey 21**
- Transport patients with all windows of ambulance open
- Decontaminate entire ambulance after patient transport
- All responders who contacted the patient require decontamination

In unstable patients with known organophosphate/carbamate poisoning:

EMT

1. Remove patient from contaminated area and consider decontamination as needed based on scene/call circumstances
2. O₂ as appropriate
3. Manage airway as appropriate, see **Blue 3**
Ventilatory support may be critical in these poisonings
4. Vigorous suctioning may be necessary
5. Request ALS
6. Mark 1 kit (noted as **auto-injector** in table below)

ADVANCED EMT

7. IV en route
8. Cardiac monitor
9. In all cases, continue to monitor closely for worsening symptoms

PARAMEDIC

10. If seizures are present, refer to Seizure protocol, **Gold 8**

11. Contact OLMC for:

- a. Doses of medications beyond those listed in the chart below
- b. Administration of other selected antidotes



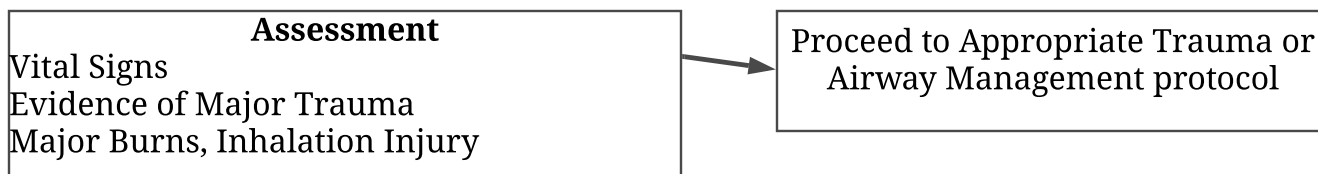
Symptoms	Dyspnea, twitching, nausea, vomiting, sweating, confusion, or pinpoint pupils	Apnea, seizure, unconsciousness, or flaccid paralysis
Pediatric < 1 year old	EMR/EMT/AEMT/Paramedic - 1 pediatric atropine auto-injector IM or Paramedic - Atropine 0.2 mg IV/IO* , AND Midazolam 0.2 mg/kg IM (MAX dose 10 mg) or 0.1 mg/kg IV/IO (MAX dose 5 mg) **	
Pediatric 1 year or older	EMR/EMT/AEMT/Paramedic - 1 adult atropine auto-injector IM or Paramedic - Atropine 2 mg IV/IO* , AND Midazolam 0.2 mg/kg IM (MAX dose 10 mg) or 0.1 mg/kg IV/IO (MAX dose 5 mg) **	
Adult	EMR/EMT/AEMT/Paramedic - 1 atropine auto-injector IM or Paramedic - Atropine 2 mg IV/IO* AND Midazolam 10 mg IM or 5 mg IV/IO **	MR/EMT/AEMT/Paramedic - 3 atropine auto-injectors IM or Paramedic - Atropine 5 mg IV/IO* AND Midazolam 10 mg IM or 5 mg IV/IO **

* Monitor and repeat dose every 5 minutes if patient remains symptomatic; if atropine is drawn up from a vial to administer (**Paramedic**), the concentration may require more than one injection site to achieve the full dose without exceeding the recommended 3-5 mL max IM volume in adults and 0.5-2 mL max IM volume in peds.

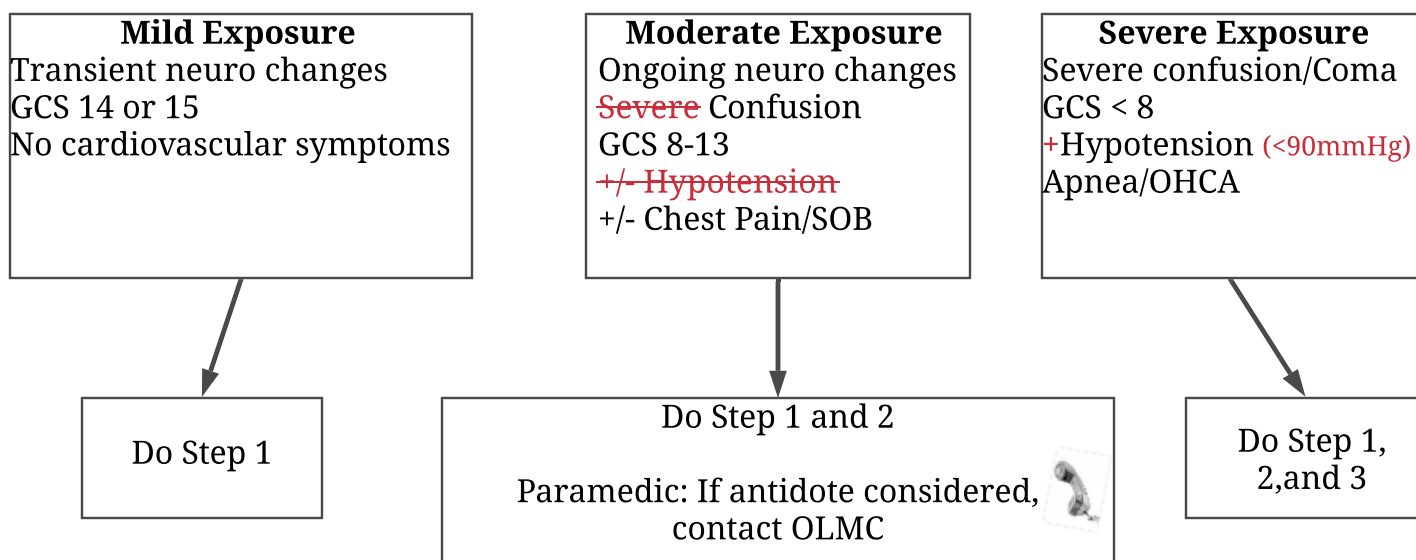
** Repeat Midazolam every 5 minutes until total of 3 doses have been provided

Cyanide/CO Exposure #1

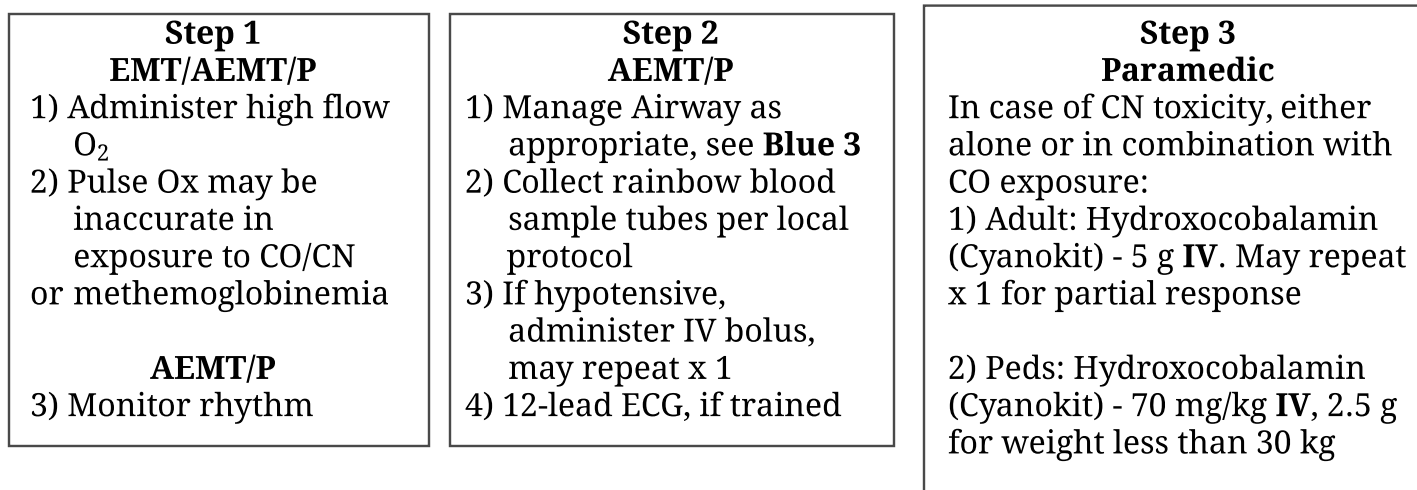
Don PPE if necessary, assess patient after evacuation
 Remove patient from source of smoke/inhalation



Severity of Exposure Definitions (CO, CN, or Combined)



Treatments



Known or Suspected Cyanide/CO Exposure #2

PEARLS for CO/Cyanide Exposure:

- Finger CO monitors may not accurately detect CO level and should not be relied upon to guide treatment or alter transport decision.
- There is no correlation between CO (Carboxyhemoglobin) level and ETCO₂ (waveform capnography).
- Carbon monoxide (CO) and Hydrogen cyanide (HCN) gases are chemical asphyxiants that can kill rapidly. Carbon monoxide is odorless. Only 40% are able to detect the almond smell of CN. Cyanide is generated by combustion of synthetic materials present in many structural fires.
- Appropriate PPE includes self-provided air/oxygen source (i.e. SCBA). Scene safety is the top priority. No patient decontamination is required for victims evacuated from CN gas exposure.
- It is rare for viable CO-exposed patients to have persistent unconsciousness requiring intubation.
- Sources of CN: Structural fire (HCN), industrial cyanide salts*, unripe cassava, apricot pits, laetrile, etc.
- If injuries incompatible with life, DO NOT GIVE ANTIDOTE.

*may persist on skin, however water decontamination may liberate HCN gas.

Radiation Injuries

EMT/AEMT

1. Ensure the scene is safe.
2. Don standard PPE capable of preventing skin exposure to liquids and solids (gown and gloves), mucous membrane exposure to liquids and particles (face mask and eye protection), and inhalational exposure to particles (N95 face mask or respirator).
3. Hazmat Trained Personnel to determine need for decontamination
4. For **Mass Casualty Incidents (MCI)**, if vomiting occurs:
 - a. Within 1 hour of exposure, survival is unlikely. If providing care to patient will compromise other patients, tag patient **“Black”**.
 - b. Less than 4 hours after exposure, patient requires immediate decontamination and medical evaluation, tag patient **“Red”**.
 - c. 4 hours after exposure, re-evaluation can be delayed 24-72 hours, tag patient **“Yellow”**.
5. Treat traumatic injuries per appropriate protocol (**Green Section**).
6. Use water-repellent dressings to cover wounds to prevent cross contamination.
7. Consider transport only after appropriate decontamination

PARAMEDIC

8. Consider anti-emetic per Nausea and Vomiting protocol, **Gold 19**. Document the time the GI symptoms started.
9. Consider pain management per Universal Pain Management protocol, **Green 17**.
10. Treat seizures per Seizure protocol, **Gold 8**. *Consider a primary medical cause or exposure to possible chemical agents unless indicators for a large whole body radiation dose (> 20 Gy), such as rapid onset of vomiting, are present.

Pearls

- In general, patients exposed or contaminated by radiation should be triaged and treated according to the severity of their conventional injuries.
- Patients contaminated with radioactive material (flecks embedded in clothing or skin), generally pose minimal exposure risk to medical personnel who use appropriate PPE.
- Irradiated patients pose no threat to medical providers.
- Time to nausea and vomiting is a reliable indicator of receiving a significant dose of ionizing radiation. The more rapid the onset of vomiting, the higher the whole-body dose of radiation.
- Tissue burns are a late finding (weeks following exposure) of ionizing radiation injury. If burns are present acutely, they are from a thermal or chemical mechanism.
- Seizures may suggest acute radiation syndrome if accompanied by early vomiting. If other clinical indicators do not suggest a whole-body dose of greater than 20 Gy, consider other causes of seizure.

Hypothermia #1

Classification	Core Temp	Clinical Presentation
Normal	>95° F / 35° C	Cold sensation/shivering
Mild	90 - 95° F 32 - 35° C	Loss of fine or gross motor skills inability to complete simple thoughts
Moderate	82 - 90° F 28 - 32° C	</= 90° F/32° C: Shivering stops </=86° F/30° C: AMS
Severe	</= 82° F </= 28° C	Rigidity, vital signs reduced/absent. Severe risk of V-fib with mechanical stimulation (rough handling)
	</= 77° F </= 24° C	Spontaneous V-fib cardiac arrest

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Bold indicates major thresholds between stages

Adapted from "State of Alaska Cold Injuries Guidelines" 2014

Treatment

SEVERE HYPOTHERMIA **WITH** SIGNS OF LIFE/**NOT** IN CARDIAC ARREST:

EMT

1. Prevent further heat loss by insulating from the ground and shielding from wind and water. Move to a warm environment, when possible. **Gently** remove wet clothing. Cover with warm blankets
2. Pack thorax with wrapped heat pack
3. Consider warmed AND humidified 100% O₂
4. High sugar oral fluids, if tolerated, and only in mild hypothermia
5. Handle gently; avoid rough movement and excess activity
6. Maintain supine position in moderate or severe hypothermia
7. Apply clean dressing to frostbitten extremities and between involved fingers and toes.

ADVANCED EMT/ PARAMEDIC

8. Consider one to two 500 mL (20 mL/kg for **pediatrics**) boluses of NS heated to 104 - 108° F (40 - 42° C)



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9. Contact OLMC for additional boluses



Hypothermia #2

SEVERE HYPOTHERMIA **WITHOUT** SIGNS OF LIFE

Note: Assess for pulse and respirations for 1 minute

Note: Definitive treatment for severe hypothermia without signs of life is rewarming with cardiopulmonary bypass. Do not delay transport of these patients. Do not initiate CPR if it will delay transport.

*Do not initiate resuscitation if the patient meets any of the criteria in **Grey 1** Section II.A OR Rescuers are exhausted or in a dangerous situation. These patients are deceased.*

EMT

1. Initiate CPR after 1 minute pulse/respiration assessment
2. Attach AED and follow prompts.
3. Rewarm using techniques as listed under Treatment: Not in Cardiac Arrest (above)

4. If no ROSC after 20 minutes of CPR/rewarming, consider termination of resuscitation. Contact OLMC, if possible



ADVANCED EMT/PARAMEDIC

5. Consider one to two 500 mL (20 mL/ kg for pediatrics) boluses of NS heated to 104 - 108° F (40 - 42° C)

6. Contact OLMC for additional boluses



7. Otherwise, treat as per normothermic cardiac arrest management for the patient's dysrhythmia, refer to Cardiac Arrest protocol, **Red 8**

PEARL

- Do not massage extremities in attempt to actively re-warm the patient; **massaging the extremities will not significantly increase body temperature and it may worsen the damage caused by frostbite.**
- **Moderate-to-severe frostbite is defined as:**
 - Frostbite involving hands, feet, face, or genitals,
 - Frostbite associated with cyanotic tissue, blisters (clear or hemorrhagic) or skin necrosis,
 - Frostbite associated with with loss of sensation or weakness in the involved area
- **Follow your local trauma system transport destination protocols in cases of moderate-to-severe frostbite.**
- **Circum-rescue hemodynamic collapse can occur in these patients. The drop in catecholamines and mental relaxation that occurs just before, during, or after rescue may lead to life-threatening hypotension or arrhythmia (i.e. ventricular fibrillation).**

Hyperthermia - Heat Exhaustion

HEAT EXHAUSTION — Volume depletion due to sweat loss

ASSESSMENT:

If core temperature is obtained, it will be variable but always below 105° F (40.6° C).

Clinical pattern is essentially that of compensated hypovolemic shock:

- Weakness and vomiting
- Skin is variable. Core-shell shunt to increase heat loss competes with shell-core shunt to protect volume. Skin is usually pale and moist with variable skin temperature
- Sweating
- Normal consciousness and CNS function

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TREATMENT: Goal is to reduce sweating and to restore volume

EMT

1. Protect the patient from heat challenge. Stop exercise and put patient at rest in a cool, shady place
2. Use evaporation techniques and remove/loosen as much clothing as practical
3. Oral fluids can be effective if the patient is not vomiting. Use dilute (less than 5% sugar) fluids given in small sips. Appropriate fluids to use include the World Health Organization's Oral Rehydration Solution OR a "homemade" solution using 1 teaspoon of salt and 8 teaspoons of sugar per 1 liter of water

ADVANCED EMT / PARAMEDIC

4. Establish IV
5. Perform fluid bolus

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Hyperthermia - Heat Stroke

HEAT STROKE — A true medical emergency that requires radical field treatment, usually, but not always, associated with heat exhaustion. Heat stroke is characterized by multisystem organ injury and failure. CNS dysfunction characterized by alterations in mental status is a hallmark distinguishing between heat exhaustion and heat stroke.

ASSESSMENT:

If core temperature is obtained, it is 105° F (40.6° C) or greater. Abnormal consciousness and/or CNS function; seizures are common. Any acute change in consciousness/CNS function in the context of a significant heat challenge should be managed as heat stroke without delay. Skin and sweating are variable, depending on volume status. Note that red, dry skin is not a dependable sign of heat stroke.

TREATMENT:

Immediate radical cooling is the urgent priority, followed by volume replacement.

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EMT

1. Cool the patient immediately by any means practical, such as:
 - a. Initiate Radical Cooling when available (especially beneficial for exertional hyperthermia, i.e. athletes, laborers):
 - i. Immerse patient up to their neck in ice water tub (if available).
 - ii. TACO Method (Tarp-Assisted Cooling with Oscillation) (if available) with 4-5 people holding the patient in a tarp, add ice water at foot and up to the neck and continuously oscillate the tarp to avoid warming of water in contact with the patient.
 - b. Also consider non-radical cooling which includes: ice packs applied to neck, axillae, groin, back; wet patient, apply cold wet sheets to patient, and air conditioning en route
 - c. Consider moistening the skin and fan vigorously. This method is effective only at low ambient humidity and a large electric fan is more beneficial than manual fanning.
2. Discontinue radical cooling if:
 - a. Shivering begins
 - b. Core temperature falls to 102° F (38.8° C).

ADVANCED EMT / PARAMEDIC

3. Establish IV
4. Cardiac Monitor
5. Perform fluid bolus

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Pearl

If at a sporting or athletic event, it is important to discuss the cooling plan with other on-scene providers, i.e. sports medicine providers or athletic trainers prior to the start of the event to ensure that necessary equipment is available.

Drowning/Submersion Injuries

EMT

1. If C-spine injury suspected, manage C-spine per Spine Management protocol, **Green 7**
2. Obtain specific history including time, temperature, associated injury, etc.
3. Begin resuscitation efforts while removing patient from the water (e.g. rescue breaths) - follow ABC (rather than CAB) flow of resuscitation.
4. Consider hypothermia, refer to Hypothermia protocol, **Yellow 7**
5. Remove wet clothes and warm the patient
6. Conscious patients with submersion injuries should be transported to the hospital for further evaluation
7. If water temperature is estimated to be less than 43° F and submerged
 - a. Less than 90 minutes - initiate full resuscitation
 - b. Greater than 90 minutes - consider not initiating resuscitation or termination of resuscitation
8. If water temperature is estimated to be greater than 43° F and submerged
 - a. Less than 30 minutes - initiate full resuscitation
 - b. Greater than 30 minutes - consider not initiating resuscitation or termination of resuscitation

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ADVANCED EMT/PARAMEDIC

9. Consider CPAP to supplement the patient's own respiratory effort
10. If needed, refer to Anxiolysis in CPAP protocol , **Blue 10**
11. If near-drowning incident involves scuba diver, suggesting barotrauma, contact OLMC and consider hyperbaric treatment facility

PEARLS for Drowning:

- Fresh and salt water drowning are treated the same in the field; treatment must be directed toward correcting severe hypoxia.
- Factors affecting survival include the patient's age, length of time submerged, general health of the victim, type and cleanliness of liquid medium and water temperature that may contribute to the effectiveness of the mammalian diving reflex (decreased respirations, decreased heart rate, and vasoconstriction, with maintenance of blood flow to the brain, heart and kidneys).
- Circum-rescue hemodynamic collapse can occur in these patients. The drop in catecholamines and mental relaxation that occurs just before, during, or after rescue may lead to life-threatening hypotension or arrhythmia (i.e. ventricular fibrillation).
- All drowning/near-drowning victims with suspected barotrauma/decompression sickness should be transported in the left lateral Trendelenburg position to prevent any emboli in the ventricles from migrating to the arterial system.
- Even patients that are conscious and appear well after a submersion event require hospital-level evaluation and observation as they may develop delayed symptoms.