



Environmental Emergencies

Environmental emergencies typically fall into one of two categories: heat related emergencies and cold related emergencies. These two categories are then further broken down into the most commonly occurring incidents. The two most common occurring heat-related problems are classified as heat exhaustion and heat stroke and the two most frequently occurring cold-related problems are usually frostbite or hypothermia. While complaints of these types are typically seasonal, they can occur anytime of the year depending on circumstances.

Let's take a look at these emergencies individually. As we mentioned before, heat-related problems can be classified as either heat exhaustion or heat stroke, the latter being more serious. Heat exhaustion is caused by a metabolic imbalance resulting in flu-like symptoms such as pallor (pale skin color), nausea and vomiting. Patients suffering from heat exhaustion should be moved to a cooler environment and be given fluids to drink (unless the patient is nauseated or vomiting). Heat exhaustion usually is secondary to outside exertion in hot and humid weather.

In cases of heat stroke, the body loses its ability to regulate its temperature. The body's core temperature rises and the patient's level of consciousness decreases. Frequently, the patient will feel hot and dry to the touch, though they may also be profusely sweating, especially if they were engaged in some type of physical exertion. In some cases, the skin will appear reddened. Patients suffering from heat stroke should be moved to a cooler environment and cooled with water. The patient should not be given fluids or anything to drink.

Cold-related problems are usually frostbite or hypothermia, the latter being more serious. Frostbite occurs when peripheral or exposed body parts freeze, such as fingers or toes. The tissue should not be rubbed to rewarm it. The extremities should be kept warm and dry until help arrives. Prevention of further exposure and injury is the focus in these cases.

Hypothermia also results when the body loses its ability to regulate its temperature. However, in this case the body loses its ability to generate heat internally. The body's core temperature drops and again the patient's level of consciousness decreases. The patient must be removed from the cold environment and warmed. No fluids should be given to the patient.

Long periods of exposure in addition to hypothermia may lead to cardiac arrest. The rule of thumb for responding to patients suffering hypothermia-induced cardiac arrest is “*no patient should be assumed to be dead until they are warm and dead.*” However, consult your local medical control about their recommendations and guidance on providing CPR instructions to callers reporting a victim of hypothermia. Hypothermic patients are prone to ventricular fibrillation with rough handling. Sometimes just moving the patient to the ambulance stretcher will put them into fibrillation. Caution is advised in moving these patients.

Pediatric complaints of this type are rare and often are presented to the EMD as frostbite or itchy inflammations of the skin caused by exposure to moist cold on exposed tissues such as the fingers, feet and ears. Treatment in the form of pre-arrival instructions from the EMD should be limited to getting the patient out of the cold environment and attempting to rewarm the extremity by means other than rubbing the affected tissues.

Pediatric heat related complaints usually are presented to the EMD as a “sick child” with flu-like symptoms, dehydration from playing in the hot outdoors and slight heat exhaustion. Pre-arrival instructions will include removing the patient from the hot environment and providing fluids, if the child is not nauseated or vomiting.

Children are slower to acclimate to hot or humid weather than adults and become dehydrated more rapidly. Children that are obese, febrile (having an elevated temperature), have underlying pre-existing conditions like cystic fibrosis or diabetes, or recurrent vomiting and diarrhea are particularly at risk for environmental or exertion-caused heat stroke. Infants and toddlers are particularly vulnerable to environmental heat stroke when overdressed, left in parked cars or confined in a hot tub, sauna or any enclosed space.

Children are seldom aware of the early signs of cold, such as numbness, and may not be as compliant as adults in wearing appropriate covering. Pre-pubescent children with cold injuries can be at risk for growth-plate injury and subsequent poor bone growth, especially of fingers and toes. When removing the child from the cold environment, make sure to advise changing wet clothes for dry coverings.

As always, these are just some suggestions of how an Emergency Medical Dispatcher can handle calls. Always refer to your APCO Institute Emergency Medical Dispatch Guidecards or software when dealing with these types of calls or any other medical call for assistance. For more information about the APCO Institute EMD Program visit www.apcoinstitute.org

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Resources

- *National Standard Curriculum for EMD, NHTSA*
- *EMD Concepts, 1st Edition, APCO Institute*
- *Emergency Medical Dispatcher, 5th Edition, Version 2, APCO Institute*

Quiz

CDE Article – Environmental Emergencies

Name: _____ Date: _____

Agency: _____

Address: _____

Phone: _____

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Email: _____

1. Heat exhaustion is caused by a metabolic imbalance resulting in flu-like symptoms such as pallor, nausea and vomiting.
 - a. True
 - b. False

2. Patients suffering from heat exhaustion and not nauseous or vomiting should be moved to a cooler environment and...
 - a. Given fluids to drink
 - b. Covered with a blanket
 - c. Allowed to sleep
 - d. Administered CPR

3. As the body's core temperature rises, the patient's _____ decreases.
 - a. Level of consciousness
 - b. External temperature
 - c. Mobility
 - d. Potential for shock

4. In cases of heat stroke, the patient may feel hot and dry to the touch, though they may also be profusely sweating.
 - a. True
 - b. False

5. Long periods of exposure in addition to hypothermia may lead to cardiac arrest.
 - a. True
 - b. False

6. Hypothermic patients are prone to _____ with rough handling.
 - a. Ventricular fibrillation
 - b. Losing consciousness
 - c. Violence
 - d. Airway obstruction

7. Pediatric cold related complaints often are presented as frostbite or itchy inflammations of the skin caused by exposure to moist cold on exposed tissues such as the fingers, feet and ears.
 - a. True
 - b. False

8. Pre-pubescent children with cold injuries can be at risk for...
 - a. Growth-plate injury
 - b. Metabolic imbalance
 - c. Mental disability
 - d. Frostbite