American Red Cross

American Red Cross Advisory Council on First Aid, Aquatics, Safety and Preparedness

ACFASP Advisory Hyperthermia

Overall Recommendation:

Standard: None

Guideline:

For a person with suspected exertional heat stroke (a core temperature at or above 40° C (104° F) and central nervous system (CNS) dysfunction occurring during exercise in heat) (Level II) immediately initiate EMS and begin rapid cooling of the victim. The shortest time to aggressive cooling and ultimate return a core temperature at or below 38.8°C or 102°F leads to best outcomes (Level II). Rapid cooling methods include cold water immersion (~5°-15°C or ~40°-60°F Degrees) (Level II) ice water dowsed towels over the entire body (Level II).

For first aid providers working without equipment to measure core temperature, a victim exhibiting signs and symptoms of heat stroke (i.e., heat exhaustion plus change in normal mental status that occurs during exercise in heat) immediately initiate EMS and begin rapid cooling (i.e, cold water immersion, ice water dowsed) for 20 minutes or until base line mental status is achieved. Immediate on-site cooling is best to optimize outcome.

Option: None

Questions to be addressed:

What are the current diagnostic criteria used to differentiate between the different types of hyperthermia (i.e., heat cramps, heat exhaustion, and heat stroke [exertional and classic]) and what are the current recommendations for managing these conditions?

Introduction/Overview:

Any individual(s) regardless of training or activity level (sedentary vs. athletic), including athletes, agriculture and construction labors, as well as many other professions (those working indoors and outdoors) are at risk for developing heat-related illness when exposed to high ambient temperatures and humidity. This occurs because they are unable to adequately dissipate

increases in body core temperature physiologically. Special populations including children, elderly, and individuals with chronic medical conditions are significantly at risk for developing heat related illnesses, particularly classic heat stroke (longer onset compared to exertional heat stroke). Untreated hyperthermia can lead to organ failure and death. Preventing, identifying, and treating hyperthermia is important for first aid providers.

Summary:

Heat Cramps

The current ARC first aid procedures for the identification and management of heat cramps appear to be consistent with the current literature. When discussing recognition, consider the possible inclusion of more signs and symptoms of heat cramps may be warranted including: decreased water intake fatigue, and thirst. When discussing care, consider adding the application of cryotherapy (Level III) and consuming a well balanced diet.

Heat Exhaustion

The current first aid procedures for the identification and management of heat exhaustion appear to be consistent with the current literature, however, a better distinction needs to be made between heat exhaustion and heat stroke within the text as well the mechanism for the development of heat exhaustion. For example, in *Responding to Emergencies* heat related, particularly heat exhaustion and heat stroke are referred to as "early' and "late" heat illness. This is not common terminology used in the literature. Furthermore, more emphasis should be placed on early recognition and prevention. When discussing recognition, consider the possible inclusion of more signs and symptoms of heat exhaustion such as those seen with heat cramps, as well as rapid, weak pulse, shallow breathing, early AMS, hypotension. When discussing care, consider adding, rest, removal from the environment to a cooler environment, using a fan to promote evaporation.

Heat Stroke

The current first aid procedures for the identification and management of heat stoke appears inadequately discussed in the current format. Given the prevalence of this condition and the potential for harm including, organ failure and death the current writing requires revision.

Consider providing greater detail of the etiology, including the affects of ambient temperature and humidity on the core temperature and defining the difference between exertional and classic heat stroke. When discussing recognition, consider the possible inclusion of more signs and symptoms of heat stroke (from above) may be warranted including that while warm/hot, red, dry skin may be apparent, it would be much more common for a victim of exertional heat stroke to be sweating at the time of collapse. The recommended care guidelines need to reinforce prompt and immediate referral to EMS. While waiting for the arrival of EMS, stress that immediate cooling of the body using a cooling modality that provides the most effective cooling rate will lead to best outcome. Cold water immersion has been proven to have the most effective cooling and survival rates; so whenever feasible, immersion, (ex. in a kiddie pool, tub, etc.) is recommended. When immersion is not possible it is recommended to rotate cold/wet towels over the patient's body. As with heat exhaustion, emphasis should be placed on prevention which includes decreasing intensity of exercise during more extreme environmental conditions as well as maintaining hydration status, avoiding the hottest times of the day, minimizing clothing and equipment, seeking shade, taking frequent breaks, and gradually increasing exposure time to the heat (heat acclimatization).