



MIAMI TOWNSHIP FIRE & EMS CLERMONT COUNTY, OHIO *MEDICAL PROTOCOLS*



HYPERTHERMIA / HEAT EMERGENCIES

Historical Finding

1. Patient displaying signs and symptoms of a heat related emergency.

Physical Findings

1. **HEAT CRAMPS** – occurs in response to patients who exercise and sweat profusely without adequate fluid replacement mixed with salt. Heat cramps generally affect the major muscle groups associated with exercise (calves, quads and hamstrings).
 - A. Temperature: Usually normal.
 - B. Mental status: Alert.
 - C. Skin: Sweaty, may be warm or cool to touch
 - D. Neurological exam: Normal except for muscle cramps.
 - E. Blood pressure: Normotensive.
2. **HEAT EXHAUSTION** – characterized by an increase in core temperature and heart rate. Patients respond well to boluses of normal saline solution.
 - A. Temperature: Normal to slight elevation.
 - B. Mental status: Alert to slight confusion.
 - C. Skin: Sweaty, usually hot to touch.
 - D. Neurological exam: weak, but maintains extremity control.
 - E. Blood pressure: Normal to mild hypotension.
3. **HEAT STROKE** – this occurs when the body's thermoregulator fails. This is a true emergency. If the body is not cooled, organ systems begin to fail and the body will shut itself down. **NOTE**: exertional heat stroke may exhibit persistent sweating.
 - A. Temperature: Core temperature of 104° F or greater.
 - B. Mental status: Altered (from extreme agitation to coma).
 - C. Skin: Usually flushed and hot; may or may not be diaphoretic.
 - D. Neurological exam: At risk for seizures.
 - E. Blood pressure: Hypotension.



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Differential Diagnosis

1. Fever (infection).
2. Dehydration.
3. Medications.
4. Hyperthyroidism.
5. CNS lesions or tumors.
6. Delirium tremors.

Protocol

1. Initiate contact; reassure, and explain procedures.
2. Assess and secure the patient's airway and provide oxygen per the airway, oxygen and ventilation protocol.
3. Perform patient assessment, obtain vital signs including temperature and begin cardiac monitoring.
4. Initiate IV access with a saline lock or 0.9% normal saline KVO.
 - A. Administer 1 liter 0.9 % normal saline bolus if the patient is hypotensive (20 mL/kg bolus for pediatrics).
 - i. Many patients with true heat stroke are not dehydrated, while heat exhausted patients usually are dehydrated.
5. If shivering begins, administer lorazepam (Ativan) 2 mg IV diluted 1:1 with 0.9 % NS.



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6. Check blood glucose; if glucose is less than 60 mg/dL consider oral glucose 15 gm if conscious and able to swallow otherwise:
 - A. Adults: administer dextrose 50 % 12.5-25 gm IV.
 - B. Pediatrics age 6 to 14 years: administer dextrose 50 % 1 mL/kg IV (max 50 mL).
 - C. Pediatrics less than 6 years: administer dextrose 25 % 2 mL/kg IV.
 - D. If IV access is unavailable:
 - i. Adults: administer glucagon (glucagen) 1 mg IM.
 - ii. Pediatrics ≥ 20 kg / 44 lbs administer glucagon (glucagen) 1 mg IM.
 - iii. Pediatrics ≤ 20 kg / 44 lbs administer glucagon (glucagen) 0.5 mg IM.
7. Rapid recognition of heat illnesses is vital and rapid cooling is the priority.
8. Move patient to a cool environment and loosen or remove nonessential clothing.
9. Cool with cold packs or moist sheets (apply to neck, axillae, or groin).