

HYPERTHERMIA / HEAT EXPOSURE

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-40 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

Providers may use purpose made continuous core body temperature monitoring devices is already in place or if provided. Regular spot check thermometers are insufficient. If purpose made continuous core body temperature devices unavailable, then use mental status as the indicator to remove from cooling

UNIVERSAL PATIENT CARE PROTOCOL

Document Patient Temperature

Remove Patient from Heat Source

Remove Patient Clothing

Increase Air Flow around patient

CAPNOGRAPHY PROCEDURE

If immersion cooling has been initiated prior to EMS arrival by on scene providers, do not interrupt cooling for assessment or treatment until cooling period has completed per this protocol

HEAT EXHAUSTION (NO AMS)

Apply coldest water available or ICE water if possible
Apply ICE PACKS to Patient (Groin, Axilla, and Posterior neck)
Consider Cooling Collar

**HEAT STROKE (+AMS)
Immersion Unavailable**

Apply coldest water available or ICE water if possible
Apply ICE PACKS to Patient (Groin, Axilla, and Posterior neck)
Consider Cooling Collar

**HEAT STROKE (+AMS)
Immersion Available**

COLD WATER / ICE IMMERSION AVAILABLE
Or
CAN BE PREPARED IN 5 mins
Use any local assets / supplies to accomplish this
STAYING AND GETTING CORE TEMP DOWN IS IMPERATIVE

Submerge as far up to neck as possible – keep head above water with towel or sheet under arms
Agitate the water
Keep immersed for 10 – 20 mins or return of normal mental status
OR
Core temp \leq 102F (40C) if purpose made continuous core temp monitoring device available

⚠ If mental status fails to return to normal after 20 mins, look for other causes and / or contact Medical Control

Do not interrupt submersion cooling for vomiting, bowel movement, combativeness, or seizures

IV / IO PROCEDURE
IV Normal Saline
Bolus 20 ml / kg
CHILLED SALINE IF AVAILABLE

IV / IO PROCEDURE
IF HYPOTENSIVE - IV Normal Saline
Bolus 20 ml / kg
IF NORMOTENSIVE - IV Normal Saline
TKO
CHILLED SALINE IF AVAILABLE

IV / IO PROCEDURE
IF HYPOTENSIVE - IV Normal Saline
Bolus 20 ml / kg
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TKO
CHILLED SALINE IF AVAILABLE

Transport with early notification to receiving hospital to begin preparing ice bath / cooling measures as needed

BLOOD GLUCOSE PROCEDURE

Cardiac Monitor / DIAGNOSTIC EKG Procedure

Monitor and Reassess

TRANSPORT to appropriate facility **CONTACT** receiving facility **CONSULT** Medical Control where indicated **APPROPRIATE** transfer of care

EMT Intervention

AEMT Intervention

PARAMEDIC Intervention

Online Medical Control

HYPERTHERMIA / HEAT EXPOSURE

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> Age Exposure to increased temperatures and humidity Past medical history / medications Extreme exertion Time and length of exposure Poor PO intake Fatigue and / or muscle cramping 	<ul style="list-style-type: none"> Altered mental status or unconsciousness Hot, dry, or sweaty skin Hypotension or shock Seizures Nausea 	<ul style="list-style-type: none"> Fever (infection) Dehydration Medications Hyperthyroidism (storm) Delirium tremens (DT's) Heat cramps Heat exhaustion Heat stroke CNS lesions or tumors
Heat Exhaustion: Dehydration		Heat Stroke: Cerebral Edema
<ul style="list-style-type: none"> Muscular / abdominal cramping General weakness Diaphoresis Febrile Confusion Dry mouth / thirsty Tachycardia BP normal or orthostatic hypotension 		<ul style="list-style-type: none"> Confusion Bizarre behavior Skin hot dry, febrile Tachycardia Hypotensive Seizure Coma
KEY POINTS		
<ul style="list-style-type: none"> Exam: Mental Status, Skin, HEENT, Heart, Lungs, Neuro Patients at risk for heat emergencies include neonates, infants, geriatric patients, and patients with mental illness. Other contributory factors may include heart medications, diuretics, cold medications, tricyclic antidepressants, phenothiazines, anticholinergic medications, and alcohol. Cocaine, amphetamines, and salicylates may elevate body temperatures. Heat exposure can occur either due to increased environmental temperatures or prolonged exercise or a combination of both. Environments with temperature > 90° F and humidity > 60% present the most risk. Sweating generally disappears as body temperature rises Heat Cramps consists of benign muscle cramping 2° to dehydration and is not associated with an elevated temperature. Heat Exhaustion consists of dehydration, salt depletion, dizziness, fever, headache, cramping, nausea, and vomiting. Vital signs usually consist of tachycardia, hypotension, and an elevated temperature. Heat Stroke consists of dehydration, tachycardia, hypotension, elevated temperature, and altered mental status. Requires cooling On scene cooling by submersion in ice water for heat stroke is imperative. Take time to prepare and submerge patient if suitable tub, ice, and water are available or can be set up in less than the transport time to the hospital or 5 mins. The hospital is unlikely to have immediate availability of an ice bath. Utilize available resources as soon as available to prevent patient deterioration. A body bag with ice and water can be used as a makeshift tub if necessary or during transport if additional cooling is required. Agitating the water will help with convection and cooling Shivering may occur as patient is cooled. Do not discontinue cooling until mental status or target core temperature is achieved. Heat stroke occurs when the cooling mechanism of the body (sweating) ceases due to temperature overload and / or electrolyte imbalances. Be alert for cardiac dysrhythmias for the patient with heat stroke. In patients with significant hyperthermia (temp > 104° F) begin actively cooling with natural or chemical ice packs applied to the patients' groin, armpits (axilla), and back of neck if submersion is unavailable. Use best cooling options available prior to transport when feasible cool patient before transport. 		