

## A. Cold Water Immersion

Cold Water Immersion (CWI) and Tarp Assisted Cooling Oscillation (TACO) are rapid cooling methods used to lower core body temperature in patients suffering from heat stroke. These techniques should only be performed at incidents where the proper equipment has been pre-staged, or when responding crews arrive to find that the scene is already properly set up.

Heat stroke is a life-threatening emergency characterized by a core body temperature greater than 104°F (40°C) and central nervous system dysfunction. If untreated, heat stroke may lead to organ failure, neurological injury, cardiac dysfunction, and death.

Cold water immersion to the neck remains the most effective treatment for rapidly lowering core body temperature in heat stroke patients.

### Operational Considerations

Crews may arrive at incidents, most commonly athletic events, recruit training, extended operations, or fireground training, where cooling procedures have already been initiated by on-site medical personnel, athletic trainers, or event staff. Follow the “cool-first, transport second” guideline as **no other emergency medical treatment is needed** other than rapid lowering of the body temperature.

- Continue the cooling process whenever possible.
- Maintain active cooling for approximately 20-30 minutes, or until directed otherwise by medical control/protocol.
- Continuously monitor airway, breathing, circulation, mental status, and patient responsiveness.

### Discontinue Cooling and Transition to Standard Patient Care If:

- Airway compromise is suspected
- Advanced airway management becomes necessary
- Cardiac monitoring or resuscitative interventions are required
- Seizure activity
- Patient condition deteriorates or becomes unstable

If any of the above occur, stop the immersion/TACO process and transfer the patient immediately to the closest emergency department while providing the appropriate patient care.

Cooling should be initiated or continued during transport in the most effective manner possible.

## Procedure

### EMR/BLS

1. Cold Water Immersion (CWI)
  - a) Move to a cool/shaded area.
  - b) Remove all equipment and excess clothing.
  - c) Assess patient vital signs.

- d) If tub is available, fill it with water and ice.
    - Ice and water may have to be added throughout the cooling process.
    - If available a tarp or patient carrier should be placed underneath patient prior to, or during submersion to assist with patient movement.
  - e) Patient should be placed in tub up to neck area, leaving the head exposed.
  - f) Place a wet towel over patient head.
    - Ensure that the airway is patent, and patient is able to maintain airway.
  - g) If available, rectal temperature should be monitored periodically. Once patient rectal temperature has reached 102F°, patient should be removed from the tub and transported for further evaluation and treatment.
    - If a rectal thermometer is unavailable, do not delay cold water immersion, immerse the patient for approximately 20-30 minutes.
  - h) If immersion is not possible/available, use Tarp Assisted Cooling Oscillation (TACO) method use rotating cold wet towels to cover as much of the body surface area as possible.
2. Tarp Assisted Cooling Oscillating Method (TACO)
- a) Remove the victim's excess clothing and equipment.
  - b) Place them in the middle of a tarp, which will serve as the makeshift tub.
  - c) Have crew pick up each corner of the tarp to form a sling, or taco shape.
  - d) Cover the patient with cool water and ice up to their chest.
  - e) Slowly move the tarp back and forth to oscillate the liquid and initiate cooling.
  - f) Ensure patient does not slip beneath the surface of the water and continuously assess vital signs.
  - g) If TACO is not available, use rotating cold wet towels to cover as much of the body surface area as possible and follow [Protocol 26 Environmental Emergencies](#).

## ALS

3. Establish vascular access via IV/IO.
4. Administer fluid bolus up to 1000 mL Normal Saline. Monitor lung sounds and blood pressure often.
  - a) If the patient develops signs and symptoms of fluid overload respiratory distress (dyspnea, crackles, rhonchi, decreasing SpO<sub>2</sub>), slow the administration rate of IV to KVO.
5. Monitor cardiac rhythm continuously and perform a 12-Lead ECG
6. If seizures develop, administer Midazolam (Versed) 5 mg slow IV/IO/IN. This may be repeated once to a total dose of 10 mg.

***NOTE: Cooling is the primary goal before transport. However, airway and circulation will take precedence over cold water immersion if patient's airway is compromised or in cardiac arrest. Cooling procedures that allow for airway management and CPR should be done concurrently.***