

HEALTHEAST MEDICAL TRANSPORTATION MEDICAL OPERATIONS MANUAL

5B HYPOTHERMIA

PATIENT CARE GOALS

- Identify and treat or rule out potential causes of hypothermia.¹
- Remove the patient from adverse surroundings and prevent further heat loss.
- Provide expedient but gentle handling and transport.

EMT

General treatment for all hypothermia patients:

1. Assess the patient and provide initial care, including oxygen and vascular access as needed, per **1B General Assessment and Care**. Determine the severity of the hypothermia, if possible, measure the patient's temperature. Consider possible non-environmental causes and contributing factors.¹
2. Determine if mild/moderate or severe hypothermia is present.²
3. Protect against further heat loss and gently remove wet garments if present.
4. Gentle handling of the patient is essential to avoid ventricular fibrillation (VF) in severely hypothermic patients. Avoid rough handling and excessive movement of the patient and perform all procedures as gently as possible.²
5. Measure blood sugar and treat hypoglycemia if present per **3G Hypoglycemia**.
6. Begin passive rewarming (warm environment and insulation) for all hypothermic patients.
7. Begin active external rewarming of the patient's trunk if signs and symptoms of severe hypothermia are present.³
8. Allow warmed, sweetened oral fluids if the patient is alert and able to swallow.
9. Infuse warmed IV fluids if available.⁴

Hypothermic arrest: ^{5,6}

10. If the patient is not breathing and perfusion is not present, begin CPR.
11. Initiate early transport rather than carrying out extended on-scene resuscitation attempts. All hypothermic arrest patients should be transported.
12. For adults with VF or pulseless ventricular tachycardia (VT), give a single biphasic shock at 360 Joules, then immediately resume CPR. If the patient fails to respond to the single defibrillation attempt, withhold further shocks until the core temperature rises above 30 degrees Celsius (86 degrees Fahrenheit).

The following table may be used to estimate the degree of hypothermia based on clinical findings:

Severity	Temperature	Clinical Findings
Mild	>93°F	Shivering, impaired judgment; tachycardia and hypertension might be present.
Moderate	86-93°F	Clouded to stuporous consciousness, shivering stops, blood pressure becomes difficult to obtain.
Severe	<86°F	Loss of consciousness, bradycardia, hypotension, slow respirations, arrhythmias may develop.

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PARAMEDIC

ADULT	PEDIATRICS (less than 60 kg)
<p>13. Medications: For hypothermic arrest, withhold medications if the core temperature is suspected to be less than 30 degrees Celsius (86 degrees Fahrenheit). Use longer medication intervals if the temperature is known and is greater than 30 degrees Celsius (86 degrees Fahrenheit)</p> <p>14. Defibrillation: For suspected severe hypothermia with VF or pulseless VT, give a single biphasic shock at 360 Joules, then immediately resume CPR. If the patient fails to respond to the single defibrillation attempt, withhold further shocks until the core temperature rises above 30 degrees Celsius (86 degrees Fahrenheit).</p>	<p>13. Medications: For hypothermic arrest, withhold medications if the core temperature is suspected to be less than 30 degrees Celsius (86 degrees Fahrenheit). Use longer medication intervals if the temperature is known and is greater than 30 degrees Celsius (86 degrees Fahrenheit)</p> <p>14. Defibrillation: For suspected severe hypothermia with VF or pulseless VT, give a single biphasic shock at 2 J/kg, then immediately resume CPR. If the patient fails to respond to the single defibrillation attempt, withhold further shocks until the core temperature rises above 30 degrees Celsius (86 degrees Fahrenheit).</p>

DOCUMENTATION KEY POINTS

- Measured or estimated core temperature.
- Contributing factors (e.g., immersion, cold weather, impaired body function, acute or chronic illness, medications, urban setting).
- Duration of immersion or exposure.
- Initial and ongoing assessments, monitoring, interventions, patient response, and complications (if any) encountered.

NOTES

¹ **Causes of hypothermia** may include:

- Environmental (“accidental”) – immersion or non-immersion cold exposure. Consider possible associated trauma and need for spinal immobilization.
- Metabolic – includes hypoglycemia, hypothyroidism, and hypoadrenalism.
- CNS/hypothalamic – includes head trauma, stroke, brain tumor, and Wernicke’s encephalopathy.
- Drug induced – includes alcohol, CNS depressants, antipsychotics, vasodilators, hypoglycemic agents (including insulin).
- Sepsis, and other severe acute illness.
- Trauma – includes patients with significant burns, patients receiving massive IV infusions.

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² **Mild/Moderate versus Severe Hypothermia**

- Mild hypothermia in general, occurs with core temperatures between 32 and 35 degrees Celsius (90 to 96 degrees Fahrenheit). *It is important to note individuals respond differently to cold and patient treatment should be based more on their clinical presentation rather than on a specific temperature.* In mild hypothermia (responsive or excitation phase) the body attempts to retain and generate heat. Heart rate, cardiac output and blood pressure will rise. The patient is generally alert with severe discomfort, vasoconstriction, and intact shivering mechanism.
- Severe hypothermia (slowing or adynamic stage) occurs when core temperatures fall below 32 degrees Celsius (90 degrees Fahrenheit). Metabolism and body functions are decreased, with significant decline in mental status, respiratory rate and depth, pulse rate, and cardiac output. Shivering ceases when body temperature falls below 30 to 32 degrees Celsius (86 to 90 degrees Fahrenheit), therefore severe hypothermia may be present in a shivering patient. Muscular rigidity and loss of reflexes will develop as severe hypothermia progresses. Myocardial irritability may cause life-threatening dysrhythmias, especially with rough handling or other cardiac-stimulating activities.

³ **Active external rewarming:** May include, heated blankets to the patient's trunk, radiant heat, and warm forced air (e.g., in the ambulance). Approved external heat packs and bags of warmed IV fluid should be packed around the patient's trunk (e.g. in the groin, neck, axilla).

⁴ **IV fluids** should be warmed to approximately 43 degrees Celsius (109 degrees Fahrenheit), if possible.

⁵ **Hypothermic arrest:** True arrest is often difficult to distinguish from severe cardiorespiratory depression. Respirations and circulation may need to be checked for longer periods (30 to 45 seconds) to determine arrest in the hypothermic patient.

⁶ **Cold water immersion:** Resuscitation efforts may need to be continued for longer periods of time in cases of hypothermic arrest due to cold water submersion and drowning. Consider water temperatures less than 21 degrees Celsius (70 degrees Fahrenheit) as "cold water" for resuscitation and treatment considerations.