Special situations

MANAGING THE PATIENT WITH ACCIDENTAL HYPOTHERMIA

Sinus bradycardia is an expected response to significant hypothermia. No specific treatment is required, and rewarming should restore a normal rhythm. Osborn J-waves may be present, especially with temperatures below 30°C. This is a positive deflection at the J-point of the QRS complex. It does not suggest coronary ischemia by itself, and treatment with rewarming should restore a normal morphology.

Osborn J-waves

Cold temperatures can induce peripheral vasoconstriction and increase central blood volume, which may result in a **cold diuresis**, and consequent volume loss.

Most patients will benefit from IV fluids to offset this. IV fluids should be warmed when possible. This won't warm the patient, but it will help prevent further heat loss. Temperature derangements may also cause electrolyte disturbances, which may correct as the temperature is corrected.

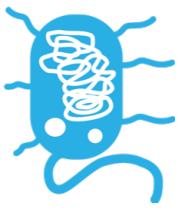
Hypothermia has antiplatelet and anticoagulant effects as well, and a **coagulopathy** may develop at temperatures below 33.5°C. Core temperature should be monitored, ideally with an indwelling thermometer (e.g., esophageal, rectal, bladder) when possible.

Warmed humidified air or oxygen should be used, especially for patients requiring mechanical ventilation.

Passive rewarming with blankets may be used for mild hypothermia with a normal mental status, but aggressive **active rewarming** should be used for patients with central nervous system symptoms, a core temperature below 32°C, or at the extremes of age.

These include warm peritoneal lavage, which will warm about three degrees per hour; left thoracic lavage, which can warm up to about six degrees per hour; or hemodialysis, extracorpeal membrane oxygenation (ECMO), or cardiopulmonary bypass, which can warm the fastest, but are often limited by availability.

It is important to identify any secondary causes for hypothermia, including



Sepsis

Stroke

Hypoglycemia

Intoxication

Myxedema coma

Secondary causes are especially likely if the patient is resistant to rewarming efforts.

In general, it is recommended to warm to at least 30–32°C during a cardiac arrest resuscitation before declaring futility if the primary cause is hypothermia. However, with obvious lividity or irreversible causes of death, a potassium level > 10, or asystole for more than 35 minutes, survival is not expected.