Accidental Hypothermia Guideline

Mild: 32 – 35 °C (89.6 – 95 °F)
- Passive rewarming
- Consider active external rewarming
- Consider labs\(^4\) / ECG\(^5\) to work up cause of hypothermia/ altered mental status (e.g. trauma, toxins, metabolic abnormality)

Moderate: 28 - 32 °C (82.4 - 89.6 °F)
- Labs\(^4\) / ECG\(^5\) to work cause of hypothermia/ altered mental status (e.g. trauma, toxins, metabolic abnormality)
- Passive rewarming
- Active external rewarming
- Warmed NS x 500 mL, repeat based on clinical judgment
- Warm humidified O\(_2\) by mask
- Consider Admission for observation

Severe: < 28 °C (82.4 °F)
- Labs\(^4\) / ECG\(^5\) to work up cause of hypothermia/ altered mental status (e.g. trauma, toxins, metabolic abnormality)
- Consult CT surgery attending for cardiopulmonary bypass\(^5\)
- If cardiopulmonary bypass not available, begin active passive external rewarming, active internal rewarming
- Rewarm to 33 C and then slowly rewarm based on cardiac arrest therapeutic hypothermia protocols
- Admit to Intensive Care

1. Esophageal is preferable over rectal temperature.
2. Check for pulse > 30 seconds, cardiac activity on bedside echo, organized rhythm on monitor, Doppler pulses.
3. BLS/ACLS may be deferred if signs of dependent lividity, obvious lethal injury, chest frozen solid, ice in airway.
4. CMP, CBC, Coags / DIC panel, Blood Gas (uncorrected), CPK (if prolonged down time). Consider ETOH / U-Tox if unclear etiology.
5. ECG Features: Widened PR / QRS / QT intervals, Osbourn / J waves, Atrial and ventricular dysrhythmias.
6. CT surgery consultation for cardiopulmonary bypass for temp < 32 C and VT/VF arrest or PEA. Consider for asystole based upon patient age, co- morbidities. Consult for severe hypothermia (< 28C) regardless of underlying rhythm as other methods of rewarming are less effective.

This guideline was ratified by the emergency department faculty at Maine Medical Center in January 2013. It reflects our expert opinion and is not necessarily applicable to all institutions. It is intended to be a reference for clinicians caring for patients and is not intended to replace providers’ clinical judgment.

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REWARMING METHODS

Passive:
- Remove clothing, dry patient, cover with blankets / space blanket, provide warm sugary drinks.

Active External:
1. Forced Air Rewarmer (eg: Bair Hugger) - to trunk only to reduce core temperature afterdrop.
2. Arctic Sun (for moderate / severe).

Active Internal:
1. Warmed fluids (D5 NS @ 40-42 °C) – Initially 250-500mL bolus, repeat based on clinical scenario.
2. Warm, humidified oxygen. By facemask or consider CPAP – by ETT if intubated.
3. Peritoneal Lavage – 2 liters of diasylate @ 40 – 45 °C, remove after 20-30 minutes.
   Rewarming rate of 1-3 °C / hr.
4. Body cavity lavage – Through Foley or NGT / OGT. 500mL boluses or continuous irrigation. Consider risk of fluid / electrolyte shifts.
5. Closed Thoracic Lavage – 2 large bore (38-40 fr) chest tubes in each hemithorax (one at mid clavicular line @ 2nd / 3rd interspace, second at post. axillary line @ 5th / 6th interspace).
   Infuse warmed (40-42 °C) saline and drain through posterior tube.
6. Thoracotomy with Mediastinal Lavage
   - 1-2 liters of warmed NS to mediastinum, remove after 1-2 minutes.
   - May utilize cardiac massage and internal defibrillation
   - Highly Invasive, requires disposition to OR.

Extracorporeal:
1. Continuous Venovenous Rewarming (CVV/R)
   - 2-3 °C / hr
2. Continuous Arteriovenous Rewarming (CAV/R)
   - 3-4 °C / hr.
   - Requires adequate MAP.
   - Can be performed in ED with proper equipment.
3. Hemodialysis
   - 3-4 °C / hr
   - Requires adequate MAP.
   - Possible to correct electrolyte and toxic abnormalities.
   - Requires dialysis staff.
4. Cardiopulmonary Bypass
   - Most rapid rewarming (8-10 °C / hr).
   - Provides full cardiopulmonary support for hemodynamically unstable patients.

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