2.3.9 Therapeutic Hypothermia

Cardiac arrest outside of the hospital is a common occurrence and typically results in a poor outcome for the patient. Those patients who do have a return of spontaneous circulation (ROSC) will often have a poor neurological outcome as a result of cerebral reperfusion injury. The American Heart Association (AHA) has recognized this fact and offers the following recommendation: “Unconscious adult patients with ROSC after out-of-hospital cardiac arrest should be cooled to 32°C to 34°C (89.6°F to 93.2°F) for 12 to 24 hours when the initial rhythm was ventricular fibrillation/pulseless ventricular tachycardia (Class IIa).”

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
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<tr>
<td>All patients with ROSC &gt; 5 minutes post non-traumatic, presumed cardiac arrest (Vfib, pulseless Vtach and asystole) (defined as compressions or defibrillation performed) and:</td>
<td>Age &lt; 16 years old</td>
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<td>Endotracheal Intubation or Supraglottic Airway and patient remains comatose</td>
<td>Pregnant</td>
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<tr>
<td>SBP &gt; 90mmHg - If initial SBP &lt;90 but responds to fluids/vasopressors and becomes &gt;90 then protocol may be executed</td>
<td>Traumatic cardiac arrest</td>
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<td>Significant head trauma</td>
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<td>Actual or suspected significant hemorrhage</td>
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<td>Initial temperature &lt;34 C</td>
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<td>Frank pulmonary edema</td>
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<tr>
<td></td>
<td>SBP &lt;90mmHg</td>
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</tbody>
</table>

Procedure

Supportive Care

- Reassess the ABCs and vital sign
- Remove the ITD as soon as the patient has a ROSC.
- Confirm therapeutic hypothermia inclusion/exclusion criteria.
- Obtain a SAMPLE history.
- Transport the ROSC patient to the nearest hospital providing combined therapeutic hypothermia resuscitation and cardiac catherization facility.
- Notify Supervisor
- Contact receiving facility – Prepare them to resume care and cooling
2.3.9 Therapeutic Hypothermia

ALS Level 1

- The patient must be successfully intubated or have a supraglottic airway prior to proceeding with therapeutic hypothermia treatment.
- Maintain SpO\textsubscript{2} above 92% and attempt to maintain an EtCO\textsubscript{2} of 35-45 mm Hg. Avoid hyperventilation.
- Conduct a neurological assessment. Document and reassess:
  - Pupils (size, reactivity, equality).
  - Motor response to pain.
- Remove the patient’s clothing.
- Start 2 large bore IVs (18g or greater).
- Cool the patient.
- Apply cold packs to the patient’s head, axilla, and groin.
- Prevent shivering – In all patient administer one of the following benzodiazepines:
  - Diazepam (Valium) 5 mg IV, IO, or intranasal; may repeat every 5 minutes x 3, up to a maximum dose of 20 mg.
  - Midazolam (Versed) 5 mg IV, IO, or intranasal, may repeat every 5 minutes x 3 up to a maximum dose of 20 mg.
  - Lorazepam (Ativan) 2 mg IV, IO, or intranasal; may repeat once, up to a maximum dose of 4 mg.
  - May also consider Morphine 2 mg IVP every 45 minutes (maximum 6 mg) for persistent shivering or if allergy to benzodiazepines.
- Pressure infuse cold (4C, 40F) IV/IO saline at 30 mL/kg, up to a maximum of 2 L. Label saline bag "Hypothermia Protocol".
- Maintain systolic blood pressure > 90 mm Hg to ensure adequate perfusion. If systolic blood pressure drops to < 90 mm Hg, consider a dopamine drip at 5-20 mcg/kg/min.
- Continually monitor and reassess the patient.
- If at any time the patient has a loss of spontaneous circulation, discontinue cooling and refer to the appropriate protocol.

ALS Level 2

None

NOTE

(a) Short transport times may preclude initiation of pre-hospital hypothermia.